



OREGON WATER RESOURCE DEPARTMENT WATER CONSERVATION, REUSE AND STORAGE GRANT PROGRAM

I. Grant Information

Study Name: Hood River Basin Surface Water Storage Feasibility Study

Type of Grant Requested: Water Conservation Reuse Above Ground Storage
 Storage Other Than Above-Ground [Including Aquifer Storage and Recovery (ASR)]
Note: A Water Conservation and Reuse study may be submitted as a joint application. All other applications must only include one application type.

Program Funding Dollars Requested: \$ 250,000.00 Total cost of planning study: \$ 759,050.00
Note: Request may not exceed \$500,000

II. Applicant Information

Applicant Name: <i>Hood River County</i>	Co- Applicant Name:
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Fiscal Officer Name: <i>Sandi Borowy</i>	Principle Contact: <i>Mike Benedict</i>
Organization: <i>Hood River County</i>	Organization: <i>Hood River County</i>
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Certification:

I certify that this application is a true and accurate representation of the proposed work for a project planning 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 and are prepared to conduct the planning study if awarded.

Applicant Signature: _____ Date: December 15, 2011

Print Name: -Les Perkins Title: Hood River County Commissioner

III. Planning Study Summary

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

Hood River Valley's economy and ecology are highly dependent upon surface water. In fall 2008, Hood River County convened its Water Planning Group to assess future water needs for threatened and endangered aquatic species, irrigated agriculture, and recreation in the Hood River Basin. This group collected all existing water-related study documents and identified the need for a feasibility study of the potential to store winter water flows in above-ground reservoirs to allow for operational flexibility of irrigation diversions while enhancing late-season stream flows for aquatic species. This OWRD grant (along with a secured BOR WaterSMART Basin Study Grant) will address this need, providing for the analysis of required irrigation, bypass, optimum peak, flushing, and ecological flows, including comparative water supply alternative analyses and the potential for environmental harm from proposed storage facilities. At its conclusion, the study will identify the actual need, if any, for stored water in the Hood River Basin.

IV. Grant Specifics

Section A. Common Criteria

Instructions: Answer all questions in this section by typing the answer below the question. It is anticipated that completed applications will result in additional pages.

1. Describe how the planning study will be performed. Include:
 - a. A description of the planning schedule/timeline, which includes identifying all key tasks. (Section VI provides an opportunity for a “graphical” representation of the schedule.)

Phase 1: Available Information and Information Gap Analysis

In November 2008, Hood River County and the watershed group organized a county-led water resources planning committee, now called the Hood River Water Planning Group (HRWPG). The mission of this group is to inventory surface and ground water resources, evaluate current and future out-of-stream and in-stream water supply requirements, and formulate plans for managing water resources at the basin level. The broad composition of this group includes the county, watershed group, OWRD, major irrigation and water districts, the soil and water conservation district, environmental groups and local resource specialists.

Over the past 3 years, the group has worked to gather all existing reports, documents, and data relating to water in the Hood River Basin. In early 2011, the existing data was gathered and inventoried. An analysis of the existing data by the group pointed to some large gaps in information and data. The primary data and information gaps were related to:

- *Future supply/demand scenarios and how those would affect both human uses of water resources and ecological processes.*
- *Options for both conservation and storage that would provide for the ability to optimize water resources management for the benefit of both water users and ecological processes. This would include a trade-off analysis of the identified options.*
- *The potential impact of climate change on water resources in terms of quantity, quality, and timing of availability.*
- *Hydrogeology in the Hood River Basin, in particular, the connections between surface water and ground water.*

The HRWPG collectively came to the conclusion that outside resources and expertise would be necessary to address the identified gaps in data and information. The HRWPG identified funding options including the Bureau of Reclamation WaterSMART Basin Study. HRWPG applied for the WaterSMART Basin Study grant in the late spring of 2011 and was notified in June of 2011 that the grant application was successful. The Basin Study grant award was for \$200,000.00 of in-kind Bureau of Reclamation staff expertise to address aspects of the above mentioned data and information deficiencies. In meetings with Bureau of Reclamation staff members, the need for additional resources was identified. The HRWPG identified the Oregon Water Resources Department Water Conservation, Reuse and Storage Grant Program as a complimentary funding source that could help the group to reach its goals.

Phase 2: Planning Study Implementation

Task 1: Grant Management:

BOR grant contracting (Hood River County, HRWPG): February 2012

Expand HRWPG to include more state and federal resource specialists: February 2012

OWRD Grant contracting (Hood River County, HRWPG): June 2012

Hire Consultants: Release RFQ/RFP, evaluate bids, conduct interviews, and contract with consultants (Hood River County, HRWPG): July 2012 – September 2012

BOR Contract and Fiscal Administration (Hood River County): February 2012 – December 2013

OWRD Contract and Fiscal Administration (Hood River County): July 2012 – June 2013

BOR Grant Reporting (Hood River County, HRWPG) upon Basin Study Completion: December 2013

OWRD Grant Reporting (Hood River County, HRWPG) upon feasibility completion: June 2013

Task 2: Assess Potential Impact of Climate Change on the Basin:

This task will be completed using BOR funding and staff expertise, and will include specific climate modeling for the Hood River Basin. Existing climate modeling will be used to create a model specific to the study area. The model will be used to evaluate the potential impacts of climate change on water supply and demand including both human needs and the needs of the ecosystem as a whole. (BOR Staff, HRWPG; February 2012 – September 2013)

Task 3: Assess Hydrology of the Hood River Basin:

This task will be completed using BOR funding and staff expertise, and will include analysis of existing data and information and identification of needed data/work. The goal will be to assess ground and surface water interaction using existing wells and well logs and to define a scope of work for additional hydrologic analysis to be broken into specific tasks that can either be completed using BOR expertise or to contract with professionals in a given area of expertise. (BOR Staff, HRWPG; February 2012 – September 2013)

Task 4: Analysis of Water Demands:

This OWRD funded task will assess long term water supply needs based on past, current, and projected agricultural demands, domestic demands, and ecological needs. This would include analysis of by-pass, optimum peak, flushing, and other ecological flows in the Basin. This task would identify and quantify current and future water deficits that could potentially be met through above ground storage or other storage and conservation measures. (Qualified Consultants and HRWPG; July 2012 – May 2013)

Task 5: Assess Physical Feasibility of Surface Storage and Other Alternatives:

This OWRD funded task will include evaluation of existing data on the water supplies in the Hood River Basin. Existing data will be used to assess the suitability of the Basin for surface storage as well as the potential for conservation/efficiency projects to offset demand and the potential subsequent effects of implementation of all alternatives. Potential surface water sources will be analyzed for availability. Existing infrastructure and new infrastructure requirements will be assessed for surface storage as well as for any conservation or efficiency alternatives. Optimum location options for one or more off-channel surface reservoirs will be identified. (Qualified Consultants, HRWPG; July 2012 – May 2013)

Task 6: Assess Regulatory and Ecological Feasibility of Surface Storage and Other Alternatives:

This OWRD funded task includes review of water rights, permitting issues, local, state, and federal regulations, and social/political considerations regarding surface storage, potential off-channel reservoir sites, and identified conservation and efficiency alternatives. (Qualified Consultants, HRWPG; July 2012 – May 2013)

Task 7: Assess Economic Feasibility of Surface Storage and Other Alternatives:

This OWRD funded task includes comparative cost-benefit analyses of surface storage and identified conservation and efficiency alternatives. (Qualified Consultants, HRWPG; July 2012 – May 2013)

Task 8: Stakeholder/Public Outreach and Participation:

The entire process will include stakeholder and public input. The HRWPG meetings will be advertised and open to the public throughout the term of the study. Quarterly project progress reports will be made to the Hood River Watershed Group for additional stakeholder and public input. (Qualified Consultants, HRWPG, Hood River Watershed Group, and General Public; July 2012 – June 2013)

Task 9: BOR WaterSMART Basin Study Report:

The final Basin Study Report for the BOR WaterSMART Basin Study Grant will include the information from the OWRD Feasibility Study as well as the work by BOR staff and HRWPG on the impact of climate change and the hydrogeology of the Basin. (Qualified Consultants, BOR staff, HRWPG, Hood River County; August 2013 – December 2013)

b. When the planning study could begin.

The planning study could begin immediately upon completion of grant contracting. The HRWPG is already formed and will be expanded to include more representation from state and federal resource agencies in February of 2012. The BOR WaterSMART Basin Study grant agreement will be signed in February of 2012 and BOR staff will be available to begin working on specific tasks that are complimentary to the OWRD grant.

2. Provide a description of the relevant professional qualifications and/or experience of the person(s) that will play key roles in performing the planning 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 planning study.

Mike Benedict, Hood River County Community Development Director, will serve as the lead contact and Fiscal Administrator. Mike has served as Community Development Director (formerly titled Planning Director) for 12 years. Mike has an extensive background in overseeing large local, state and federal grants, contract administration, managing consultants, and working with groups with a wide range of backgrounds to meet a common goal.

The Hood River Water Planning Group will provide oversight for the implementation of both the Basin Study and the surface water storage feasibility. The established HRWPG will be expanded in February to include resource specialists from the USFS, ODFW, NOAA/NMFS, USFWS, and DEQ. The HRWPG was created specifically to look at the needs of the Hood River Basin in regards to water planning to create a common platform for all interested parties in the Basin to work from. Current members of the HRWPG are comprised of the following groups:

- *Hood River County: Mike Benedict, Community Development Director, oversees all land-use planning in Hood River County and has an extensive background in overseeing and implementing state and federal resource guidelines, rules, and laws. Mike was responsible for developing the Counties Goal 4(forest) section of the County's Comprehensive Plan as well as the original stream protection overlay. Mike has been the administrative and fiscal manager for many local, state, and federal grants. Prior to working for Hood River County, Mike had a distinguished 20 year career in the United States Navy. Les Perkins, Hood River County Commissioner, has served in his position for 11 years and has acted as the lead Commissioner for resource issues with particular emphasis on water related topics. Les has been the Chair of the HRWPG since the group's inception in 2008. Les is also the Business Development Director for a local non-profit, working on river restoration and fish screening in the Pacific Northwest. Sandi Borowy serves as the Budget and Finance Director for Hood River County. Sandi has received numerous awards as the Budget and Finance Director and oversees the entire budget for Hood River County which includes numerous local, state, and federal grants.*
- *Irrigation: All three of the major irrigation districts located in Hood River County have representation on the HRWPG. Jer Camarata, Manager of Farmers Irrigation District, Craig DeHart, Manager of Middle Fork Irrigation District, and John Buckley, Manager of East Fork Irrigation District collectively have decades of water resource management experience. These three districts have completed many system efficiency projects that include piping of canals, barrier removal, fish screening, and on farm-efficiency measures. All three districts are active members of the Hood River Watershed Group.*
- *Confederated Tribes of the Warm Springs (CTWS): Chris Brun serves as the representative of the CTWS, an important partner in the Hood River Basin. The CTWS has been actively involved in restoration and conservation activities in the Hood River Basin for the past few decades, providing both expertise and funding.*
- *Municipal Water: Mark Beam, Manager of Ice Fountain Water District, has acted as the representative for municipal water. Mark has worked for Ice Fountain Water*

District for nearly 20 years and has been active in maintaining a complex water delivery system through system improvements and source protection.

- *OWRD: Bob Wood, Watermaster for District 3, has worked for OWRD for 13 years. Bob has extensive knowledge of the Hood River Basin and the water rights that govern use.*
- *Hood River SWCD: Anne Saxby, Manager of the Hood River SWCD, has been active in promoting, funding, and managing water conservation and restoration projects in the Hood River Basin for 20 years. Anne has worked closely with both land owners and resource agencies to create projects that work to both improve the function of the watershed and benefit landowners.*
- *Columbia Gorge Fruit Growers: Erik VonLubken represents agricultural interests and brings 25 years of farm management experience. Erik and his family have been active in protection and enhancement of both agriculture and the watershed through conservation activities for several decades.*
- *Watershed Group: Steve Stampfli, Hood River Watershed Group Watershed Coordinator, has over three decades of experience managing and documenting watershed restoration and enhancement activities. Steve has extensive experience in grant administration, project management, grant reporting, and monitoring.*
- *General Public: There are three members from the general public. Shane Willis currently works for Hood River Electric Co-Op and has lived in the Hood River Valley most of his life. He has strong agricultural roots through his family's farming operations. Hugh McMahan is a retired radiologist and a relative new-comer to the valley. Hugh brings a fresh perspective and strong analytical ability to the group as well as a willingness to commit his time. Jason Keller is a hydrologist and brings an enormous amount of technical expertise to the group. Jason has over 10 years of experience performing environmental monitoring and water resource assessments in the Western US including the interaction of surface and groundwater.*
- *Resource Agencies: In February of 2012, the HRWPG will be expanded to include resource specialists from the USFS, USFWS, ODFW, NOAA/NMFS, and DEQ.*

The Bureau of Reclamation will also be bringing considerable expertise to the process through a WaterSMART Basin Study Grant. The Bureau has pledged \$200,000.00 in staff resources through the use of climatologists, hydrologists, engineers, and other specialized staff members.

Hood River County will sponsor both the OWRD and Bureau of Reclamation grants. The HRWPG will provide the expertise and oversight for solicitation and selection of one or more qualified consultants to perform the feasibility analysis. The chosen qualified consultant(s) will have demonstrated experience in hydrology, hydrogeology, geomorphology of aquatic and riparian habitat, water quality issues for aquatic and wildlife uses, and related water resources analysis including knowledge of permitting, water law and environmental issues necessary to complete the geological, physical, and environmental feasibility analysis. The chosen consultant(s) will demonstrate expertise related to water supply infrastructure including but not limited to diversion structures, conveyance structures, storage structures, pumping facilities, filtration facilities treatment facilities, and hydropower facilities in order to inform the physical and economic feasibility analyses. The ability to work with a wide array of stakeholders will be required.

3. What local, state or federal project permitting requirements/issues do you anticipate in order for the planning study to be conducted?

We anticipate that no permits will be required for this planning study, which does not include any on-the-ground implementation. This project is comprised of feasibility analysis only for which permits are not required.

4. Are permits/governmental approvals required for the planning study? If yes, indicate whether you have obtained the necessary permits/governmental approval. If you have not obtained the necessary permits/governmental approval, describe the steps you have taken to obtain them.

No permits will be required, so no steps have been taken to obtain permits.

5. Describe your goal (which must be based on evaluating the feasibility of developing a water conservation, reuse or storage project) and how this study helps to achieve the goal.

Our goal is to proactively meet the long-term water needs of fish, residents, and the agricultural economy of the Hood River Valley in a sustainable manner that reverses the present pattern of consumptive use that can reduce natural river flows by as much as 75 percent or more during late-summer irrigation season. These dramatically reduced flows result in increased water temperatures and negative impacts to adult and juvenile fish populations. Increased fish production in September is exponentially proportional to in-stream flow. Based on aggressive water conservation targets and an estimated irrigation water rights base of 17,000 acres, irrigated agriculture's demand on the Hood River Basin require an estimated 25,500 acre feet on an annual basis. But the fact that low summer flows profoundly limit fish production does not necessarily mean that diverting winter flows for storage of water to be used in late-summer will result in an overall net gain in fish production. This study will address this question, providing for the analysis of actual required irrigation, by-pass, optimum peak, flushing, and ecological flows, including comparative water supply alternative analyses and the potential for environmental harm from proposed storage facilities. This proposed study will provide Hood River Basin stakeholders with the necessary information to make an informed decision as to whether or not above-ground storage will allow the realization of its goal to meet its comprehensive, long-term water needs.

