



**OREGON WATER RESOURCE DEPARTMENT
WATER CONSERVATION, REUSE AND STORAGE
FEASIBILITY STUDY GRANT PROGRAM**

I. Grant Information

Study Name: Thief Valley Restoration Feasibility Study

Type of Feasibility Study: Water Conservation Reuse Above-Ground Storage
 Storage Other Than Above-Ground [Including Aquifer Storage and Recovery (ASR)]

Program Funding Dollars Requested: \$ \$239,520 Total Cost of Feasibility Study: \$ \$505,260
Note: Request may not exceed \$500,000

II. Applicant Information

Applicant Name: <i>Keating Soil & Water Conservation District</i>	Co-Applicant Name:
Address: <i>3990 Midway Dr Baker City, OR 97814</i>	Address:
Phone: <i>541-523-7121 X 109</i>	Phone:
Fax:	Fax:
Email: <i>whitney.collins@bakercountyswcds.com</i>	Email:

Principle Contact: <i>Whitney Collins, Districts Manager</i>
Address: <i>3990 Midway Dr Baker City, OR 97814</i>
Phone: <i>541-523-7121 X 109</i>
Fax:
Email: <i>whitney.collins@bakercountyswcds.com</i>

Certification:

I certify that this application is a true and accurate representation of the proposed work for a project feasibility study and that I am authorized to sign as the Applicant or Co-Applicant. By the following signature, the Applicant certifies that they are aware of the requirements of an Oregon Water Resources Department grant, have read and agree to all conditions within the sample grant agreement and are prepared to conduct the feasibility study, if awarded.

Applicant Signature: *Whitney M Collins* Date: 7/21/15
Print Name: Whitney M Collins Title: Districts Manager

III. Feasibility Study Summary

Please give a brief summary of the feasibility study using no more than 150 words.

The Thief Valley Feasibility Study will be a joint effort with several partnering agencies, including Bureau of Reclamation, to fully explore the possibility of restoring the lost storage capacity of Thief Valley Reservoir by installing an inflatable rubber dam on the existing spillway. A study was completed in 2001 that suggested that the installation of a rubber dam was the most viable option for re-establishing water storage capacity. The planning study proposed in this application will complete the feasibility portion of this project and will provide an initial design to ensure the project is feasible. This study will take into consideration several factors including: stability of the structure, cultural resource issues, permitting requirements, social and economical impacts, and will provide a final cost estimate for construction. The above listed factors are an important, necessary, and required steps that will need to be fulfilled prior to installation of the rubber dam.



2015-2017 Grant Solicitation

**WATER CONSERVATION, REUSE AND
STORAGE FEASIBILITY STUDY GRANT PROGRAM**

GRANT APPLICATION

APPLICATION INSTRUCTIONS

1. Complete Sections I through VII in the spaces provided.
2. An application must be submitted on a form provided by the Department. An explanation must accompany the application if any of the information required cannot be provided [OAR 690-600-0020(6)].
3. If in hard copy - use 8 ½" x 11" single sided, unstapled pages. Provide any attachments to application also on 8 ½" x 11" single-sided, unstapled pages. Avoid color and detail that will not photocopy clearly.
4. Please Contact the Department's Grant Specialist Jon Unger at **503.986.0869** or Jon.J.Unger@wrд.state.or.us if you have any questions.

Application Deadline: July 31, 2015 5:00 PM,
(Application must be received by this date and time)

Mail application to:

OREGON WATER RESOURCES DEPARTMENT
Attention: Grant Specialist
725 Summer Street NE, Suite A
Salem, OR 97301

KEY GRANT INFORMATION

Introduction. The Water Conservation, Reuse and Storage Grant Program, established by Senate Bill 1069 (2008), is designed to fund the qualifying costs of feasibility studies that evaluate the feasibility of developing water conservation, reuse or storage projects. Oregon is facing increasing water demand and increasingly scarce water supplies. To adequately meet Oregon's diverse water demands now and into the future, Oregonians must use their water wisely and efficiently. That means looking more closely at innovative water conservation and reuse programs and environmentally sound storage projects that capture available water so it can be put to good use when needed.

What is a feasibility study? A feasibility study is an assessment of a proposed plan or method. Typically there should be a previously identified water project that appears to have merit but is lacking important details necessary to determine whether or not to proceed. The feasibility study focuses on helping answer the essential question of "should we proceed with the proposed project idea?" All activities of the study are directed toward helping answer this question. Ideally the project identified will have community support and will have been identified through a collaborative process.

Match Funding. To be eligible for funding applicants must clearly demonstrate funding from a source other than the Program of not less than a dollar-for-dollar match from cash or in-kind services. For example, if \$25,000 is requested in Program Funds, then there must be a match of at least \$25,000 from another source. The matching funds must be secured or in the process of being secured. The maximum grant award is \$500,000.

Eligibility Requirements for Storage Studies. To be eligible for funding for a project feasibility study associated with a proposed storage project that would: Impound surface water on a perennial stream; Divert water from a stream that supports sensitive, threatened or endangered fish; or Divert more than 500 acre-feet of surface water annually, the proposed project feasibility study must contain the following elements:

- Analyses of by-pass, optimum peak, flushing and other ecological flows of the affected stream and the impact of the storage project on those flows;
- Comparative analyses of alternative means of supplying water, including but not limited to the costs and benefits of water conservation and efficiency alternatives and the extent to which long-term water supply needs may be met using those alternatives;
- Analyses of environmental harm or impacts from the proposed storage project;
- Evaluation of the need for and feasibility of using stored water to augment in-stream flows to conserve, maintain and enhance aquatic life, fish life and any other ecological values; and
- For a proposed storage project that is for municipal use, analysis of local and regional water demand and the proposed storage project's relationship to existing and planned water supply projects.

See Application Criteria and Evaluation Guidance for assistance in filling out this application.

IV. Grant Specifics

Section A. Common Criteria

Instructions: Please answer all questions contained in this section. It is anticipated that completed applications will result in additional pages.

1. Describe your goal and how this study helps to achieve the goal.

The end goal for the Lower Powder Irrigation District (Irrigation District) and the Keating Soil & Water Conservation District (Keating SWCD) is to restore all, or a large percentage of, the water storage capacity lost to sedimentation at Thief Valley Reservoir. Since its construction in 1932, this Bureau of Reclamation (BOR) reservoir has lost over 30% of its storage capacity due to heavy sedimentation. From an initial capacity of 17,600 acre feet in 1932, the current storage capacity of the reservoir is estimated at 12,100 acre-feet, for a loss of 5,500 acre-feet.

To achieve this volume restoration goal, the Irrigation District will propose to install an inflatable rubber dam on the existing spillway at Thief Valley Reservoir. This will restore water storage capacity that has been lost over the years due to siltation. The restored capacity will recover most, if not all, of the lost active storage, and allow the Lower Powder Irrigation District to fully utilize their legal state water storage right. A review of construction alternatives and cost analysis has shown that the installation of the rubber dam is the most viable option for the restoration of storage capacity at Thief Valley Reservoir. With drought conditions declared in Baker County for the past four years, this goal becomes increasingly critical.

Now that the Irrigation District, along with its partnering agencies, have a clear, mutual goal in mind, it is time to take the next step; to confirm the engineering feasibility, design feasibility, and cost of the bladder dam, as well as review the potential for both adverse impacts and beneficial effects to the natural, cultural, and human environment that could accompany this project. The Irrigation District has met with the BOR, who owns the reservoir, and has confirmed that installation of the bladder dam at Thief Valley is considered a viable solution pending more detailed studies, which are proposed in this application. The BOR is also willing to be a cost-share partner in the proposed studies. Other partnering entities/agencies include Keating SWCD, Idaho Power Company, Oregon Department of Agriculture, and Baker County.

This planning study will be a multi-faceted and multi-level process that will be broken into five tasks, with each task including several individual steps. Greater detail describing the approach, results, and resources necessary for each of the following planning study tasks will be provided throughout this application.

Task One. Project Management. Due to the complexity and challenging timeline of this planning and design effort, project management is considered a distinct task, and will be an over-arching factor in all tasks through the proposed planning study. The project management team will be responsible for ensuring that study process, quality, product, budget and schedule objectives are met. This management group will meet regularly (monthly at minimum) and will issue progress reports to agency leadership throughout the project.

