Statewide Surface Water Storage Project Studies
Presentation to the Treasure Valley CAMP Advisory Committee
June 10, 2010

Legislative Direction

2008 Idaho Legislature passed legislation directing the Idaho Water Resource Board to investigate potential new surface water projects across the state.

- House Joint Memorial No. 8 (HJM 8)
- Senate Bill 1511 (S1511)
- House Bill 644 (H644)
House Joint Memorial 8

- House Joint Memorial No. 8 (HJM8) confirmed the Legislature's support of the study of additional water storage projects.

- HJM8 referenced drought, population growth and urban development, conjunctive administration, and endangered species as demands being placed on Idaho's water storage and delivery systems.

House Joint Memorial 8

- The Statement of Purpose attached to HJM8 states:
  
  > Idaho stores only 25% of its annual average runoff, while other areas in the western states store several times their average annual runoff.

  > There is potential for Idaho to capture additional water in storage and use it to meet traditional and emerging water needs.

  > New storage reservoirs can take many years to plan, design and construct.
House Joint Memorial 8

- Identified studies of additional water storage projects, including, but not necessarily limited to, the Minidoka Dam Enlargement, Teton Dam replacement, and Twin Springs Dam, and to move forward with those storage projects that provide the most benefit to the residents of Idaho.

- Also specified the Galloway Project and the Lost Valley Dam Enlargement as potential priority studies.

House Joint Memorial 8

- Encouraged federal, state and local agencies to cooperate with other public and private entities to initiate and complete the study of additional storage.

- Intent is to identify sites that can be built in a safe, environmentally sound and economical manner, and provide significant long-term benefits to the state – local and regional benefits.
Senate Bill 1511 passed by the 2008 Idaho Legislature appropriated $1.8 million to the Water Resource Board to study enlarging Minidoka Dam and replacing Teton Dam.

House Bill 644 also passed in 2008 appropriated funds to the Water Resource Board to undertake Comprehensive Aquifer Management Plans (CAMPs) in several areas. Additional reservoir storage is one of several strategies to be considered in the Treasure Valley CAMP, therefore some of these funds were reserved for the storage in the Boise River basin.
Minidoka Dam was constructed in 1906 by the U.S. Bureau of Reclamation. Due to the age of the dam, Reclamation is planning to reconstruct the dam's spillway. Recognized that raising the dam could potentially be accomplished at the same time as the spillway replacement. Water Resource Board and Reclamation entered into an agreement in August 2008 to undertake a study of raising the dam by 5 feet. The study cost was not to exceed $1.4 million.

Minidoka Dam Raise Study

The study was intended to evaluate:

- Overall feasibility of accomplishing a structural raise.
- The costs to accomplish the raise.
- Impacts to power plants, highways, bridges, irrigation facilities, parks and recreation facilities, wildlife management areas, needed right-of-way, and hydrology and flood considerations.
- Identification of environmental issues and tribal concerns.
- Identification of any operation and maintenance issues associated with a raised dam.
Minidoka Dam Raise Study

Reclamation presented the results of the study to the Water Resource Board on May 27, 2010.

- There appear to be no significant technical issues associated with raising the dam by 5 feet.
- The raise would result in approximately 67,000 acre-feet of additional storage.

Minidoka Dam Raise Study

- Estimated costs if spillway replacement and raise constructed at the same time:
  - Cost to complete the spillway repair = $50 million
  - Cost to raise the dam = $150 million
  - Total project costs = $200 million ($2,980 per af)

- Estimated costs if raise in the future after spillway repair is complete in today's dollars:
  - Cost to raise the dam = $205 million

(increased costs due to construction inefficiencies, spillway and power plant modifications, embankment design requirements)
The Bureau of Reclamation originally constructed Teton Dam and its 300,000 acre-foot reservoir in the early 1970's. Teton Dam failed during its initial filling in 1976.

The basin was identified by the Legislature for further study to evaluate options for replacing the benefits the original storage would have provided.

The Water Resource Board entered into an agreement with the Bureau of Reclamation in June of 2009 to undertake this study.

Study costs are projected to be approximately $800,000. Reclamation and the Water Resource Board each committed up to $400,000 toward the study costs.

Reclamation is also seeking additional funding to support the study through the Secure Water Act – Water SMART Basin Study Program.

The study is expected to take 2 years to complete.
Henrys Fork Special Study

- Objectives of the study:
  - Identify opportunities for development of water supplies (i.e. above-ground on-stream and off stream storage).
  - Improvement of water management and optimization of resources (i.e. conservation measures, system optimization and automation) while sustaining environmental quality.
  - The purpose of the special study are to assist future planning and decision-making.

Henrys Fork Special Study

- Reclamation is providing public information and taking public comments through the Henry's Fork Watershed Council.

