

**Hood River Watershed Group Expansion:  
Stakeholder Outreach and Water Conservation Strategy Development  
(Task B)**

Applicant

Hood River Soil and Water Conservation District  
Project Manager: Cindy Thieman  
3007 Experiment Station Road  
Hood River, OR 97031  
Phone: 541-386-6063  
Email: [cindy@hoodriverswcd.org](mailto:cindy@hoodriverswcd.org)

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## Executive Summary

**Date:** June 10, 2013  
**Applicant:** Hood River Soil and Water Conservation District  
Hood River, OR (Hood River County)

**Summary:**

The applicant is proposing to expand the existing Hood River Watershed Group through targeted outreach and information sharing. We will also conduct analyses (*e.g.*, IFIM modeling, cost-benefit analyses of project concepts, etc.) to identify and prioritize actions that Watershed Group partners can take to improve long-term reliability of water supply and restore/protect instream flows for threatened native fish. As part of this, the Watershed Group will continue to work with Reclamation on a Water Resources Model that will result in long-term projected water supply and stream flows under different climate change scenarios. This project will culminate in the creation of a Water Conservation Strategy that identifies agreed-upon goals/targets for stream flows, water quality and habitat, as well as steps for implementing and funding projects to realize these goals. Reclamation funds will be used to hire a project engineer to develop and provide technical analysis of project concepts and support the prioritization of these concepts. This engineer will also be the primary point of contact for Reclamation staff who are completing the Water Resources Model. Funds will also be used to support Watershed Group staff to manage the project, implement focus group meetings, facilitate the identification, development and selection of project concepts to achieve water conservation objectives, and complete a final Water Conservation Strategy. Project implementation will be from January 1, 2014 through December 31, 2015.

## Background

### *Hood River Watershed*

The 339-square mile Hood River Basin originates on the eastern side of the Cascade Range in Oregon. Its creeks and rivers flow north from the 11,245 foot peak of Mt. Hood, to the Columbia River at an elevation of 74 feet. The dramatic change in elevation is reflected in steep gradient streams with coarse streambed material and glacial-silt laden water. Approximately 75% of the watershed is forestland; with two-thirds being U.S. Forest Service and the remaining third split between County and private timber land. Seven percent of the watershed is orchard land and the remaining 18% is a mixture of rural residential and urban land (Coccoli 1999). The Hood River basin includes the unincorporated communities of Parkdale, Mt. Hood, Odell, Dee, Pine Grove, and Oak Grove, as well as the City of Hood River. Maps of the basin are in **Figures 1 and 2**.



**Figure 1. Hood River Basin in relation to the State of Oregon.**

The economy of Hood River County, which shares the watershed's boundary, is primarily dependent upon irrigated agriculture. In 2010, raw agricultural commodity sales in Hood River County were \$87,598,000 (OSU Extension). About one-third of the U.S. winter pear crop is grown in the Hood River Valley. Recreation and tourism have expanded into the second biggest economy, as people are drawn to the abundant opportunities for windsurfing, boating, fishing, camping and hiking as well as orchard and vineyard touring (Coccoli 1999).

The Hood River Watershed is part of the ceded lands of the Confederated Tribes of the Warm Springs Reservation (CTWS). Ceremonial and subsistence fishing are a vital part of tribal culture and economy. However, fishing has become severely restricted for both tribal and non-tribal fishermen because of declining salmon runs (Coccoli 1999). Chinook, steelhead, and coho are all listed as Threatened under the Endangered Species Act (ESA). In response, CTWS built a hatchery on the Middle Fork Hood River and together with Oregon Department of Fish and Wildlife have initiated a program to restore spring Chinook and steelhead populations. Rainbow, cutthroat, and bull trout also reside in the Basin. Bull trout are ESA-listed threatened. Pacific lamprey began to recolonize the lower Hood River subsequent to the Powerdale dam removal in 2010.

The Hood River Basin relies heavily on surface water flows for irrigation, and groundwater for drinking water supplies. The primary source for surface water and spring-fed groundwater is snowmelt from the snowpack and glaciers on Mt. Hood. The Hood River Basin supplies irrigation water to approximately 24,500 acres in five major irrigation districts, and supplies drinking water to approximately 20,000 people. Groundwater wells are also utilized around the Hood River Basin for both irrigation and domestic/municipal use. In addition to human uses, multiple ESA-listed species and non-listed species rely on water in the basin for their continued existence.

