

Exhibit B Statement of Work for State Contract Modification

WATER ACTIVITY NAME - Santa Maria & Continental Reservoirs: Priority Studies to Restore Capacity

GRANT RECIPIENT – Santa Maria Reservoir Company

FUNDING SOURCE – Rio Grande Basin Account - WSRA

INTRODUCTION AND BACKGROUND

This application seeks funds for the necessary continuation and expansion of an existing contract (Contract) between Santa Maria Reservoir Company (SMR) and the Colorado Water Conservation Board (CWCB). In that Contract, Task 2.5 and all of Task 3.0 relate to studies of Santa Maria Reservoir. SMR has determined, based on data in the URS' recently completed *Continental Reservoir Flood Hydrology Final Report* dated June 10, 2010, that those tasks are of less priority and should be postponed to a later time. To be specific, funds relating to Task 2.5, in the existing Contract, entitled "Santa Maria Inlet Optimization," amounting to \$12,195. Funds relating to Task 3.0 in the existing Contract, total \$36,595. These two tasks, for which SMR has already been funded, total \$48,790. We request that this amount be re-allocated to Tasks 1.6 and 1.7 in this proposal in order to fund additional Survey and Geotechnical studies.

These details are explained in the "Fee Estimate" submitted by URS Corporation. To summarize:

SMR's previous commitment of \$18,000 matching funds is increased by \$22,000 more, for a total matching amount of \$40,000.

Amount re-allocated already funded	\$ 48,790
SMR Additional Matching funds	\$ 22,000
WSRA Grant Funds	<u>\$ 22,000</u>
	\$ 92,790
Cost of remaining tasks in this proposal	\$147,270
Total (modified) Project Cost	\$254,060

Findings from the URS Hydrology studies have provided a more thorough understanding of the complexities involved in restoring full capacity to Continental and Santa Maria, suggesting several alternative approaches to implementation, each of which requires full investigation. This reallocation and re-commitment of funds by SMR, plus the funds requested here, provide the means to conduct a thorough assessment of the options for restoring full capacity to Continental and Santa Maria reservoirs.

OBJECTIVES

The objectives of this project are to complete, extend, and re-prioritize the Tasks described in the existing Contract between Santa Maria Reservoir Company (SMR) and the Colorado Water Conservancy Board and to conduct additional studies as described below in order to determine the most viable method to remove storage restrictions and restore full capacity to Continental and Santa Maria reservoirs. The Objectives for this proposal are identical to those proposed by SMR in its previous proposal and as formalized in its existing Contract with CWCB. This application for funding and this Scope of Work reflect agreements which have been agreed to, pending approval of this request for funding, between Santa Maria Reservoir Company and URS Corporation, the Contractor, per Contractor's Modifications to their Work Order No.1 dated September 2, 2009. The Scope of Work for this project is divided into two main tasks: 1) Continental Reservoir and 2) Pipeline, Siphon, and Open Ditch. These studies and the proposed alternative Continental Dam improvements will be conducted in conformance with Colorado State Engineer's Office (SEO) Dam Safety Rules and Regulations (Rules) dated January 2007.

Task 1 – Continental Reservoir

Task 1.1 – Hydrologic/Hydraulic Analysis

Description of Task: Perform hydrologic study to determine required spillway size.

Determine

hydrologic/hydraulic adequacy of spillway, according to State's regulations, so as to lift current

restrictions. In addition, complete an analysis and identify any additional shortcomings of the

water delivery and reservoir system, and make recommendations to address any such matters.

Method/Procedure: Consult with Project Sponsors regarding these recommendations to determine if further engineering needs to be completed to mitigate these matters. URS will meet with the Project Sponsors and SEO to discuss the project details during a project

kickoff meeting and one-day site visit. URS will perform an inspection of the project features

including Continental Dam; Pipeline, Siphon, and Open Ditch; and Santa Maria Dam during the site visit. URS will identify if there are additional dam safety issues other than the spillway and the seepage along the left dam abutment based on the project inspection. If additional dam safety issues exist, URS will make recommendations with respect to further field investigations, engineering analyses, and designs. URS will develop the 24-hour, 100-year precipitation using NOAA Atlas II; and local and general storm probable maximum precipitation (PMP) using EPAT and HMR-55A methods.