Task Two. Bladder Dam Planning and Design. The BOR conducted an appraisal-level study of a bladder dam at Thief Valley in 2001. This study concluded that a bladder dam at Thief Valley appeared viable based on available information, but recommended a number of more detailed analyses to confirm achievability. These additional studies include seismic assessment (a requirement now being systematically carried out for all Reclamation dams, with the Thief Valley dam assessment scheduled for mid-2016) and on-site assessment of the dam's structural condition. The scope of work proposed in this planning study application includes carrying out all of the more detailed analyses/studies recommended in the 2001 BOR study, as well as the preparation of the bladder dam design and implementation plan. Specific steps necessary for achieving these results include:

- o Site Assessment and Testing (including the seismic assessment and structural assessments)*
- o Bladder Dam preliminary design to assess feasibility*
- o Construction Considerations and Strategies*

- o *Operation, Maintenance Considerations, and Strategies*
- o *Cost Estimate For Project Implementation*

Step Three. Environmental Assessment. An Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) will be prepared to determine whether installation, operation and maintenance of the rubber dam on Thief Valley would have any significant adverse consequences to the natural, social, or cultural environment. This assessment will include the full spectrum of biophysical and sociocultural resources as well as necessary agency consultations related to state and/or federally protected species or resources. Another aspect of the EA will include the potential benefits of increased reservoir carryover storage and increased/more reliable downstream flows for fish. The NEPA process is not only a means to identify and weigh the consequences of potential adverse effects associated with this project, but also a way in which potential beneficial effects can be achieved.

Step Four. Cultural and Tribal Resources. A complete archaeological and historic evaluation will be conducted at the Thief Valley site, as well as the surrounding lands that could be affected by the installation and operation of a spillway bladder dam. This evaluation will comply with all laws, executive orders, and acts that seek to protect cultural resources. Appropriate field investigations and resource analysis will be conducted, and the required report will be prepared and filed with the State Historic Preservation Officer (SHPO). This evaluation will determine whether the proposed actions will adversely impact significant cultural resources, and if there are appropriate measures available to avoid or mitigate such impacts. Idaho Power Company, who is a partnering agency on the Thief Valley proposal, will provide the Class 1 Background Phase for the SHPO process. The BOR will conduct necessary consultations with potentially affected Tribes.

Step Five. Permitting Requirements. The studies listed above will also review and summarize any state and local permitting requirements that may be associated with the project. Collectively, these studies will test the physical, economic, and environmental feasibility of regaining lost storage capacity at Thief Valley Reservoir, as well as provide necessary design studies to implement the project.

The Lower Powder Irrigation District has signed a Memorandum of Agreement with the Keating SWCD to manage any future or potential projects that may arise from this proposed planning study. The Keating SWCD, along with BOR will be working hand-in-hand with the Irrigation District, Bureau of Reclamation, the Tribes, Idaho Power Company, Oregon Department of Agriculture, Oregon Department of Fish and Wildlife, and other agencies to ensure this project is reasonably viable for all interested parties.

The Irrigation District and all project participants understand the potentially significant effects of their actions. Therefore, the proposed planning study is the most direct and credible means to validate and achieve the storage capacity goal by defining how restoration activities on Thief Valley Reservoir might impact cultural and social resources, as well as to determine that this decision is environmentally and economically sound.

2. Describe the water supply need(s) that the proposed project addresses. Identify any critical local, regional, or statewide water supply needs that implementation of the project associated with the feasibility study will address. **Responses should rely upon solid water availability and needs data/analysis.** For examples of water supply needs see “Criteria and Evaluation Guidance Document.”

Due to the severe loss in water storage due to siltation, the Lower Powder Irrigation District, which is made up of the farmers and ranchers who depend on the Thief Valley water and own the irrigation rights to the reservoir, have not been able to take advantage of their double-fill water right for over 10 years. When the dam was originally built in 1932, the irrigators were issued a double fill water right from Oregon Water Resources Department, which is still in effect today. However, with the current upstream usage, this is no longer a viable solution to additional water storage. With the installation of a rubber bladder dam at Thief Valley, it is expected to gain back 100% of the previously lost storage capacity.

The Thief Valley Dam is the last dam on the Powder River before it enters the Snake River, and the water storage is allocated to irrigation use. The Bureau of Land Management designated the 11.7 miles downstream of the dam a Wild and Scenic River in 1988. With the reduced water storage, the minimum downstream flow requirements have barely been met for fish habitat and streamside vegetation, which is crucial in terms of water quality and

downstream health. The added storage is projected to allow for the downstream flow to exceed Oregon Department of Fish and Wildlife's minimum requirements for pool and instream flow beyond the dam.

Although the primary use is irrigation, Thief Valley Reservoir was once a popular destination for water recreation, campers, and anglers. The Reservoir was once stocked with Rainbow Trout, Large Mouth Bass, and Black Crappie. Campers could stay at one of 10 sites located on the reservoir, and the boat ramp and dock were used for water sports such as wind surfing, kayaking and boating. Unfortunately, with the current storage capacity of the reservoir, fish populations cannot survive from year to year, and the boat ramp and dock are far above the water line. Needless to say, recreational use of the site has severely decreased in the past years.

After appraisal studies conducted in 1992 and 2001 by the Denver Technical Service Center, it has been estimated that the Thief Valley Reservoir has lost 5,500 acre feet of its storage capacity since its construction in 1932, due to heavy silting and sedimentation. This reservoir, which is located on the Powder River, serves 32 irrigators in Baker County. As the only source for irrigation water, rapid storage loss is detrimental to the livelihood of these landowners.

The current lack of water storage, combined with drought conditions in Baker County for four straight years, means irrigators are without water throughout much of the year, particularly during the dry summer months. In a community that is dependent upon water to make a living and contribute to society, the current capacity of the reservoir is daunting. The proposed feasibility study will not only address possible impacts on cultural resources, but may help determine what effects, if any, the additional water storage will have on fish populations, native vegetation, and recreational access at Thief Valley Reservoir.

3. Explain how the proposed project will meet the water supply need(s), and indicate what percentage of that need will be met. (For example: If your water supply need is 20,000 acre-feet of additional water and the project will supply 10,000 additional acre-feet, 50 percent of your need will be met).

The documented sediment accumulation that has occurred in Thief Valley Reservoir has reduces the ability of the Lower Powder Irrigation District to store the water necessary to irrigate their lands. As a result irrigation must cease early in the summer, resulting in a reduced yield. The Lower Powder Irrigators need a total water supply of 5,500 acre feet annually. Installing a rubber dam on the existing spillway at Thief Valley Reservoir, which would be inflated in the spring to catch late season runoff, and deflated in the winter months to avoid ice buildup. The Reservoir's capacity would be increased by 5,500 acre feet, meeting 100% of the water supply need allowing all 32 irrigators to reclaim their full legal water storage rights. In this case, when the landowners benefit increases, so does that of the wildlife and habitat surrounding the reservoir and downstream river. The Powder River is home to many aquatic species, including Bull Trout, which is listed on Oregon Department of Fish and Wildlife's Sensitive Species List. Increased flows into the Wild and Scenic designated Powder River below the dam will help improve fish and aquatic habitat, as well as water quality and downstream health. Increased flows will also help prevent an excessive growth of algae, which clouds the stream and does not allow sunlight to filter through. This clouding may disrupt water temperature, natural vegetation, wildlife habitat, and even alter river flows.

After construction in 1932, the original size of Thief Valley Reservoir was 17,600 acre-feet, which was intended to meet the current and potential water supply need for irrigators, wildlife, and recreational users. After appraisal studies were conducted in 1992 and 2001, it is estimated that the reservoir is now at 12,100 acre-feet. That is a loss of over 30% of the reservoir's storage capacity due to sedimentation. The proposed construction activity of installing an inflatable rubber dam on the existing spillway is expected to gain back the lost storage by restoring the capacity of the reservoir.

The stored water is intended to be multi-functional, so in addition to adding production and habitat improvement, increased storage is intended to add an economic benefit by attracting tourists and recreationists for fishing, camping, and boating activities. The feasibility study will help to determine at what level these activities will be impacted or improved. By restoring the estimated 5,500 acre-feet back into the reservoir, Thief Valley Reservoir can continue its intended purpose and source water for landowners and wildlife alike.

The well-being and success of the irrigators is dependent upon water. In an ag-based community such as Baker County, the economic gain to these producers, and in turn the entire county, would be well merited by completing the feasibility and restoration activities at Thief Valley Reservoir.

4. Describe the technical aspects of the feasibility study and why your approach is appropriate for accomplishing the specific study goals and objectives.

The scope of work proposed for the Thief Valley Bladder Dam planning study encompasses the full range of critical questions and answers which are necessary to establish the engineering, environmental, and cost feasibility of the project, as well as to provide the level of initial design analysis necessary to engage a selected contractor and project costs.

Key considerations that must be addressed to establish the viability of the bladder dam installation include:

- *Access necessary for equipment delivery and installation*
- *Site suitability for construction staging*
- *Current condition of the dam in terms of strength of materials and any signs of deterioration with age*
- *Relative seismic stability of the existing dam and the dam with the bladder installed*
- *Strength of the dam with the additional weight and stresses accompanying the bladder dam*
- *Environmental effects of the additional annual fluctuations in pool volume and water level due to bladder dam operation (all relevant biophysical and sociocultural parameters, including cultural resources and Native American concerns)*
- *Environmental effects at the base and downstream of the dam due to higher spillway elevations when the bladder dam is fully or partially inflated (all relevant biophysical and sociocultural parameters, including cultural resources and Native American concerns)*
- *Relative cost, both overall and in terms of dollars per acre-foot of storage restored by the project*

Assuming that the findings of the above studies demonstrate the engineering, environmental, and cost viability of installing a bladder dam in the spillway of Thief Valley, the scope of study encompassed by this proposal includes necessary engineering design to specify, acquire, and install the facility. However, if any of the above studies demonstrate that installation of a bladder dam at Thief Valley is infeasible or undesirable, the study can be brought to a close without expending all funding.