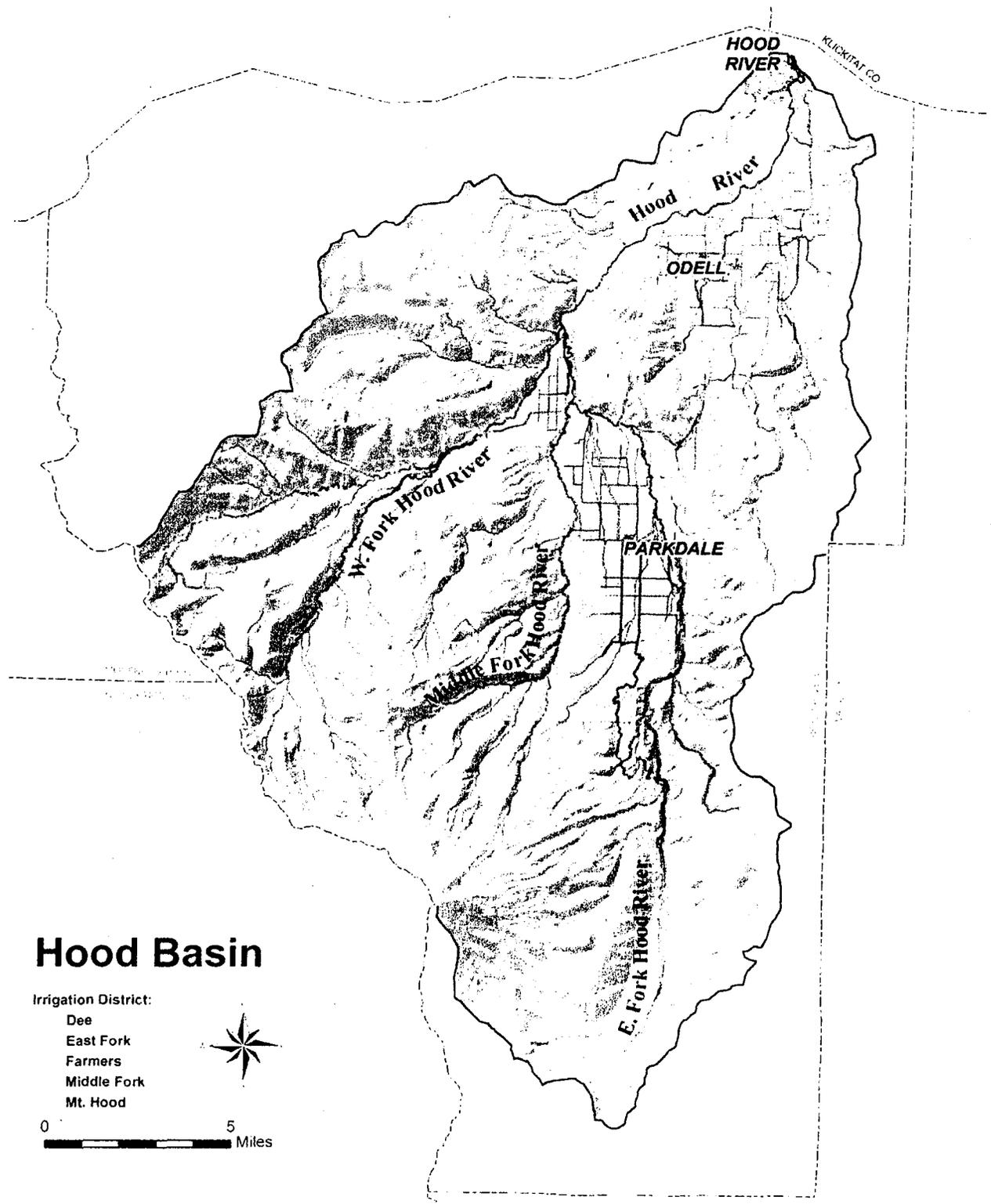
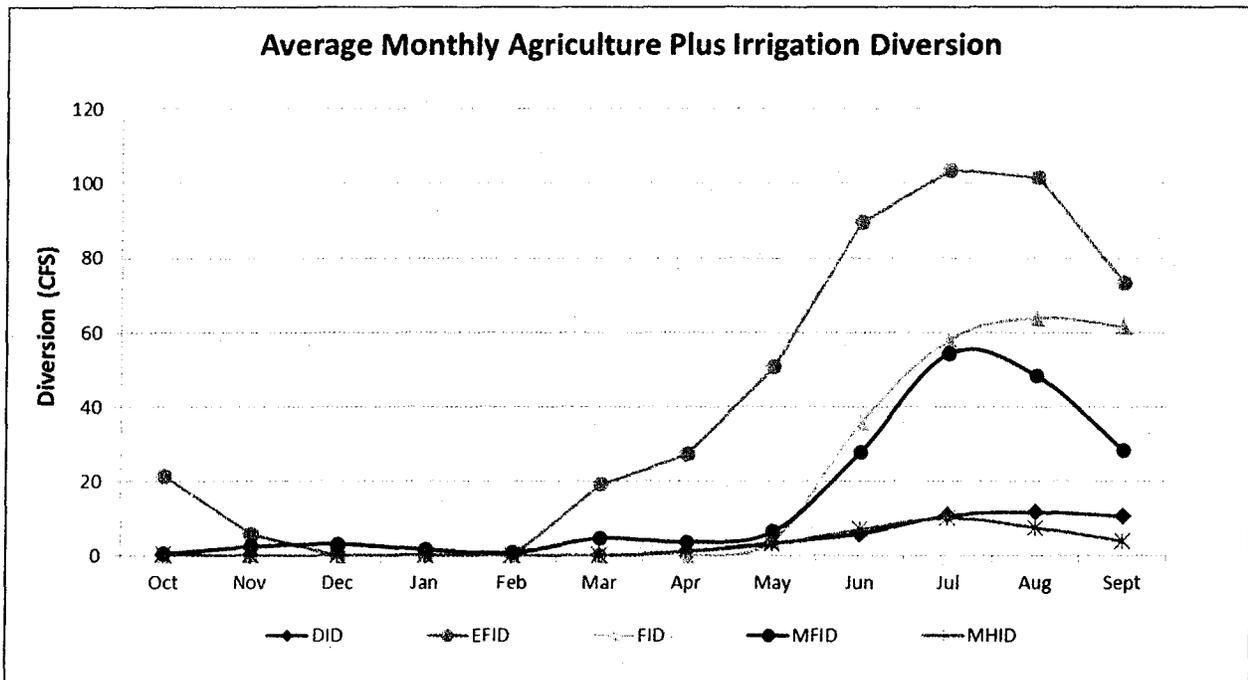


Figure 2: Hood River Basin with irrigation district boundaries.

### Water Supply & Demand

**Irrigation:** There are five major irrigation districts in the Basin (see **Figure 2**). Irrigation season is April 15 – September 30. East Fork Irrigation District (EFID) and Mt. Hood Irrigation District (MHID) serve 10,700 acres with one large diversion off the East Fork Hood River. Most of their certificates have a priority date of 1895. Middle Fork Irrigation District (MFID) irrigates approximately 6,385 acres from five tributaries to the Middle Fork and five tributaries to the East Fork of the Hood River. Most of their priority dates are from the 1960s. Farmers Irrigation District (FID) provides water to 5,888 acres of land. Roughly half is agricultural ground and the other half is rural residential, two golf courses, and a public school. FID diverts water from the mainstem Hood River and eight tributaries, with water right certificate priority dates from 1874 to 1989. Dee Irrigation District (DID) serves 870 acres and diverts water from the West Fork Hood River and two of its tributaries. Their water rights range in priority from 1909 to 1978. **Figure 3** shows average monthly use by each irrigation district for crop irrigation and other agricultural use.



**Figure 3.** Average monthly irrigation plus agricultural (i.e., spray and frost) diversion for irrigation districts in the Hood River Basin. (Graph courtesy of Niklas Christensen, Watershed Professionals Network, 2013)

Very little water storage is available in the Hood River Basin. FID has the ability to store 1,005 acre-feet in two small reservoirs and MFID has the ability to store 3,500 acre-feet in one reservoir. In the case of MFID, the ability to utilize this stored water is restricted due to water quality issues and protection of bull trout. There are substantial reserved water rights held in trust by Oregon Water Resources Department (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, hydropower production, municipal water, and streamflow augmentation. Realization of storage projects to utilize these rights would be complicated, expensive, and require buy-in from a wide range of

stakeholders. Preliminary results from Reclamation's *Surface Water Storage Assessment* suggest that there are no good locations for a storage facility in the East Fork Hood River sub-basin, due to high irrigation diversion rates, the need to store water off-channel, significant cost and operational risks. There may be opportunities in MFID and FID to increase the elevation of their existing spillways and therefore achieve additional storage volume at relatively low cost. This could be relatively straightforward in FID, but actions in MFID may be limited due to upstream fish habitat.

**Hydropower:** FID and MFID have hydropower facilities with a combined nameplate capacity of 8.6 Megawatts. These hydropower plants produce 25 percent of the power consumed in the Hood River Basin. During the summer, both districts' hydropower generation is reduced to meet irrigation demand. MFID is still able to run at full capacity at its upper plant; however, due to irrigation demand, flow through its lower plant is reduced by 80%. FID has a different plant layout, where its upper plant goes offline and its lower plant's flow is reduced by 60% in the summer to meet irrigation demand. During the non-irrigation season, FID diverts 55 to 100 cfs and MFID diverts 25-40 cfs for hydropower production.

**Domestic/Municipal:** The domestic/municipal water supply to the six water districts originates primarily from groundwater springs.

#### ***Bureau of Reclamation Investment in the Hood River Basin***

(Note: This information should be considered for Evaluation Criteria C2-Readiness to Proceed, in that it describes previous/current work that relates to implementing the proposed scope of work. Describing it here will help reviewers understand references under the Goals and Criteria A & B.)