URS will then develop the flood hydrology using the United States Army Corp of Engineers (USACE) HEC-HMS computer model using available project data. URS will then route the floods through the existing spillway to determine if the critical storm event

meets SEO Rules. These analyses will be used to determine the required spillway configuration that will be evaluated in Task 1.2.

Deliverable:

1. Project Execution Plan delivered one week prior to the project kick-off meeting.
2. Task memorandum presenting the findings and, if required recommendations, of the dam inspection.
3. Final design report section and appendices presenting the methodology, results, and recommendations for the flood hydrology.
4. Submittal to the SEO for approval.

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Task 1.2 – Alternatives Development and Evaluation - Spillway

Description of Task: Confirm and specify how repairing the spillway, and any other identified issues, will meet the State Engineer's requirements, including but not limited to, passing the PMF.

Method/Procedure: URS will perform the required hydraulic, structural, and geotechnical analyses to develop up to three spillway alternatives. URS will evaluate the alternatives based on technical, environmental, social, and financial issues. URS will perform a one-day alternatives workshop to present and select the preferable alternative for the project. The alternatives development and evaluation will be performed in conjunction with the alternatives development and evaluation for Task 2 – Pipeline, Siphon, and Open Ditch to ensure the overall system alternative(s) are selected that best meet(s) the project goals.

Deliverable: A section in the Alternatives Development and Evaluation memorandum presenting the findings and recommendations.

Task 1.3 – Prepare Plans and Specifications - Spillway

Description of Task: Upon determination of existing spillway adequacy, prepare plans and specifications for an adequate spillway, and prepare cost estimate for completing this work with an accuracy of plus and minus 10%.

Method/Procedure: URS will perform the required hydraulic, structural, and geotechnical engineering analyses to develop the spillway design for the project. Based on these analyses, URS will prepare plans and specifications for the selected alternative. The plans and specifications will become part of the overall project plans and specifications that will also include the selected alternatives for Task 2 – Pipelines, Siphon. Engineers Joint Contract Documents Committee (EJCDC) revised by URS to satisfy the specific project requirements will be used for the project. Technical specifications will be prepared in Construction Specification Institute (CSI) format. Design review submittal will be made at the 95% design level. URS will include the Project Sponsor's comments in the 100% design submittal. URS will perform quantity takeoffs so that a probable construction cost estimate can be developed. The cost estimate will be prepared based on recent bid tabulations from similar projects. The cost estimate will include a 10% contingency.

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Deliverables:

1. Final design report sections and appendices for spillway improvements.
2. 95% and 100% plans and specifications for spillway improvements.
3. 95% and 100% probable engineer's construction cost estimate for spillway improvements.
4. Submittal to the SEO for approval.

Task 1.4 – Alternatives Development and Evaluation - Seepage

Description of Task: Conduct an evaluation of the seepage migration through highly fractured abutment rocks; study stratification in the dam shell and effects of weathering on the embankment.

Method/Procedure: URS will use the available geotechnical data to evaluate the seepage through the fractured rock abutment. URS will prepare up to three alternatives to address the seepage issue based on analysis, dam inspection, and discussions with the Project Sponsors and SEO. URS will evaluate the alternatives based on technical, environmental, social, and financial issues. URS will perform a one-day alternatives workshop to present and select the preferable alternative for the project. The alternatives development and evaluation will be performed in conjunction with the alternatives development and evaluation for Task 2 – Pipeline, Siphon, and Open Ditch -- to ensure the overall system alternative(s) are selected that best meet(s) the project goals.

Deliverable: A section in the Alternatives Development and Evaluation memorandum presenting the findings and recommendations.