5. Describe how the feasibility study will be performed. Include:
- a. General summary statement that describes the study progression.
 - b. When the feasibility study will begin.
 - c. Listing of key tasks to be accomplished with each task having:
 - i. Title
 - ii. Timeline for completion
 - iii. Description of the activities to be performed in this key task
 - iv. Description of the resources necessary for accomplishing the key task

Example:

- (i) Streamflow measurement;
- (ii) September-April;
- (iii) Weekly streamflow measurements will be performed to gather hydrographic data for the hydrologic analysis to take place in May;
- (iv) A technician will be hired to perform the streamflow measurements.

(Key tasks listed here are to be placed in Section VI. Project Feasibility Study Schedule for a quick reference “graphical” representation of the schedule.)

- a. *General Summary Statement That Describes the Study Progression.*

The Thief Valley Bladder Dam feasibility study will begin with field investigation to review and document relevant site/facility characteristics; including access, construction staging, condition of the existing dam and its equipment, and general environmental characteristics (both biophysical and sociocultural factors). Following this field investigation, studies will focus on other engineering characteristics relevant to determining site/facility suitability for installation and operation of a bladder dam. Once site and facility suitability is confirmed, bladder dam design feasibility and specification will begin. A parallel effort with facility design and specification will help to determine project cost, including site preparation, any necessary modifications or repairs to the existing dam, acquisition and installation of the bladder dam and its related equipment, and other project features (as necessary) such as a discharge warning system located downstream of the dam.

Following the engineering feasibility analysis and the beginning of the bladder dam design specification, work on the NEPA Environmental Assessment (EA) and related endangered species, cultural resource and Native American resource studies will begin. The EA will cover the full spectrum of biophysical and sociocultural resource parameters and will be supplemented by the other focused assessments. Together these studies will determine if and to what degree the bladder dam project would cause concern related to significant biophysical or sociocultural environmental impacts. The findings of these studies will be relevant in decision-making regarding the viability or desirability of the bladder dam project. For example, negative significant impacts, or significant impacts that are expensive to mitigate would no doubt be a factor in deciding whether or not to proceed with the project. On the other hand, the environmental studies may illustrate potential for beneficial impacts in the form of reservoir fishery or seasonal downstream flows below the dam.

Finally, a review will be made of state and/or local regulations or requirements that may have influence on the bladder dam project.

Collectively, the scope of work summarized above will provide all of the information necessary to demonstrate project engineering and cost feasibility, assess environmental effects, review state and local requirements or concerns, and, assuming the project is a "Go", provide project design to a level appropriate for proceeding to implementation of the bladder dam.

b. When the feasibility study will begin.

The Thief Valley Bladder Dam feasibility study would begin upon award of state grant funding and execution of a related Memorandum of Agreement between the Keating SWCD and the federal Bureau of Reclamation. Thus, work would begin in December 2015 or January 2016.

c. Listing of key tasks to be accomplished with each task having:

The Thief Valley Bladder Dam feasibility study will consist of five major tasks, with the first task, project management, acting as an over-arching factor throughout the entire planning study process. All tasks will include several individual steps that will help to complete the overall task.

Task 1. Project Management (to be applied to all steps throughout the planning study)

Task 2. Thief Valley Bladder Dam Study

Task 3. NEPA Environmental Assessment

Task 4. Cultural and Tribal Resources

Task 5. Other Permitting Requirements

The title, timeline, activities, and required resources for the key tasks and their respective steps are below:

*****Task One**

Title: Project Management

Timeline: January 2016 - October, 2016

Activities: The primary activities in this key task surround management of the rubber dam planning and design effort. As noted below, several concurrent and interrelated tasks will need to be monitored for scope of work performance, proper coordination and information exchange, and adherence to schedule and budget. Performance reports will be given to project sponsors on a regular basis.

Resources: Project manager and group leaders

*****Task Two**

Title: Planning and Initial Design feasibility Study

Timeline: January 2016 through October, 2016

Activities: The primary activities will surround management of the bladder dam planning and design effort. As noted under Step Two below, several interrelated tasks will need to be monitored for scope of work performance, proper coordination and information exchange, and adherence to schedule and budget. Also, regular performance reports will be presented to project sponsors.

Resources: Project Manager

***Task Two- Step One.**

Title: Draft Thief Valley Bladder Dam Study Report

Timeline: January through August, 2016

Activities: This task encompasses seven sets of activities necessary for producing the draft engineering report for the Thief Valley Bladder Dam project. The work effort involved in each of these is summarized below.

Introduction – Providing information on the background and location of the proposed project.

Site Assessment – Reporting the results of the site assessment including necessary information on site access conditions in capacity, availability and size of construction staging areas, condition of the existing dam (including any factors affecting strength or resiliency), and general environmental conditions in the area surrounding the existing high water mark and in the area surrounding downstream of the base of the dam.

Bladder Dam Design – Including:

- description of the bladder dam system*
- analysis of flood hydrology,*
- hydraulic analyses*
- structural considerations (including strength of the concrete, any active deterioration mechanisms, strength of banker bars on the spillway crest, load carrying capacity of the existing dam, and ice)*
- presence and potential effect of debris*
- condition of existing outlets*
- geology and geotechnical considerations*
- vandalism and security considerations*
- dam design specifications*
- seismic analysis*

Construction Considerations – including site access (for workers, delivery of construction equipment, delivery of the bladder dam, etc.), electric power and communication systems, contractor work area, anchor bolt installation, accommodation of minimum flow requirements, and construction time frame.

Operation and Maintenance Considerations – including current reservoir operations and operation of the bladder dam (including mechanical equipment, operations equipment (automatic, manual, and remote), electrical power, emergency generator, erosion potential at the toll of the dam, and heat for downstream warning system)

Cost Estimate – including final project design (with bladder dam vendor) and project development (including materials and equipment, site preparation, dam acquisition and installation, testing and site cleanup)

Draft Report – including assembly and review for editorial consistency, proofreading, initial draft preparation, review and comment, final revisions, and publication of draft report.

Resources: personnel requirements will include project manager, civil engineer, mechanical engineer, hydraulic engineer, electrical engineer, hydrologist, drill crew, concrete coring personnel, concrete testing personnel, cost estimator and technical writer. Specialized equipment requirements will center on a concrete boring and concrete testing equipment.

**Task Two – Step Two*

Title: Peer Review

Timeline: September, 2016

Activities: The draft design will be reviewed by BOR senior engineering and cost estimating personnel to verify the methodology, data sources, analysis and results reflected in the draft bladder dam design report. The results of this review will be reflected in a Design Review Memorandum.

Resources: Senior engineering and cost estimating personnel reflecting the disciplines comprising the bladder dam design team.

**Task Two – Step Three*

Title: Response to Comments and Final Study Report

Timeline: September and October, 2016

Activities: The design team leader and staff will respond to the comments received from the senior design review team. Any necessary adjustments to data, process, or results will be made in each chapter of the report. Editorial staff will then produce the final Thief Valley Bladder Dam Study Report.

Resources: Same as tasks above.

****Task Three*

Title: Environmental Assessment- NEPA

Timeline: September 2016 through September 2017

Activities: The primary activities surround management of the NEPA EA effort. Several interrelated steps will need to be monitored related to scope of work, schedule, and budget. In addition, some steps involve public and potentially tribal open houses to obtain public input. The project manager will lead these events. Performance will be reported regularly to project sponsors.

Resources: Project manager and "task leaders"

**Task Three- Step One*

Title: Scoping Process

Timeline: September and October, 2016

Activities: The beginning of the NEPA EA process will involve preparing a scoping package consisting of a description of the project proposal and any other alternatives being considered. The package will also summarize the EA process and schedule, and request that interested parties provide commentary regarding the scope and content of the EA.

The scoping package will be distributed via (1) direct mail to those on a project mailing list assembled to include potentially affected landowners, business owners, and other residents of the area surrounding Thief Valley Reservoir and downstream along the Powder River, including the farming producers who use water stored in the reservoir, (2) a project website (built and activated while the scoping package is being prepared), and (3) a newspaper announcement describing the project and the scoping process and providing the website address and contact information for the EA task manager, who can be contacted for copies of the package.

Resources: EA "task manager" and support staff (see section IV-10, below)

**Task Three- Step Two.*

Title: Draft EA

Timeline: October, 2016 through April, 2017

Activities: This task encompasses preparation, production and distribution of the draft EA. The EA (consistent with NEPA guidelines) will contain the following chapters and content:

Introduction – including project location and background, purpose and need, authority, and relevant regulatory compliance information,

Alternatives, Including the Proposed Action – including descriptions of the No Action alternative (as required by NEPA), the Proposed Action, any other alternatives considered (whether described in detail or considered but eliminated), other actions relevant to assessment of cumulative impacts, and a summary comparison of the environmental effects of the alternatives considered in detail.