The Hood River Basin is located within a "Substantial Potential Conflict Area" hotspot, as mapped in 2003 by Reclamation's "Potential Water Crises by 2025." This status was given to western U.S. basin regions where "existing supplies are not adequate to meet water demands for people, farms, and environment."

Over the last decade, the Bureau of Reclamation (Reclamation) has been active in the Basin on several fronts. Two local irrigation districts have been recipients of a Water 2025 Challenge Grant. In 2004, FID received an award for \$300,000 to convert 2.5 miles of open canals and ditches to a buried pipeline. This water conservation project provided an additional 1,500 to 3,500 acre-feet of water to remain in the Hood River during the summer low-flow period. In 2007, EFID also received \$300,000 to complete a \$4.3-million project to convert 1.7 miles of open ditches to buried pipe, resulting in a water savings of 1,745 acre-feet per year.

In 2011, Hood River County received a Reclamation Basin Study grant as well as a Water Conservation, Reuse and Storage grant from Oregon Water Resources Department (OWRD). These study grants are overseen by a committee called the Hood River Water Planning Group (WPG), of which the Hood River Watershed Group (HRWG) is a part. Although these are two separate grants, together they form the Hood River County Water Planning Study. The OWRD grant was used to hire consultants to inventory all water rights and water use in the Basin, assess Basin-wide water conservation potential, perform an Instream Flow Incremental Methodology (IFIM) study, and provide project management of the overall study. The Reclamation grant is being conducted through an in-kind contribution from Reclamation. Key tasks being performed by Reclamation include: hydrologic modeling of historical baseline flows and future climate change flow scenarios, groundwater modeling, reconnaissance level evaluation of potential new reservoir sites or improvements to others, and water resource modeling.

All data from the OWRD and Reclamation portions of the Water Planning Study will be combined into Reclamation's water resource model of the Basin. This model uses existing water demands, water demands due to population growth, projected reductions in water demands through various conservation measures, results from Reclamation's groundwater model, historical and future streamflow sequences, potential new reservoir sites (or augmentation of existing sites), and the relationships between streamflow and aquatic habitat to perform an analysis of existing and future water supply reliability and the impacts to instream flows. Once baseline impacts are assessed, the model will be used to evaluate the effectiveness of groundwater use, additional storage, water conservation, or operational changes to mitigate for shortfalls. The model will also be used to develop options to maintain adequate water supply and instream flows in the future.

The water resource modeling performed by Reclamation will begin in late 2013. At this point, it will be critical to engage local experts and stakeholders. All Reclamation staff working on the Water Planning Study are located outside of the Hood River Basin in either Washington, Idaho, or Colorado. A major key to project success up to this point has been the ability for Reclamation to use a single point of contact who serves as the project engineer to the WPG (*i.e.*, Niklas Christensen, PE, Watershed Professionals Network). This position has been supported by the OWRD grant; however those funds will be exhausted by September 2013. Reclamation has expressed a strong interest in continuing to have this local engineer interface with the WPG and give feedback to Reclamation (Toni Turner, pers comm). This will be particularly helpful as Reclamation is evaluating climate change impacts to the basin, water resource modeling scenarios, location and type of groundwater scenarios, viable water conservation alternatives, and additional surface water storage sites. The local project engineer will play a key role in communicating results and implications to the local community and helping to develop HRWG's resulting Conservation Strategy. Due to the sensitivity of the Basin's water supply to climate change (*e.g.*, snowmelt timing), the significant amount of irrigated acreage, and projected population growth, it is critical that results from the Water Planning Study are communicated effectively to all stakeholders so they can become the foundation of water planning in the County for decades to come.

The study has also identified a significant need for more groundwater data. Due to the interaction of surface and groundwater, more data are needed to understand the Basin's hydrology and available water resources. These data will allow the WPG and HRWG to plan for various scenarios involving increased demand for groundwater resources and potential impacts due to climate change.

## Project Description

### *Description of Existing Watershed Group-*

The Hood River Watershed Group formed in 1993. It is one of approximately 90 watershed councils in the State of Oregon. HRWG is a non-regulatory, grassroots organization made up of rural landowners, urban residents, growers, irrigation districts, the Soil and Water Conservation District, environmental organizations, businesses, government agencies and tribal representatives. The mission of the Group is “to sustain and improve the Hood River Watershed through education, cooperation, and stewardship.”

The HRWG meets on a monthly basis to hear presentations on a variety of watershed-related topics and receive updates from watershed group members/partners. HRWG has a mission statement and bylaws (**Bylaws available upon request**) and has conducted a number of watershed assessments and plans. HRWG also maintains a basin-wide Action Plan that identifies, prioritizes, and describes planned projects.

### *Applicant Eligibility*

The applicant for this proposal is the Hood River Soil & Water Conservation District (SWCD) located in Hood River, Oregon. The District is a key member-organization of the Hood River Watershed Group; it serves as HRWG’s fiscal agent and is the employer for HRWG staff. The HRWG and SWCD have a long and successful history in the basin and have implemented or facilitated numerous conservation projects throughout their history.

### *Goals & Objectives*

We are applying for funding to implement “Task B-Expansion of an Existing Watershed Group.” The Watershed Group has an existing mission statement, bylaws and coordinator. We are pursuing Task B funds to expand HRWG’s membership and influence and improve effectiveness in achieving long-term conservation goals. Our goals and objectives are listed below.

- **Goal 1: Expand membership of the Watershed Group through Stakeholder Outreach**
  - *Objective A:* Increase number of active participants in the HRWG
  - *Objective B:* Increase knowledge of current information on future water supply issues and conservation opportunities.
  - *Objective C:* Increase stewardship activities that conserve water and restore/enhance ecological resilience of the Watershed
- **Goal 2: Finalize Water Planning Study and Water Resource Model in order to integrate results into Water Conservation Strategy.**
  - *Objective A:* Ensure local knowledge, opportunities, and constraints have been fully incorporated into the Water Supply Study and Water Resources Model.
  - *Objective B:* Communicate results from Water Planning Study to local stakeholders and water managers.
  - *Objective C:* Collect additional groundwater data to support Water Resources Model.
- **Goal 3: Develop Water Conservation Strategy**
  - *Objective A:* Develop targets for optimum stream flow
  - *Objective B:* Review and integrate biological and water quality targets from existing plans
  - *Objective C:* Develop strategies and project concepts to achieve water conservation targets
  - *Objective D:* Develop monitoring strategy to evaluate success in reaching targets

## **Evaluation Criteria**

### **A1. Watershed Group Diversity**

The HRWG is comprised of rural landowners, urban residents, orchardists, irrigation districts, the Soil and Water Conservation District, environmental organizations, businesses, governments and tribal representatives. Membership is open to anyone who lives in or has an interest in the Hood River Watershed. The following organizations or individuals participate in the Executive Committee, Technical Advisory Committee, Operations Committee, and/or HRWG meetings and presentations:

- Hood River Soil & Water Conservation District
- Confederated Tribes of Warm Springs Indian Reservation
- Irrigation Districts: East Fork, Middle Fork, Farmers, Dee, Mt. Hood
- Water & Sewer Districts (Crystal Springs; Odell Wastewater Treatment Plant)
- Local Non-profits: Hood River Valley Residents Committee, Farmer's Conservation Alliance
- Columbia Land Trust
- Columbia Gorge Fruit Growers Association
- Timber Industry: Longview Timber Company, Mt. Hood Forest Products
- Mt. Hood Meadows Ski Resort
- Urban & rural residents (Indian Creek Stewards, others)
- Sport fishers
- Hood River County
- Oregon Watershed Enhancement Board
- Oregon Department of Environmental Quality
- Oregon Department of Fish & Wildlife
- Oregon Water Resources Department
- Oregon Department of Forestry
- Oregon State University Extension Service
- Natural Resource Conservation Service
- US Forest Service

Although the above list encompasses almost the full scope of stakeholders in the watershed, more active participation of some groups and individuals is needed. One primary group of interest is orchardists. Orchards occupy approximately seven percent of the watershed but consume the majority of water. They are also vital to the local economy. HRWG has connections with some orchardists as Board members, past or current project landowners, and/or meeting attendees, but they represent a small fraction of the ~300 orchardists in the Valley. Another primary group is rural and urban residents. Again, HRWG has connections with a small fraction of these residents, yet there are significant water conservation opportunities to be realized if more outreach and education were targeted towards them. On the following page, is a list of actions we are proposing to address these needs.

## **Goal 1: Expand membership of the Watershed Group through Stakeholder Outreach**

### **Goal 1 Actions:**

- 1) Host one community-wide presentation of Hood River County Water Planning Study and Water Resource Model results. This presentation would be advertised in Hood River County News, posted on the SWCD website, and other public media sites. We would send an announcement to the HRWG and SWCD list serves and to our partner organizations with listserves.
- 2) Host four to six focus group meetings for orchardists. Each meeting will have a landowner co-host who will personally invite neighbors and colleagues. At these meetings, we will present findings from the Study and Water Resource model, discuss the latest conservation technology available for irrigation, identify key challenges in implementation, and brainstorm solutions for overcoming challenges. One of these meetings could also be sponsored and hosted by the Columbia Gorge Fruit Growers Association. OSU Extension will participate in these meetings. Extension has worked closely with the orchardists in the valley for many decades and will be an invaluable resource for identifying operational strategies with a high likelihood of success.
- 3) Host one to two rural/urban residential focus group meetings. These meetings may be hosted by a home-owners association. These presentations would be advertised in Hood River County News, posted on the SWCD website, and other public media sites. We would send an announcement to the HRWG and SWCD list serves and to our partner organizations with listserves.
- 4) Establish connection with two golf courses. Invite owners and managers to community presentation and brainstorm opportunities for improving water conservation and adjacent habitat.

### **A2. Geographic Scope**

The HRWG already encompasses the full geographic scope of the Hood River Basin. US Forest Service, Longview Timber Company and Hood River County own and operate all the forestland in the watershed, which covers 75% of basin. Orchards and irrigated pastures cover approximately 8% of the basin. The remaining landscape is a mix of other farm types, rural and urban residences, and commercial/industrial properties.

### **B1. Critical Watershed Issues**

Since the mid-1960s, total annual water yield has trended downward (Newton 2011) and, over the past 20 years, the basin has experienced more extreme variations in quantity of snowpack and timing of snowmelt. This has been associated with an increase in the frequency of flood/debris flow events (McMahan 2010). When these flood/debris events occur, they have resulted in severe damage to infrastructure for all of the major irrigation districts. Irrigation users are especially dependent upon the availability of water late in the irrigation season when stream flows are at their lowest. Cycles of drought have caused water rotations among water users and, in severe drought years, have resulted in a complete lack of water for some water users for the latter part of the irrigation season (FID 2011). Expectations are that fluctuations in timing and quantity of precipitation in the Hood River Basin will continue to cause flooding/debris flow issues, and that fluctuation in snowpack on Mt. Hood will cause shortages of available water late in the irrigation season (Nolin *et al.* 2007). The potential lack of water late in the irrigation season, or the inability to effectively divert this water due to damage from debris flows or extreme silt loads, is of major concern to the irrigation community.

The Hood River basin is home to several ESA-listed fish runs. These species include 1) an important population of summer steelhead within the Lower Columbia, 2) last known sustaining population of bull trout in the Mt. Hood National Forest, 3) threatened population of winter steelhead located in the East

and Middle Fork Hood River, 4) threatened population of fall Chinook salmon located in the lower basin, 5) threatened population of coho salmon in the lower part of the basin, and 6) an economically and culturally important population of spring Chinook, occurring primarily in the West Fork Hood River (Shively 2006).

The highest rate of diversion (>75% of available flow) occurs along the East Fork Hood River below East Fork Irrigation District's 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. This could have resulted in fish kills, which would potentially constitute a taking under ESA. Equally high rates of diversion impact the lower mainstem 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, low stream flow caused by current rates of surface water diversion is the biggest limiting factor for salmon, trout and other aquatic species. Problems associated with 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.

Current domestic/municipal supply and demand from groundwater are in balance. However, there is concern whether or not future population growth in the basin can be met if aquifers are tapped by other water users if surface flows diminish. Little is known about the hydrogeology of the Hood River Valley which makes prediction of the impact of surface water flows on these domestic/municipal water sources difficult (Keller 2010). Of the six major domestic/municipal water supplies, only one has completed a detailed analysis of the zone of contribution for the source water (Yinger 2003). What is known is limited to the Sceva (1966) groundwater report and the USGS (Grady 1983) Water Resources Investigations Report.

In recent years, wells have been tapped for irrigation use late in the irrigation season. Water quantity and quality (*i.e.*, sediment) concerns could cause more irrigators to turn to groundwater in the future. Without a clear understanding of the connection between surface- and groundwater, and a lack of understanding of the potential impact of climate change on groundwater recharge, proper planning and regulation is not possible. Adjacent watersheds have seen significant groundwater declines due to over-appropriation and slow recharge of the Columbia River Basalt aquifers (Keller 2010). An increase in wells tapped for irrigation could conceivably impact existing domestic wells as well as surface water flows.

The Oregon Water Resources Department (OWRD) and Hood River County have recently started monitoring about 20 wells in an effort to understand the basin's groundwater resource. The partners need to increase the number of wells to 60 - 80 and conduct quarterly monitoring for at least 3-4 years to build a groundwater model that can more accurately predict future availability of this resource.

## **B2. Watershed Group Contributions that will Address Watershed Issues**

The Hood River Watershed Group has completed a number of assessments and plans over the past 15 years that have made important contributions to the understanding of watershed conditions in the basin. These include the *Hood River Watershed Assessment* (Coccoli 1999), which followed Oregon Watershed Enhancement Board (OWEB) protocols, and the *Hood River Subbasin Plan for Fish and Wildlife* (Coccoli 2004). The Subbasin Plan contains an evaluation of current (as of 2004) and historical biological

and physical conditions, an inventory of existing fish and wildlife programs and measures, and a management plan outlining measurable objectives and prioritized strategies to meet those objectives. HRWG also developed prioritized lists of restoration, monitoring, and education actions in their 2002 and 2008 Watershed Action Plans.

