Colorado Water Conservation Board
Water Plan Grant – Statement of Work – Exhibit A

Statement Of Work	
Prepared Date:	**April 17, 2023**
Name of Grantee:	**Eagle River Water & Sanitation District**
Name of Water Project:	**Bolts Lake Reservoir Preliminary Design**
Funding Source:	**Water Plan Grant**

Water Project Overview:

This project consists of designing, permitting, and constructing a dam and reservoir at the historic Bolts Lake Reservoir (BLR) site in Minturn, Colorado, as well as developing a gravity feed pipeline delivery system from the Eagle River and from Cross Creek to fill the Bolts Lake Reservoir. Bolts Lake is an off-channel reservoir site that would store up to 1,210 acre-feet of water diverted from the Eagle River and/or Cross Creek. The Eagle River Water & Sanitation District (District) and Upper Eagle Regional Water Authority (Authority) closed on the purchase of the Bolts Lake site in February 2022 with the intent to develop a water supply reservoir that will provide critical in-basin water storage to the District's and Authority's portfolio of water resources. Once constructed, the reservoir will improve the resiliency of the community's water supply as they adapt to the impacts of a changing climate, and it will provide a water supply for important community land use priorities such as workforce housing. In addition to serving all existing District and Authority customers, water stored in the reservoir also will be used to augment diversions of the Town of Minturn and Battle North's planned future development on the land surrounding the reservoir site. The Minturn Town Council approved an Intergovernmental Agreement with the District and Authority on February 2, 2022, that secured augmentation rights for Minturn in exchange for a simplified future reservoir permitting process and other considerations.

The redevelopment of the reservoir is projected to take up to 10 years to complete. The construction of the reservoir will require deep excavation within the former lake footprint to roughly triple the volume of the original reservoir capacity. Based on a planned joint effort between the District, the Authority, and Battle North, the removed material will be used to cap the surrounding property on the Bolts site that will further remediation of mining impacts on the surrounding property and improve downstream water quality in the Eagle River.

An additional community benefit will be that the District and Authority have agreed to allow passive recreation on the reservoir, including non-motorized boating and fishing, so long as it doesn't interfere with the reservoir's main purpose of water supply.

The next step for development of the reservoir, and the subject of this application, is to complete preliminary design work to support federal, state, and local permitting. The preliminary design phase includes the following tasks:

- site visit and reconnaissance,
- field investigations,
- diversion and delivery system alternatives evaluations,
- spillway and outlet works design,
- inundation map analysis,
- preliminary design report,
- preliminary plans and specifications,
- cost estimating,
- project management and meetings, and
- initiation of environmental permitting.

Subsequent project phases which may be the subject of future water plan grant applications will consist of federal permitting, detailed design, state and local permitting, final design, and construction.

Project Objectives:

Objectives of this project include:

1. Provide additional in-basin storage in the Eagle River Valley to meet the water supply needs of the Towns of Avon, Minturn, and Vail, and the communities of Arrowhead, Beaver Creek, Bachelor Gulch, Berry Creek, Cordillera, Eagle-Vail, Edwards and other surrounding areas in unincorporated Eagle County served by the Eagle River Water & Sanitation District and Upper Eagle River Water Authority.
2. Increase the reliability and resiliency of the District and Authority's water supply to adapt to a changing climate by achieving the water supply planning goal of developing of an in-basin strategic reserve equal to ten percent (10%) of the District and Authority's annual water demands.
3. Reinforce the ability of the District, the Authority, and the Town of Minturn to meet CWCB minimum instream flow requirements decreed in water court case nos. 78W3796, 80CW0124, and 80CW0126.
4. Address water scarcity in the headwaters of the Colorado River Basin.
5. Provide recreational opportunities in the Eagle River Valley.

Tasks
Task 1 – Site Visit/Reconnaissance
Description of Task:

Select sites for drilling geotechnical borings, conducting geophysical surveys, and collecting additional groundwater data.
Method/Procedure:
Field visit by owner and consultant team to gather information.
Deliverable:
None.