Affected Environment and Environmental Consequences – addressing existing conditions and the potential consequences of the No Action and action alternatives (at minimum, the proposed action) on the full range of biophysical and sociocultural environmental parameters. These include:

-Geology and Soils

-Surface Hydrology

-Groundwater Hydrology

-Surface Water Quality

-Groundwater Quality

-Water Rights and Contracts

-Vegetation

-Aquatic Wildlife

-Terrestrial Wildlife

-Threatened and Endangered Species

-Air Quality

-Climate Change

-Land Use and Ownership

- Socio-Economics
- Recreation
- Transportation
- Public Services and Utilities
- Energy
- Visual Resources
- Noise
- Cultural Resources
- Indian Sacred Sites
- Indian Trust Assets
- Environmental Justice
- Cumulative Impacts

Consultation and Coordination – describing the public agency outreach efforts conducted, including the scoping process and any other consultations contributing to the environmental assessment.

Executive Summary – produced after most of the EA is drafted but placed at the beginning of the published document.

Quality Assurance- review and revisions

Reproduction and Distribution – with involved Tribes receiving the document at least one week ahead of general public. A cover letter distributed with the document indicates when the comment period will end, when the open house(s) will occur and notes that only comments submitted in writing will receive response in the final EA.

Resources: Production of the draft EA will require staff in a wide range of disciplines. These include geology, soil science, surface and groundwater hydrology, water rights and contracts, terrestrial and aquatic biology, air quality and climate change, land use, socio-economics, recreation, transportation, energy, landscape architecture, noise analysis, cultural resources, and Native American affairs. It is likely that a consulting firm will be retained to prepare a first draft of the EA, with agency staff (Reclamation and the State) overseeing and finalizing the NEPA document. See section IV-10 for further perspective.

**Task Three – Step Three*

Title: Tribal, Public and Agency Review

Timeline: April and May, 2017

Activities: This task consists of (1) coordinating Tribal and public review of the draft EA, (2) conducting a public open house (and Tribal open house if desired by involved tribes) to answer questions about the EA document and the NEPA process, and (3) assembling and conducting initial review and categorization of the comments received on the document.

Resources: Project Manager, "EA task leader" and support staff.

**Task Three – Step Four*

Title: Final EA

Timeline: June and July, 2017

Activities: This task consists of responding to the comments received on the draft EA, either (primarily) by direct response – in a Response to Comments chapter added to the main EA document or via an internal revision/correction to the main body of the EA.

Resources: Project Manager, "EA task leader", and the array of staff disciplines listed for the draft EA.

**Task Three – Step Five*

Title: Findings

Timeline: July through September, 2017

Activities: This final task in the EA process involves production of a brief findings document. These findings can be in the form of a Finding of No Significant Impact (FONSI) or a finding that the project will or may involve unmitigated or unmitigable significant impacts. In the former case, the proposed project could proceed assuming that any other relevant permitting processes are fulfilled. In the latter case, an Environmental Impact Statement (EIS) would need to be prepared before a decision could be made on whether or not the proposed project could proceed.

Resources: Project Manager, "EA task leader", and the array of staff disciplines listed for the draft EA.

****Task Four*

Title: Cultural and Tribal Resources Study

Timeline: October 2016 through May 2017

Activities: The primary activities in this key step will focus on monitoring the cultural and tribal resource studies and ensuring that necessary coordination is occurring. Budget and schedule adherence will also be important. Performance reports will occur regularly to project sponsors.

Resources: Project manager and task group leaders

**Task Four – Step One*

Title: Draft National Historic Preservation Act (NHPA) Cultural Resources Report

Timeline: October through December, 2016

Activities: Preparation of this report involves (1) a literature search centered on the historic and prehistoric archaeological work in the study area, (2) a field investigation of areas subject to ground disturbance by the proposed project in the study area, (3) a determination of whether the proposed project could disturb or destroy archaeological resources eligible for the National Register of Historic Places, (4) assessment of whether there are measures available to mitigate or avoid impact to eligible resources, and (5) preparation and submittal to the State Historic Preservation Officer (SHPO) of a report documenting this work.

Resources: Cultural Resources Team Leader, lead archaeologist, field archaeologist, and support staff.

**Task Four – Step Two*

Title: SHPO Review

Timeline: January, 2017

Activities: This task normally requires little, if any, effort on the part of the project archaeological team. However, the staff may receive questions or requests for further information from the SHPO during this review period.

Resources: Cultural Resources Team Leader, lead archaeologist or field archaeologist, as/if needed.

**Task Four – Step Three*

Title: Final NHPA Cultural Resources Report

Timeline: February, 2017

Activities: The Cultural Resources Report is revised and finalized based on any relevant discussion with, or comments from the SHPO. The results of the NHPA report process are reflected in the chapter 3 Cultural Resources section of the EA (Task Three above).

Resources: Cultural Resources Team Leader, lead archaeologist or field archaeologist, as needed.

**Task Four – Step Four*

Title: Tribal Consultations

Timeline: October, 2016 and May, 2017

Activities: The Tribal Liaison with the NEPA lead agency corresponds in writing with involved Tribes as part of the NEPA process. These consultations occur immediately prior to the public scoping and draft EA review periods. The Tribes are afforded the opportunity to comment on the scope of the NEPA document and provide commentary on the draft NEPA document ahead of the general public.

Resources: NEPA Lead Agency Tribal Liaison, with assistance from the NEPA team leader and staff as needed

****Task Five*

Title: Other Permitting Requirements

Timeline: September 2017

Activities: This step involves oversight of the brief investigation planned to outline state and local permitting requirements that could affect the project. Regular performance reports will occur.

Resources: Project manager and group leaders

**Task Five – Step One*

Title: Review of state and local permitting requirements

Timeline: September, 2017

Activities: Project staff will consult with state and local government officials to determine what, if any, additional permitting requirements may apply to the proposed project. The intent is not to initiate any relevant permitting processes, but simply to account for efforts that will need to be accomplished by the project proponents.

Resources: One or more federal or state lead agency planning staff members.

6. Please provide the following data and information for the proposed project and the project's sources of water supply:
 - a. The location of the proposed project. Include the basin, county, township, range and section. Attach a **map** that identifies the project's implementation area to this application.

The project site is located 15 miles north of Baker City, in Baker County Oregon. Thief Valley Reservoir is located on the Powder River in the Snake River Basin. Located in sections 8, 16, 17, 21, 22, 23, 26 and 27. Township 6 S Range 40 E.

- b. The name(s) and river mile(s) of the source water and what they are tributary to, if applicable.

The project is located on the Powder River on river mile 50. The Powder River is a tributary of the Snake River.

- c. Whether the project will be off-channel or on-channel (for above-ground storage only).

This will be an on-channel study and resulting restoration project.

- d. Water availability to meet project storage. For above-ground storage the Department typically evaluates availability using a 50 percent exceedance water availability analysis.

Baker County water right certificate #11692 for storage, as well as Oregon State water right certificate #11092 are already in place. Since no additional water right will be needed for project implementation, water availability will not be a factor in meeting the water storage goal.

- e. Proposed purposes and/or uses of conserved or stored water.

The stored water will allow the Lower Powder Irrigation District to apply and use their full legal water right for irrigation purposes. Thief Valley Reservoir serves 32 irrigators who grow cash crops and raise cattle in a predominately ag-based community in eastern Oregon. The stored water will also allow for several fish and other wildlife populations, such as Rainbow Trout, Large Mouth Bass, Black Crappie and various waterfowl, to use the reservoir as essential habitat. The added storage will also allow for the downstream flow to exceed Oregon Department of Fish and Wildlife's minimum requirements for pool and instream flow beyond the dam. Increased flows into the Wild and Scenic designated river below the dam will help to improve water quality. In addition to adding economic and habitat improvement, the stored water will be used to attract tourists and recreationists for fishing, camping, and boating activities

- f. Environmental flow needs and water quality requirements of supply source water bodies.

The Powder Basin includes the Brownlee, Burnt, and Powder USGS 4th Field HUC watersheds. All streams in these watersheds drain into the Snake River along the border of Oregon and Idaho. The Powder Basin is almost entirely located in Baker County, with smaller portions of the northern part of the basin in Union and Wallowa counties, and the southeast corner in Malheur County. Local groups, as well as federal and state agencies, have been working to address water quality issues in the Powder Basin for many years.

The Powder River is 144 miles long and drains more than 1,540 square miles before emptying into the Snake River on the Oregon-Idaho border. It begins in the city of Sumpter at the convergence of McCully Fork and Cracker Creek and continues east through Phillips Lake and turns north around Elkhorn Ridge, flowing towards Baker City. Downstream from the town of North Powder, the river flows through Thief Valley Reservoir and turns to flow southeastwardly for its remaining 78 miles. It empties into the Brownlee Reservoir near the town of Richland.