Task 1.5 – Prepare Plans and Specifications - Seepage

Description of Task: Prepare plans and specifications to reduce/eliminate seepage problem; and, if appropriate, establish monitoring plan for seepage rates and piezometers levels. Prepare cost estimate to reduce/eliminate seepage problem with an accuracy of plus and minus 10%.

Method/Procedure: URS will perform the required engineering analyses to enable the development of the final design plans to address the seepage issue. Based on these engineering analyses, URS will prepare plans and specifications for the selected seepage alternative. The plans and specifications will become part of the overall project plans and specifications that will also include the selected alternatives for Task 2 – Pipelines, Siphon; and Open Ditch. EJCDC revised by URS to satisfy the specific project requirements will be used for the project. Technical specifications will be

prepared in CSI format. Design review submittal will be made at the 95% design level. URS will include the Project Sponsor's comments in the 100% design submittal. URS will perform quantity takeoffs so that a probable construction cost estimate can be developed. The cost estimate will be prepared based on recent bid tabulations from similar projects. The cost estimate will include a 10% contingency.

Deliverables:

1. Final design report sections and appendices for seepage improvements.
2. 95% and 100% plans and specifications for seepage improvements.
3. 95% and 100% probable engineer's construction cost estimate for seepage improvements.
4. Submittal to the SEO for approval.

Task 1.6 – Survey

Description of Task:

1.6.1 Survey Research - The U.S. Department of Commerce - National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS) provides geodetic control throughout the United States. Although known by other agency names in the past, the National Geodetic Survey (NGS) is the primary source for geodetic data in Colorado. A minimum of two NGS Horizontal Monuments will be used to establish the Project's Horizontal Control Network, and a minimum of two NGS Vertical Monuments will be used to establish the project's Vertical Control Network.

1.6.2 Survey Control - The Horizontal Control for this Project will be tied to the Colorado High Accuracy Reference Network (CHARN), referenced to the North American Datum of 1983 (NAD 83), using densification points in the area, a minimum of two (2) points will be used. Two permanent Control Monuments will be set at Continental Reservoir, one on each end of the dam, preferably outside of the potential construction disturbance zone. A Fast Static GPS survey will be conducted on the Control Monuments, and shall meet the requirements of a Colorado Department of Transportation Class A Primary Survey, as outlined in the CDOT Survey Manual dated January 2008. A Project Control Diagram will be developed showing the Control Monument with geodetic (WGS 84) coordinates, Colorado State Plane, South Zone coordinates, and project control (state plane coordinates brought to ground using the dam elevation) coordinates in feet. A statement shall be included describing the procedure to convert from State Plane Coordinates to Ground Coordinates, and from Ground Coordinates to State Plane Coordinates. Elevations for the vertical control shall be established from existing national benchmarks, referenced and tied to the North American Vertical Datum of 1988 (NAVD 88). The Vertical Control for this project will be GPS

derived orthometric heights (elevations), for the Primary Control Monuments using a minimum of two Benchmarks Monuments. If more accurate vertical elevations are required at a later date, a closed loop Vertical Survey will be conducted. If needed, the closed loop survey will be calculated to meet the minimum elevation closure standards of a Second Order, Class II survey, as published in Part 4: Standards for A/E/C and Facility Management publication from the Federal Geographic Data Committee. The calculated closure cannot exceed the square root of the total horizontal distance of the differential level loop in miles multiplied by 0.035 feet, ($0.035 \text{ ft} \sqrt{d \text{ miles}}$).

Method/Procedure:

1.6.3 General Survey Conditions - The optimum time to conduct topographic and improvement surveys that may be used to generate a three dimensional models is during periods of low storage, and low flows. The topographic and improvement survey will be conducted on the dam structures using RTK GPS techniques. Any locations that the terrain is obscured by vegetation will be surveyed using a Conventional Total Station.

The survey will be broken down into five parts:

1. Survey the Dam crest, the toe of the downstream face, the spillway, and the outlet structure.
2. Survey the Geotechnical Boreholes.
3. Survey the profile of the outlet pipe to the concrete lined canal.
4. Survey the Canal and terrain within 25 feet of the centerline of the Canal.
5. Survey the Drop Structure.

