Oregon
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MEMORANDUM

TO: Water Resources Commission

FROM: Thomas M. Byler, Director

SUBJECT: Agenda Item I, June 16, 2022
Water Resources Commission Meeting

State Recognition of the Lower John Day Place-Based Partnership's Integrated Water Resources Plan

I. Introduction

The Lower John Day Place-Based Partnership (Partnership) is seeking state recognition of their integrated water resources plan. The Commission will be asked to recognize the Partnership's plan.

II. Background

Undertaking place-based integrated water resources planning (place-based planning) is recommended action 9A of Oregon's Integrated Water Resources Strategy (IWRS). This planning is a voluntary, locally initiated and led effort in which a balanced representation of water interests within a basin or watershed work collaboratively and in partnership with the state to complete a five-step planning process to: 1) Build a collaborative and integrated process; 2) Characterize water resources, water quality, and ecological issues; 3) Quantify existing and future needs; 4) Develop integrated solutions for meeting long-term water needs; and 5) Adopt and implement the plan.

In 2015, the Oregon Legislature provided authority through Senate Bill 266 for the state to support place-based planning. In 2016 the Department made grants to four planning groups, including the Partnership, to undertake place-based planning using the 2015 Draft Place-Based Planning Guidelines (Draft Guidelines - Attachment 1). The Partnership's planning effort is convened by Herb Winters, District Manager, Gilliam County Soil and Water Conservation District, and Debra Bunch, the Mid-John Day Water Council Coordinator. The grantee is the Gilliam Soil and Water Conservation District.

III. State Recognition Process

A planning group can choose to seek state recognition for their place-based integrated water resources plan. The Draft Guidelines call for state agencies review to the plan and make a recommendation to the Commission on whether to recognize a plan. The core IWRS agencies, and others as appropriate, review the plan to evaluate if it is consistent with the Draft Guidelines

and IWRS principles. The Department developed the 2019 Planning Step 5 DRAFT Guidance to aid the planning groups and state agencies through this evaluation process (Attachment 2). The planning group then presents their plan to the Commission with the accompanying state agency recommendation and asks the Commission to recognize the plan on behalf of the State of Oregon. The Commission previously discussed the value of a plan, the value of state recognition, and the process for state recognition in a number of Commission meetings. In March of 2022, the Commission formally recognized the Upper Grande Ronde River Watershed Partnership's Place-Based Integrated Water Resources Plan:

- May 2014, Item H - Place-Based Planning
- August 2014, Item L - Place Based Planning
- November 2014, Item C - Place Based Planning
- November 2019, Item L - Overview of the Process for State Recognition of Place-Based Integrated Water Resource Plans
- February 2021, Item D - Update on Place-Based Integrated Water Resource Planning
- June 2021, Item G - State Recognition of Place-Based Integrated Water Resources Plans
- August 2021, Item I - State Recognition of Place-Based Integrated Water Resources Plans
- March 2022, Item F - State Recognition of the Upper Grande Ronde Partnership's Place-Based Integrated Water Resources Plan

IV. State Agency Review and Recommendation for the Partnership Plan

From 2016 to 2022, the Partnership conducted place-based planning following the process outlined in the 2015 Draft Place-Based Planning Guidelines with financial and technical support from the state and other partners. On December 15, 2021, the Partnership submitted a Draft Plan for formal state agency review. A Plan Review Team consisting of representatives from the Department, Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, Oregon Department of Agriculture, and the Oregon Watershed Enhancement Board, determined by consensus that a number of improvements to the Draft Plan were required to receive an agency recommendation for state recognition.

The Partnership worked to address the required improvements, and on May 17, 2022, adopted its final Integrated Water Resources Plan by consensus as outlined in the Partnership's governance agreement (Attachment 3). The Plan Review Team verified the adopted Plan addressed the required improvements and is consistent with the Draft Guidelines and IWRS principles. Therefore, the state agencies recommend the Commission recognize the Plan. Attachment 4 includes draft resolution language for the Commission to consider as it makes its decision.

V. Summary

The Partnership developed a place-based integrated water resources plan in partnership with the state and adopted it by consensus. The Plan Review Team reviewed the Partnership's May 2022 Integrated Water Resources Plan and recommends the Commission award state recognition to the Partnership's Plan.

VI. Alternatives

1. Vote to formally recognize the Lower John Day Place-Based Partnership's Integrated Water Resources Plan included as Attachment 3 by resolution of the Commission (Attachment 4).
2. Vote not to recognize the Plan.
3. Direct the Department to work with the Lower John Day Place-Based Partnership to incorporate specific changes and return with an updated Integrated Water Resources Plan.

VII. Recommendation

The Director recommends Alternative 1, to vote to formally recognize the Lower John Day Place-Based Partnership's Integrated Water Resources Plan included as Attachment 3 by resolution of the Commission (Attachment 4).

Attachments:

1. 2015 Draft Place-Based Planning Guidelines
2. 2019 Planning Step 5 DRAFT Guidance
3. Lower John Day Place-Based Partnership May 2022 Final Plan
4. Draft Commission Resolution

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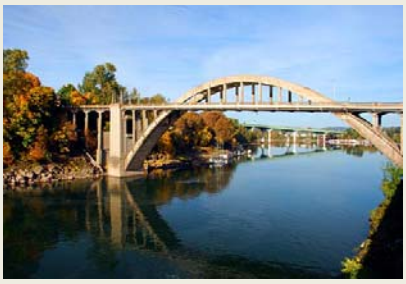
Attachment 1



Draft Guidelines

A Tool for Conducting Place-Based Integrated Water Resources Planning in Oregon

February 2015

About these Draft Guidelines

These guidelines were written to support implementation of Oregon's 2012 Integrated Water Resources Strategy, specifically Recommended Action 9A: "Undertake Place-Based Integrated Water Resources Planning." They were developed by the Oregon Water Resources Department through a series of stakeholder workshops, public input, and assistance from several natural resource agencies. These guidelines are a tool to support voluntary planning efforts aimed at meeting instream and out-of-stream needs, including water quantity, water quality, and ecosystem needs.

The state will provide technical assistance and seek funding to further place-based integrated water resources planning efforts across the state. The Governor's Budget, released in December 2014, proposes grant funds and two additional staff housed at the Water Resources Department.

These guidelines remain in draft form to allow for suggestions and adjustments that may be made during 2015. By releasing these guidelines now, our hope is that a given 'place' will have time to pilot test these guidelines and provide productive feedback.

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Why Take a Place-Based Approach to Integrated Water Resources Planning?

Introduction

Water is one of the world's most precious natural resources. With more than 100,000 miles of rivers and streams, 360 miles of coastline, and more than 1,400 named lakes, Oregon is renowned for its water. Our rivers, streams, lakes, wetlands, estuaries, springs, and aquifers provide a wide range of benefits to all Oregonians.

A clean and reliable source of water is essential for meeting our basic human needs, and for supporting Oregon's economy. Thousands of businesses and industries rely upon water in some form, to irrigate a crop, to manufacture a product, or to provide a service or experience.

Oregon's economy, in turn, is dependent upon a healthy environment where water resources play an essential part. Fish and wildlife need water of sufficient quantity and quality to live, reproduce, and thrive. Fully functioning ecosystems are necessary to support our commercial and recreational needs and a quality of life unique to Oregon and the Pacific Northwest.

In recognition of the importance of water to all Oregonians, and with leadership, support, and direction from the Oregon Legislature and the Water Resources Commission, the Oregon Water Resources Department led the development of the state's first Integrated Water Resources Strategy (IWRS). The Department worked closely with the Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, and the Oregon Department of Agriculture during its development.

Adopted in 2012, the IWRS serves as a blueprint for achieving the state's long-term goals of improving our understanding of the status of Oregon's water resources, including our instream and out-of-stream needs (water quantity, water quality, and ecosystem needs), and implementing recommended actions to meet those needs today and into the future. One action in the IWRS, Recommended Action 9A, calls for helping communities undertake a place-based approach to integrated water resources planning.

Place-Based Planning – A Key Step for Attaining a Community's Vision for the Future

Although Oregon is often thought of as a water-rich place, it is not without challenges. As described in the Integrated Water Resources Strategy, the state faces many water-related challenges. Organized in broad categories called "critical issues," these statewide challenges are summarized below.

- Limited water supplies and systems
- Gaps in data & information
- Understanding various institutions
- Understanding needs/demands
- Population growth
- Economic development
- Climate change
- Energy-water nexus
- Infrastructure challenges
- Changes in land-use
- Education and outreach
- Integrating various planning activities
- Maintaining and developing partnerships
- Water management/development (conservation, storage, reuse, etc.)
- Ecological health (natural storage, instream protections, invasive species, habitat)
- Public health (drinking water, toxics, pollutants, recreation)
- Funding

These issues affect most communities across the state. Water supply shortages for instream and out-of-stream uses already occur in many locations throughout the state, and will likely be intensified by a changing climate and increases in future demand. Similarly, while efforts have been successful in improving water quality, new pollutants are emerging, and about 22,000 stream miles and 30 lakes and reservoirs are water-quality impaired. Even with significant gains in restoring habitats and watersheds functions throughout Oregon, many species are still at a fraction of their historic levels, with several listed as threatened or endangered under the Federal Endangered Species Act.