One of the Department of Environmental Quality's (DEQ) water quality tools is the Total Daily Maximum Load (TMDL). A "Total Maximum Daily Load" is the amount of pollution that a waterway can receive in one day without causing water quality to drop below federal clean water standards. A TMDL identifies the maximum amount of pollution each source is allowed to add to a water body so that the combined quantity of pollution does not affect beneficial uses such as fisheries, agriculture or drinking water supplies. When all sources comply with the TMDL, water quality improves.

The SWCDs have maintained a database of water quality information during 1995-2002. Water temperature and other water quality information were collected at six sites on the upper Powder River main stem between Phillips Reservoir and North Powder, Oregon, seven sites on the lower Powder River main stem located below Thief Valley Reservoir to a site approximately 100 meters above the confluence of the Powder River with Brownlee Reservoir. Four sites were located on Pine Creek, and during 2002, sites were also established on Eagle Creek at two places.

The baseline inventory incorporates a sampling design that allows statistical testing with objective results that separate differences between sites located throughout the Basin. Differences in water quality samples between sites were stratified for influences due to elevation and distance between sites.

7. What local, state or federal project permitting requirements/issues/approvals do you anticipate in order for the feasibility study to be conducted? If approvals are required, indicate whether you have obtained them. If you have not obtained the necessary permits/governmental approval, describe the steps you have taken to obtain them. If no permits are needed, please provide explanation.

No permits will be required to conduct this study. The Lower Powder Irrigation District has gained approval and support from Bureau of Reclamation, who owns Thief Valley Reservoir and Dam, to move forward in applying for the planning study phase of the project. Once the planning study has been completed, the Irrigation District will move forward with applying for applicable permits for the restoration portion. Permits that are anticipated for restoration activities include ODFW, Army Corp of Engineers (ACOE), and Department of State Lands (DSL).

8. Describe the level of involvement, interest and/or commitment of local entities associated with the feasibility study. Describe how the feasibility study and/or proposed project will benefit/impact these entities. Attach letters of support if available.

a. Bureau of Reclamation (BOR) will be the federal agency lead for any action that may occur at Thief Valley Reservoir and Dam. These actions may include: technical studies, compliance, and approval for any modification of the facility, including installation of the spillway rubber dam, which is the end goal of this planning study. BOR, who owns Thief Valley Reservoir and Dam, has been an active partner from the very beginning stages of this project.

Representatives from BOR have been in regular contact with the Irrigation District and the Keating SWCD, and have provided insight and information that is crucial in moving forward with the multi-phased project. BOR is in full support of the proposed restoration work on Thief Valley Dam, and will remain a valuable partner.

b. Oregon Water Resources Department will be the state lead for this project and has provided assistance and guidance as this concept was developed.

c. Oregon Department of Agriculture supports this water storage project in the interest of benefitting agriculture in Oregon. ODA states potential benefits to include: aquifer recharge, and potential lease options.

d. Lower Powder River Irrigation District, who owns the legal water rights to Thief Valley Reservoir, has reinforced that the primary objective of the Irrigation District is to regain the storage volume that has been lost to sedimentation in the reservoir. Primary objectives of this group's efforts are: confirming the feasibility of the technical planning phase, determining the feasibility of the construction concept, and providing a reasonably accurate cost estimate.

e. Keating Soil and Water Conservation District has played an active role in contacting partners, facilitating meetings, gathering funding information, and putting together applications. The SWCD has a very close working relationship with the Irrigation District, as well as ODA, and will continue to be an active partner through the planning study phase and the restoration phases of the Thief Valley project.

- f. Idaho Power is committed to this project because of the potential benefit it will have downstream Idaho Power has committed to complete a class 1 cultural review of the project location.*

There have been several meetings with the above listed agencies where members are able to brainstorm, discuss responsibilities, seek funding sources, and technical assistance. Attached are several letters of support from different project partners in support of moving forward with the planning study, as well as the installation phase of the project.

9. Identify when matching funds will be secured, from whom, and the dates of matching funds availability.

Bureau of Reclamation, who owns Thief Valley Reservoir and Dam, have committed a 50% cost share match to the planning study phase of the project. It is estimated that the total cost of this planning study project will be \$505,260.00

10. Provide a description of the relevant professional qualifications and/or experience of the person(s) that will play key roles in performing the feasibility study. If the personnel have not been decided upon, include a description of the professional qualifications and/or experience of the person(s) you anticipate will play key roles in performing the feasibility study.

Specific individuals have not yet been identified for performing the work in the various tasks comprising the proposed study. The following paragraphs identify the specific skills that will be required and the expected source of qualified personnel with those skill sets.

Project Management

<i>Discipline/Role</i>	<i>Personnel</i>
<i>Project Manager</i>	<i>Reclamation Snake River Area Office (SRAO) senior project manager</i>
<i>Engineering Team Leader</i>	<i>Reclamation SRAO senior civil engineer</i>
<i>NEPA Team Leader</i>	<i>Reclamation SRAO senior NEPA specialist</i>
<i>Cultural Resources Team Leader</i>	<i>Reclamation SRAO senior archaeologist</i>

Updated Appraisal Study

<i>Discipline/Role</i>	<i>Personnel</i>
<i>Civil engineering</i>	<i>Reclamation SRAO & PNRO* dam engineering staff</i>
<i>Mechanical engineering</i>	<i>Reclamation “</i>
<i>Hydraulic engineering</i>	<i>Reclamation “</i>
<i>Electrical engineering</i>	<i>Reclamation “</i>
<i>Hydrology</i>	<i>Reclamation SRAO hydrologist</i>
<i>Concrete coring</i>	<i>Reclamation SRAO drill crew</i>
<i>Concrete testing</i>	<i>Reclamation approved contractor</i>
<i>Cost estimating</i>	<i>Reclamation PNRO reservoir cost estimator</i>

**Pacific Northwest Regional Office*

NEPA Environmental Assessment (EA)

<i>Discipline/Role</i>	<i>Personnel</i>
<i>Lead Agency</i>	<i>Reclamation</i>
<i>Preliminary Draft EA</i>	<i>Reclamation-approved contractor</i>
<i>Reclamation internal Draft EA</i>	<i>Reclamation NEPA Team Leader & relevant discipline specialists, e.g.</i>
- <i>surface water and groundwater hydrology</i>	
- <i>surface water and groundwater quality</i>	
- <i>geology and soils</i>	
- <i>climate</i>	

- *terrestrial biology*
- *aquatic biology*
- *federal and state protected species & environments*
- *land ownership & land use, including recreation*
- *socioeconomics*
- *transportation*
- *public services and utilities*
- *environmental justice*
- *cultural resources, Indian trust assets, traditional cultural properties, etc.*

<i>Public Draft EA</i>	<i>Reclamation – same as internal draft, above</i>
<i>Public review, open house(s)</i>	<i>Reclamation and Oregon public involvement personnel and EA senior technical group leaders</i>
<i>Reclamation Final EA & Findings</i>	<i>Reclamation – same as internal draft, above</i>

Cultural and Tribal Resources Studies

<i>Discipline/Role</i>	<i>Personnel</i>
<i>Archaeological & Historical (cultural) resource records search</i>	<i>Reclamation & State approved contractor</i>
<i>Cultural resource field survey</i>	<i>“</i>
<i>Preliminary NHPA* report</i>	<i>“</i>
<i>Reclamation Draft NHPA report</i>	
<i>State Historic Preservation Officer review</i>	<i>Reclamation Cultural Resources Team Leader (as needed)</i>
<i>Final NHPA report</i>	<i>Reclamation Cultural Resources Team Leader & Contractor (as needed)</i>

**National Historic Preservation Act*

Permitting Requirements

<i>Discipline/Role</i>	<i>Personnel</i>
<i>Oversight & Management</i>	<i>NEPA team leader</i>
<i>Research and Reporting</i>	<i>NEPA technical staff A professional has not yet been selected to complete the planning study, but qualifications should be up to state and federal standards for that field. The chosen professional will likely be an archaeologist, which will need to meet the following criteria:</i>

Archaeological investigations in Oregon should be conducted by qualified archaeological professionals who meet the state’s definition of a “qualified archaeologist”, the Secretary of the Interior’s Professional Qualification Standards, or for federal agencies, Office of Personnel Management (OPM) standards. Archaeological investigations conducted pursuant to federal and state laws must be conducted by qualified professionals. Under Oregon State Statutes (ORS390.235(6) (b)) a “Qualified archaeologist” means a person who has the following qualifications:

- 1. A post-graduate degree in archaeology, anthropology, history, classics or other germane discipline with a specialization in archaeology, or a documented equivalency of such a degree.*

2. *Twelve weeks of supervised experience in basic archaeological field research, including both survey and excavation and four weeks of laboratory analysis or curation.*
3. *Has designed and executed an archaeological study, as evidenced by a Master of Arts or Master of Science thesis, or report equivalent in scope and quality, dealing with archaeological field research.*

Each of these consultants and/or agencies shall possess at least one qualified professional that meets Oregon state law and the Secretary of the Interior's Professional Qualification Standards, and have demonstrated ability to meet the Secretary of the Interior's Standards and Guidelines for identification, evaluation, and archaeological documentation.