1.6.4 Process Survey and Aerial Mapping Data - The ground survey data will be processed to create a three dimensional model of the project site, and a Triangulated Irregular Network (TIN) model will be created, and one foot contour intervals created. A three dimensional Microstation and AutoCad drawing will be created for the project site.

1.6.5 Boundary Survey - No Land Survey Boundaries are to be determined or surveyed at this time.

Deliverables: All data and submittals will be reviewed and/or checked by a State of Colorado Registered Professional Land Surveyor before delivery.

1. SURVEY REPORT

- a. The consultant shall deliver two copies of the survey report.
- b. The reports shall be bound in three ring binders.
- c. Each report shall include the following sections:
 - i. Project description.
 - ii. Certification of Survey.
 - (a) A report that itemizes the procedures taken to assure that the survey data is of specified quality.
 - (b) This report shall include meetings and progress reports, acquisition of permission to enter, traffic control, utility location, survey equipment and calibration. The report shall include actual closures, ratios, tolerances, and differences detected while performing the work and evaluating quality. The report is to be signed and sealed by the PLS in responsible charge of the survey work.
 - iii. Copy of the Control Survey Diagram.
 - iv. Equipment calibration report.
 - v. Photographs of all found or set project control monuments.
 - vi. Copy of GPS report.
 - vii. Copy of field notes for surveys.
 - viii. Copy of project point list.
 - ix. The electronic data on compact disc.

Task 1.7 – Geotechnical

Description of Task: URS will conduct geotechnical investigations that include drilling, sampling, in-situ testing and laboratory testing to further characterize the existing spillway foundation materials and abutment rock to the right of the existing spillway.

Method/Procedure: The spillway will include ten test holes as follows:

Up to two test holes advanced through the upstream portion of the spillway near the dam

crest to characterize and obtain samples of the foundation soil (if present) and underlying

bedrock. Rock coring would be limited to approximately 10 feet in depth. These borings would define the profile of underlying rock and foundation soils, and will allow more accurate estimates of required rock excavation, and spillway under drain and anchor design.

Up to six test holes advanced through the spillway chute to characterize and obtain samples of the foundation soil (if present) and underlying bedrock. Rock coring would be limited to approximately 10 feet in depth. These borings would define the profile of underlying rock and foundation soils, and will allow more accurate estimates of required rock excavation, and spillway under drain and anchor design.

Up to two more test holes advanced through the spillway stilling basin area to characterize and obtain samples of the foundation soil (if present) and underlying bedrock. Rock coring would be limited to approximately 10 feet in depth. These borings would define the profile of underlying rock and foundation soils, and will allow more accurate estimates of required rock excavation, and spillway under drain and anchor design.

The following will be performed during the program:

Sample using Split Spoon, Modified California, or Shelby tube samplers at 5-foot intervals or less to evaluate in-situ properties of spillway foundation soils, and to obtain samples for laboratory testing.

Collect rock core samples in the underlying bedrock to characterize the foundation rock and for subsequent laboratory testing.

Perform permeability testing of in-situ soil and rock to provide a basis for spillway underdrain design.

Conduct laboratory testing on selected samples collected from the field investigation. URS proposes to perform strength test to evaluate engineering properties of spillway foundation soils and foundation rock. In addition, index testing would be performed on foundation soils encountered during the investigation.

URS will use a track mounted casing advance ODEX drill rig being winched from the spillway crest, and anchored in the spillway to advance the borings in the steep (approximately 1.7H:1V) spillway chute slope. The same drill rig could be used to advance the other borings as well.

URS will prepare a geotechnical summary report presenting the field investigation methods and procedures, testing results, materials characterization, and design recommendations.

Deliverables: Draft and final geotechnical reports.

Assumptions:

- (1) Access into the existing spillway is suitable for both a tracked drill rig, and for a large tow truck wrecker or equivalent.
- (2) Holes may be cut through the existing spillway, and patched when completed.
- (3) Anchors may be installed at the drilling locations to secure the rig in place.
- (4) Soil materials beneath the spillway may consist of large cobbles, requiring the use of an ODEX drill rig. This same drill rig may also be used for core drilling.
- (5) Worker platforms will be constructed to create a safe work environment.