6. Describe the technical aspects of the planning study and why your approaches are appropriate for accomplishing the goal of the planning study.

The approach to this feasibility study will be neutral with regards to outcome. The study will be designed to provide an objective analysis of the need for and impact of a potential surface storage project with a comprehensive analysis of alternative methods for meeting the current and future water needs of the Basin. The feasibility study will provide the necessary foundation for making informed decisions regarding sustainable water management in the Hood River Basin. This study is integral to future water planning within the Basin.

The study approach relies on the experience and expertise of the HRWPG as well as professional consultants and expertise within the staff of the Bureau of Reclamation. The feasibility study will be broken into four general components.

The first step will be to assess the water supply and demand within the Hood River Basin in order to determine the quantity and timing of the current and future water deficit. This will be accomplished using historical in-stream flow data in the Hood River Basin and past and current demand with respect to irrigation, hydropower, municipal, and ecological processes.

This would include analysis of by-pass, optimum peak, flushing and other ecological flows. This first step is necessary to provide the baseline information which will be used to develop the next three components.

The second step will be to assess the physical feasibility of surface storage and potential conservation and efficiency alternatives. The data generated in step one will provide the quantified statement of need and will also provide data related to water availability and timing. This information will be used to hone in on potential water sources and the timing and duration of flows available for potential storage.

Included in this step will be analysis of existing infrastructure for suitability for a surface storage facility, potential optimum off-channel surface reservoir sites, as well as necessary new infrastructure. Assessment of optimum off-channel surface reservoir sites will be based upon criteria such as: distance from point of diversion, distance to distribution system, environmental impacts, basic geotechnical analysis, land ownership, site access, and potential impact on the community. An alternatives analysis will be performed in this step to provide assessment of conservation and efficiency opportunities. Assessment of conservation and efficiency potential will be performed based on actions such as piping canals, improving sediment management, improving on-farm efficiencies, and improving on farm-delivery systems and the extent to which long-term water supply needs may be met using these methods.

The third step will be to assess the regulatory and ecological feasibility of surface storage and conservation and efficiency alternatives. This step will utilize the information generated in the previous two steps to analyze the impact on the Basin, from an ecological perspective, of surface storage, identified surface storage sites, and the identified conservation and efficiency alternatives. This step will include the analysis of the impact of the potential storage project(s) on by-pass, optimum peak, flushing and other ecological flows as well as any environmental harm or impacts. Also included will be the evaluation of the feasibility of using stored water to augment in-stream flows to conserve, maintain and enhance aquatic life, fish life and other ecological values. Permitting and water rights issues pertaining to both surface water diversion and surface storage will also be analyzed in this third step.

The fourth step of the feasibility study will be comprised of an assessment of the economic feasibility of surface storage and the identified alternatives. This will include a cost-benefit analysis of a surface storage project and the identified alternatives including conservation and efficiency alternatives. Costs to be considered will be items such as infrastructure improvements, land acquisition/leases, permitting, environmental compliance, design and construction, and operation and maintenance as well as environmental costs. Benefits to be considered will include stability of irrigation and domestic water supply, environmental benefits, and impact on ground water levels.

These four steps in the feasibility study will allow for an informed stakeholder decision making process to determine the appropriate next steps to achieving long-term sustainable water management in the Hood River Basin.

7. Describe the level of involvement; interest and/or commitment of different entities associated with the planning study (attach letters of support). Describe how these entities will benefit or be impacted by the planning study.

Since 1993, Hood River County has actively worked with the Hood River Watershed Group (HRWG) to implement cooperative solutions to known water quantity, water quality, fish passage and fish habitat problems in the basin. The HRWG is one of many established watershed councils in Oregon, whose active membership and supporters include Hood River

County, irrigation districts, water districts, orchardists, OWRD, ODFW, ODEQ, recreationists, environmental groups, citizens, USFS, Hood River SWCD and many others.

In November 2008, Hood River County and the watershed group organized a county-led water resources planning committee, now called the Hood River Water Resources Planning Group (HRWPG). The mission of this group is to inventory surface and ground water resources, evaluate current and future out-of-stream and in-stream water supply requirements, and formulate plans for managing water resources at the basin level. The broad composition of this group includes the county, watershed group, OWRD, major irrigation and water districts, the soil and water conservation district, environmental groups and local resource specialists.

The notable support that water resources planning has received from the broad-based HRWG and HRWPG members is attributable to the community's recognition of the high value of the county's water resources. The basin is highly dependent on abundant and clean water for driving the valley's agriculture and tourism economy. The community also recognizes that water resources are extremely limited, and that in-stream flows in certain tributaries are now reduced by over 75% due to water diversion in late summer and fall. There is consequent concern about future water shortages that could impact both in-stream and out-of-stream uses, and the threat of future water conflicts.

