

# Yellow Jacket Water Conservancy District

## *Request for Proposals*

### Lake Avery Enlargement – Engineering Feasibility Study

#### **OVERVIEW**

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The Yellow Jacket Water Conservancy District (YJWCD) requests proposals from qualified Engineering consultants to evaluate the feasibility of enlarging the Lake Avery Dam (ak Big Beaver Reservoir) located west of Meeker in Rio Blanco County, Colorado. Colorado Parks and Wildlife (CPW) owns and operates the current dam as a recreational site open to the public. Past studies commissioned by YJWCD have identified the existing Lake Avery as a preferred location for constructing additional water storage in the Upper White River Basin. CPW has agreed to allow YJWCD to further explore the feasibility of enlarging Lake Avery with the understanding that all costs associated with any enlargement would be borne by YJWCD. While CPW will not be providing project funding for the project, they are a cooperating partner in the study and will work with YJWCD to provide the selected consultant with any existing documents and performance data pertinent to the study.

#### **BACKGROUND**

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Lake Avery was originally constructed in 1964 with a dam height of 90 feet and a decreed storage capacity of 7,756 acre-feet. The dam was constructed by the Colorado Game and Fish Department for purposes of recreation, wildlife, and fishing. Since the original construction of the dam assorted studies and rehabilitation efforts have taken place including:

- 1975 –Investigation of dam raise by 93 feet and max capacity of 55,000 AF, Bureau of Reclamation
- 1984 –Geotechnical Evaluation of expansion suitability, CWCB
- 1991 –Seismic Refraction Survey, IECO
- 1992 –Geologic Investigation, Bureau of Reclamation
- 1992/1994 -Hydrology Study, Boyle Engineering Corporation
- 1993 –Safety Evaluation & Conceptual Designs, Bureau of Reclamation
- 1996 – Spillway Reconstruction and 2 ft dam raise to adequately pass the design flood modeled in the Boyle study.
- 1997 –Subsurface Categorization during Drilling Operations, Western Engineers
- 2023 – Comprehensive Dam Safety Evaluation, Colorado Dam Safety

#### **Yellow Jacket Water Conservancy District**

YJWCD owns a conditional water storage right of 10,000 acre feet on the Little Beaver Drainage on which Lake Avery is located. Past studies commissioned by YJWCD have evaluated potential storage volumes for a variety of options for storing this water in an enlarged Lake Avery. Options evaluated range from spillway modifications with no dam raise to a maximum dam crest raise of 27 feet to provide approximately 10,000 acre-feet of additional storage.

In 2022 and 2023, YJWCD hired Applegate Group to evaluate the Hydrology and Hydrologic Hazard Classification of the existing Dam according to new guidance published by the Colorado Dam Safety Branch in 2020. The results of this study indicated the Dam likely has a Hydrologic Hazard Rating of Extreme and therefore, the spillway would need to be capable of passing the Probable Maximum Precipitation event (PMP). Hydrologic analysis of the watershed was performed to determine the Inflow Design Flood (IDF) resulting from the PMP rainfall event. This analysis revealed that while total flood volume was relatively close to estimates from the Boyle Engineering study (1994), the peak flowrate was approximately half of the previous amount. The results of this study have not been submitted to the Colorado Dam Safety Branch for review; however, YJWCD intends to have Applegate Group prepare a formal Hydrology Report in 2025 for approval by Dam Safety. Consultants responding to this RFP can assume the revised Hydrology for the site will be approved by the time the feasibility study is conducted.