Task 2 – Field Investigations
Description of Task:
This task will focus on the following elements: • Additional geotechnical exploration - several exploration locations proposed for the feasibility study were not accessible at the time of previous explorations and additional explorations are necessary to fill data gaps/reduce uncertainty; • Geophysical testing to supplement our geotechnical investigation; • An exploration program at the potential borrow site to determine if a clay source in sufficient quantity is available; and • An evaluation of natural recharge in the Old Tailings Pile (OTP) area and update the groundwater model accordingly to simulate the findings.
Method/Procedure:

Borings will be advanced with sonic drilling methods and standard penetration test sampling at 2.5- to 10-foot intervals in the upper 100 feet of each boring. Rock coring will be performed in the borings to confirm and characterize bedrock lithology, evaluate bedrock seepage characteristics (with packer testing), and evaluate bedrock and structural conditions (with core logging and downhole televiewer logging). The borings will provide information to support additional seepage analysis, design of the dam embankment and abutments, and design of rock cuts. Geotechnical laboratory testing will be completed on samples obtained from the borings to characterize and classify the soils. Testing is anticipated to consist of moisture content, unit weight, grain size distribution, Atterberg limits, specific gravity, corrosion, and unconfined compressive strength of rock core. The topographic ridge between Bolts Reservoir and the Consolidate Tailings Pile (CTP) acts as a barrier to groundwater flow, as evidenced by the significant drop in groundwater levels from the up-gradient (reservoir area) to the down-gradient (CTP) sides of this feature. The ridge was modeled with a bedrock high in the subsurface; however, because there are no borings in this ridge, there is no direct evidence of the bedrock high. A surface geophysical survey (seismic reflection tomography, electrical resistivity tomography, or gravity) will be performed to map the bedrock surface. Data from a proposed deep boring in this area will provide additional information regarding depth to bedrock to support interpretation of geophysical data.
Deliverable:

The deliverables for this task will consist of the following:

- A work plan to submit to the Environmental Protection Agency (EPA) for installation of the stilling basin and tensiometers within the Old Tailings Pile.
- A groundwater data report including geotechnical and monitoring well construction logs, water level measurements, aquifer hydraulic property measurements, and water quality data.
- An updated geotechnical data report including a summary of exploration activities, boring logs, packer testing data and interpretation, and interpreted borehole televiewer data.
- A borrow source evaluation memo, including:
    - A summary of site reconnaissance observations and mapping, test pit and boring logs, and a laboratory testing summary to evaluate suitability of clay materials (primarily shear strength, dispersivity, and permeability).
    - An estimate of the volume of suitable clay soils recoverable from the site.
    - Preliminary design of excavation slopes and sequencing if explorations indicate suitable borrow material exists at the potential borrow site.

Task 3 - Diversion and Delivery System Alternatives Evaluation

Description of Task:

This task will include the following elements:

- Alternatives to the Eagle River Diversion to provide Bolts Lake with a firm annual yield of 1,210 AF including a pump station located on the Eagle River near Bolts Lake and a surface diversion and gravity pipeline originating from Cross Creek via the historical Bolts Ditch headgate and ditch alignment;
- Hydrologic modeling to optimize water deliveries from the Eagle River and Cross Creek over a variety of streamflow conditions including during extreme drought periods (both physical and legal water availability will be considered);
- Modeling to identify the volume and duration of diversions required from the alternative sources to achieve a firm annual yield of 1,210 AF;
- Depending on the outcome of the above analyses, the recommended design and capacity of the Eagle River gravity system will be reviewed for cost and delivery efficiencies; and
- Proposed access to the Eagle River diversion facility for both construction and long-term maintenance will be evaluated. Environmental considerations and costs will be considered.

Method/Procedure:

The consultant team will evaluate alternatives, perform modeling, develop cost estimates, and complete cost/benefit analyses for each alternative and develop recommendations.

Deliverable:

The deliverables for this task will consist of the following:

- Developing an Opinion of the Probable Construction Cost (OPCC) for each alternative. The analysis for the pump alternative will include the energy costs required to operate the pumping plant over an extended period. A Net Present Value (NPV) analysis of each project configuration will be completed to allow for a present-day comparison of costs; and
- A cost/benefit analysis will be completed for alternative project configurations including:
    - Eagle River Gravity only;
    - Eagle River Gravity + Eagle River Pump Station; and
    - Eagle River Gravity + Cross Creek Gravity.

Task 4 - Spillway and Outlet Works Design, Inundation Map Analysis
Description of Task:
This task will include the following elements: • A hydrologic analysis will be performed to determine the Inflow Design Flood (IFD) and Probable Maximum Flood (PMF) runoff flow rates (including potential failure of the intake structure) tributary to the dam. Hydraulic analysis and design of primary outlet works to pass the design operating inflow, and to draw down the top five feet of the operating pool (within 5 days) to the Eagle River downstream of the site, including any necessary dissipation methods; • Hydraulic analysis and design of an overflow spillway to safely pass the IDF to the Eagle River downstream of the site, including any necessary dissipation methods; • A breach analysis of the Dam during the IDF and PMF events; and • Floodplain Modeling from 2,000 river-feet upstream to 2,000 river feet downstream of the US-24 Bridge, including the aerial crossing for the Eagle Mine waste conveyance pipeline, to aid in Inundation Mapping.