The following entities have provided letters in support of this application:

- Hood River County Board of Commissioners
- East Fork Irrigation District
- Middle Fork Irrigation District
- Farmers Irrigation District
- Hood River Watershed Group
- US Forest Service, Mt. Hood National Forest
- Oregon Senator Chuck Thomsen
- Oregon Representative Mark Johnson

Section B. Unique Criteria

Instructions: Answer the set of questions below that applies to the type of planning study that this grant will fund. NA

Water Conservation or **Reuse**

1. Water Conservation or Reuse projects that may result from this planning study are requested to be included in the Water Resources Department's "Inventory of Potential Conservation Opportunities". Though you may have already submitted this information earlier in the year through a separate survey, we ask that all applicants complete the information on the form provided at the end of this application.
 I have filled out the application or I have not filled out the application.
2. Describe the water supply need(s) that the project associated with the planning study is intended to meet. Applicant should reference supporting documentation that would be available upon request.
3. Explain how the associated project will mitigate the need to develop new water supplies and/or 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.
4. Explain how the project associated with the planning study 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% of your need will be met).
5. Provide data and information on the associated project and the project's sources of water supply:
 - a. The location of the associated project. (Include the basin, county, township, range and section.)
 - b. The name(s) and river mile(s) of the source water and what they are tributary to, if applicable.
[REDACTED]
 - c. Environmental flow needs and water quality requirements of supply source water bodies and water bodies downstream of associated and/or affected return flows.
[REDACTED]
 - d. Reliance on return flows by downstream water right holders.
[REDACTED]
6. Provide a review of the local, state, and/or federal permitting requirements and issues posed by the implementation of the project associated with the planning study.

X Above-Ground Storage

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

- Will the project divert greater 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 one of these questions, by signature on this application, you are committing to include the following required elements in your planning study.

Describe how you intend to address the required elements in your planning 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.**

Analysis of by-pass, optimum peak, flushing and other ecological flows of the affected stream and the impact of the storage project on those flows is included as a specific component of the feasibility analysis.

- 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.**

Comparative analysis 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 is included as a specific component of the feasibility analysis.

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

Analysis of environmental harm or impacts from the proposed storage project is included as a specific component of the feasibility analysis.

- d) 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.**

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 is included as a specific component of the feasibility analysis.

Is the proposed storage project for municipal use?

- Yes No

If you answered “Yes,” then describe how you intend to address the following required element in your planning 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.**

Not applicable.

Proceed in answering the following questions:

1. Describe when and to what extent the project associated with the planning study includes provisions for using stored water to augment instream flows to conserve, maintain and enhance aquatic life, fish life or other ecological values.

As detailed under Question 5 below (and documented by the 2004 Hood River Subbasin Plan and 1999 Hood River Watershed Assessment), aquatic habitat and water quality in the Hood River basin is highly impacted by decreased flows during the summer and fall irrigation season. In certain tributaries (e.g., East Fork Hood River) natural river flows are reduced more than 75% during late irrigation season. Artificially reduced flows are resulting in demonstrated declines in adult and juvenile fish production throughout the basin and elevated water temperatures.

Development of reservoir storage could potentially: a) allow capture of high winter flows for irrigation use, b) enable measured release of water during the irrigation season using efficient piped delivery systems, c) reduce the rate of diversion from tributaries in late summer and fall, and d) maintain river and tributary water in-stream during critical periods.

2. Describe the water supply need(s) that the project associated with the planning study is intended to meet. Applicant should reference supporting documentation that would be available upon request.
The planning study will analyze and quantify the water supply needs of the Hood River Basin.
3. Explain how the project associated with the planning study 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% of your need will be met).
The planning study is designed to analyze and quantify the water supply needs of the Hood River Basin. Since this is purely a feasibility analysis, it would be premature to state that the study would lead to a project.
4. Present convincing argument that there are no other reasonably achievable alternatives that would be able to meet the water supply need(s). Applicant may reference supporting documentation that would be available upon request.

Based upon past hydrogeological studies conducted in the Hood River and surrounding basins (e.g., Mosier Creek), the HRWPG believes that neither ground water or water conservation alone will be able to supply the very high irrigation water demands of the Hood basin, and meet in-stream flow requirements. The basin is chiefly underlain by Columbia River basalts that have experienced significant groundwater declines in The Dalles and Mosier areas due to the slow recharge of Columbia River basalt aquifers in combination with over appropriation and commingling of aquifers stemming from improperly sealed wells.

As stated below, the Hood basin has the distinction of having the highest number of ESA-listed fish species in the entire state of Oregon. Exacerbating this, critical tributaries like the East Fork Hood River display more than 75% artificial flow reductions during the critical late summer and fall irrigation season. These diminished flows are having demonstrated impacts on wild summer and winter steelhead (ODFW, 2011). Actual data show that production of adult and downstream migrant steelhead in the lower Hood would more than double if flows could be increased to 500 cfs.

The eventual combination of a) expansion and/or construction of new surface water reservoirs, b) diversion of water during non-critical periods or from non-critical sub-basins, and c)

optimizing both system and on-farm water use efficiency, could represent the best path forward for meeting both in-stream and out-of-stream water demands in the basin.