There have been dozens of restoration and enhancement projects constructed in the basin focused on improving habitat, fish passage, water quality, and water quantity. These have largely been implemented and/or funded by the Confederated Tribes of Warm Springs (CTWS), U.S. Forest Service, OWEB, and the irrigation districts, with HRWG staff writing grants to fund portions of these projects. Many of the largest projects in the basin have focused on conserving water through infrastructure upgrades as well as decreasing sedimentation through better management. All five of the irrigation providers have participated in projects aimed at improving stream flows and water quality. FID and MFID have utilized their hydropower income, loans, and grant funding from OWEB and Reclamation to improve operational efficiencies. Both districts have converted almost all their open canals to buried pipes, installed pressure reducing stations, invested in state of the art fish screens and diversion structures, and are continually working to remove sediment so that more efficient irrigation systems can be installed by their patrons. With assistance from CTWS and OWEB, DID has also converted their open canals to buried pipe and upgraded their diversions and screens. EFID has converted a 4.7-mile section of canal to buried pipe, but has a substantial amount of open canals remaining.

The next major tasks to improve management and conservation of the Hood River Watershed are to finalize the Hood River Water Planning Study and Water Resource Model and integrate results into a basin-wide Water Conservation Strategy. Below we describe the Goal 2 and 3 actions that will accomplish these tasks.

**Goal 2: Finalize Water Planning Study and Water Resource Model in order to integrate results into Water Conservation Strategy.**

**Goal 2 Actions:**

- 1) Targeted communications to individuals and organization affected by analysis (*e.g.*, Irrigation Districts comment on and approve 'irrigation conservation' measures prior to evaluation in Reclamation's water resource model).
  - Communicate these discussions with Reclamation staff to ensure correct construction of the water resource model.
  - Provide review and concurrence of the input of these data as well as check the reality of the modeling results when needed.
- 2) Send monthly Water Study status updates to HRWG and WPG documenting assumptions, analysis, next steps, and other information ensuring all stakeholders are aware of and have the opportunity to comment on and influence the Study.
  - Coordinate with Reclamation to include updates on their specific tasks and ensure efforts from all partners are within schedule and scope.
- 3) Facilitate monthly WPG meetings to discuss Water Planning Study progress, next steps, opportunities, and constraints.
- 4) Establish an additional 40 – 60 groundwater monitoring sites. Conduct quarterly groundwater monitoring at all sites (*i.e.*, 20 current sites + 40-60 additional) for two year period. Input groundwater data into Water Resources Model.
- 5) Provide local knowledge on stream reaches, and species and life stages of concern for instream flow study. Optimize interface between Reclamation's water resource modeling and ongoing instream flow study.

- Provide support and technical data necessary to ensure that flows are generated at the appropriate locations throughout the Basin for use in the IFIM study.
  - Ensure that results from the water resource modeling are provided to other partners in a format that is acceptable to them for use in their IFIM efforts.
- 6) Review model results including those from the groundwater, hydrologic, and water resources modeling efforts. Review technical reporting provided by Reclamation.
  - 7) Make professional recommendations and facilitate Basin specific decisions that will be incorporated into the Water Planning Study (e.g., document trade-offs associated with water resource modeling scenarios that can be analyzed by Reclamation, create decision matrix with recommendations to help inform WPG of alternatives that should be analyzed).

### **Goal 3: Develop Water Conservation Strategy**

#### **Goal 3 Actions:**

- 1) Review projected stream flows and aquatic habitat availability under different climate change scenarios generated by Reclamation's water resource model.
- 2) Identify optimum stream flows needed for each life history stage of the T&E listed salmonid species in the Hood River Basin to promote the recovery of these species. This step may require additional runs of the Instream Flow Incremental Methodology (IFIM) model.
- 3) Review potable, irrigation, industrial, and hydropower water conservation potential identified in the *Hood River Basin Water Conservation Assessment*. Determine which conservation measures are likely to be the most feasible and cost-effective at meeting Basin conservation goals.
- 4) Determine minimum irrigation needs if/when all practical conservation measures are implemented.
- 5) Propose and agree on targets for stream flow
- 6) Select and develop strategies/project concepts to meet stream flow, water quality, fish passage, and riparian/instream habitat quality targets. This could include:
  - Investigating logistics and economic feasibility of water-right leasing for instream use
  - Developing a drought response plan
  - Evaluating potential participation, cost, and effectiveness of district-wide soil moisture monitoring program
  - Meeting with potable water managers to determine the feasibility of adopting conservation strategies analyzed in the *Hood River Basin Water Conservation Assessment*, such as rebates for low-flow indoor fixtures, and rate structuring to encourage water conservation
  - Evaluating the effectiveness, cost, and potential incentives for basin-wide sprinkler conversion.
  - Evaluating potential reservoir locations and volumes
- 7) Review existing water quality data in basin and create GIS layer(s) showing known water quality conditions. (This may highlight gaps in water quality information and point to additional data collection needs.) Make these layers available on County website and provide links to data if possible.
- 8) Review existing goals and strategies described in Western Hood River Sub-basin Total Maximum Daily Load report (ODEQ 2001), Hood River Subbasin Plan for Fish and Wildlife (Coccoli 2004), Hood River Basin Aquatic Habitat Restoration Strategy (Shively 2006) and lower Columbia River Conservation & Recovery Plan for Oregon Populations of Salmon & Steelhead (Oregon Department of Fish & Wildlife 2010). Integrate these goals and strategies into the Water Conservation Strategy where applicable.
- 9) Develop long-term water conservation strategy to help mitigate for and adapt to climate change impacts.

### **C1. Watershed Group efforts related to Federal, State, or regional watershed plans.**

Several state and federal plans have been developed to address water quality and habitat needs for fish and wildlife. These include the Western Hood Subbasin Total Maximum Daily Load (TMDL) (Oregon Department of Environmental Quality 2001), Hood River Agricultural Water Quality Management Plan (WQMP) (Hood River Local Advisory Committee 2012), Mt. Hood National Forest's Hood River Basin Aquatic Habitat Restoration Strategy (Shively 2006), and the lower Columbia River Conservation & Recovery Plan for Oregon Populations of Salmon & Steelhead (Oregon Department of Fish & Wildlife 2010).

The TMDL assessed stream temperatures and physical parameters influencing temperature to determine total maximum daily loads for point and non-point sources of pollution. The TMDL also identified Designated Management Agencies (DMA) and identified responsibilities and management strategies for each DMA to implement. The Agricultural Water Quality Management Plan developed Best Management Practices to meet the requirements of Oregon Senate Bill 1010, which, among other things, prohibits any action that prevents riparian vegetation from growing and prohibits the introduction of pollutants (*e.g.*, fertilizers, manure) to streams and lakes.

The Aquatic Habitat Restoration Strategy identified limiting factors and priority actions to address aquatic habitat restoration needs for resident and anadromous fish species. It also prioritized the sixth field watersheds within the Hood River in order to allocate limited resources most effectively. Finally, it provided a rough estimate of the restoration needs and implementation costs by activity for each of the sixth field watersheds (Shively 2006).