Section B. Unique Criteria

Instructions: Address the set of items below that applies to the type of feasibility study that this grant will fund.

Water Conservation or **Reuse**

1. Water Conservation or Reuse projects that are identified by the Department in a statewide water assessment and inventory receive a preference in the scoring process. Contact the Department's Grant Specialist to include your project on the inventory.
2. Explain how the associated project will either: (a) mitigate the need to develop new water supplies and/or (b) use water more efficiently. Reference documentation and/or examples of the success of similar or comparable water conservation/reuse projects that would be available upon request.
3. Provide a description of: (a) Local, state and/or federal permitting requirements and issues posed by the **implementation** of the project associated with the feasibility study and (b) property ownership status within the project implementation area. If permitting or other approvals are not needed please indicate and provide an explanation.

Above-Ground Storage

Please answer the following three questions **BEFORE** proceeding:

- Will the project divert more than 500 acre-feet of surface water annually? Yes No
- Will the project impound surface water on a perennial stream? Yes No
- Will the project divert water from a stream that supports sensitive, threatened or endangered species? Yes No

If you answered "Yes" to any of these questions, by signature on this application, you are committing to include the following required elements in your feasibility study.

Describe how you intend to address the required elements in your feasibility study:

- a) Analyses of by-pass, optimum peak, flushing and other ecological flows of the affected stream and the impact of the storage project on those flows.

A NEPA Environmental Assessment (EA) with the BOR as lead agency is part of the work proposed in this grant application. These considerations will be addressed in that EA. However, BOR's senior biologist for this river system indicates that, assuming the range of Thief Valley operations would not change from historic patterns, the reservoir would still go to run of river late in the irrigation season and would not be considered a "storage" facility. The only difference the bladder dam would make would be that capacity to retain runoff for late season irrigation (under existing water rights) and streamflow would be restored. The loss of storage/retention capacity due to sediment buildup behind the dam has progressively reduced the ability of the system to manage runoff for irrigation and streamflow releases later in the late summer/early fall season.

- b) Comparative analyses of alternative means of supplying water, including but not limited to the costs and benefits of water conservation and efficiency alternatives and the extent to which long-term water supply needs may be met using those alternatives.

Review and analysis of potentially feasible alternatives to the proposed action will be part of the federal NEPA EA to be prepared by the BOR

- c) Analyses of environmental harm or impacts from the proposed storage project.

The NEPA EA to be prepared with BOR as lead agency will assess the potential for adverse impacts to the full range of biophysical and sociocultural resource categories in the study area. If potential for adverse impact is recognized in the EA studies, the analysis will explore feasible means to avoid or mitigate that impact.

- d) Evaluation of the need for and feasibility of using stored water to augment instream flows to conserve, maintain and enhance aquatic life, fish life and any other ecological values.

A part of BOR's NEPA EA process is exploration of ways in which project proposals, such as a bladder dam at Thief Valley, can provide environmental benefits while meeting other project objectives. The restoration of storage/retention capacity at Thief Valley may offer opportunities for more reliable seasonal downstream flow conditions in the Powder River, especially in the late summer and early fall seasons.

Is the proposed storage project for municipal use?

- Yes No

If "Yes," then please describe how you intend to address the following required element in your feasibility study:

- e) For a proposed storage project that is for municipal use, analysis of local and regional water demand and the proposed storage project's relationship to existing and planned water supply projects.

Proceed in addressing the following items:

1. Describe to what extent the project associated with the feasibility study includes provisions for using stored water to augment instream flows to conserve, maintain and enhance aquatic life, fish life or other ecological values. Projects that include the above provisions receive preference in the scoring process.

The completion of a feasibility study for Thief Valley Reservoir, including the NEPA EA, would establish whether or not the decision to install a rubber dam is both environmentally and economically sound. Certainly, due to reduced water storage capacity over time, desired downstream flows have barely been met for fish habitat and streamside vegetation. The restored water storage/retention, would allow for increased downstream flows below the dam late in the irrigation season. The study will determine what effects the restored late-season water retention at/releases from the reservoir will have on fish populations, native vegetation, and recreational access at the Reservoir.

2. Provide a review of: (a) Local, state and/or federal permitting requirements and issues posed by the **implementation** of the project associated with the feasibility study and (b) property ownership status within the project implementation area.

The water is available for storage both legally, through the Lower Powder Irrigation District water rights, and physically due to the heavy spring runoff flows that we are currently unable to capture due to the reduced storage capacity of the reservoir.

Storage Other Than Above-Ground [Including Aquifer Storage and Recovery (ASR)]

Please answer the following three questions **BEFORE** proceeding:

Will the project divert more than 500 acre-feet of surface water annually? Yes No

Will the project impound surface water on a perennial stream? Yes No

Will the project divert water from a stream that supports sensitive, threatened or endangered species? Yes No

If you answered "Yes" to any of these questions, by signature on this application, you are committing to include the following required elements in your feasibility study.

Describe how you intend to address the required elements in your feasibility study:

- a) Analyses of by-pass, optimum peak, flushing and other ecological flows of the affected stream and the impact of the storage project on those flows.
- b) Comparative analyses of alternative means of supplying water, including but not limited to the costs and benefits of water conservation and efficiency alternatives and the extent to which long-term water supply needs may be met using those alternatives.
- c) Analyses of environmental harm or impacts from the proposed storage project.
- d) Evaluation of the need for and feasibility of using stored water to augment instream flows to conserve, maintain and enhance aquatic life, fish life and any other ecological values.

Is the proposed storage project for municipal use?

Yes No

If "Yes," then please describe how you intend to address the following required element in your feasibility study:

- e) For a proposed storage project that is for municipal use, analysis of local and regional water demand and

the proposed storage project's relationship to existing and planned water supply projects.

Proceed in addressing the following items:

1. Underground storage projects that are identified by the Department in a statewide water assessment and inventory receive a preference in the scoring process. Contact the Department's Grant Specialist to include your project on the inventory.

2. Provide a review of: (a) Local, state and/or federal permitting requirements and issues posed by the **implementation** of the project associated with the feasibility study and (b) property ownership status within the project implementation area.

V. Match Funding Information

Applicants must demonstrate a minimum dollar-for-dollar match based on the total funding request. The match may include a) secured funding commitment from other sources, b) pending funding commitment from other sources, and/or c) the value of in-kind labor, equipment rental, and materials essential to the feasibility study. For secured funding, you must attach a letter of support from the match funding source that specifically mentions the dollar amount shown in the "Amount/Dollar Value" column. For pending resources, documentation showing a request for the matching funds must accompany the application.

<p>In the "type" column below matching funds may include:</p>	<p>In the "status" column below matching funds may have the following status:</p>
<ul style="list-style-type: none"> • Cash - Cash is direct expenditures made in support of the feasibility study by the applicant or partner*. 	<ul style="list-style-type: none"> • Secured - Secured funding commitments from other sources.
<ul style="list-style-type: none"> • In-Kind - The value of in-kind labor, equipment rental and materials essential to the feasibility study provided by the applicant or partner. 	<ul style="list-style-type: none"> • Pending - Pending commitments of funding from other sources. In such instances, Department funding will not be released prior to securing a commitment of the funds from other sources. Pending commitments of the funding must be secured within 12 months from the date of the award.

*"Partner" means a non-governmental or governmental person or entity that has committed funding, expertise, materials, labor, or other assistance to a proposed project planning study. OAR 690-600-0010.

Match Funding Source (if in-kind, briefly describe the nature of the contribution)	Type (✓ One)	Status (✓ One)	Amount/ Dollar Value	Date Match Funds Available (Month/Year)
<i>BOR</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in-kind	<input type="checkbox"/> secured <input checked="" type="checkbox"/> pending	\$239,520	<i>November 15</i>
<i>Keating SWCD</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in-kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> pending	\$25,000	<i>September 15</i>
<i>Idaho Power</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in-kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> pending	\$1,220	<i>September 15</i>
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		

VI. Feasibility Study Schedule

Estimated Study Duration: January 1, 2016 to September 1, 2017

Place an "X" in the appropriate column to indicate when each Key Task of the project will take place.

Feasibility Study Key Tasks	2015			2016				2017 & Beyond
	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	
<i>Project Management</i>				X	X	X	X	
<i>Draft Bladder Dam Study Report</i>				X	X	X		
<i>Environmental Assesment- NEPA</i>						X	X	X
<i>Cultural and Tribal Resources Study</i>						X	X	X
<i>Permitting Requirements</i>								X

- **Please Note:** Successful grantees must include all invoices and identify which key tasks are associated with each invoice when requesting financial reimbursement.

VII. Feasibility Study Budget

Section A

Please provide an estimated line item budget for the proposed feasibility study. Examples would include: labor, materials, equipment, contractual services and administrative costs.