5. Provide data and information on the associated project and the project’s sources of water supply:
- The location of the associated project. (Include the basin, county, township, range and section.)

The project is located in the Hood River watershed, which lies entirely within Hood River County.

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

The table below shows current irrigation water sources in the Hood River basin:

<i>Irrigation District:</i>	<i>Source Water, and Location (River Mile (RM)):</i>	<i>Tributary To:</i>
<i>East Fork Irrigation District (including Mt. Hood Irrigation District)</i>	<i>-East Fork Hood River, RM 6.4</i>	<i>Hood River</i>
<i>Middle Fork Irrigation District</i>	<i>-Clear Branch, RM 0.7 -Rogers Creek, RM 0.5 -Coe Creek, RM 0.7 -Eliot Creek, RM 1.2</i>	<i>Middle Fork Hood River</i>
<i>“</i>	<i>-Evans, Trout, Wishart and Griswell creeks.</i>	<i>East Fork Hood River</i>
<i>Dee Irrigation District</i>	<i>-West Fork Hood River, RM 6.2</i>	<i>Hood River</i>
<i>“</i>	<i>-Camp, Alder, No name and Deer creeks</i>	<i>West Fork Hood River</i>
<i>Farmers Irrigation District</i>	<i>-Hood River, RM 11.4</i>	<i>Columbia River</i>
<i>“</i>	<i>-Green Point, Dead Point, North Green Point, Gate, Cabin, North Pine, South Pine and Ditch creeks.</i>	<i>West Fork Hood River</i>
<i>Aldridge Irrigation Company</i>	<i>-Tony Creek, RM 0.2</i>	<i>West Fork Hood River</i>

There are substantial reserved water rights (held in trust by OWRD) in the Hood River Basin for storage. The West Fork of the Hood River has 9,000 acre-feet with a priority date of November 6, 1992; the East Fork of the Hood River has 50,000 acre-feet with a priority date of November 6, 1992; and Neal Creek has 5,000 acre-feet with a priority date of November 6, 1992, available for storage of winter flows. These rights are available for “multiple use” storage, meaning that the

stored water must be used for more than one purpose such as irrigation, recreation, municipal water, and stream flow augmentation.

- c. Whether the project will be off-channel or on-channel.

The project will only examine off-channel storage opportunities.

- d. Water availability to meet project storage. (Typically, the Department evaluates new storage projects using a 50 percent water availability analysis.)

The actual amount of water available at the 50 percent level to meet prospective project storage amounts in the Hood River Basin is unknown at this time. This project would provide this information by first defining the amount of winter flow required for robust fish production, after which the Hood River Basin discharge exceedance curves would be analyzed to determine if surplus water might, in fact, be available for project storage. If surplus flow were identified, then the amount of water available for storage could be quantified, and the ability of this stored water to meet late-summer irrigation demand in lieu of active diversion from basin tributaries and rivers and the consequent benefit to fish production could be assessed.

- e. Proposed purposes and uses of stored water.

Development of one or more off-channel surface water storage reservoirs, coupled with complete piping of all main irrigation district canals, will enable optimized water diversion and use throughout the year. Consequently, more water will remain in-stream to protect and restore in-stream related values, including ESA-listed fish and water quality. Stored water will be used for agricultural irrigation on approximately 17,000 acres within the valley, and reservoir-based recreation.

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

The Hood River basin supports the highest number of ESA-listed fish runs in Oregon (Rod French, 12/5/11 personal communication). These species (listed by relative importance) include a) the only population of summer steelhead within the Lower Columbia ESA on the Oregon side that reside solely in the West Fork Hood River, b) last known sustaining population of bull trout in the Mt. Hood National Forest occupying the Middle Fork Hood River, c) depressed population of winter steelhead located in the East and Middle Fork Hood River, d) small population of fall Chinook salmon located in the lower basin, e) Coho salmon in the lower part of the basin, e) and an economically and culturally important population of spring Chinook, occurring primarily in the West Fork Hood River (2006 Hood River Basin Aquatic Habitat Restoration Strategy).

A basin-wide flow assessment and appraisal of the impacts from multiple water withdrawals and diversions has not been completed in the Hood basin. The 2006 Hood River Basin Aquatic Habitat Restoration Strategy, however, summarizes the amount of water being diverted during the late irrigation season. The highest rate of diversion (>75% of available flow) occurs along the East Fork Hood River below East Fork Irrigation District's (EFID) diversion at RM 6.4. In July of 2005, flow in the East Fork Hood River above the EFID Main Canal diversion was estimated at 128 cfs. If EFID had exercised its full legal water right during this period, the river would have been virtually

dewatered, and an ESA taking could have resulted. Equally high rates of diversion (>75%) impact the lower Hood River. Reaches that experience 50-75% declines in stream flow during irrigation season, include North Green Point Creek and lower Evans Creek. Diversion rates of 25-50% occur along the entire Middle Fork Hood River and the upper East Fork Hood River. Finally, the lower West Fork Hood River sustains diversion of up to 25% of its flow during the late irrigation season.