### **Available Information**

For the consultant's convenience, the following background documents are attached to this RFQ:

- Selected Construction drawings from original dam construction and subsequent spillway modifications obtained from the SEO.
- *Lake Avery Development Memo (2021)*
- *Lake Avery Preliminary Hydrologic Hazard and Hydrology Summary Memo (2024)*
- *Lake Avery Conceptual Enlargement Option Vicinity Map (2024)*
- YJWCD and CPW Big Beaver Feasibility Study Meeting Presentation with Minutes (April 2023)
- Page 38 regarding water availability from the *Yellow Jacket Water Conservancy District Water Storage Feasibility Study (2013)*

## **FEASIBILITY STUDY SCHEDULE**

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YJWCD understands the development of additional storage is a long-term project with many challenges. One initial challenge is funding availability and TABOR restrictions on the District. YJWCD intends to solicit grant funding for this study from the Colorado Water Conservation Board (CWCB) and the Colorado River Water Conservation District (CRWCD) once the costs of the study are established. Preliminary conversations with these entities have indicated funding would likely be available once the costs of such a study were known. Based on this information YJWCD proposes the following project schedule:

- January 10, 2025 – RFP released.
- February 7, 2025 – Questions due from consultants
- February 14, 2025 – Response to questions issued.
- February 28, 2025, at 5:00 PM MST – Responses to RFP Due
- March 2025 – YJWCD reviews submittals and selects a preferred consultant.
- April 2025-October 2025 – YJWCD assembles funding for the study.
- November 2025-December 2026 – Feasibility study conducted.

## **SCOPE OF WORK**

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Analysis of potential enlargement options for Lake Avery are conceptual in nature. The District desires to hire a consultant to perform a feasibility-level study of enlarging the existing dam and appurtenant structures. This study will include an evaluation of the two enlargement options outlined below:

1. Modify the existing spillway by reducing the freeboard on the dam to maximize reservoir storage without requiring an enlargement of the actual embankment.
2. Enlarge the dam embankment and modify the spillway structures in order to provide 10,000 acre feet of additional storage.

The study shall evaluate the feasibility of these options based on factors outlined below.

### **Water Rights**

Impacts on the operation of the reservoir in the context of the conditional and existing absolute rights shall be considered as part of the study. Existing call records and gage data shall be used to estimate the availability of water diversion under the conditional YJWCD decree for the period of 2000-2024. The current version of the White River StateMod model from the Division of Water Resources should be used as a basis for this analysis.

### **Geotechnical Evaluation**

The selected consultant shall review and evaluate all existing geotechnical reports and monitoring data to determine how any existing issues with the dam could impact a potential enlargement. It is not anticipated that this task will include any additional geotechnical field investigations but would identify what future investigations and testing work would be required should the project proceed to final design. The geotechnical analysis should include slope stability modeling of the existing embankment in the context of proposed enlargements to determine what embankment improvements might be necessary. Soil strength parameters used in this analysis will be based on existing data, conservative book values, and engineering judgment.

An evaluation of a full dam raise should consider options for both upstream and downstream embankment modifications required for such an enlargement. Pros and cons of each option should be discussed in the final report. Impacts to existing drainage infrastructure should also be considered along with the potential need for additional seepage control and drainage measures.

The reservoir rim stability shall also be assessed for the steep slope areas around the perimeter of the lake resulting from increased operating levels of the reservoir. Areas of concern should be identified and potential measures that could be used to address them discussed.

### **Spillway Evaluation**

Spillway modifications or replacement options should be evaluated to ensure the enlarged dam can adequately pass the required IDF with 1 foot of residual freeboard. A labyrinth weir spillway configuration has been considered conceptually up to this point, but other options should also be evaluated as appropriate. Condition of the existing spillway crest and RCC rundown should be

evaluated primarily by observations made during an on-site inspection. Lab or field testing of any concrete structures is not anticipated at this time. Conceptual drawings of proposed spillway configurations should be prepared including plan views, sections, and other key details necessary to adequately display the proposed improvements.

### **Outlet Evaluation**

During the winter of 2024 and 2025, CPW has contracted to perform a rehabilitation of the existing outlet works of Lake Avery, which is currently in progress. The selected consultant should review the original and rehabilitation outlet works designs to determine what additional improvements may be required for the enlargement options considered, if any. The impacts of enlargement options to outlet works structural integrity, hydraulic conditions, erosion, energy dissipation, etc. should be considered. Conceptual drawings of any outlet modifications should be prepared including plan views, sections, and other key details necessary to adequately display the proposed improvements.