- Information on the study is available on Reclamation's website:
Weiser-Galloway Project

- The Galloway site on the Weiser River has been investigated in the past by multiple federal and state agencies (reservoir of up to 900,000 acre-feet).

- Currently recognized for its potential as a multi-purpose reservoir site:
  - Provide sustainable water supplies for agriculture
  - Could replace flow augmentation water released from the Upper Snake and Boise River basins freeing up water for needs in the respective basin
  - Hydropower generation
  - Fisheries enhancement
  - Water based recreation
  - Local employment benefits

Weiser-Galloway Project

- The Water Resource Board recently executed an agreement with the US Corps of Engineers to reexamine the project based on current local and regional water supply needs and economics.

- The study is expected to be completed by March 2011 and will provide qualitative information needed to support policy and the decision making process as to whether to proceed with the potential project.
Lower Boise Interim Feasibility Study

The Interim Feasibility Study will evaluate water storage options for flood risk reduction and water supply.

- Although the reservoir system upstream of the City of Boise provides significant flood protection, it is generally acknowledged that the Treasure Valley has a low level of flood protection compared to its population.

- In 1999, the U.S. Army Corps of Engineers was given the authority to undertake feasibility studies leading to increased flood protection for the Treasure Valley in cooperation with a local partner. In 2007, this authority was modified to include ecosystem restoration and water supply.
Lower Boise Interim Feasibility Study

- Through the Water Resource Board, the Treasure Valley CAMP process was initiated to address future water supply and demand issues.

- In May of 2009, the Water Resource Board signed an agreement with the Corps of Engineers to act as the local partner in completing an Interim Feasibility Study.

- The estimated cost for the Interim Feasibility Study is $1.8 million, with the Board and the Corps each responsible for half of the cost. The Board was awarded a $500,000 credit for previous analysis in the Boise River Basin reducing the funds required from the State to conduct the study.

The storage analysis will evaluate 12 previously-identified potential sites.

- The 12 sites include raising existing dams, off-stream storage sites, and on-stream sites.

- The 12 sites will be ultimately be narrowed to a short-list of the 3 most promising sites for detailed engineering, environmental, and cost analysis.
Lower Boise Interim Feasibility Study

- Results of the study will provide the Treasure Valley CAMP Advisory Committee with technical information about water storage potential in the Boise River drainage in evaluating strategies for a recommended Comprehensive Aquifer Management Plan.

- Results will provide the US Corps of Engineers with the water storage component of a full Feasibility study to address flood management on the Boise River.

- The initial screening for a short list of storage sites for further analysis is scheduled to be completed in August, 2010.

- Interim Feasibility Study is scheduled to be complete in early 2012, subject to federal appropriations.

- At that point, the State will need to determine whether to complete the full feasibility study through the Corps. This will necessarily entail a wider range of analysis than just water storage, but is a necessary step in the Corps' project delivery process.
Lower Boise Interim Feasibility Study

- Status: the preliminary screening process is underway to develop a shortlist of storage sites for further evaluation. This includes compiling available data in order to compare based on a wide range of criteria.

- Public Involvement: Public meetings have been scheduled to introduce the information compiled and to obtain public comment.
  - June 29 – Caldwell, ID
  - June 30 – Eagle, ID and Boise, ID
  - July 1 – Idaho City, ID

For more information or questions about the study contact:

Project Manager: Ellen Berggren
Telephone: (208) 345-2065
E-mail: Boise.Office@usace.army.mil
Underground Storage

- Underground storage is not a component of the Interim Feasibility Study, but it is one of the studies being implemented for the Treasure Valley CAMP through a contract with the University of Idaho. Results of the study will be presented at a later date.

- An underground storage, or aquifer recharge, program is being implemented for the Eastern Snake Plain Aquifer (ESPA) as part of the ESPA Comprehensive Aquifer Management Plan. Approximately 125,000 acre-feet were recharged into ESPA in 2009 and just under 56,000 acre-feet so far in 2010.

- The potential for underground storage (recharge) will be evaluated in other areas of Idaho as Comprehensive Aquifer Management Plans are developed for those regions including the Treasure Valley CAMP.

Questions?
BACKGROUND: The lower Boise River flows approximately 64 miles through Ada and Canyon counties, from Lucky Peak Dam to its confluence with the Snake River. This area has experienced rapid growth over the past several decades; land use is changing from agricultural to urban.

Three federal dams upstream of the City of Boise are jointly operated for flood risk management and irrigation purposes by the U.S. Army Corps of Engineers and the Bureau of Reclamation. Although the reservoir system provides significant flood protection, reducing the 100-year natural discharge from 41,000 cubic feet per second (cfs) to 16,600 cfs, the levees do not provide reliable protection even at this reduced flood level.