Although every river basin in Oregon is unique in terms of widely varying ecological issues, community values, and economic dynamics, every community has its own water challenges that if left unaddressed, will likely increase in the future. Failing to address these challenges can impair the quality of life for Oregonians and hinder communities from reaching their economic, social, and environmental potential.

Water is essential for economic growth in both urban and rural areas across the state. In order for a community to achieve its economic and environmental goals for the future – for example, to provide jobs for its citizens and to ensure that a strong vibrant fishery and recreation opportunity exist – we must consider how instream and out-of-stream water quantity, water quality, and ecosystem needs will be met today and in the future.

Water crosses political boundaries and connects the landscape, and as such, water challenges cannot be adequately addressed using a piecemeal, uncoordinated approach. Solutions must be holistic and coordinated so that partners are not working at odds with one another.

Initiating a "place-based" integrated water resources planning approach is a tool for Oregon communities to achieve that level of coordination, by collaboratively developing a shared vision for the future, and anticipating and addressing specific water-related challenges. Such planning gives those who live, work, and play in a community and who care deeply about it a stronger voice in their water future, which in turn will provide a pathway for building the political and public support needed for water resources projects (instream and out-of-stream). This support will be particularly helpful in demonstrating that projects are well-vetted and supported at the local level, and therefore merit technical or financial assistance. Furthermore, communities that undertake a place-based approach can help inform statewide efforts, including providing data and input to future iterations of the IWRS. In essence, place-based integrated water resources planning will allow communities to identify their water resources needs and then partner with the state to develop solutions and a suite of projects that will help meet those needs now and into the future.

Purpose and Use of the Guidelines

These guidelines were written knowing that piloting integrated water resources planning at a watershed level will inform the long-term, place-based planning program in Oregon. During this pilot phase, the state can adjust or adapt the guidelines to provide greater clarity or direction as needed.

The IWRS Project Team welcomes input from local communities employing these guidelines. Send comments to: waterstrategy@wrd.state.or.us.

Five Steps of Place-Based Planning

A place-based plan should adhere to the following five steps:

1. Build a Collaborative & Integrated Process
   Create a structure and process that fosters collaboration, bringing together various sectors and interests to work toward the common purpose of maintaining healthy water resources to meet the needs of the community and the environment. Ensure a balanced representation of interests and a meaningful process for public involvement.

2. Characterize Water Resources, Water Quality, & Ecological Issues
   Describe and assess current water supplies, water quality, and the status of ecosystem health to determine any existing challenges and potential opportunities.

3. Quantify Existing and Future Needs/Demands
   Define how much water is needed to meet current and future water needs – instream and out-of-stream – water quantity, water quality, and ecosystem needs/demands. Plans should address how climate change, population growth, and land use affect water resources and the ability to meet these needs within the community. Meeting water needs should be considered within the context of specific watersheds, accounting for the hydrological, geological, biological, climatic, socio-economic, cultural, legal, and political conditions of a community.

4. Develop Integrated Solutions for Meeting Long-Term Water Needs
   Recommend a suite of actions to address the community's water-related challenges with the goal of meeting both instream and out-of-stream needs.

5. Adopt the Plan
   Planning groups should formally adopt the plan. Agencies will review the plan and the Water Resources Commission will have an opportunity to formally accept the plan, based upon whether it meets the goals and objectives of the statewide Integrated Water Resources Strategy.

To be considered a place-based plan that helps implement the statewide Integrated Water Resources Strategy, planning groups should adhere to these planning guidelines and the following fundamentals:

- Recognize the public interest in water, state authorities, and responsibilities.
- Comply with existing state laws and policies.
- Ensure balanced representation of all interests.
- Have a meaningful process for public involvement (e.g., advertise and hold public meetings).
- Adhere to the 2012 IWRS Guiding Principles. Refer to Appendix A.
- Remember that a place-based plan, on its own, cannot change existing laws or jeopardize existing water rights.

Within a basin or sub-basin, multiple plans governing the use and protection of water resources may already exist. Examples include water management and conservation plans (by a municipal water provider or irrigation district), fish conservation and recovery plans, Biological Opinion Implementation Plans, basin programs that govern future allocations, the laws administering the

Forest Practices Act, Total Maximum Daily Loads (TMDLs) for improving water quality, and many local implementation plans. There are also local land-use plans, watershed restoration action plans, and locally-developed agricultural water quality management plans. Taken together, these plans and their respective strategies engage many agencies and entities at every level.

In envisioning a place-based planning approach, these existing regulations, plans, and programs do not go away, but instead provide a baseline of information, history, and rules that should be considered, coordinated, and built upon. A voluntary integrated water resources plan can help bring together these plans and programs in a more strategic and effective way, providing greater opportunities for coordination and funding while making progress on multiple fronts.

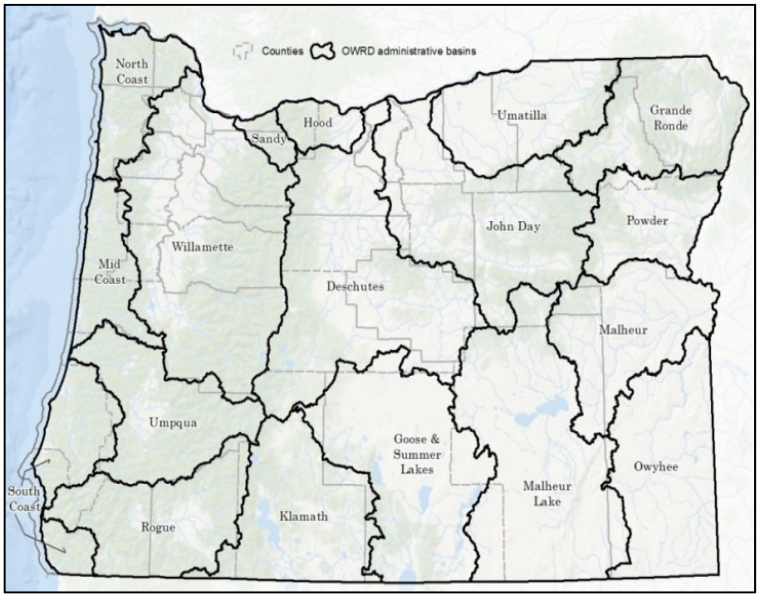
Planning Step 1: Build a Collaborative & Integrated Process

During this initial step, a representative(s) of the planning group should consult with the Water Resources Department for the purposes of: defining the planning scale, convening the process, involving state agencies as partners, inviting and involving diverse interests, and ensuring a public process with consensus decision-making.

Define the Planning Scale

Planning groups have the flexibility of establishing their own geographic planning scale, so long as it meets certain criteria. The Water Resources Department's existing administrative drainage basins are a good starting point for identifying the planning scale (see Figure 1). These administrative boundaries are further divided into smaller geographic areas within the Department's basin programs (refer to OAR Chapter 690, Divisions 500-520). Planning groups can chose to focus on smaller geographic areas, such as a sub-basin, or a group of sub-basins, within these boundaries. For example, planning groups could focus on the upper, middle, or lower section of a basin. To the extent possible, planning groups should utilize watershed-based boundaries, accounting for both groundwater and surface water, and situations where the source of water for certain uses (e.g., drinking water or irrigation) originates in an adjacent basin or sub-basin.

Figure 1: Administrative Basins in Oregon (OWRD)



Convene the Process

Since developing a place-based plan is completely voluntary, local partners will need to initiate the effort and convene the process. These guidelines do not suggest who the convener should be, but rather, describe the role and responsibilities of a convener(s). Oregon's Policy Consensus Initiative (PCI) provides resources to help facilitate collaborative planning and has developed basic principles

to help conveners understand their role in the planning process. Planning groups should refer to PCI's resources, particularly the "Role of a Convener," an excerpt of which is included as Appendix B. Conveners, and any sponsoring entities, should communicate to the Water Resources Department of their intentions to organize a planning group and to develop a place-based plan.

Involve Agencies as Partners

The role of state agencies in development of a place-based plan is to provide data and information, and generally, offer support, advice and direction throughout development of the plan. The Water Resources Department and its sister agencies can help planning groups incorporate the goals and objectives of the Integrated Water Resources Strategy at the local level, and understand the regulatory structures in place today.

If resources allow, the Water Resources Department could serve as a planning member or act as a liaison for other natural resources agencies not able to commit staff resources to participate in planning-related activities, such as face-to-face meetings. At a minimum, planning groups should consult with other agencies, such as the Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, and Oregon Department of Agriculture to determine agency participation. A state agency could serve as a facilitator or play a co-convening role, if requested by local communities and if resources allow.