Task 2 – Pipeline, Siphon, and Open Ditch

Task 2.1 – Diversion Gate

Description of Task: Evaluate condition at diversion gate and specify required actions. Prepare cost estimate for this work to be completed with an accuracy of plus and minus 10%.

Method/Procedure: URS will review the diversion gate in the field. Based on the field investigation URS will recommend improvements or gate replacement, if required. The alternatives will be discussed and the preferred alternative will be selected during the combined alternatives workshop for the project. Recommendations will be made for additional engineering and designs to address the diversion gate findings. Design or analyses are not included in this scope of work.

Deliverable: A section in the Alternatives Development and Evaluation memorandum presenting the findings and recommendations.

Task 2.2 – Prepare Plans and Specifications – Siphon Support System Stabilization

Description of Task: Prepare plans and specifications to stabilize the support system on the siphon. Prepare cost estimates for this work to be completed, with an accuracy of plus and minus 10%.

Method/Procedure: URS will evaluate the structural integrity of the pipeline support system. The structure evaluation will evaluate the landslide loading condition induced by the upslope hill area, the dynamic hydraulic loading within the pipe, and the bearing capacity of the external support system. This analysis will be performed along with the other tasks presented under Task 2. Alternatives will be developed and evaluated for this task. URS will evaluate the alternatives based on technical, environmental, social, and financial issues. URS will perform an alternatives workshop to present and select the preferable alternative(s) for the project. URS will perform a one-day alternatives workshop to present and select the preferable alternative for the project. The alternatives development and evaluation will be performed in conjunction with the alternatives development and evaluation for Task 1 – Continental Reservoir to ensure the overall system alternative(s) are selected that best meets the project goals. URS will prepare plans and technical specifications for the selected alternative. The plans and technical specifications will become part of the overall project plans and specifications that will also include the selected alternatives for Task 1 – Continental Reservoir. EJCDC revised by URS to satisfy the specific project requirements will be used for the project. Technical specifications will be prepared in CSI format. Design review submittal will be made at the 95% design level. URS will include the Project Sponsor's comments in the 100% design submittal. URS will perform quantity takeoffs so that a probable construction cost estimate can be developed. The

cost estimate will prepared based on recent bid tabulations from similar projects. The cost estimate will include a 10% contingency.

Deliverables:

- (1) A section in the Alternatives Development and Evaluation memorandum presenting the findings and recommendations.
- (2) Final design report sections and appendices for the Siphon Support System.
- (3) 95% and 100% plans and specifications for the Siphon Support System.
- (4) 95% and 100% probable engineer's construction cost estimate for the Siphon Support System.

Task 2.3 – Pipeline and Siphon Capacity Assessment and Design

Description of Task: Evaluate condition and capacity of the pipeline and the siphon used to transport water in winter; study seasonal problems with open ditch – freezing in winter limits the use stored water, and the limitations on capacity in summer. Prepare plans and specifications to establish necessary capacity in pipeline. Prepare cost estimates for this work to be completed with an accuracy of plus and minus 10%.

Method/Procedure: During the project kick-off meeting and site visit, URS will discuss the systems' operation related to seasonal flows and past historical issues related to capacity. URS will then perform a baseline hydraulic analysis of the total system starting at the diversion gate to Santa Maria Reservoir. The analysis will include three system combinations of the open ditch and the underground pipeline after the siphon. The first analysis will include the hydraulics of the diversion gate, pipeline leading to the siphon, siphon, exit structure of the siphon into the open ditch, and open ditch. This analysis will be used to determine the system's performance when the underground pipe is not used to convey water. The second analysis will include the same hydraulics up to the open ditch where the combination of the open ditch/underground pipeline will be studied. The third analysis will include the same hydraulics up to the open ditch where the underground pipeline will be studied for winter diversions. These analyses will be performed in conjunction with performing Task 2.4. Based on the findings of the hydraulic analyses, URS will develop up to three alternatives to achieve the required flow through the system. URS will evaluate the alternatives based on technical, environmental, social, and financial issues. URS will perform an alternatives workshop to present and select the preferable alternative for the project. URS will perform a one-day alternatives workshop to present and select the preferable alternative for the project. The alternatives development and evaluation will be performed in conjunction with the alternatives development and evaluation for Task 1 – Continental Reservoir to ensure the overall system alternative(s) are selected that best meets the project goals.