Reports of flood damages in localized areas occur with flows of 4,500 cfs. Boise River flood stage is 7,000 cfs as measured at the Glenwood Bridge. Significant development in the river corridor and population growth has resulted in renewed interest in flood risk management and water supply. Interest has also been expressed in environmental restoration to include habitat preservation, as well as aesthetics and recreation along the Boise River.

The Idaho Water Resource Board (IWRB) has initiated the Treasure Valley Comprehensive Aquifer Management Plan (CAMP) to address future water supply and demand issues for the lower Boise River Basin for the next 50 years. The Corps has developed a two-phased feasibility study approach for the Boise River General Investigation (GI) to assist the IWRB with its regional planning effort. The Boise River GI - Interim Feasibility Study will provide technical information about water-storage potential in the Boise River drainage that will be used in the Treasure Valley CAMP.

STUDY AUTHORITIES: The Corps’ study authorization is provided by Section 414, Water Resources Development Act (WRDA) of 1999, authorizing a feasibility study for flood control on the Boise River, and Section 4038, WRDA 2007, modifying the 1999 authority to include ecosystem restoration and water supply as project purposes.

The IWRB study authorization is provided by bills and memorials passed by the 2008 Idaho Legislature, including House Bills (HB) 428 and 644 which directed the IWRB to conduct a statewide comprehensive aquifer planning and management effort, including evaluation of additional surface water storage, and created an Aquifer Planning and Management Fund. House Joint Memorial (HJM) 8 encouraged the IWRB, in coordination with other public and private entities, to initiate and complete the study of additional water storage projects in the state of Idaho, including, but not limited to, the study of Twin Springs Dam in the Boise River drainage.

STUDY SCOPE: Both the Corps and IWRB have investigated water resource issues in the lower Boise River in previous studies. The Corps most recently completed reconnaissance studies for the lower Boise River in 1995 and 2001 that identified water resources problems and needs in the areas of flood risk management, water supply and quality, ecosystem restoration and recreational safety.

The Boise GI will be conducted using a two-phased approach. The partnership with the IWRB will initiate the first phase – an interim feasibility study. Additional partnerships will be formed to complete the feasibility study. The interim feasibility study will focus on water storage and flood risk in the lower Boise River, downstream of Lucky Peak Dam. Other identified issue areas will be studied in depth during the second phase of the feasibility study.

The interim feasibility study will
1) evaluate and document the existing conditions on the Boise River,
2) evaluate public safety issues related to flooding,
3) conduct detailed analysis of storage opportunities in the Boise River Basin (water storage analysis), and
4) develop a plan to complete the remainder of the feasibility study.
A draft report documenting the study analysis will be prepared and made available for public review and comment. Completion of phase 1 of the feasibility study is anticipated in 2012, pending congressional funding.

The evaluation of surface water storage will build upon the Bureau of Reclamation’s Boise/Payette Water Storage Assessment Report completed in July 2006. The Reclamation study identified 12 sites or ‘areas of opportunity’ that merited further investigation. These sites are listed below.

Middle Fork Boise Drainage
1. Alexander Flats
2. Twin Springs

North Fork Boise Drainage
3. Rabbit Creek
4. Barber Flats

South Fork Boise Drainage
5. Anderson Ranch Dam
6. Krall Mountain

Main Boise Drainage
7. Arrowrock
8. Lucky Peak
9. Grimes Creek
10. Dunnigan Creek
   (Mores Creek)
11. Indian Creek-Mayfield
12. Firebird
   (Willow Creek)

The project delivery team is conducting site investigations and a screening analysis to narrow down the 12 sites to three sub-options. The screening analysis will be multi-disciplinary and will include hydrologic, geologic, environmental, socio-economic and other information.

PUBLIC INFORMATION MEETINGS: The Corps and IWRB will hold information meetings to review study scope and the information collected about the water storages sites. Meeting dates and information are below.

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<th>Date</th>
<th>Location 1</th>
<th>Location 2</th>
<th>Location 3</th>
<th>Location 4</th>
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<td>June 29</td>
<td>Caldwell, ID College of Idaho</td>
<td>Eagle, ID City Hall Council Chambers</td>
<td>Boise, ID City Council Chambers</td>
<td>Idaho City, ID Ray Robison Community Hall</td>
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<td>Simplot Dining Hall</td>
<td>660 East Civic Lane</td>
<td>150 N. Capitol Boulevard</td>
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<td>2112 Cleveland Boulevard</td>
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FOR MORE INFORMATION: Contact Project Manager Ellen Berggren with questions about the study. Call (208) 345-2065, or email Boise.Office@usace.army.mil, or visit the study Web page at www.nww.usace.army.mil.