If federal projects or land management programs exist within the planning area, groups should reach out to federal agencies to determine participation as well.

Invite & Involve Diverse Interests

The planning group will need to decide its own structure for involving diverse interests and should describe this approach within its plan. Most importantly, the structure needs to ensure that the planning body represents a balance of interests from different sectors. Diverse representation is a key tenet of integrated water resources management. Each basin will be unique in terms of the actual distribution of interests and stakeholders. Having diverse interests engaged and invested from the beginning will help ensure a process that meets both instream and out-of-stream water needs. Remember that these needs encompass water quantity, water quality, and ecosystem needs, considering both surface water and groundwater resources.

In determining the composition of a planning group, it is important to ensure that all persons potentially affected by a place-based plan have a voice in the decision-making process. This includes environmental justice communities, particularly members of minority or low-income communities, tribal communities, and those traditionally under-represented in public processes.

The place-based plan should describe how the planning members were determined, including a list of those that were invited to participate. Interest groups will need to decide for themselves what individual(s) best represents their interests for planning group participation. The plan should describe those responsible for its development and implementation. The description should contain enough detail to help stakeholders and the public understand how to communicate with the planning group and participate in plan development. Generally, interests in any given place will include:

- Local governments (cities and counties)
- Tribal governments
- Municipal water and wastewater utilities

- Major industries or employers
- Agriculture
- Forestry
- Self-supplied water users
- Conservation/environmental groups
- Power companies
- Small business
- Private landowners
- Special districts (e.g., irrigation, public utilities, flood control, parks/recreation, drainage, ports, etc.).
- State and federal agencies (natural resources, land management, business development)

Ensure a Public Process & Consensus Decision-Making

Reaching decisions within the planning group must be an inclusive and transparent process. Making decisions by consensus is an effective technique, meaning that one or two in the group may dissent, while the rest of the group supports the decision—or can "live with it." Getting to consensus provides a solid foundation upon which to build a plan and subsequent related actions, because it signals long-term support and commitment from a diverse set of stakeholders and partners.

Any place-based plan needs to employ a strong communication strategy, not only to ensure public participation in plan development, but to also engage the broader community on implementation of the plan. Publicize, in advance, meetings of the planning group, and accept public comment during every meeting.

Ensure a means of online communication as well, by setting up a website and posting materials regularly. Consider using a list-serve, and/or email account that can be used to quickly and widely disseminate information. Use these media, as well as print or other venues, to advertise upcoming meetings and public comment opportunities. Planning groups should comply with the state's Public Meetings Law. Refer to Appendix C for references, including a "quick guide" developed in 2010 for local and state officials, members of Oregon boards and commissions, citizens, and non-profit groups.

Planning Step 2: Characterize Water Resources, Water Quality, & Ecological Issues

The purpose of this step is to help the planning partners collectively identify challenges currently facing the community, and to start mapping potential solutions or opportunities to address any water quantity, water quality, or ecological issues. This planning step represents the data gathering and assessment phase. Oregon's 2012 Integrated Water Resources Strategy provides a statewide framework of critical issues that can be used for reference.

This step of the planning process is also an opportunity to tell the story of what makes the area unique, describing the economic, social, cultural, and landscape characteristics of the community. This includes the physical characteristics of water resources, such as major rivers, tributaries, aquifers, and other resources, noting whether they are rain, snow, or spring-fed systems.

Extensive planning efforts in the 1960s through the early 1990s examined water resources issues for most areas of the state and resulting basin programs describe how water can be allocated in the future. Planning groups should consider existing basin program policies, objectives, and

classifications (OAR Chapter 690, 500-520), and any other existing legal protections, when characterizing water resources issues.

In addition to surface water, describe the availability of groundwater resources to the extent known. Describe, if possible, where additional data is needed. Note any groundwater protected areas and the status of groundwater in these areas. Existing data or basin investigations are available from the Water Resources Department and the U.S. Geological Survey.

The place-based plan should describe water quality –both surface water and groundwater– in the planning area. Items to consider for water quality include: designated beneficial uses, impaired water bodies, groundwater management areas, total maximum daily loads, permitted discharges, non-point sources of pollution, and any monitoring or relevant publications that can be used to characterize surface water or groundwater quality conditions.

The plan should include a general description of the ecological health of the planning area. This section should include a description of key species and habitats. Describe the historical and current presence of aquatic species, including any migratory fish, listed species under the Endangered Species Act with their current status, and species on ODFW's State Sensitive List. Include a discussion of limiting factors that affect aquatic habitats in the watershed. As an example, the 2006 Oregon Conservation Strategy provides a list of limiting factors to consider: water quantity (low flows), water quality, invasive species, water temperature, sedimentation, passage barriers, degraded riparian condition, and loss of habitat complexity.

Refer to Appendix C for technical resources and publications to help complete Planning Step 2.

Planning Step 3: Quantify Existing and Future Needs/Demands

The purpose of Planning Step 3 is to identify how much water is needed to support current and future uses of water, to examine when and where supplies do not meet instream or out-of-stream needs / demands today, and to determine where existing supplies are likely to fall short in the future.

Planning groups should quantify existing and future instream and out-of-stream water needs in the watershed, using a 50-year planning horizon, and accounting for future pressures such as climate change, population growth, and changes to land-use. Keep in mind that such needs encompass water quantity, water quality, and ecosystem needs. Many of these needs may already be quantified in municipal or agricultural water management plans, TMDL plans, habitat restoration plans, forest management plans, or conservation and species recovery plans. Planning groups should identify where conflicts among uses are most likely to arise in the future. This is critical information that will shape how solutions are developed later in the planning process.

Out-of-Stream Needs/Demands

Describe existing water rights in the basin, generally. Are consumptive uses (e.g., municipal, agricultural, industrial, domestic, etc.) being met today? Are uses met by surface water, groundwater, stored water, or non-traditional sources of water, such as recycled water, treated effluent, rainwater catchment, or stormwater? Evaluate the reliability of existing infrastructure (diversion works, storage reservoirs, delivery systems, etc.). The local watermaster may have information regarding the history and frequency of water shortages during dry years in the area.

Oregon's Water Rights Information System and annual water use reports may also be useful for understanding existing water uses.

Instream Needs/Demands

Describe existing instream needs in the planning area to determine if such needs are currently being met. Consider existing protections (e.g., instream water rights, pending instream water right applications, scenic waterway flows, or flows specified in project operations) to support fish, wildlife, recreation, or pollution abatement. Also assess flow needs to support other uses, such as navigation or hydropower. Groundwater often contributes flow to surface water bodies and supports various ecological functions; therefore, groundwater should be considered for assessing instream needs. Determine how often instream flows are met in wet or dry years and the likelihood such flows will be met in the future. Refer to the Integrated Water Resources Strategy for more information on the suite of flows that are needed to support instream uses.

Climate Change & Natural Hazards

As planning groups are conducting assessments under Planning Element #2 (characterizing issues) and Planning Element #3 (defining needs/demands), groups will need to consider the risks posed by climate change. The analysis could identify vulnerabilities of (a) human systems, (b) natural systems, and (c) infrastructure and the built environment. Projected climate change impacts include a longer freeze-free season, increased water demand due to warmer summertime temperatures, and higher spring flows/lower summer flows in snowmelt-dominated basins.

Planning groups should assess whether natural and built systems are vulnerable to certain natural events, such as droughts, wildfires, floods, or possibly seismic events. The frequency, duration, intensity, and impacts of past events and potential future events should be considered. Planning groups may wish to consider developing a multi-year, worst-case planning scenario to aid in development of drought, flood, or other preparedness-type strategies.

Planning Step 4: Develop Integrated Solutions for Meeting Long-Term Water Needs

Developing the solutions toolbox is paramount for meeting instream and out-of-stream water needs in a given place, today and into the future. Considering the diversity of water challenges, planning groups will likely need to consider a suite of tools, examining various options for meeting unmet needs/ demands. This can include maintaining current practices, if they are sufficient to meet future needs / demands. Use of the following tools can help bridge any gaps identified. Note that the following solutions, listed in no particular order, is not all encompassing. Innovative approaches or solutions are strongly encouraged.

(a). Efficiency and Conservation Measures

Consider improving water-use efficiency and employing conservation practices as a means for meeting water needs. At the individual level, irrigators can reduce on-farm water use by implementing a number of new technologies and practices. Several irrigation districts throughout Oregon have made their delivery systems more efficient in recent years, finding ways to save water, reduce costs, and improve the reliability of deliveries to water users. The state's Allocation of Conserved Water program is a water right transfer tool that puts some water back instream while allowing some water to be applied to additional acreage.

Water conservation opportunities exist within municipal water systems as well. Delivery system upgrades and household-level programs that install low-flow toilets, faucet aerators, and high-efficiency shower heads can be effective tools for reducing water use and meeting additional demands. Rebate or outreach programs sponsored by municipal water providers have been effectively used in Oregon in the past and continue to be used to complement system upgrades.