### **Impacts to Existing Infrastructure**

Impacts to existing infrastructure around the lake should be considered including bathrooms, boat ramps, roadways, trails, docks, and any other infrastructure identified on site. Impacted infrastructure should be noted and relocation costs included in the opinion of probable cost.

### **Permitting**

The selected consultant should outline the likely Federal, State and Local permitting requirements associated with the enlargement of the dam and reservoir as part of this study. Potential costs and timelines for obtaining the required permits should be outlined in the feasibility report. Anticipated permits include but are not limited to Federal NEPA compliance, Army Corps of Engineers Section 404 and associated wetlands impacts, Rio Blanco County Floodplain, Colorado Dam Safety, and Cultural Resource Studies and coordination with the Colorado State Historical Preservation Office. Threatened and Endangered wildlife species that may be present in the area and impact the ability to enlarge Lake Avery should be listed. Detailed surveys for these species is not required at this time. Additional permits and approvals identified during the course of the study should be identified and discussed in the summary report.

### **Opinion of Probable Cost**

Concept drawings and the results of the geotechnical evaluation will be used to estimate the quantities and construction costs associated with the two options considered in the study. These cost estimates will be used by YJWCD to strategize potential project funding for the two identified options. Costs would include construction as well as potential design and permitting costs. Costing analysis shall be performed to the level of a Class 4 analysis as defined by the Association for the Advancement of Cost Engineering (AACE).

## **DELIVERABLES**

The results of the feasibility study should be summarized in a concise Feasibility Study Report written for the YJWCD Board audience. This report should include the conclusions drawn from the study, as well as recommendations for further investigation and plan development. Additionally, the report

should contain supporting figures, tables, and appendices that reinforce the tasks completed and the resulting conclusions. Conceptual drawings of proposed infrastructure modifications should be included in the appendix of the Feasibility Study Report.

## RFP SUBMITTAL REQUIREMENTS

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Interested firms shall submit the following information to YJWCD by the date indicated on Page 1 of the RFP. Proposals shall be submitted digitally to [sgrosscup@balcombgreen.com](mailto:sgrosscup@balcombgreen.com). All proposals will be reviewed by the board who will select the consultant based on an evaluation of proposed cost and qualifications. Proposals shall be limited to no more than 20 pages (excluding staff resumes and sample Master Services Agreement). Submitted materials shall generally follow the outline below.

- Cover Letter
  - Overview of firm.
  - Summary of qualifications.
- Detailed Qualifications
  - Discuss at least five projects performed by the firm during the past 5 years that is similar in nature and scope to the proposed scope of work.
  - Projects included should include staff members proposed for this study.
- Staff
  - Identify key staff who will be assigned to the project
  - Identify sub-consultants, if any, that will be part of the project team
  - Organization chart of proposed project team
  - Resumes of key staff should be provided but are not included in the maximum page count.
- Cost
  - Provide proposed costs to complete the Scope of Work
  - Include estimated hours and billing rates for each staff member assigned to the project
  - Include sub-consultant's costs if any
- Schedule
  - Include a simple bar chart schedule showing the consultants' proposed schedule for the study by task.
- Master Services Agreement (MSA)
  - YJWCD does not have a standard MSA. Consultants should submit a sample copy of their typical MSA for YJWCD to review.

The selected consultant is required to carry the minimum insurance limits outlined below.

- Professional Liability
  - Each Occurrence - \$1,000,000
  - Aggregate - \$2,000,000
- Commercial General Liability
  - Each Occurrence - \$2,000,000
  - Personal and Adv Injury - \$2,000,000
  - Aggregate - \$4,000,000

- Workers Comp
  - Statutory
- Automobile Liability
  - Bodily Injury/Property Damage Each Accident - \$2,000,000
- Umbrella Policy
  - Each Occurrence - \$3,000,000
  - Aggregate - \$3,000,000