Method/Procedure:
Hydrologic analyses will be performed using State Engineer approved runoff estimation techniques and will be checked for applicability with one or more of the following methods: USGS Gauge Scaling, USGS StreamStats, or NRCS TR-55 routing. Hydraulic design of the primary outlet works will be performed using HydraFlow StormSewers, and Energy Dissipation Techniques using CDOT techniques or HY-8. Hydraulic design of the spillway, as well as the breach inundation analysis, will be performed using the U.S. Army Corps of Engineers HEC-RAS 6.1 two-dimensional modeling program. Necessary dissipation techniques for the spillway will be designed using HEC-23.
Deliverable:
The deliverables for this task will consist of the following: • A technical memorandum summarizing the tasks above. Ultimately, the results will be presented in the design documents provided in other tasks.
Task 5 – Preliminary Design Report
Description of Task:

The consultant team will prepare a report that will include the following:

- Results of additional subsurface explorations and testing;
- Updated seismic hazard analysis;
- Updated seepage analysis results and recommendations;
- Updated global stability analysis results for dam, saddle dam, and reservoir side slopes;
- Updated settlement analysis results for new fills;
- Updated recommendations for rock slopes, including:
  - Permeability/seepage loss through rock slopes;
  - Structural conditions of bedrock/outcrops for design of rock cuts;
- Preliminary recommendations or considerations for drainage features or dewatering system to resist uplift in clay blanket;
- Preliminary Instrumentation Plan;
- Hydrology and Hydraulics study
  - Preliminary design of the primary outlet works and emergency spillway.
  - Inundation mapping of a dam breach during the IDF and PMF
- Preliminary constructability review;
- Considerations for removal of potentially contaminated material:
  - Access Road below main dam embankment
  - Groundwater extracted as part of dam construction
- Considerations for suitability of excavated rock for use as riprap;
- Siting and pre-design of an up-gradient drain system as an alternative for mitigating seasonally high groundwater levels in vicinity of the reservoir;
- Conduct a cost-benefit and risk analysis of the up-gradient drain versus limiting recharge in the OTP area; and
- Project configuration exhibits that can be used for permitting agency consultations and environmental permitting purposes.

Method/Procedure:

The consultant team will work together to prepare an integrated report that summarizes the findings of the additional field investigations and subsequent analysis. The report will discuss the preliminary design and indicate modifications from the Feasibility Level Study based on additional findings and further analyses.

Deliverable:

The deliverables for this task will consist of the following:

- Draft and final versions of the Preliminary Design Report.

Task 6 - Preliminary Plans and Specifications

Description of Task:

Accompanying the report, will be a set of preliminary-level drawings and specifications for the dam and reservoir, including plan sheets, proposed grading, profiles, typical sections, and typical details.

Method/Procedure:

The consultant team will prepare 30% design drawings and specifications using standard engineering practices.

Deliverable:

The deliverables for this task will consist of the following:

- Draft and final versions of preliminary dam and reservoir plans and specifications.

Task 7 – Environmental Permitting

Description of Task:

The scope of work for this task includes:

- Re-affirm past non-jurisdictional determination for 11.53 acres of wetlands identified in the bottom of Bolts Lake (expires November 27, 2022). Present results to the U.S. Army Corps of Engineers (COE).
- Re-affirm past non-jurisdictional determination for 9.99 acres of wetlands identified in the lower Highlands region of the Bolts Ditch diversion and conveyance system originating from Cross Creek (expires November 27, 2022). Present results to the COE.
- Re-affirm past jurisdictional determination for approximately 2.9 acres of wetlands identified in the upper Highlands region of the Bolts Ditch diversion and conveyance system originating from Cross Creek (expires November 27, 2022). Present results to the COE.
- Submit the Eagle River diversion and pipeline wetland delineations that were completed in 2021 to the COE and the Environmental Protection Agency (EPA). Request approval of the aquatic resource delineations.
- Update the initial Purpose and Need statement to include 2021 water use and demand tables and the identified preferred project configuration (preferred alternative).
- Develop a list of alternatives for consideration in the National Environmental Policy Act (NEPA) process. To configure Preliminary Alternatives, a comprehensive list of water supply concepts and components will be identified. Concepts will include structural and non-structural water supply strategies (e.g., water conservation). These preliminary alternatives will comprise combinations of

concepts and components that would meet the District's future water demands identified in the Purpose and Need statement. Such alternatives might include new reservoir construction somewhere in the Eagle River Basin, expansion of existing reservoirs (Eagle Park Reservoir/Black Lakes), and No Federal Action (e.g., increase water conservation, groundwater development, and aquifer storage and recovery).