Landscaping can account for a significant use of water; installing efficient irrigation systems or selecting plants that require less water can also be effective tools, along with other landscaping techniques. (Refer to IWRS Action 10A for more information).

(b). Built and Natural Storage

Storage as a water management tool includes natural storage, built storage (above-ground and below-ground), and operational changes to existing storage projects.

The state of Oregon has a policy described in OAR 690-410-0080 that gives high priority to storage that optimizes instream and out-of-stream public benefits and beneficial uses. Multi-purpose storage is preferred over single-purpose storage.

If planning groups are considering new storage as a potential water management tool, the following should be considered:

- Purpose (e.g., type, location and extent of use, benefits);
- Legal Requirements (e.g., state, federal, and local legal requirements);
- Social Considerations (e.g., recreational, public support, cultural, historic);
- Technical Constraints (e.g., siting issues, public safety and structural integrity);
- Financial Realities (e.g., project financing including site costs, cost sharing and repayment, and operating, maintenance and rehabilitation costs);
- Economic Analysis (e.g., project benefit/cost analysis);
- Land Use (e.g., ownership, comprehensive plans, coordination);
- Environmental Effects (e.g., impacts on streamflows, fisheries, wildlife, wetlands, habitat, biological diversity, water quality and opportunities for mitigation);
- Other (e.g., direct and indirect impacts).

For existing storage projects within the watershed, planning groups should evaluate current storage capacities, authorized purposes, and operational practices to determine if management or engineering adjustments could help meet any unmet needs/demands.

Planning groups should also consider the enhancement of watershed storage capacity through natural processes using non-structural means. These non-structural means include maintaining forested and riparian areas, protecting or restoring floodplain functions, preserving wetlands, and restoring upland meadows. (Refer to IWRS Actions 10B and 11A for more information).

(c). Water Right Transfers & Rotation Agreements

Water right transfers allow the water right holder to change the point of diversion, place of use, or type of use. The state provides options for permanent transfers, temporary transfers, and instream leases. Transfers can be used to move water to where it is needed, or to provide mitigation water for new consumptive uses of water. One of the basic tenets of a water right transfer is ensuring that

other instream or out-of-stream uses are not injured as a result of the changes to the use. Whether the change is a transfer or a lease, it will not be authorized if other instream or out-of-stream water right holders are injured as a result of the change.

In addition to transfers, there are a number of other innovative management methods that can provide some flexibility and alternatives. For example, water users with existing water rights can enter into private signed agreements to rotate water and make the most economical use of a limited supply. Other examples of permanent and temporary options include dry year options and forbearance agreements.

(d). Non-Traditional Water Supply Techniques

Planning groups should consider alternative or non-traditional supplies, such as the use of rainwater, stormwater, greywater, or desalinated water as a management strategy.

For example, some Oregon communities have installed purple pipe as a means to use reclaimed water for golf courses or other greenways. Such installations require a parallel system of infrastructure, alongside traditional wastewater and stormwater pipes. The ability to use reclaimed water for non-potable uses means that large amounts of water can by-pass the treatment facility process, usually reserved for potable water supplies. (Refer to IWRS Action 10C for more information).

Desalination is a technique that allows communities to address water scarcity by treating brackish groundwater or saltwater. Both inland and coastal communities may wish to undertake desalination projects to meet their water needs. Such projects would need to seek approval through existing regulatory pathways, and where appropriate, planning groups may need to identify policy gaps that create barriers to desalination projects. The identification of these barriers would allow the state to pursue policy changes, if needed, so that desalination can occur where appropriate, without jeopardizing existing water rights and identified beneficial uses.

(e). Infrastructure

Water infrastructure needs are many and growing. As water and wastewater systems age, maintenance becomes a greater challenge and cost. Many of the diversion, conveyance, storage, and other infrastructure in Oregon are more than 100 years old and in need of repair or replacement. As communities grow and technologies improve, the need for modern infrastructure continues to grow as well. Developing regional partnerships among water providers and wastewater utilities can be a key component to a successful infrastructure program.

Planning groups should consider taking stock of water-related infrastructure in the community to determine whether maintenance or upgrades are necessary and whether plans are in place to save for and invest in maintenance needs. A thorough structural review should be undertaken to assess the integrity of structures to withstand disturbances, such as earthquakes or large flood events. In addition, the planning group may want to evaluate whether reservoir storage capacity has been reduced, by sedimentation for example, or for public safety reasons. Doing so could help expand water supplies or provide greater system reliability during dry years. (Refer to IWRS Action 7A and 7B for more information).

(f). Watershed & Habitat Restoration

Planning groups will need to consider actions to improve and maintain the ecological health of the planning area. Watershed restoration efforts have been occurring throughout Oregon for many years, providing the habitat needed to support fish, wildlife, and a variety of ecosystem services, such as recycling nutrients back into the soil and therefore, improving water quality.

The Integrated Water Resources Strategy contains four recommended actions to improve or maintain the health of Oregon's ecosystems: improve watershed health, resiliency, and capacity for natural storage; develop additional instream protections; prevent and eradicate invasive species; and protect and restore instream habitat and access for fish and wildlife. In particular, removing fish passage barriers and screening diversions are key actions to consider. Planning groups can look to the IWRS for other tools to consider during plan development.

Oregon's network of watershed councils, soil and water conservation districts, and non-profit conservation organizations are at the forefront of on-the-ground restoration projects. Planning groups should consider building upon the expertise and strategic action plans of these local organizations.

(g). Instream Flow Protections

The protection and maintenance of instream flows are necessary to support ecosystem health. Oregon's instream flow policy in OAR 690-410-0030 recognizes that benefits are provided by water remaining where it naturally occurs.

Protecting streamflows that are needed to support public uses is a high priority for the state. The long-term goal of the state's policy is to establish an instream water right on every stream, river and lake that can provide significant public benefits. Where streamflows have been depleted to the point that public uses have been impaired, methods to restore the flows should be developed and implemented. These activities must be consistent with the preservation of existing rights, established duties of water, priority dates, and with the principle that all of the waters within the state belong to the public to be used beneficially without waste.

Many watersheds throughout the state contain protections for instream flows through instream water rights, permit conditions, by-pass conditions, scenic waterway designations, and biological opinions. There are a number of tools available to meet instream flows needs, including streamflow measurement and management, transferring senior water rights instream, leasing water temporary instream, and regulating in favor of senior instream water rights. Streamflow restoration projects should seek cooperation and coordination between instream water interests and out-of-stream water users. The Water Resources Department and the Department of Fish and Wildlife have jointly identified priority areas for streamflow restoration throughout the state.

A place-based plan should identify opportunities for meeting instream flow needs. If instream flow requirements do not exist for a particular stream, river, or lake within the planning area, or if conflicting federal or state targets exist, the planning group may want to consult and seek recommendations from the Oregon Department of Fish and Wildlife on how to proceed in determining the appropriate instream flow. (Refer to IWRS Action 11B for more information on instream protections).

(h). Water Quality Protections

The Integrated Water Resources Strategy contains recommended actions to improve and protect water quality for the benefit of many uses, such as drinking water, ecosystem health, aquatic life, agriculture, and industry.

Some of the state's water quality priorities are set forth in water quality management plans (e.g., Senate Bill 1010 plans, Forest Practices Act, TMDLs and associated implementation plans) and groundwater protection plans. Ultimately, a place-based plan should identify opportunities for protecting and improving water quality in the planning area. This could be through the implementation of existing plans, undertaking actions in basin assessments, or developing new tools and collaborative strategies among community partners. Planning groups should consider potential pollutant sources and their potential solutions, such as using low impact development to mitigate stormwater impacts, using community outreach and grants to fix leaky septic systems, and using take-back programs to avoid toxic and pharmaceutical contamination of water supplies. Below are two examples from the Integrated Water Resources Strategy that demonstrate how to protect and improve water quality and public health:

Drinking Water

Planning groups should identify actions to address drinking water quality needs by considering collaborative source water protection strategies and various treatment technologies. Drinking water protection should focus on both large municipal systems, as well as community or individual drinking water systems.

Toxics and Other Pollutants

The IWRS recommends a number of ways to reduce toxics and other pollutants. The Oregon Department of Environmental Quality and its partners are pursuing many of these recommendations, with implementation being carried out at the local or community level. Planning groups should evaluate what strategies are in place within their community, such as the promotion of pesticide collection events, pharmaceutical take-back programs, the use of integrated pest management techniques, reducing cyanotoxins in fresh and marine waters, or raising public awareness.

(i). Monitoring

Expanding monitoring efforts to better understand water quantity, water quality, ecological issues, and program effectiveness is a key recommendation of the 2012 IWRS. Planning groups may need to install measurement devices or include monitoring as part of plan development, or the group may recommend increasing monitoring efforts as a management tool. Place-based planning efforts could help identify additional data needs, which can include monitoring and evaluating: streamflow (e.g. adding real-time capabilities), groundwater levels, water use, water quality, habitat conditions, and watershed functions. Several types of monitoring needs are described in the 2012 IWRS.