The lower Columbia River Conservation & Recovery Plan for Oregon Populations of Salmon & Steelhead contains goals, identified threats, strategies and key actions to delist and achieve broad sense recovery for each species.

HRWG played an integral role in each of these planning and implementation efforts. Staff have collected continuous temperature data to support the evaluation of progress towards meeting TMDL objectives, and monitored the effectiveness of other water quality improvement projects. Staff have also served in an advisory role for development of the plans. In addition, each plan lead (*i.e.*, ODFW, DEQ, USFS) is an active partner of HRWG. The Watershed Group based its 2008 Watershed Action Plan (Stampfli 2008), in large part, on recommended strategies in the Aquatic Habitat Restoration Strategy, Agricultural WQMP, and TMDL. See [hoodriverswcd.org/cms/wp-content/uploads/2013/01/HRWG\\_HRWatershedActionPlan.pdf](http://hoodriverswcd.org/cms/wp-content/uploads/2013/01/HRWG_HRWatershedActionPlan.pdf) for this action plan. It documents all the projects completed by HRWG between 2002 and 2008 and lists projects slated for 2008-2013 implementation.

Over the past 15 years, HRWG has implemented numerous projects to address water quality, water quantity, fish passage, and habitat quality needs. HRWG staff often write grants to partially fund these efforts and the partner members implement the projects. These include riparian enhancement projects implemented by SWCD or CTWS that address issues and actions called out in the TMDL and Agricultural Water Quality Management Plan. The County, CTWS, and USFS have replaced numerous culverts to improve fish passage. CTWS and USFS have also installed hundreds of large wood structures. Finally, the irrigation districts have converted many open canals to buried pipes in order to conserve water and reduce withdrawals from the river.

As described under Goal 3 Actions, we will review recommendations and strategies from all of these plans and integrate these into the Water Conservation Strategy where applicable. Although, outside of the work this proposal is funding, HRWG will also be updating its Action Plan, which will be directly informed by all of these plans.

**C2. Readiness to Proceed/ Plan for Implementing Proposed Scope of Work**

The plan for implementing the proposed scope of work is detailed in Criteria A and B above. Also, please refer to budget and narrative for costs associated with each task. **Table 1** provides an overview of tasks, responsible party, deliverables, and timeline. Also, please see description of Bureau of Reclamation involvement in Basin on pages 7 and 8.

**Table 1. Overview of Responsible Party, Timeline, Tasks and Deliverables**

<b>Responsible Party:</b> Project Engineer
<b>Timeline:</b> January 2014 – June 2014
<b>Tasks:</b> see budget narrative
<b>Deliverables:</b> interim reports and status updates, presentations, meetings, phone calls, emails
<b>Responsible Party:</b> Groundwater Technician
<b>Timeline:</b> January 2014 – December 2015
<b>Tasks:</b> see budget narrative
<b>Deliverables:</b> groundwater monitoring data
<b>Responsible Party:</b> Watershed Group Coordinator & SWCD Technician with support from HRWG partners
<b>Timeline:</b> October 2014 and December 2015
<b>Tasks:</b> 1) Host one community-wide presentation of Hood River County Water Planning Study and Water Resource Model results. 2) Host four to six focus group meetings for orchardists. Each meeting will have a landowner co-host who will personally invite neighbors and colleagues. At these meetings, we will present findings from the Study and Water Resource model, discuss the latest conservation technology available for irrigation, identify key challenges in implementation, and brainstorm solutions for overcoming challenges. 3) Host one to two rural/urban residential focus group meetings. These meetings may be hosted by a homeowners association. 4) Establish connection with two golf courses. Invite owners and managers to community presentation and brainstorm opportunities for improving water conservation and adjacent habitat.
<b>Deliverables:</b> database contacts; meeting participation; presentations developed and given to community and selected water-use groups; summary of focus group meeting results to include number of participants and their general response to information presented.
<b>Responsible Party:</b> Water Planning Group Committee & Watershed Group Coordinator
<b>Timeline:</b> July 2014- December 2015
<b>Tasks:</b> 1) Review projected stream flows and aquatic habitat availability under different climate change scenarios generated by Reclamation’s water resource model. 2) Identify optimum stream flows needed for each life history stage of the T&E listed salmonid species in the Hood River Basin to promote the recovery of these species. 3) Review potable, irrigation, industrial, and hydropower water conservation potential identified in the <i>Hood River Basin Water Conservation Assessment</i> . 4) Determine minimum irrigation needs if/when all practical conservation measures are implemented. 5) Propose and agree on targets for stream flow 6) Select strategies/project concepts to meet stream flow, water quality, fish passage, and riparian/instream habitat quality targets. Develop a drought response plan. Investigate logistics and economic feasibility of water-right leasing for instream use. 7) Review existing water quality data in basin and create GIS layer(s) showing known water quality conditions.

(This may highlight gaps in water quality information and point to additional data collection needs.) Make these layers available on County website and provide links to data if possible.

- 8) Review existing goals and strategies described in Western Hood River Sub-basin Total Maximum Daily Load report (ODEQ 2001), Hood River Subbasin Plan for Fish and Wildlife (Coccoli 2004), Hood River Basin Aquatic Habitat Restoration Strategy (Shively 2006) and lower Columbia River Conservation & Recovery Plan for Oregon Populations of Salmon & Steelhead (Oregon Department of Fish & Wildlife 2010). Integrate these goals and strategies into the Water Conservation Strategy where applicable.
- 9) Develop long-term water conservation strategy to help mitigate for and adapt to climate change impacts.

**Deliverable:** Water Conservation Strategy

#### **D. Watershed Group/Landscape Conservation Cooperatives Nexus**

The Hood River Watershed is on the western edge of the Great Northern Landscape Conservation Cooperative. Although we are not currently, we would be interested in being involved in or helping form the Columbia Basin Partner Forum of the Great Northern LCC. This proposal aligns perfectly with the primary goal of the LCC (*i.e.*, Bring together science and resource management to inform adaptation strategies in the face of climate change.) The primary driver of the Water Resources Model being developed by Reclamation for the Hood River Watershed is climate change. The HRWG could share the results of this model, our planning and outreach process, and resulting Water Conservation Strategy with partners in the Columbia Basin.

