WHITE RIVER STORAGE PROJECT
Project Overview and Status Report
Colorado River District Presentation
October 17, 2018
PRESENTATION OVERVIEW

- Who is the Rio Blanco Water Conservancy District?
- Overview of the pending White River Water Crisis
- Overview of Previous Studies
- How the Colorado River District Can Help?

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
Who is the Rio Blanco Water Conservancy District?
Who is the Rio Blanco Water Conservancy District?

- Formed in 1978 as part of the Water Users Association #1 (WUA#1)
- Constructed Taylor Draw Dam (Kenney Reservoir) in 1984
  - Included project permitting & financing
- In 1992 all WUA#1 assets were transferred to the RBWCD
- Hydroelectric Plant constructed in 1993
- The RBWCD has operated the FERC-licensed Taylor Draw Hydroelectric Project since 1993
  - 2MW Run of the River Project
  - Average Annual Revenues of:
    - $500,000 from hydropower
    - $192,000 from the general fund
  - Kenney Reservoir has
    - Been locally funded.
    - Eliminated ice jams & winter flooding in Rangely.
    - Provided local recreation for > 30 years.
    - Provided renewable energy for the Rangely Community.

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.
Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
The RBWCD’s mission is to conserve and develop land and water resources for the best use of water within the RBWCD boundaries.

In line with their mission, the RBWCD took it upon themselves to lead this study in an effort to start the initial steps to mitigate a developing water crisis.

Kenney Reservoir loses about 300 acre-feet per year to siltation.

Intake View
Why was the 2014 Water Storage Study completed?

- The Rio Blanco Water Conservancy District (RBWCD) is facing a water crisis:
  - Half of the surface area of Kenney Reservoir is silted in.
  - The siltation is eliminating future potential Town of Rangely water storage.
  - Kenney Reservoir recreation use is dramatically reduced.
  - The RBWCD wishes to proactively address White River endangered fish issues.

- The RBWCD Board understood the need to begin a multi-year planning process for a new reservoir.

- Identification of a viable Northwestern Colorado Water Project was considered essential to Governor Hickenlooper’s Statewide Water Plan.
Wolf Creek Reservoir has been considered as an important storage location since the 1980’s.

Geotechnical Investigations from 1983

ANY USE OF ANY CONTENT IN THIS PRESENTATION MUST BE AUTHORIZED BY THE RIO BLANCO WATER CONSERVANCY DISTRICT.
White River Storage Feasibility Study (Phases 1 & 2) Summary

KEY PROJECT TASKS:
- Purpose & Need Evaluation
- Map Study for Reservoir Location
- Course Screening of Alternatives
- Feasibility Designs for 3 Primary Reservoirs
- Alternative Evaluation & Selection
- RBWCD filed a 2014 Water Right
- Completed in March 2015

STAKEHOLDER MEETINGS INCLUDED:
- Public Workshop Meetings (7)
- Y/W/G Roundtable Meetings (5)
- Other Stakeholder Meetings (50)
## White River Storage Feasibility Study
### 2065 Water Demands

#### “Working Pool” Future Water Demands (Harvey Economics, 2014):

<table>
<thead>
<tr>
<th>Water Use Sectors</th>
<th>Low End of Range (acre-feet)</th>
<th>High End of Range (acre-feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal and Industrial (M&amp;I)</td>
<td>1,600</td>
<td>3,150</td>
</tr>
<tr>
<td>Oil and Natural Gas</td>
<td>3,500</td>
<td>3,500</td>
</tr>
<tr>
<td>Oil Shale</td>
<td>8,500</td>
<td>42,300</td>
</tr>
<tr>
<td>Endangered Fish</td>
<td>3,000</td>
<td>42,000</td>
</tr>
<tr>
<td>Other</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>16,600</strong></td>
<td><strong>90,950</strong></td>
</tr>
</tbody>
</table>

Note: The Energy Demands from this study are being used in the BIP Phase III Modeling of the White River by Wilson Water Group.

Working Pool ranges rounded to 20,000 acre-foot and 90,000 acre-foot.

---

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
Original Purpose & Need

Solution:
1. Wolf Creek Reservoir
2. 20,000 to 90,000 acre-feet working pool with Pump Station

Other Potential Needs:
- Agriculture
- Colorado River Risk Reduction
- Hydropower
- Climate Change
- Water Quality
- Water Conservation

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
White River Storage Feasibility Study
Alternative Evaluations

ALTERNATIVE SCREENING:

- Enlargement of Taylor Draw Dam
  *Eliminated due to current reservoir siltation and infrastructure impacts.*

- Dredging of Kenney Reservoir
  *Eliminated due to estimated cost of dredging in excess of $700 million
  Unidentified disposal location.*

- More than 20 Alternatives Evaluated

- Intended to Address NEPA Alternatives Analysis

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
On 8-29-2018 the RBWCD Board unanimously approved the primary alternative as the Wolf Creek Dam with a pump station.
White River Storage Feasibility Study
Wolf Creek Dam - 20,000 AF Working Pool

Wolf Creek Reservoir
20,000 Acre-Foot Working Pool

Gravity Fill Canal (Optional)

400-Foot-Wide Spillway

Embankment Dam

Outlet Works

Reservoir Fill Pipeline (Optional)

Pump Station (Optional)
Prior hydrologic evaluations suggest the maximum storage the White River can support is about 400,000 acre-feet.