Development of new data or monitoring tools should be compatible with and available to partners, including state agencies. Oregon DEQ has resources available for local entities that are monitoring water quality conditions within their watershed, including directions for quality assurance, sampling, and analysis. The place-based plan should include a description of any current or proposed monitoring activities occurring in the watershed. Refer to Appendix C for monitoring standards and other related resources.

Planning Step 5: Plan Adoption & Implementation

On occasion, the planning group may be asked to present or share information with the Oregon Water Resources Commission, primarily to provide feedback on the use of these guidelines and to give Commission members an opportunity to offer recommendations and general input.

A place-based plan should be completed within a reasonable time frame. For the purposes of piloting these guidelines, plans are expected to be completed within three years of initiating the planning process. The state recognizes, however, that communities are at different stages of planning; some communities have already initiated discussions, collected data, or conducted assessments, whereas others are in the very early stages of organizing themselves. For these reasons, it is important to work with state agencies throughout the planning process to adjust completion timeframes, if needed.

Planning group members should formally approve their plan. Individual planning members should seek an affirmative vote from their respective governing boards or commissions to confirm any funding or political commitments made by the planning group.

The Department, working closely with the IWRS Project Team Agencies—namely the Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, and the Oregon Department of Agriculture—will conduct an inter-agency review of each place-based plan during the final stages of plan development. The Water Resources Commission will ultimately make the final decision about whether to formally accept a place-based plan as a component of the Integrated Water Resources Strategy. More specifically, the Commission will decide whether the plan adheres to these guidelines and the statewide goals and objectives of meeting instream and out-of-stream water needs, including water quantity, water quality, and ecosystem needs.

Implementation of a place-based plan will likely involve various partners and result in a suite of projects and/or long-term programs. Some projects may need additional analyses (e.g., feasibility studies) that are beyond the scope of a place-based plan. It is very likely that permits or some type of state or federal approval will be needed for certain projects, as well as funding, likely from multiple sources. Planning groups may need to develop a more detailed implementation strategy, agreement, or workplan to ensure that all of the hard work of creating the integrated water resources plan is carried out by various public and private partners.

Appendix A: Guiding Principles from Oregon's Statewide Strategy

The fifty-year vision and guiding principles from the 2012 Integrated Water Resources Strategy are reproduced below as a reference for planning groups. The guiding principles were developed to help shape the development and implementation of the Strategy. These principles should serve as a constant reminder to recognize the public interest in water, to include a meaningful process for public involvement, and to maintain a balanced representation of all interests.

Accountable and Enforceable Actions

Ensure that actions comply with existing water laws and policies. Actions should include better measurement and enforcement tools to ensure desired results.

Balance

The [place-based] strategy must balance current and future instream and out-of-stream needs supplied by all water systems (above ground and below ground). Actions should consider and balance tradeoffs between ecosystem benefits and traditional management of water supplies.

Collaboration

Support formation of regional, coordinated, and collaborative partnerships that include representatives of all levels of government, private, and non-profit sectors, tribes, stakeholders, and the public. Collaborate in ways that help agencies cut across silos.

Conflict Resolution

Be cognizant of and work to address long-standing conflicts.

> Everywhere in our State, we see healthy waters, able to sustain a healthy economy, environment, and cultures & communities.
>
> Healthy waters…are abundant and clean. A healthy economy…is a diverse and balanced economy, nurturing and employing the state's natural resources and human capital to meet evolving local and global needs, including a desirable quality of life in urban and rural areas. A healthy environment…includes fully functioning ecosystems, including headwaters, river systems, wetlands, forests, floodplains, estuaries, and aquifers. Healthy cultures and communities…depend on adequate and reliable water supplies to sustain public health, safety, nourishment, recreation, sport, and other quality of life needs.
>
> A Fifty-Year Vision for Oregon's Water Future
> Policy Advisory Group
> 2012 Integrated Water Resources Strategy

Facilitation by the State

The State should provide direction and maintain authority for local planning and implementation. Where appropriate, the State sets the framework, provides tools, and defines the direction.

Incentives

Where appropriate, utilize incentive-based approaches. These could be funding, technical assistance, partnerships / shared resources, regulatory flexibility, or other incentives.

Implementation

Actions should empower Oregonians to implement local solutions; recognize regional differences, while supporting the statewide strategy and resources. Take into account the success of existing plans, tools, data, and programs; do not lose commonsense approach; develop actions that are measurable, attainable, and effective.

Interconnection/Integration

Recognize that many actions (e.g. land-use actions) in some way affect water resources (quality and/or quantity); recognize the relationship between water quantity and water quality; integrate participation of agencies and parties.

Public Process

Employ an open, transparent process that fosters public participation and supports social equity, fairness, and environmental justice. Advocate for all Oregonians.

Reasonable Cost

Weigh the cost of an approach with its benefits to determine whether one approach is better than another, or whether an approach is worth pursuing at all. Actions should focus on reducing the costs of delivering services to the state's residents, without neglecting social and environmental costs.

Science-Based, Flexible Approaches

Base decisions on best available science and local input. Employ an iterative process that includes "lessons learned" from the previous round. Establish a policy framework that is flexible. Build in mechanisms that allow for learning, adaptation, and innovative ideas or approaches.

Streamlining

Streamline processes without circumventing the law or cutting corners. Avoid recommendations that are overly complicated, legalistic, or administrative.

Sustainability

Ensure that actions sustain water resources by balancing the needs of Oregon's environment, economy, and communities.

Appendix B: The Convener's Role & Responsibilities

The following information contains excerpts from the Policy Consensus Initiative's document entitled, "The Role of a Convener." For the full version or to find more information or resources visit: http://www.policyconsensus.org/publicsolutions/ps_6.html.

The Convener

A convener is a person—typically a well-known public leader with credibility and stature—who brings a diverse group of people together to resolve a problem collaboratively. Experience over the past 25 years has demonstrated that conveners are often essential to achieving successful outcomes in collaborative processes, especially when the solutions reached require action by multiple sectors and levels of government.

Conveners get people involved in finding effective solutions together; they do not seek to impose their own solutions. Experience has shown that [public officials] and other respected civic leaders can be very effective as conveners or co-conveners of collaborative processes, so long as they act in impartial ways. By virtue of their office, elected leaders have the power to convene people from a variety of sectors to work on public problems. Other respected leaders, by virtue of the credibility and social capital they have built in their communities, regions, or states, also have the power to convene. When leaders serve as conveners or co-conveners of collaborative processes, the outcomes of these processes are more likely to receive support and to be formally adopted and implemented.

Selecting a Convener

The process for selecting a convener needs to be transparent, so that the parties and the public understand who made the selection. During the assessment, the parties should be asked who would make a good convener. The purpose of the question is not to have the parties choose the convener, but rather to understand their perceptions about the kind of person who is needed to gain the cooperation of all interests in working toward a solution.

The most important criteria for selecting a convener is that the person be highly respected and statesmanlike—someone with a reputation for serving the public interest, with no particular ax to grind or perspective to push on the issue at hand. Sometimes people will come to the table primarily because of the convener's status—because the stature of the convener makes them feel they are doing something important and worthwhile.

Best Practices for a Convener

To be effective, conveners should abide by the following key guidelines:

1. Be inclusive.

Conveners should be sure that a wide variety of people from different perspectives are involved. They should welcome participants from all interests—not just those with obvious interests, but also those with the economic, political, or technical resources that will help make for successful outcomes.

2. Establish a neutral meeting place.

When the issue is complex and divisive, the convener must establish an impartial process and a safe space for people to open up about their beliefs and opinions. It is often helpful to get assistance from an experienced facilitator to plan and conduct the process.

3. Be impartial to the solution.
Participants must believe that the convener is not predisposed to one side or another and is trying to find a solution that all sides can embrace. The convener may need to work in a bipartisan fashion with a co-convener from the other side of the aisle, to ensure the perception of impartiality.

4. Direct, rather than dominate, the discussions.
The convener must enable people to talk with each other, rather than talking only to the convener. It is often useful for someone else to facilitate the discussions so the convener can listen and ask questions. Besides, conveners will rarely have time to run all of the meetings.

5. Frame the meeting and the issue.
The convener must establish a purpose for each meeting and help to ensure that the issue is framed in a way that enables all people to work together productively. Defining and naming the issue jointly can ensure that everyone is willing to contribute to the solution.

6. Keep people moving and working together.
The convener should provide feedback to the group on their progress. Where institutional impediments or red tape crop up, the convener should consider using his or her own capabilities to overcome them.

7. Demonstrate ongoing visible commitment.
The convener can help keep participants at the table by demonstrating that they care about the progress the group is making. Even if the convener cannot be present at every meeting, he or she should send signals demonstrating on-going interest.