#### **Attachments**

- Letters of support: Hood River County, Confederated Tribes of Warm Springs, East Fork Irrigation District, Oregon State University Extension
- Watershed Group Resolution

<b>Hood River Watershed Group Expansion: Project Budget</b>				
<b>Item Description</b>	<b>Quantity</b>	<b>Unit Type</b>	<b>Cost/Unit</b>	<b>Total Cost</b>
<b>Salaries and Wages</b>				
HRWG Coordinator	200	hours	\$23.70	\$4,740
HRWG Technician	60	hours	\$18.23	\$1,094
SWCD Technician	60	hours	\$17.35	\$1,041
<b>Fringe Benefits</b>				
HRWG Coordinator	200	hours	\$4.37	\$874
HRWG Technician	60	hours	\$3.66	\$220
SWCD Technician	60	hours	\$3.74	\$224
<b>Travel</b>				
HRWG Coordinator	220	miles	\$0.57	\$124
Groundwater Technician	560	miles	\$0.57	\$316
<b>Equipment</b>				
Coaxial Cable Water Level Meter	1	unit	\$1,062	\$1,062
<b>Supplies/Materials</b>				
Meeting refreshments	8	meetings	\$95	\$760
<b>Contracted Services</b>				
Hydrologic Engineer (Watershed Professionals Network)	715	hours	\$95	\$67,925
GIS mapping	60	hours	\$60	\$3,600
Groundwater Technician	660	hours	\$17.85	\$11,781
<b>Reporting</b>				
Quarterly Reporting	20	hours	\$28.07	\$561
Final report	20	hours	\$28.07	\$561
<b>Total Direct Costs</b>				<b>\$94,884</b>
Indirect Costs-5% of direct				\$4,744
<b>Total Project Costs</b>				<b>99,629</b>

**Budget Narrative**

Item	Total Costs /Description of Tasks
<b>Salaries,Wages &amp; Fringe Benef.</b>	
Project manager: Cindy Thieman, Watershed Group Coordinator 200 hours; Base rate= \$23.70/hr; Fringe rate= \$4.37/hr <u>Fringe includes medical reimbursement, SIMPLE IRA, Worker's comp premiums, Employer SUTA, Employer Medicare (1.45%), Employer FICA(6.2%)</u>	<b>Total Cost= \$4,740</b> Overall project management; Participation in all technical meetings; Set-up & execution of focus group meetings; Record new contacts/members; Coordinate & help write Water Conservation Strategy. The applicant expects that these tasks will exceed 200 hours. However, the HRWG has funding from Oregon Watershed Enhancement Board (state funding) that will cover these additional costs.
HRWG Technician: Megan Saunders, Watershed Technician 60 hours; Base rate=\$17.35/hr; Fringe rate=3.66/hr (See fringe description above)	<b>Total Cost= \$1,094</b> Gather monitoring data from partners; work with GIS contractor to map sites; Outreach to agricultural landowners ( <i>i.e.</i> , irrigation efficiency funding opportunities)
SWCD Technician: Kris Schaedel, Conservation Technician 60 hours; Base rate=\$18.23; Fringe rate= \$3.74 (See fringe description above)	<b>Total Cost=\$1,041</b> Assist with focus group meeting arrangements; Outreach to rural residential landowners ( <i>i.e.</i> , provide education on xeriscaping & irrigation efficiency methods)
<b>Travel</b>	
HRWG Coordinator: 220 miles at .57/mile (current State of Oregon rate)	<b>Total Cost= \$124</b> Travel to ~15 meetings. One – two people traveling. Additional miles incurred by HRWG staff will be covered by Oregon Watershed Board Enhancement funding.
Groundwater Technician: 560 miles at .57/mile	<b>Total Cost= \$316</b> Quarterly ground water monitoring for 2 years. One to two people traveling.
<b>Equipment</b>	
Coaxial Cable Water Level Meter	<b>Total Cost= \$1,062</b> Necessary for monitoring ground water levels in wells.
<b>Materials &amp; Supplies</b>	
Meeting refreshments	<b>Total Cost= \$760</b> Refreshments for 8 meetings averaging \$95/meeting. This estimate is based on past experience. We have found that providing food increases meeting attendance and helps foster conversation during breaks.

<b>Contracted Services</b>	
Groundwater technician 660 hours @ 17.85/hr	<b>Total cost= \$11,781</b> New well recruitment, quarterly groundwater monitoring for 2 years, groundwater data entry, correspondence and outreach w/ well owners
Project engineer: Niklas Christensen, PE 715 hours @ \$95/hr	<b>Total cost=\$67,925</b>
<p><b>150 hours:</b></p> <ul style="list-style-type: none"> <li>• Discuss analyses with Irrigation Districts and Fisheries managers prior to evaluation in Reclamation's water resource model.</li> <li>• Communicate these discussions with Reclamation staff to ensure correct construction of the water resource model.</li> <li>• Provide review and concurrence of the input of these data as well as check the reality of the modeling results when needed.</li> <li>• Send monthly Water Study status updates to HRWG and WPG documenting assumptions, analysis, next steps, and other information ensuring all stakeholders are aware of and have the opportunity to comment on and influence the Study.</li> <li>• Coordinate with Reclamation to include updates on their specific tasks and ensure efforts from all partners are within schedule and scope.</li> <li>• Facilitate monthly WPG meetings to discuss Water Planning Study progress, next steps, opportunities, and constraints.</li> <li>• Provide local knowledge on stream reaches, and species and life stages of concern for instream flow study. Optimize interface between Reclamation's water resource modeling and ongoing instream flow study.</li> <li>• Review model results including those from the groundwater, hydrologic, and water resources modeling efforts. Review technical reporting provided by Reclamation.</li> <li>• Make professional recommendations and facilitate Basin specific decisions that will be incorporated into the Water Planning Study (e.g., document trade-offs associated with water resource modeling scenarios that can be analyzed by Reclamation, create decision matrix with recommendations to help inform WPG of alternatives that should be analyzed).</li> </ul> <p><b>565 hours</b></p> <ul style="list-style-type: none"> <li>• Facilitate the identification of optimum stream flows needed for salmonid species; This step will likely require additional runs of the Instream Flow Incremental Methodology (IFIM) model.</li> <li>• Determine which conservation measures are likely to be the most feasible and cost-effective at meeting Basin conservation goals.</li> <li>• Determine minimum irrigation needs if/when all practical conservation measures are implemented.</li> <li>• Select and develop strategies/project concepts to meet stream flow, water quality, fish passage, and riparian/instream habitat quality targets, including 1) evaluating potential participation, cost, and effectiveness of district-wide soil moisture monitoring program, 2) determining feasibility of adopting conservation strategies analyzed in the <i>Hood River Basin Water Conservation Assessment</i>, such as rebates for low-flow indoor fixtures and rate structuring to encourage water conservation, 3) evaluating the effectiveness, cost, and potential incentives for basin-wide sprinkler conversion, &amp; 4) evaluating potential reservoir locations and volumes</li> </ul>	

GIS Mapping 60 hours @ \$60/hr	<b>Total cost= \$3600</b> Create GIS layer(s) showing known water quality conditions and previous restoration projects.
<b>Reporting</b>	
Quarterly & final reports 40 hours @ \$28.07	<b>Total cost= \$1,122</b> Per Reclamation grant requirements
<b>Indirect Costs</b>	
Fiscal administration: 5% of direct cost	<b>Total cost= \$4,744</b> Contracting, Payment processing, SAM, Audits, etc.; Actual cost of fiscal administration will probably be higher. SWCD will cover these additional costs using state funding sources

## REFERENCES

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- Keller J. 2010. Groundwater Hydrology of Hood River County. 4 pp.
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- Sceva J.E. 1966. A Reconnaissance of the Ground-Water Resources of the Hood River Valley and Cascade Locks Area, Hood River County, Oregon. State of Oregon Ground Water Report No. 10.
- Shively D. 2006. Hood River Basin Aquatic Habitat Restoration Strategy. Mt. Hood National Forest, Hood River Ranger District. 111pp.
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## Hood River Watershed Group