- 400,000 AF Storage Pool
- 90,000 AF “Working Pool” (Including Recreation + Silt + Insurance)
White River Modeling for the White/Yampa/Green Basin Roundtable
Modeling work by Wilson Water Group (April 2018)

Wolf Creek Reservoir End of Month Content

Bottom Line: Storage is needed on the White River to meet future demands.

The reservoir is working! Storage is needed!
<table>
<thead>
<tr>
<th>Size: 20,000 acre–foot Working Pool</th>
<th>90,000 acre–foot Working Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dam Site:</strong></td>
<td><strong>Wolf Creek Dam</strong></td>
</tr>
<tr>
<td><strong>Fill Method:</strong></td>
<td>Canal Fill</td>
</tr>
<tr>
<td><strong>Construction Cost (2018 dollars)</strong></td>
<td>$195M</td>
</tr>
<tr>
<td><strong>Cost per AF based on Construction Costs &amp; Total Reservoir Storage</strong></td>
<td>$4,800/AF</td>
</tr>
<tr>
<td><strong>Average Annual O&amp;M Costs</strong></td>
<td>$300,000</td>
</tr>
<tr>
<td><strong>Average Annual Potential Hydropower Revenue</strong></td>
<td>$31,000</td>
</tr>
<tr>
<td><strong>Average Annual Storage loss from Sediment (acre–feet)</strong></td>
<td>57</td>
</tr>
<tr>
<td><strong>Anticipated Relative Environmental Impacts</strong></td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Long–term Private Land Impacts</strong></td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Major Highway Impacts</strong></td>
<td>Yes, Highway 64 at Diversion</td>
</tr>
<tr>
<td><strong>BLM Lands Impacted</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>BLM Areas of Critical Environmental Concern Impacted</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>BLM Wilderness Study Areas Impacted</strong></td>
<td>No</td>
</tr>
</tbody>
</table>

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
NO ACTION IS NOT AN OPTION:

- The White River basin currently does **not** have storage to meet:
  - The current water needs during drought conditions; or
  - Reliably provide water for future needs.
    - Kenney Reservoir only provides water storage for less than 10 years...
    - Lake Avery and Rio Blanco Lake are not available for water supply.

- Implications to the endangered fish populations could occur if storage is not available to supplement the White River flows to meet flow targets.

- Recreational benefits at Kenney Reservoir will continue to diminish.

- Tax revenue from the Project will not be available to benefit the local community.
Additional storage is needed to alleviate a pending water crisis in the lower White River Basin.

The unit cost for storage at Wolf Creek Dam is very economical.

The Wolf Creek Dam with a pump station is the most economical alternative for construction costs.

A gravity fill canal or pipeline is not considered to be economical.

RBWCD is prepared to initiate federal permitting by the end of 2019.
What’s Next?

- Pre-Permitting Phase
- Permitting Phase
- Design
- Construction

This work is preliminary & subject to further revision and refinement.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
2019: Pre-Permitting Phase

1. Continued Project Management and Facilitation;
2. Continued coordination with the Programmatic Biological Opinion (PBO) and White River Management Plan developments;
3. Implementation of a Lean permitting process;
4. Preliminary Recreation Plan;
5. Purpose and need refinement and strengthening;
6. Financing Plan; and

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
Project Financing

- Will Be Finalized in Pre-Permitting Phase

- Partners Need to Commit
  - “Pay to Play”

- Viable Funding Mechanisms
  - Federal Funding
  - State Funding
  - Local Government Funding
  - Hydropower Partner
  - Industry Partners
  - Project Bonding
    - General Obligation
    - Revenue Bonds

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
How Can the River District Help?

The Colorado River District has been very successful in creating new storage in the State. We would be honored to have the Colorado River District as a partner. **How?**

- Contribute $50,000 towards the Pre-Permitting Phase
- Technical support from River District staff
- Peer review of White River PBO flow recommendations
- Potential involvement in Lean Permitting.

**Wolford Mtn. Reservoir**

**Elkhead Reservoir**

**Wolf Creek Reservoir?**

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.
We Would Appreciate Your Comments and Questions

THIS WORK IS PRELIMINARY & SUBJECT TO FURTHER REVISION AND REFINEMENT.

Any use of any content in this presentation must be authorized by the Rio Blanco Water Conservancy District.