8. Make sure there is an outcome.
The convener can help a group get to closure by establishing timetables for the process and reminding people of those timetables. The best outcome involves written agreements that spell out an action and implementation plan, including specifying different people's responsibilities.

Appendix C: Technical Resources & Publications

This appendix is a starting point for planning groups looking for pertinent data and information, technical reports, statewide or regional plans and assessments, and agency contacts.

Public Process, Meetings

Oregon's Public Meeting Laws – Reference Guide (2010)
http://www.open-oregon.com/wp-content/uploads/2010/06/publicMEETINGSreader.pdf

Oregon Attorney General's Public Records and Meetings Manual (2011)
http://www.doj.state.or.us/pdf/public_records_and_meetings_manual.pdf

Policy Consensus Initiative's Resources for Leaders and Conveners
http://www.policyconsensus.org/publicsolutions/ps_6.html

Environmental Justice in Oregon, It's the Law (2008)
https://law.lclark.edu/live/files/17291-38-2collin

Water Quantity Data

Near Real-Time Streamflow Data
http://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/

Historical Streamflow and Lake Level Data
http://apps.wrd.state.or.us/apps/sw/hydro_report/

Monthly Water Use Data
http://www.oregon.gov/owrd/pages/wr/water_use_report.aspx

Groundwater Level Data
http://www.oregon.gov/owrd/pages/gw/well_data.aspx

Groundwater Studies and Publications
http://www.oregon.gov/owrd/pages/gw/gw_pubs.aspx

Critical Groundwater Areas (Map)
http://www.oregon.gov/owrd/pages/gw/gw_critical_allocations.aspx

Water Availability Database
OWRD's model for estimating water availability can provide useful information on whether any new water is available during different months of the year to support future uses.
http://apps.wrd.state.or.us/apps/wars/wars_display_wa_tables/MainMenu1.aspx

Water Rights Database
http://www.oregon.gov/owrd/pages/WR/wris.aspx

Water Rights Maps (GIS themes)
http://www.oregon.gov/owrd/Pages/maps/index.aspx

Water Quality Data

Wastewater Permits Database
http://www.deq.state.or.us/wq/sisdata/sisdata.asp

Water Quality Monitoring Data
http://deq12.deq.state.or.us/lasar2/

The Oregon Water Quality Index
http://www.deq.state.or.us/lab/wqm/wqimain.htm

Impaired Water Bodies
http://www.deq.state.or.us/wq/assessment/assessment.htm

Designated Beneficial Uses for Water Quality
http://www.deq.state.or.us/wq/standards/uses.htm

Groundwater Management Areas for Water Quality
http://www.deq.state.or.us/wq/groundwater/gwmas.htm

Ecological Data

Fish Distribution Data
https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=fishdistdata

State Species Sensitive List
http://www.dfw.state.or.us/wildlife/diversity/species/sensitive_species.asp

Streamflow Restoration Priority Areas (Maps)
https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=streamflowmaps

Salmon and Steelhead Recovery Tracker
http://www.odfwrecoverytracker.org/

Instream Water Rights in Oregon (Map)
http://filepickup.wrd.state.or.us/files/Publications/Place_Based_IWRS/ISWR_SWW_Map.JPG

ODFW's Compass Tool
Online mapping that displays passage barriers and status
https://nrimp.dfw.state.or.us/compass/

2013 Statewide Fish Passage Priority List
ODFW's statewide inventory of fish passage barriers, prioritized for enforcement, based on the needs of native migratory fish
http://www.dfw.state.or.us/fish/passage/

Fish Screening Information
http://www.dfw.state.or.us/fish/screening/index.asp

DSL's Technical Resources for Wetlands
http://www.oregon.gov/dsl/WETLAND/Pages/technical_resources.aspx

Watershed assessments funded by OWEB
http://www.oregon.gov/OWEB/MONITOR/pages/watershedassessments_linked.aspx

Monitoring-Related Resources (see also water quality / quantity sections, above)

Measurement and Computation of Streamflow, Volumes 1 & 2: USGS Water Supply Paper 2175
http://pubs.usgs.gov/wsp/wsp2175/

Stage Measurement at Gaging Stations (2010)
http://pubs.usgs.gov/tm/tm3-a7/

Discharge Measurements at Gaging Stations (2010)
http://pubs.usgs.gov/tm/tm3-a8/

DEQ's Volunteer Water Quality Monitoring Resources
http://www.deq.state.or.us/lab/wqm/volmonresources.htm

Climate Change Resources

IPCC Fifth Assessment Report (2013)
http://www.ipcc.ch/report/ar5/

Northwest Climate Assessment Report (2013)
http://occri.net/wp-content/uploads/2013/11/ClimateChangeInTheNorthwest.pdf

Oregon's Climate and Health Profile (2014)
https://public.health.oregon.gov/HealthyEnvironments/climatechange/Pages/Climate-and-Health-Profile.aspx

DLCD's Website: Planning for Climate Change
http://www.oregon.gov/LCD/CLIMATECHANGE/Pages/index.aspx

Natural Hazards: Drought, Floods, Earthquakes etc.

AWRA's Proactive Flood and Drought Management Applied Strategies (2013)
http://www.awra.org/news/AWRA_report_proactive_flood_drought_final.pdf

Oregon Resilience Plan (2013)
http://www.oregon.gov/OMD/OEM/osspac/docs/Oregon_Resilience_Plan_Final.pdf

Oregon's Natural Hazard Mitigation Plan (2015)
In addition to the statewide Natural Hazard Mitigation Plan, hazard plans developed by cities and counties may also be useful in understanding past hazard events in a community.
http://www.oregon.gov/LCD/HAZ/pages/NHMP.aspx

Oregon Hazards Explorer
http://oregonexplorer.info/hazards

Infrastructure

OWRD's Dam Inventory
http://apps.wrd.state.or.us/apps/misc/dam_inventory/default.aspx

Oregon Association of Clean Water Agencies
http://www.oracwa.org/c-energy.html

Pacific Northwest Seismic Network
http://pnsn.org/earthquakes/recent

U.S. Army Corps of Engineers National Inventory of Dams
http://geo.usace.army.mil/pgis/f?p=397:12

Statewide or Regional Plans & Assessments

Oregon's Integrated Water Resources Strategy
http://www.oregon.gov/OWRD/pages/law/integrated_water_supply_strategy.aspx

Oregon Conservation Strategy (ODFW)
http://www.dfw.state.or.us/conservationstrategy/read_the_strategy.asp

Oregon Plan for Salmon and Watersheds (OWEB)
http://www.oregon.gov/OPSW/pages/index.aspx

Conservation and Recovery Plans (ODFW)
http://www.dfw.state.or.us/fish/CRP/conservation_recovery_plans.asp

TMDLs in Oregon (DEQ)
This site contains links to Total Maximum Daily Load and Water Quality Management Plan documents prepared for water bodies in Oregon designated as water quality limited on the 303(d) list.
http://www.deq.state.or.us/wq/tmdls/tmdls.htm

Agricultural Water Quality Management Plans (SB 1010)
http://geo.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=e48e9d32e854458a8079b10852c3100b

DEQ Basin Assessments
Basin assessments have been completed for the North Coast, Deschutes, Rogue, and Powder River Basins.
http://www.deq.state.or.us/wq/watershed/watershed.htm

OWRD Basin Programs
Some stream systems are only classified for certain uses during certain times of the year. These classifications are used, in conjunction with other laws or rules, to determine whether the state can allow new uses of water. Basin programs exist for most of the state's major drainage basins, and are described in Oregon Administrative Rules Chapter 690, Division 500 – 520.

North Coast Basin Program	[Available here]
Willamette Basin Program	[Available here]
Sandy Basin Program	[Available here]
Hood Basin Program	[Available here]
Deschutes Basin Program	[Available here]
John Day Basin Program	[Available here]
Umatilla Basin Program	[Available here]
Grande Ronde Basin Program	[Available here]
Powder Basin Program	[Available here]
Malheur Lake Basin Program	[Available here]
Owyhee Basin Program	[Available here]
Malheur Lake Basin (Provision)	[Available here]
Goose & Summer Lakes Basin Program	[Available here]
Rogue Basin Program	[Available here]
Umpqua Basin Program	[Available here]
South Coast Basin Program	[Available here]
Mid-Coast Basin Program	[Available here]
Columbia River Basin Program	[Available here]
Middle Snake River Basin Program	[Available here]

Contacts

Integrated Water Resources State Agency Contacts:

OWRD: Alyssa Mucken, alyssa.m.mucken@state.or.us; 503-986-0911 (Salem)

ODEQ: Wade Peerman, wade.peerman@state.or.us; 503-229-5046 (Portland)
Heather Tugaw, heather.tugaw@state.or.us; 541-776-6091 (Medford)
Smita Mehta, smita.mehta@state.or.us; 541-278-4609 (Pendleton)

ODFW: Danette Faucera, danette.l.faucera@state.or.us; 503-947-6092 (Salem)

ODA: Margaret Matter, mmatter@oda.state.or.us; 503-986-4561 (Salem)

Watershed Councils
http://www.oregon.gov/OWEB/GRANTS/docs/councilcapacity/June_2014_Map_Watershed_Councils.pdf

Soil and Water Conservation Districts
http://geo.maps.arcgis.com/apps/Viewer/index.html?appid=9cee1a8b865140d5b71253975fb7fe6d

DEQ's Basin Coordinators
http://www.deq.state.or.us/wq/tmdls/docs/basincoordinators.pdf

OWRD's Watermasters in Oregon
http://www.oregon.gov/owrd/pages/offices.aspx#Region/Watermaster_Map

Appendix D: Quick Guide for Place-Based Planning

The appendix is a short list of the place-based planning elements. It provides the general topic areas and key points to consider while developing a place-based plan.