Line Items	Number of Units* (e.g. # of Hours)	Unit Cost (e.g. hourly rate)	In-Kind Match	Cash Match Funds	OWRD Grant Funds	Total Cost
Staff Salary/Benefits						
Contractual/Consulting			\$239,520		\$239,520	\$479,040
Equipment (must be approved)						
Supplies						
<i>Other: Class 1 review- Idaho Power</i>			\$1,220			\$1,220
Administrative Costs**			\$25,000			\$25,000
Total for Section A			\$265,740		\$239,520	\$505,260
Percentage for Section A						100%

* Note: The "Unit" should be per "hour" or "day" – not per "project" or "contract." $Units \times Unit\ Costs = Total\ Cost$

** Administrative Costs may not exceed 10 percent of the total funding requested from the Department

Section B

If grant amount requested is \$50,000 or greater, you **MUST** complete Section B. Key Tasks in Section B should be the same as the Key Tasks in Section VI (Feasibility Study Schedule).

APPLICATION CHECKLIST

Instructions: Use this checklist to ensure that your application is complete. An incomplete application will jeopardize your application's review. **This form does not need to be included in your application packet.**

General

If submitting electronically, the preferred format is either a Microsoft word or Adobe pdf

- Only one application is included with the packet (other applications must be sent separately).

Paper submissions only

- The application and attachments are on 8 ½" x 11" paper.
- The application and attachments are single-sided.
- The application and attachments are not stapled or bound.

Section I – Grant Information

- All questions in this section have been answered.
- The Grant Dollars Requested and the Total Project Cost mirror the totals shown in Section VII.

Section II – Applicant Information

- All contact information for the applicant(s) and fiscal officer is complete and current.
- The certification is signed by an authorized signer.

Section III – Feasibility Study Summary

- A brief summary, of no more than 150 words, is complete.

Section IV – Grant Specifics

- All questions in Section A have been answered.
- If the type of feasibility study is water conservation, reuse or storage other than above-ground, you have contacted the Department and requested project be added to the Oregon Water Resources Department's statewide water assessment and inventory.
- All applicable questions for the type of grant requested have been answered.

Section V – Match Funding Information

- Applicant has identified that at least 50 percent match has been sought, secured or expended.
- Letters of support are included for "secured" match funding sources.
- Documentation is included for "expended" match funds.
- Documentation is included for "pending" match funds.

Section VI – Feasibility Study Schedule

- Estimated project duration dates have been supplied.
- All Key Tasks of the project are listed.

Section VII – Feasibility Study Budget

- Section A is complete.
- Administration costs do not exceed 10 percent of the requested OWRD Grant Funds.
- If grant amount requested is \$50,000 or greater, Section B has been completed.
- All Key Tasks listed in Section B mirror the Key Tasks listed in Section VI.

Certificate No. 11692

STATE OF OREGON

COUNTY OF BAKER

The United States of America, District Counsel, Bureau of Reclamation, 603 Post Office Building, Portland, Oregon, has made proof to the satisfaction of the State Engineer of Oregon, of a right to store the waters of Powder River, tributary of Snake River, to be appropriated under Application No. 15178, Permit No. 11092, for the purpose of irrigation and domestic, under Reservoir Permit No. 667 of the State Engineer, and that said right to store said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from December 16, 1931; that the amount of water entitled to be stored each year under such right, for the purposes aforesaid, shall not exceed 36,000 acre feet.

The reservoir is located in Sections 8, 16, 17, 21, 22, 23, 26 and 27, Township 6 South, Range 40 East, W. M.

REMARKS: I find that the reservoir is located in Sections 14, 15, 16, 17, 21, 22, 23, 26 and 27, Township 6, South Range 40, E.W.M.

R. B. Bunch
Watermaster.

File

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

603 Postoffice Building,
Portland, Oregon, December 22, 1931.

STATE ENGINEER
RECEIVED

DEC 28 1931

Mr. Chas. E. Stricklin,
State Engineer,
Salem, Oregon.

SALEM, OREGON

Dear Mr. Stricklin:

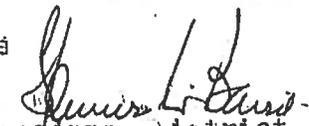
Acknowledgment is made of your letter of December 18 advising that our application for a permit to construct the Thief Valley Reservoir has been filed as No. 14444.

As your letter of December 11 suggests, one of the reasons for having made application for North Powder River storage in excess of the capacity of the Thief Valley Reservoir, under present plans, is to provide for a refill of the reservoir during a single irrigation season.

You are probably familiar with preliminary investigations of the Baker Project carried out by the Bureau of Reclamation, which contemplate the storage of much more of the waters of North Powder River than under present plans. In the event of a material enlargement of the project, and a consequent change of plans by enlargement of the storage works over those now being constructed, the application (No. 14444) for storage in excess of capacity of the reservoir now under construction, will be of value to the project.

I trust that our application may be approved and your permit will issue.

Very truly yours


Associate District Counsel

December 18, 1951.

Mr. Spencer L. Laird,
Associate District Council,
U. S. Reclamation Service,
Post Office Building,
Portland, Oregon.

Dear Sir:

I have not known you for some time, and since receipt of the voucher for the fact to apply on the application of the United States for permit to construct the Chief Valley Reservoir, we have filed this application, giving it No. 14464.

In my previous letter I called to your attention that the application is for permit to store 26,000 acre-feet of water above the plans of the proposed dam and reservoir indicate that its capacity is 17,000 acre-feet. Before this application is approved and a permit issued thereon it would seem advisable to have some explanation of these figures.

Very truly yours

CHAS. T. WISCHMANN
State Engineer

By L. A. Stanley, Asst.

CAS FL

STATE OF OREGON
COUNTY OF BAKER
CERTIFICATE OF WATER RIGHT

This is to Certify, That UNITED STATES OF AMERICA -- BUREAU OF RECLAMATION
of 603 Post Office Bldg., Portland, State of Oregon, has made proof
to the satisfaction of the STATE ENGINEER of Oregon, of a right to store the waters of
Powder River, tributary of Snake River,

for the purposes of
Irrigation and domestic, to be appropriated under Application No. 15178, Permit
No. 11082,

under Reservoir Permit No. 667 of the State Engineer, and that said right to store said
waters has been perfected in accordance with the laws of Oregon; that the priority of the right
hereby confirmed dates from December 16, 1931;

that the amount of water entitled to be stored each year under such right, for the purposes afore-
said, shall not exceed 36,000 acre-feet.

The reservoir is located in Section 8, 16, 17, 21, 22,
25, 26 and 27, Tp. 6 S., R. 40 E., W. M.

After the expiration of fifty years from the date of this certificate or on the expiration of
any federal power license issued in connection with this right, and after not less than two years
notice in writing to the holder hereof, the State of Oregon, or any municipality thereof, shall have
the right to take over the dams, plants and other structures and all appurtenances thereto which have
been constructed for the purpose of devoting to beneficial use the water rights specified herein, upon
condition that before taking possession the State or municipality shall pay not to exceed the fair
value of the property so taken, plus such reasonable damages, if any, to valuable, serviceable and
dependable property of the holder of this certificate, not taken over, as may be caused by the
severance therefrom of the property taken in accordance with the provisions of section 5728,
Oregon Laws.

WITNESS the signature of the State Engineer,

affixed this 2nd day
of March, 19 37

CHAS. E. STRICKLIN
State Engineer.



1995 Third Street
Baker City, Oregon 97814

June 3, 2015

Keating Soil and Water Conservation District
3990 Midway Drive
Baker City, Oregon 97814-1453
ATTN: Ms. Whitney Collins, Districts Manager

RE: Letter of Support for Keating County Soil and Water Conservation District's
Application to the OWRD Water Conservation, Reuse and Storage Grant Program

Dear Ms. Collins:

I am writing this letter on behalf of Baker County in support of the Keating County Soil and Water Conservation District's Application for an Oregon Water Resources Department Water Conservation, Reuse and Storage Grant for FY 2016.

Baker County supports the Keating Soil and Water Conservation District's (Keating SWCD) proposal for installing an inflatable rubber dam on the spillway of Thief Valley Dam to restore approximately 4,600 acre feet of water storage capacity lost to sediment accumulation in the reservoir. Baker County fully supports activities and actions that increase reliability of agricultural water supplies because of direct and indirect economic benefits to farmers, ranchers, wildlife and to the surrounding communities.

Funding for this project is critical because farmers and ranchers of the Lower Powder Irrigation District have and continue to experience dry and drought conditions during the past fifteen years, and the Irrigation District's ability to mitigate effects of drought on crops, fish and livestock has been significantly impacted by reduced capacity to store water when it is available. Funds will be used to restore most of the storage capacity lost to sedimentation in Thief Valley Reservoir, thereby increasing economic resilience and adaptability to hydro climatic variability and change in agriculture in the Lower Powder Valley.

Baker County fully supports the goals and objectives of the Lower Powder Irrigation District in partnership with the Keating SWCD described in this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark E. Bennett".