In summary, high rates of surface water diversion during irrigation season (April 15 – October 1) significantly impact fish species in the Hood River basin, as documented by the 2004 Hood River Subbasin Plan and other documents. Limiting factors resulting from diminished flows include a) blocked passage and limited access to upstream habitat, b) decreased quantity and quality of aquatic habitat, and c) increased water temperatures.

6. Provide a review of the local, state, and/or federal permitting requirements and issues posed by the implementation of the project associated with the planning study.

Upon completion of this planning study (and associated work involving the USDI Bureau of Reclamation, and perhaps other siting studies), the project partners hope to pursue design and construction of a reservoir(s) project. Via the final design process, the complete suite of required permits and regulatory requirements will be developed. In advance of that, however, the following represent a potential list of requirements for construction of a reservoir(s): a) OWRD water right(s) for diverting and storing water, b) US Army Corp of Engineers Section 404 permit, c) Oregon Department of State Lands removal and fill permit, d) Hood River County Planning Department land-use compatibility determination, e) biological assessments, f) cultural resources surveys, g) wetland determinations, h) OWRD dam safety permit, etc.

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

NA

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

Will the project divert greater 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 one of these questions, by signature on this application, you are committing to include the following required elements in your planning study.

Describe how you intend to address the required elements in your planning 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 in-stream 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 you answered “Yes,” then describe how you intend to address the following required element in your planning 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 answering the following questions:

1. Water Conservation or Reuse projects that may result from this planning study are requested to be included in the Water Resources Department’s “Inventory of Potential Conservation Opportunities”. Though you may have already submitted this information earlier in the year through a separate survey, we ask that all applicants complete the information on the form provided at the end of this application.
 I have filled out the application or I have not filled out the application.

2. Describe the water supply need(s) that the project associated with the planning study is intended to meet. Applicant should reference supporting documentation that would be available upon request.

3. Explain how the project associated with the planning study 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% of your need will be met).

[REDACTED]

4. Present convincing argument that there are no other reasonably achievable alternatives that would be able to meet the water supply need(s). Applicant may reference supporting documentation that would be available upon request.

[REDACTED]

5. Provide data and information on the associated project and the project's sources of water supply:

a. The location of the associated project. (Include the basin, county, township, range and section.)

[REDACTED]

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

[REDACTED]

c. Water availability to meet project storage. (Typically, the Department evaluates new storage projects using a 50 percent water availability analysis.)

[REDACTED]

d. Proposed purposes and uses of stored water.

[REDACTED]

e. Environmental flow needs and water quality requirements of source water.

[REDACTED]

f. Water quality, storage capacity, and geologic aspects of the associated aquifer(s) and/or recharge zones.

[REDACTED]

6. Provide a review of the local, state, and/or federal permitting requirements and issues posed by the implementation of the project associated with the planning study.

[REDACTED]

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 resources, b) previously expended resources, and/or c) pending resources. For secured funding, you must attach a letter of support from the match funding source that specially 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. For resources that have been previously expended, the expenditure must have occurred on or after July 1, 2011. Resources expended prior to July 1, 2011 are not eligible for match purposes.

The Type of matching funds may include:	The Status of matching funds may include:
<ul style="list-style-type: none"> The value of in-kind labor, equipment rental and materials essential to the planning study provided by the applicant or partner*. 	<ul style="list-style-type: none"> Secured funding commitments from other sources.
<ul style="list-style-type: none"> Cash is direct expenditures made in support of the planning study by the applicant. 	<ul style="list-style-type: none"> Associated and documented expenditures for the planning study from non-program sources incurred on or after July 1, 2011.
	<ul style="list-style-type: none"> 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 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>Bureau of Reclamation WaterSMART Basin Study Grant</i>	<input checked="" type="checkbox"/> cash <input type="checkbox"/> in kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending	\$200,000.00	February 2012
<i>HRWPG</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending	\$309,050.00	February 2012
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		

VI. Project Planning Study Schedule

Estimated Project Duration: July 2012 to June 2013

Place an “X” in the appropriate column to indicate when each element (key task) of the project will take place.

Project Planning Study Element (Key Tasks)	2012		2013			
	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
<i>PHASE 1</i>						
<i>Available information and Information Gap Analysis – Completed 2011</i>						
<i>PHASE 2</i>						
<i>Grant Management</i>	X	X	X	X	X	X
<i>Assess Potential Impact of Climate Change on the Basin</i>	X	X	X	X	X	X
<i>Assess Hydrology of the Hood River Basin</i>	X	X	X	X	X	X
<i>Analysis of Water Demands</i>	X	X	X			
<i>Assess Physical Feasibility of Surface Storage and Alternatives</i>		X	X	X		
<i>Assess Regulatory and Ecological Feasibility of Surface Storage and Alternatives</i>		X	X	X		
<i>Assess Economic Feasibility of Surface Storage and Alternatives</i>		X	X	X		
<i>Stakeholder/Public Outreach and Participation</i>	X	X	X	X	X	X
<i>BOR WaterSMART Basin Study Report</i>					X	X

APPLICATION CHECKLIST

Instructions: Use this form as an important cross-check 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 – Planning 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 planning study is Water Conservation, Reuse or Storage Other Than Above-Ground, a Request to be added to the Oregon Water Resources Department's Inventory of Potential Conservation Opportunities has been completed. (Form is located at the end of this document.)
- All applicable questions for the type of grant requested have been answered.