Planning Step 1: Building a Collaborative &Integrated Process

Place-Based Planning Under the IWRS
- Adhere to fundamentals
- Follow IWRS Guiding Principles

Define the Planning Scale
- Establish the geographic planning scale
- Correspond with existing basins
- Watershed-based

Convene the Process
- Public official or of similar stature
- Adhere to basic principles (See App. B)
- Notify OWRD of planning initiation

Involve Agency Partners
- Technical contacts
- Guidance; support
- Seek federal participation

Invite and Involve Diverse Interests
- A balance of interests from different sectors
- Define responsible parties
- Include all persons potentially affected

Employ a Public Process
- Must be an inclusive and transparent process
- Seek consensus
- Develop communication strategy/plan
- Follow Public Meetings law

Planning Step 2: Characterize Water Resources, Water Quality, & Ecological Issues

Describe the Place
- Economic, social, cultural characteristics
- Unique features or attributes
- Physical and landscape characteristics:
  - Major rivers & tributaries
  - Aquifer systems and springs
  - Estuaries and bays
  - Reservoirs and lakes
  - Conveyance systems
  - Hydrology (rain, snow or spring fed systems), etc.

Surface & Groundwater Quality/Quantity
- Availability
- Existing protections
- OWRD basin programs
- Beneficial uses (water quality)
- Impaired water bodies
- Groundwater management areas (water quality)
- Total maximum daily loads
- Permitted discharges

Ecological Health of the Watershed
- Key species & habitats
- Historical and current fish species
- ESA STE species; ODFW sensitive species
- Limiting factors

Planning Step 3: Quantify Existing & Future Needs/Demands

Existing and Future Needs/Demands
- Instream and out-of-stream
- Quantity, quality, & ecosystems
- Future pressures (e.g., population, land-use, etc.)

Out-of-Stream Needs
- Agricultural uses (irrigated and non-irrigated)
- Municipal uses
- Industrial uses
- Domestic uses

Instream Needs
- Meeting existing targets (water rights, scenic waterways flows, etc.)
- Fish and wildlife, water quality, recreation, etc.

Climate Change & Natural Hazards
- Human and natural risks
- Infrastructure and built environment risks
- Drought, floods, seismic, other natural hazards
- Multi-year, worst-case scenario

Planning Step 4: Develop Integrated Solutions for Meeting Long-Term Water Needs

Efficiency & Conservation Measures
- Allocation of Conserved Water; on-farm activities
- Infrastructure upgrades
- Household level conservation programs

Built & Natural Storage
- Capacity & operations
- Above & below
- Natural storage (forests, floodplains, wetlands, snowpack)

Transfers & Rotation Agreements
- Permanent transfers
- Temporary transfers
- Instream leases
- Rotation or forbearance agreements

Non-Traditional Techniques
- Recycled or reclaimed water projects
- Graywater, rainwater, stormwater
- Desalination

Infrastructure
- Aging water and wastewater systems
- Energy efficiencies
- Storage capacities
- Safety (e.g., seismic, flood risk)
- Regional partnerships
- Long-term maintenance strategies

Watershed & Habitat Restoration
- Improve/maintain ecological health
- Utilize existing plans/efforts (e.g. Oregon Plan)
- Fish passage barriers/screening

Instream Flow Protections
- New instream water rights
- Streamflow restoration priorities
- Improved measurement/monitoring
- Consult with ODFW

Water Quality Protections
- Pollution reduction strategies
- Nonpoint source projects
- Source water protection
- Toxics (e.g., nutrients reduction)
- Education and outreach

Monitoring
- Measurement (streamflows/water use)
- Program Effectiveness
- Quality assurance
- Shared information

Planning Step 5: Plan Adoption & Implementation

Review Process
- Three-year completion timeframe
- Seek input from WRC
- Inter-agency review

Adoption
- Planning members adopt
- Seek approval from boards/commissions
- Submit to WRC for acceptance process
- Develop workplan/implementation strategy

Attachment 2

Place-Based Integrated Water Resources Planning

DRAFT Guidance for Planning Step 5

Plan Adoption and Implementation

September 13, 2019

OREGON
WATER RESOURCES
DEPARTMENT

Water is a finite resource with growing demands; water scarcity is a reality in Oregon. Water-related decisions should rest on a thorough analysis of supply, the demand/need for water, the potential for increasing efficiencies and conservation, and alternative ways to meet these demands.

Oregon's Integrated Water Resources Strategy Policy Advisory Group (2016)

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Introduction

Planning Step 5, Plan Adoption and Implementation, is about bringing all the planning work accomplished during Planning Steps 1 through 4 together into a concise, *place-based integrated water resources plan* (the "Plan") that is locally-developed and adopted, state-recognized, and actionable. The Plan should tell a compelling story about the critical water issues in the planning area, the vision for the future, recommended actions, and a strategy for implementation.

This guidance is intended to assist in drafting the Plan and to explain the process for state agency review and formal recognition of the Plan by the Oregon Water Resources Commission (the "Commission"). This guidance includes the following sections:

- Purpose and Value of a Plan. This section briefly describes the purpose and value of a completed Plan.

- Developing the Plan. This section describes the need for a clear process and work plan, how the Plan can be developed using existing work products, the required Plan contents, other considerations, and the importance of gaining support for the Plan.

- State Agency Review of DRAFT Final Plan. This section describes the review team composition, review steps and timeline, criteria for Final Draft Plan review by state agency reviewers, outcomes of the state agency review, and Final Plan adoption by the planning group.

- Commission Recognition of Final Plan. This section describes the process and purpose of seeking recognition by the Commission of the locally-adopted Final Plan including the steps for Commission recognition and factors the Commission will consider.

- Appendix A. Example Plan Template. This appendix provides one example of how a planning group could organize their Plan. Groups are not required to use this template.

- Appendix B. State Agency Review Criteria. This appendix describes criteria state agencies will use to review the Final Draft Plan and includes the worksheet agency reviewers will use as well as draft templates for conveying results. The criteria are based on the 2015 Draft Place-Based Planning Guidelines and the statewide Integrated Water Resources Strategy (IWRS) Guiding Principles.

- Appendix C. Links to Relevant Funding Programs. As planning groups consider Plan implementation they may wish to see if any of these funding programs might be a good fit for their recommended actions.

Purpose and Value of a Plan

The purpose of a Plan is to communicate and engage a variety of audiences – water partners, the general public, potential funders, and decision-makers – about the community's water resources situation, critical water issues, its shared vision and goals, recommended actions, and a strategy for implementing the Plan.

The Plan can have significant value in several important ways:

- Competitive Edge for Funding Opportunities. State-recognized Plans built through a locally-led, collaborative process describe recommended actions that may be attractive investment opportunities for funding programs offered by state and federal agencies, philanthropic organizations, partners, local government, the state legislature, and others.

- Relationship Development. Developing the Plan has brought diverse water interests together, provided new opportunities for dialogue about difficult water issues, and built new levels of cooperation, trust, and respect for diverse perspectives about the different values of water. These relationships can have positive effects for many years, especially as the group transitions from planning to implementation of the Plan.

- Shared Vision for Action. Most communities in Oregon have not previously developed such a deep, common understanding of their local water resources and of the water challenges they face, and then developed actions to address those challenges. Being better informed and having a vision and Plan for a better future can lead to improved cooperation and proactive solutions to complex water challenges.

- Communication Tool. A Plan containing consensus-based solutions/strategies that are broadly supported by diverse interests is a powerful tool for communicating to decision-makers and the public what you need to succeed. The Plan will communicate to decision-makers - local, state, and federal - the community's vision and the financial and technical resources, and cooperation, needed to achieve that vision.

- Alignment of Plan with the Statewide Integrated Water Resources Strategy. The Plan should identify which of the planning group's recommended actions are consistent with IWRS recommended actions and will help the state achieve its 50-year vision of "…maintaining healthy water resources to meet the needs of Oregonians and Oregon's environment for generations to come." The Plan will also inform updates to the statewide IWRS and highlight opportunities for achieving statewide IWRS goals at the local level. It can help ensure alignment between local, state and federal actions that affect water management.