Mark E. Bennett, Commissioner
Baker County



June 11, 2015

Whitney Collins
Baker County SWCDs
3990 Midway Drive
Baker City, OR 97814

Subject: Thief Valley Reservoir Project

Dear Whitney:

Idaho Power Company (IPC) would like to offer this letter of support for the Thief Valley Reservoir project which proposes to install a bladder on the spillway of Thief Valley Dam to increase the reservoir storage capacity. This bladder will increase the height of the existing dam and effectively recover active storage that has been lost by sedimentation in the reservoir.

This project will provide a viable option to restore reservoir storage space that has been lost over time due to sediment accumulation in the reservoir. Raising the spillway height by 6.3 ft would provide an additional 4,600 acre foot of storage and allow downstream irrigators to better utilize their storage water right.

Idaho Power is committed to preserving the Snake River's ability to provide clean water and clean power to our region for future generations. As part of that commitment, we are examining ways to improve the overall health of the river in cooperation with adjacent landowners and other stakeholders.

The process of obtaining a new long-term federal license to operate our hydroelectric projects in Hells Canyon involves addressing downstream water temperatures that are elevated in the fall due to warming that occurs as the Snake flows through Southern Idaho during the summer. That warm water collects in Brownlee Reservoir and ultimately flows out of Hells Canyon Dam several degrees warmer than current state and federal standards allow.

Idaho Power plans to address this and other water quality issues through a Snake River Stewardship Program that will be part of our relicensing plan.

The three components of the program are:

- Instream restoration actions, including narrowing and deepening the river channel through island enhancement, creation of new islands and creation of inset floodplains and emergent wetlands;
- Restoring native vegetation along key tributaries of the Snake River;
- Reducing agricultural runoff in collaboration with irrigators.

The lower Powder River is one of the sub-basins in which the restoration of native vegetation along its streambank would benefit not only water quality, but overall stream health. This type of large-scale riparian restoration requires a high level of cooperation and partnership with

STEVE BRINK
Senior Biologist
Environmental Dept/Fisheries Section

208-388-2224
sbrink@idahopower.com

P.O. Box 70 (83707)
1221 W. Idaho St.
Boise, ID 83702

local watershed groups, landowners and irrigation districts. Supporting projects like the Thief Valley Reservoir project is an opportunity for IPC to begin to build partnerships and foster cooperative relationships.

To support the Thief Valley Reservoir project, IPC is conducting a Class 1 cultural review of the project area in order help define what further cultural surveys may be required during the project permitting phase. IPC staff archaeologists are currently completing this review (in-kind value \$1,220). Please let me know if IPC can be of any other help to you on moving this project forward towards implementation.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve Brink". The signature is fluid and cursive, with the first name "Steve" and last name "Brink" clearly distinguishable.

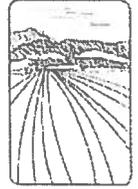
Steve Brink

Senior Fisheries Biologist



June 3, 2015

Keating Soil and Water Conservation District
3990 Midway Drive
Baker City, Oregon 97814-1453
ATTN: Ms. Whitney Collins, Districts Manager



RE: Letter of Support for Keating County Soil and Water Conservation District's Application to the OWRD Water Conservation, Reuse and Storage Grant Program

Dear Ms. Collins:

I am writing this letter in support of the Keating County Soil and Water Conservation District's (SWCD) application for a grant from the Oregon Water Resources Department 2015-2017 Water Conservation, Reuse and Storage Program.

Oregon Department of Agriculture (ODA) supports the Keating Soil and Water Conservation District's proposal for installing an inflatable rubber dam on the spillway of Thief Valley Dam to restore approximately 5,500 acre-feet of water storage capacity lost to sediment accumulation in the reservoir. ODA is interested in means that increase reliability of agricultural water supplies because of direct and indirect economic benefits to farmers, ranchers, and the surrounding communities.

Funding for this project is vital because farmers and ranchers of the Lower Powder Irrigation District have faced dry and drought conditions during the past 15 years. The Irrigation District's ability to mitigate effects of drought on crops and livestock has been significantly impacted by reduced capacity to store water when it is available. Funds will be used to restore needed storage capacity lost to sedimentation in Thief Valley Reservoir, thereby increasing economic resilience and adaptability in agriculture to hydroclimatic variability and change in the Lower Powder Valley.

ODA fully supports goals and objectives described in the proposal by Keating SWCD.

Sincerely,

Margaret A. Matter
Water Resources Specialist
Oregon Department of Agriculture
635 Capitol Street NE
Salem, Oregon 97301



United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

MAY 05 2015

IN REPLY REFER TO:

SRA-1000
PRJ-8.00

Jonathan Unger
Water Supply Development Coordinator
Oregon Water Resources Department (OWRD)
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271

RECEIVED BY OWRD

MAY 11 2015

SALEM, OR

Subject: Updated Appraisal Study

Dear Mr. Unger:

As you requested, this letter confirms the Bureau of Reclamation's interest in and authority¹ to act in studying the potential of installing a bladder dam on the spillway of Thief Valley Dam in Eastern Oregon to restore the reservoir to its original storage capacity.

Reclamation performed an appraisal-level study in 2001² to develop appraisal-level costs to install a 6.3-foot-high rubber bladder dam on the spillway of Thief Valley Dam to increase the reservoir storage capacity by 4,600 acre-feet to recover lost active storage due to sedimentation. This study evaluated the hydraulic, structural, and operation issues associated with installation of the bladder dam and estimated installation costs. The bladder dam was determined to be a viable option at this site because of the low maintenance, low operating pressures, remote operation capability, and storage-only function (Reclamation 2001). While this initial work was completed, additional studies were recommended including environmental compliance documentation, evaluation of the seismic hazard at the site, and evaluation of some structural components of the dam (e.g., concrete strength, anchor bar strength, etc.).

In 2014, the Lower Powder River Irrigation District (LPRID) expressed an interest in having Reclamation conduct an update to the 2001 Appraisal Study to address these additional questions and to refine the cost estimate for the bladder dam installation. However, Reclamation requires that non-Federal partners provide at least 50 percent of the cost (either in monies or in-kind services or a combination of both) for the Updated Appraisal Study, accompanying National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), Endangered Species Act (ESA) and related compliance efforts. LPRID is now in the process of applying for a grant from the State of Oregon Water Resources Department to obtain that funding.

¹ Authority based on the *Burnt, Malheur, Owyhee, and Powder River Basin Water Optimization Feasibility Study Act of 2002*.

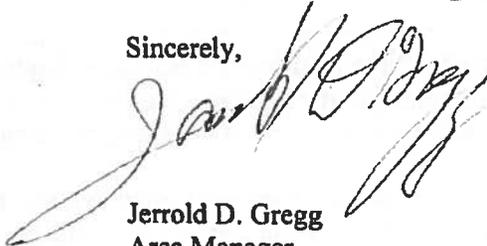
² Reservoir Volume Increase at Thief Valley Dam, Oregon – Appraisal Report: TVD-RVI-APPRAISAL-2001-1.

Reclamation has met on three previous occasions with parties interested in this study effort and as a result is drafting the statement of work, approximate schedule, and estimated budget necessary to accomplish the Updated Appraisal and related environmental studies. Should LPRID be successful in obtaining the funding from OWRD, Reclamation will collaborate with the study partners to refine the scope, schedule, and budget. In addition, a Memorandum of Agreement (MOA) will be developed between Reclamation and the funding partners. Reclamation is also identifying FY2016 Federal funding at this time to support the Updated Appraisal and related environmental studies effort.

Funding of work beyond the Updated Appraisal and related environmental studies, including final design and installation of a bladder dam at Thief Valley would be the responsibility of the District and OWRD (or other funding partner). All such work would be performed under Reclamation direction and supervision, and the facility would remain in Reclamation ownership.

If you have any questions or need further information on this subject, please contact Mr. John Petrovsky, Activity Coordinator, at 208-383-2224 or via email at jpetrovsky@usbr.gov.

Sincerely,



Jerrold D. Gregg
Area Manager

cc: Mr. Fredrick Phillips III
President
Lower Powder River Irrigation District
2550 Broadway Street
Baker City, OR 97814-3302

July 16, 2015

To Whom It May Concern

Our old Thief Valley Reservoir has lost about one third of it's capacity. That capacity needs to be increased and a bladder to raise it's elevation turns out to be the only practical solution.

When I moved here 25 some years ago , we were able to (in volumne) refill the reservoir with in-flow during the irrigation season. We were always able to irrigate through the entire growing season. The reservoir was, at most drained late season every 3 to 5 years. The fishing in the reservoir and the 17 miles of river below it was unbelievable (no fish story).

We have lost in-flow due to water use above the reservoir, the drought and warmer weather has led to draining the reservoir every year for at least the last five years, ususally during hot weather, thus killing most aquadic species in the river.

Our irrigation practices have changed. The expense of planting a more profitable crop has become dicey due to not knowing if we will have water thru the growing season, thus losing the crop.

Raising the reservoir to it's original size is truly the only answer to restore the beneficial uses of the Lower Powder River water.

As an old guy, I look forward to good fishing and clean water in the river more than irrigating all summer. In any light there is no down side to funding this project.

Respectfully,

Walt Jury, Director

Lower Powder River Irrigation District