- Participate in a pre-consultation meeting with the COE, EPA and/or the U.S. Forest Service (USFS). The mix of agencies will depend, in part, upon the identified preferred alternative. Review initial Purpose and Need Statement and alternatives analyses. Receive input and direction from agencies.
- Based upon the results and recommendations from the federal agencies following the pre-consultation meeting, prepare a Project Proposal letter to be submitted to the lead federal agency. The letter will detail the Proposed Action, and it will contain an updated Purpose and Need Statement and initial alternatives analysis. The letter will contain federal form SF-299 that provides the agencies with additional details regarding the proposed action. The submission and acceptance of the Project Proposal letter will formally initiate the NEPA process.

Method/Procedure:

A subconsultant with prior experience on this project will perform this task.

Deliverable:

The deliverables for this task are anticipated to include the following:

- Updated determination of non-jurisdictional and jurisdictional wetlands identified within the project boundaries;
- Updated Purpose and Need Statement with 2021 water demands and the preferred project configuration;
- Detailed descriptions of alternatives for consideration in the NEPA process;
- Notes from the pre-consultation meeting with the COE, EPA and/or USFS;
- 404 permit application submittal to COE;
- Input for pre-qualification of NEPA 3rd party contractors;
- Scope of work and procurement documents for NEPA 3rd party contractor, as needed; and
- Results of floodplain/floodway modeling, and floodplain development permit application.

Task 8 – Feasibility-Level Cost Estimate

Description of Task:

The consultant team will prepare a cost estimate following the guidelines from the American Society of Professional Estimators (ASPE) and Advancement of Cost Engineering (AACE) for a Class 3 (Budget Estimate) estimate, which is appropriate for screening purposes with 10% to 40% project definition that can be expected to have an estimated accuracy range of -15% to +30%.

Method/Procedure:

See description of task.

Deliverable:

The deliverables for this task will consist of the following:

- Class 3 Opinion of Probable Construction Cost.

Task 9 – Project Management and Meetings

Description of Task:

The lead consultant will contract directly with ERWSD. In this role, the lead consultant will prepare a project schedule, prepare subconsultant agreements with other team firms, lead and schedule meetings, prepare meeting minutes, and prepare monthly invoices and monthly progress reports to the EWRSD/UERWA Board of Directors.

Method/Procedure:

This task will be carried out through the continuation of monthly meetings with the consultant team and ERWSD.

Meetings include a kickoff meeting, meetings with the State Engineer's Office, and periodic progress meetings.

Deliverable:

The deliverables for this task will consist of the following:

- Project schedule
- Subconsultant agreements
- Monthly invoices and progress reports
- Meeting minutes

Task 10 – Project Administration and Management

Description of Task:

ERWSD will provide in-kind project administration and management. ERWSD will coordinate with consultant to ensure Task 1-9 deliverables are completed.

Method/Procedure:

This task will be carried out through the continuation of monthly meetings with the consultant team and ERWSD.

Deliverable:

The deliverables for this task will consist of the following:

- Progress Reports
- Invoicing to CWCB
- Final Report to CWCB

Budget and Schedule

This Statement of Work shall be accompanied by a combined Budget and Schedule that reflects the Tasks identified in the Statement of Work.

Reporting Requirements

Progress Reports: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of issuance of a purchase order, or the execution of a contract. The progress report shall describe the status 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 Report: At completion of the project, the applicant shall provide the CWCB a Final Report on the applicant's letterhead that:

- Summarizes the project and how the project was completed.
- Describes any obstacles encountered, and how these obstacles were overcome.
- Confirms that all matching commitments have been fulfilled.
- Includes photographs, summaries of meetings and engineering reports/designs.

The CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

Payment

Payment will be made based on actual expenditures and must include invoices for all work completed. The request for payment must include a description of the work accomplished by task, an estimate of the percent completion for individual tasks and the entire Project in relation to the percentage of budget spent, identification of any major issues, and proposed or implemented corrective actions.

Costs incurred prior to the effective date of this contract are not reimbursable. The last 10% of the entire grant will be paid out when the final deliverable has been received. All products, data and information developed as a result of this contract must be provided to CWCB as part of the project documentation.

Performance Measures

Performance measures for this contract shall include the following:
(a) Performance standards and evaluation: Grantee will produce detailed deliverables for each task as specified. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions (if applicable) per the budget in Exhibit B. Per Grant Guidelines, the CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.
(b) Accountability: Per Grant Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must confirm that all grant conditions have been complied with on each invoice. In addition, per Grant Guidelines, Progress Reports must be submitted at least once every 6 months. A Final Report must be submitted and approved before final project payment.
(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit

A. Progress shall be detailed in each invoice and in each Progress Report, as detailed above. Additional inspections or field consultations will be arranged as may be necessary.
(d) Noncompliance Resolution: Payment will be withheld if grantee is not current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the Grant Agreement.