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*"To maintain & improve the Hood River  
Watershed  
through education, cooperation, &  
stewardship"*

*3007 Experiment Station Road  
Hood River, OR 97031  
541-386-6063*

Michelle Maher  
Bureau of Reclamation  
Financial Assistance Services  
P.O. Box 25007  
Denver, CO 80225

June 7, 2013

**Re: Watershed Group Resolution (Task B: Expansion of an Existing Watershed Group)**

Dear Ms. Maher,

The Hood River Soil and Water Conservation District (SWCD) is applying for Cooperative Watershed Management Program funding to expand an existing watershed group on behalf of the Hood River Watershed Group (HRWG). The proposal was reviewed by the HRWG at its May 28, 2013 meeting and the application was approved by consensus. The proposal was also reviewed and approved by the SWCD Board of Directors on June 6, 2013.

The Applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

Chuck Gehling  
Chair  
Hood River Watershed Group

Anne Saxby  
District Manager  
Hood River Soil & Water Conservation District



**EAST FORK IRRIGATION DISTRICT**

**P. O. Box 162  
3500 Graves Road  
Odell, Oregon 97044  
(541) 354-1185**

Michelle Maher  
Bureau of Reclamation  
Financial Assistance Services  
P.O. Box 25007  
Denver, CO 80225

June 7, 2013

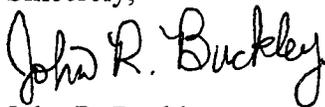
Re: Hood River Watershed Group Expansion: Outreach and Conservation Strategy Development

Dear Ms. Maher,

East Fork Irrigation District (EFID) strongly supports the Hood River Soil and Water Conservation District's application, on behalf of the Hood River Watershed Group, to seek funds for Watershed Group Expansion. We understand that these funds will be used to expand Watershed Group membership and involvement through targeted outreach and information sharing. This grant will also fund additional modeling and analysis to help identify steps that Watershed Group partners can take to improve long-term reliability of water supply. This project will culminate in the creation of a Conservation Strategy that identifies agreed-upon goals/targets for stream flows, water quality and habitat, as well as steps for implementing and funding projects to realize these goals. I am particularly pleased that the Conservation Strategy will also include a drought response process and plan.

In summary, EFID supports this collaborative, consensus driven, basin-wide approach for addressing future water supply goals. The Hood River Watershed Group partners have strong working relationships with federal, state, and local agencies to improve watershed conditions. We hope to continue this trend as we plan for future water supply and demands.

Sincerely,



John R. Buckley  
District Manager





**Mid-Columbia Agricultural Research and Extension Center**  
3005 Experiment Station Drive, Hood River, Oregon 97031  
T 541-386-2030 | F 541-386-1905 | <http://oregonstate.edu/dept/mcarec/>

June 10, 2013

Michelle Maher  
Bureau of Reclamation  
Financial Assistance Services  
P.O. Box 25007  
Denver, CO 80225

Dear Ms. Maher:

On behalf of Oregon State University, I would like to express my strong support for the Hood River Soil and Water Conservation/Hood River Watershed Group WaterSMART proposal seeking funds for Watershed Group Expansion.

Under the proposed project, Watershed Group membership will be expanded and stakeholder involvement will be increased through targeted outreach and information sharing. This project will also continue development and analysis of the basin water resource model initiated in the Hood River County Water Supply Study. Another key element of this project will be the creation of a Conservation Strategy identifying agreed-upon goals and targets for stream flows, water quality, and habitat, as well as steps for implementing and funding projects to realize these goals. The Conservation Strategy will also include a drought response process and plan. These are all critical steps towards improving long-term reliability of water supply including availability of irrigation water to agricultural users.

The Hood River Watershed Group partners have a strong record of improving watershed conditions through developing working relationships with federal, state, and local agencies. The proposed project will continue this trend as we plan for future water supply and demands.

Sincerely,

A handwritten signature in black ink that reads "Steve Castagnoli". The signature is written in a cursive style.

Steve Castagnoli  
Extension Horticulturist





## Hood River County Community Development

Planning, Building Codes, Veterans' Services, Economic Development and Information Systems  
601 State Street, Hood River OR 97031

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MICHAEL BENEDICT, DIRECTOR  
(541) 387-6840 • FAX (541) 387-6873

June 7, 2013

Michelle Maher  
Bureau of Reclamation  
Financial Assistance Services  
P.O. Box 25007  
Denver, CO 80225

Re: Hood River Watershed Group Expansion: Outreach and Conservation Strategy Development

Dear Ms. Maher,

I am writing in support of the Hood River Soil and Water Conservation District's application for funding to expand the Hood River Watershed Group. The expansion will allow much needed outreach and education to citizens of the County, especially in the area of water conservation. The additional in-stream, climate and water resource modeling, along with the expansion of our groundwater monitoring program, are natural extensions of the work currently funded by the Bureau under the current Water Smart Grant that Hood River County was awarded and are sorely needed to further understanding of our County water resources and needs.

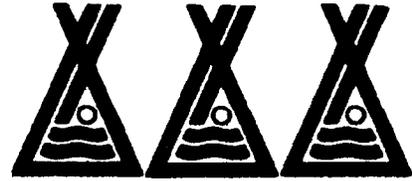
I also strongly support the development of a long range Conservation Strategy so that a cooperative agreement can be in place prior to an actual situation that would require it.

Sincerely,

M. Benedict

Cc: Chair, Hood River Water Planning Group





**THE CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON**

DEPARTMENT OF NATURAL RESOURCES  
Hood River Production Program  
6030 Dee Hwy. Parkdale, Oregon  
Phone (541) 352-3548  
Fax (541) 352-9365

June 10, 2013

Dear Bureau of Reclamation,

The Confederated Tribes of the Warm Springs Reservation supports the Hood River Watershed Group's efforts to obtain necessary funds to support completion of numerous studies initiated by the Hood River County Water Planning Group. The information obtained from these investigations will enable basin stakeholders to conduct strategic planning to address potential future water shortages. We hope the Bureau will give full consideration to the Hood River Basin Water Study application for funding under the WaterSMART program.

The Hood River watershed is within the Tribes ceded lands. Since time immemorial tribal members have fished, hunted and gathered within the basin. The Tribes recognize that receding glaciers and reduced snow pack threatened the summer water supplies that fish and wildlife depend upon. The Tribes have invested significant resources into flow restoration in the Hood River Basin. However, there is much that remains to be accomplished if needs of all water users are to be met during periods of increased water scarcity. We see successful implementation of this study as crucial to our restoration efforts.

The Tribes strongly support the collection of any data that can be used to guide future basin water management in such a way that allows collaborative efforts of all water stakeholders. Further we remain committed to assisting with implementing any recommendations that may arise from the proposed Hood River Basin Water Study that benefit long term instream flows.

Sincerely,

CHRIS BRUN  
Hood River Production Program Coordinator