URS will prepare plans and technical specifications for the selected alternative. The plans and specifications will become part of the overall project plans and specifications that will also include the selected alternatives for Task 1 – Continental Reservoir. EJCDC revised by URS to satisfy the specific project requirements will be used for the project. Technical specifications will be prepared in CSI format. Design review submittal will be made at the 95% design level. URS will include the Project Sponsor's comments in the 100% design submittal. URS will perform quantity takeoffs so that a probable construction cost estimate can be developed. The cost estimate will be prepared based on recent bid tabulations from similar projects. The cost estimate will include a 10% contingency.

Deliverables:

- (1) A section in the Alternatives Development and Evaluation memorandum presenting the findings and recommendations.
- (2) Final design report sections and appendices.
- (3) 95% and 100% plans and specifications.
- (4) 95% and 100% probable engineer's construction cost estimate.

Task 2.4 – Open Ditch and Underground Pipeline Assessment & Design

Description of Task: Analyze and evaluate water conveyance through open ditch and underground pipeline. Determine whether open ditch should be repaired/upgraded or replaced with underground pipe. Prepare cost estimates for these two (2) alternatives of open ditch or underground pipeline for this work to be completed, with an accuracy of plus and minus 10%.

Method/Procedure: The baseline hydraulic analysis prepared for Task 2.3 will be used to develop alternatives for this task. URS will evaluate the alternatives based on technical, environmental, social, and financial issues. URS will perform an alternatives workshop to present and select the preferable alternative(s) for the project. URS will perform a one-day alternatives workshop to present and select the preferable alternative for the project. The alternatives development and evaluation will be performed in conjunction with the alternatives development and evaluation for Task 1 – Continental Reservoir to ensure the overall system alternative(s) are selected that best meets the project goals. URS will prepare plans and technical specifications for the selected alternative. The plans and technical specifications will become part of the overall project plans and specifications that will also include the selected alternatives for Task 1 – Continental Reservoir. EJCDC revised by URS to satisfy the specific project requirements will be used for the project. Technical specifications will be prepared in CSI format. Design review submittal will be made at the 95% design level. URS will include the Project Sponsor's comments in the 100% design submittal. SEO submittal of the design for the conveyance system is not required but will be included in the project design documents. URS will perform quantity takeoffs so that a probable construction

cost estimate can be developed. The cost estimate will be prepared based on recent bid tabulations from similar projects. The cost estimate will include a 10% contingency.

Deliverables:

- (1) A section in the Alternatives Development and Evaluation memorandum presenting the findings and recommendations.
- (2) Final design report sections and appendices.
- (3) 95% and 100% plans and specifications.
- (4) 95% and 100% probable engineer's construction cost estimate.

REPORTING AND FINAL DELIVERABLE

Reporting: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of the executed contract. The progress report shall describe the completion or partial completion of the tasks identified in the statement of work including a description of any major issues that have occurred and any corrective action taken to address these issues.

Final Deliverable: At completion of the project, the applicant shall provide the CWCB a final report that summarizes the project and documents how the project was completed. This report may contain photographs, summaries of meetings and engineering reports/designs.

Schedule

The work items described will be completed by June 30, 2012. Additional breakdown of task items will be as follows:

Field (Survey & Geotechnical Investigation) work completed by August 1, 2011
Draft of Final Plans & Specifications submitted for Owner/State review Nov. 1, 2011
Final Plans & Specifications submitted with Owner/State comments June 30, 2012