Section V – Match Funding Information

- Applicant has identified that at least 50% 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 – Project Planning Study Schedule

- Estimated project duration dates have been supplied.
- All elements (key tasks) of the project are listed.

Section VII – Project Planning Study Budget

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

Request to be added to the Oregon Water Resources Department's
Inventory of Potential Conservation Opportunities

The purpose of this inventory is to catalogue potential conservation projects that water users themselves have identified but not yet pursued because of financial, institutional, or other barriers. For the purpose of this application, water storage other than above-ground are included as conservation opportunities and are most likely capital conservation projects.

As a water provider or user, you know your water demands and water conservation opportunities better than anyone. We would appreciate your assistance with this important data collection effort by completing this survey. Your participation will help provide the building blocks we need to begin to identify and achieve potential future water supplies. Please answer the questions as completely as possible, to the best of your ability. We appreciate your help with this important effort.

This inventory of already-identified, potential conservation projects includes both capital and programmatic projects. Capital projects are defined as one-time, large investments resulting in water savings. Examples include reclaimed water plants, reservoir covering, transmission line upgrades reducing leaks, or industrial engineering modifications to re-use process water. Programmatic projects are defined as ongoing investments resulting in water savings. Examples include facilitating upgrades to more efficient water using devices (e.g., distributing free showerheads, toilet rebates) and distribution system leak detection programs. The conservation inventory is primarily intended to include “planned” projects rather than projects that are currently being implemented. However, currently active programmatic projects may be listed if they will continue or expand in future years. The inventory of projects submitted will be compiled by county or basin.

Examples are provided below.

	Example Capital Conservation Project	Example Programmatic Conservation Project
Project Description Provide brief sentence	Line 3 miles of unlined ditch.	Toilet rebate program for residential customers
Estimated Future Savings Provide brief sentence, including information regarding savings seasonality.	20 acre feet of water per year	If we spend our full budget each year, we estimate 50,000 gallons of water save per year
Seasonality Indicate what part of the year savings are generated (e.g. year-round; summer only; etc.).	Peak (irrigation) season savings.	Savings should occur throughout the year.
Estimated Future Costs Provide brief sentence.	\$500,000 total project costs.	\$40,000 a year.
Implementation Schedule Provide brief sentence.	Not set. Have conducted cost and savings estimate, but still seeking funding.	We started the program in 2005 and plan to implement until 2015.
Project Funded? Designate either “yes”, “no”, or provide brief sentence if necessary	No. Pursuing grant funding.	Yes. IN our CIP through the next 5 years.

To add a project to the inventory of potential conservation opportunities, please provide the following information for each conservation project.

This is a <input checked="" type="checkbox"/> Capital Conservation Project <input type="checkbox"/> Programmatic Conservation Project	
Project #/Name	Hood River Basin Surface Water Storage Design
Project Description	Engineering, design, and construction for an off-channel surface reservoir.
Estimated Future Savings	Uncertain at this point. Feasibility analysis will provide the answer.
Seasonality	Irrigation season savings.
Estimated Future Costs	Uncertain at this point. Feasibility analysis will provide an estimated cost.
Implementation Schedule	Not set. Feasibility analysis will provide a basis to develop a timeline.
What are the barriers to implementation, e.g. funding?	Lacking a feasibility analysis to provide accurate information for possible project development.
This is a <input checked="" type="checkbox"/> Capital Conservation Project <input type="checkbox"/> Programmatic Conservation Project	
Project #/Name	Farmers Canal Piping Project
Project Description	Pipe 3 miles of open irrigation canal.
Estimated Future Savings	2250 acre feet of water per year.
Seasonality	Irrigation season savings.
Estimated Future Costs	\$3,630,000.00
Implementation Schedule	Not set. Would like to construct in 2014 – 2015.
What are the barriers to implementation, e.g. funding?	Funding is the barrier. Currently seeking grant and loan funding.

- Include this form with your application -



East Fork Irrigation District
P.O. Box 162
Odell, OR 97044
541-354-1185

December 14, 2001

Les Perkins, Commissioner
Hood River County Board of County Commissioners
601 State Street
Hood River, OR 97031

Re: Support of Hood River Basin Water Storage Assessment Project

Dear Les,

East Fork Irrigation District is in strong support of Hood River County's efforts in their application for funding the Hood River Basin Water Storage Assessment Project.

The Hood River Basin has a strong record of collaboration with federal, state and local agencies in maintaining a workable understanding of water related issues. East Fork Irrigation District supports the efforts toward continuing to maintain the County's agricultural base and, also, improving the health of the watershed. The potential for a water storage reservoir in our district is extremely important.

East Fork Irrigation District believes that the proposed assessment is critical in meeting the basin wide water goals. We strongly encourage OWRD to fund this important project.

Sincerely,

A handwritten signature in cursive script that reads "John R. Buckley".

John R. Buckley
District Manager

and the potential for environmental harm from proposed storage facilities. At its conclusion, the study will identify the actual need, if any, for stored water in the Hood River Basin.