Developing the Plan

Utilize existing work products to develop the Plan. Summarize the planning effort into an accessible and readable document using planning step deliverables, reports, or other materials developed during the planning process. The executive summaries or conclusion sections of the planning step deliverables - modified and supplemented with key figures, graphs, maps, and tables - can be used to develop the majority of the Plan.

Establish a Clear Process and a Work Plan

As with previous planning steps, it is important to have a clear work plan for the progress and timing of work to complete Planning Step 5. The work plan should describe the scope and flow of work, responsibilities among participants, the timeline, work products the stakeholders will be asked to review, and key decision points.

If the planning group is interested in having state recognition of their Plan , then the group should include a state agency review in its process and work plan. That state agency review occurs when the Plan is nearly final, but still in draft form (meaning that it can be revised if necessary), a "Final Draft Plan." More information on that review and the time required is included later in this guidance.

Required Plan Contents

This section describes the required contents for the Plan. Plans do not have to follow this exact order and may contain additional or modified sections. These topics mirror the review criteria that will be used during the interagency review process. The topics should look familiar as almost all will have been covered in Planning Steps 1 through 4. Planning groups can use these topics as the primary Plan sections as shown in the example Plan template in Appendix A. Or groups can structure their Plan differently. Regardless of Plan organization, if a planning group seeks to have a *state-recognized place-based integrated water resources plan* then it must include these contents and meet the criteria covered in Appendix B.

- Executive Summary. An executive summary is a short overview of the main points of the longer Plan. It often includes the most important points or take-aways that the author wants to communicate, including key findings, conclusions, recommendations, justifications, and next steps. An executive summary can be a useful communication tool for those readers who are either not likely to read the entire Plan or to pique their interest in reading further.

- Planning Purpose. This should include a description of why the group undertook place-based water planning, the original issues the planning was initiated to address, and early organizers of the effort. The letter of interest, governance agreement and outreach materials may be good sources of this background information.

- Scope of the Plan. This should include a description of the planning area and the scope of the planning effort. The section should describe significant water features, water users or interests, key drivers and significant features, and a map of the planning area showing major streams, roads, cities, political boundaries, watershed boundaries, and any other geographic features you want to highlight. This should also include the planning timeframe that was used. It can also include a description of elements of water planning that were determined to be outside the scope of the planning effort.

- Plan Development Process, Outreach, and Participants. This content area may include information from the governance agreement, organizational structure, decision-making process, the planning group's vision or mission, the governance agreement signatories and other participants in the planning process. Additionally, this portion of the Plan might describe outreach efforts taken to achieve a *balanced representation of interests* and the results of that outreach. It could include a description of how the group worked to ensure an *open and transparent public process that fosters meaningful public participation*. Information on this topic may be found in materials developed during Planning Step 1 and/or in a Communication and Outreach Plan. This section could also include a description of the process that was used for Final Plan adoption.

- Understanding Water Resources Quantity, Quality, and Ecological Issues. This topic was the focus of Planning Step 2. Summarize the key information from Planning Step 2, which may include a summary of the status of water quantity, water quality, and ecological issues and the results and conclusions from the analysis completed. This should be a high level summary of the findings. Additional technical information can be included as an appendix or a reference to a stand alone document such as the Planning Step 2 materials.

- Current and Future Water Needs and Vulnerabilities. This topic covers the planning work and the results from Planning Step 3. Summarize key information about the instream and out-of-stream water needs/demands and vulnerabilities associated with a changing climate. Methods used to develop current and future needs can be included as an appendix or a reference to a stand alone document such as the Planning Step 3 materials.

- Data Gaps Identified. Data gaps should be identified and the planning group may also consider including a description of how data gaps impacted various aspects of the planning. Data gaps may be considered as a type of critical water issue. Data gaps may need proposed solutions or recommended actions to address them. However, in some

cases identifying the data gaps, even without a proposed solution, will be important to inform others, such as state agencies, of the need.

- Critical Water Issues. By the end of Planning Step 3 or early in Step 4, the planning group identified a set of critical water issues. These critical water issues should be described as well as the information and method used to identify them as critical water issues. The Plan should be as specific about the scope and scale of the critical water issues as the supporting information will allow. It may also be beneficial to include goals and metrics that the group can use to determine when they have been successful at addressing a critical water issue.

- Solutions or Recommended Actions. The "solutions" (or "strategies") should be described and related specifically to how they will solve a critical water issue or fill a data gap. The Planning Step 4 guidance provided this definition of **solutions:** *"the strategies, practices, programs, projects, studies, management actions, and other efforts taken to address a critical water issue*." In the 2017 Statewide IWRS, solutions proposed for implementation are termed "recommended actions." It would be beneficial to also describe the decision support system or process used to evaluate, select, or prioritize recommended actions.

- Plan Implementation Strategy. This section should describe the strategy for implementing the Plan. To the extent possible, the implementation strategy should describe which recommended actions will have initial focus, what feasibility studies or funding is needed to implement various aspects of the Plan, and the timeline for Plan implementation. It should also address who will lead various aspects of Plan implementation and what resources are needed to keep the planning group coordinated during implementation. One approach could be an implementation team coordinated by a project manager, and semi-annual stakeholder meetings where interested parties are updated on progress, help draft funding proposals, visit project sites, or review other work products. Keeping the planning group or core team working together, to some extent, and supporting each other over a sustained timeframe will be critical to the success of Plan implementation.

Other Plan Development Considerations

In addition to the required contents above, there are other topics or issues the planning group might consider during Plan development:

- Document Length. There is no prescribed length for a Plan, however a Plan should not be a voluminous collection of documents previously developed during the planning process. *The Plan should be a summary of the key conclusions, findings, and*

recommendations from the planning process. The planning group will need to balance the need to include enough information to make a compelling case for Plan implementation, but not too much information that will lose the reader. If additional supporting information is needed, consider including it as an appendix or referring the reader to another document.

- Audience. A Plan often has many audiences such as water partners, the general public, potential funders, and decision-makers. The planning group might consider who its primary audiences are and structure the Plan organization and content to speak to those audiences. For instance, if a group intends to pursue funding from the Oregon Watershed Enhancement Board (OWEB), it could be worthwhile to include plan components that would make the group eligible for OWEB funds.

- Visuals. Visuals such as maps, figures, graphs, diagrams, and pictures can be powerful ways to communicate information and increase the visual appeal and readability of your Plan.

- Supporting materials. As mentioned previously, these Plans can have a lot of value. But that does not mean they are always the best tool for communicating key information from the Plan or planning process. Other materials such as brochures, videos, one-pagers, or story maps may be more effective at communicating some aspects of the Plan to different audiences. These are not required, but the planning group might consider how supporting materials would add value. These materials could be developed as part of the early stages of Plan implementation.

- Setting Plan up for success. The time, energy, and thought invested in the planning process along with all the items listed above will help set the Plan up for success. Other ways the planning group can set the Plan up for success include: 1) telling a clear and compelling story that can be understood by both the planning group and others who have not been involved in the planning process, 2) clearly identifying immediate next steps to facilitate the transition to plan implementation, and 3) being thoughtful about wrestling with tough or complex issues versus deferring them to a later date (it may be tempting to quickly write up a plan, but it may be worth spending extra time to work through potential barriers to successful implementation).

Partner Review of Draft Plan and Public Support

Though planning groups will take different approaches to involving partners or participants in drafting the Plan, it is important that participants have a meaningful way to contribute so they are well-informed and invested in the Plan's contents and can support the Plan. Some

participants may need time to review the Draft Plan several times through or have other people within their organizations review the Draft Plan. Some audiences will benefit from a presentation of the Draft Plan including time for discussion and/or review of the entire Draft Plan. Allow adequate time for review, but also have clear deadlines so the group can meet it's agreed-upon deadlines. Once the feedback is returned, the planning group can decide what changes are needed to address any concerns and improve the Draft Plan to gain broad support.

It is recommended that the group do a self-assessment using the criteria in Appendix B in the final stages of plan development. The group can use the self-assessment to determine if any modifications are needed before the Final Draft Plan is submitted for the state agency review.

Once the planning participants have reached consensus on the Final Draft Plan as defined by the governance agreement, a broader community outreach effort should be undertaken to inform the public at large, obtain their feedback, and gain their support. This should not be the first time the broader community hears about the planning effort. The group may consider doing a public review process concurrently with the state agency review.

State Agency Review of Final Draft Plan

The 2015 Draft Guidelines state that the Oregon Water Resources Department (OWRD) will conduct a state agency review of each Plan during the final stages of Plan development with the state IWRS Project Team Agencies: Oregon Department of Fish and Wildlife (ODFW), Oregon Department of Agriculture (ODA) and Oregon Department of Environmental Quality (DEQ). The state agency review team will include a combination of policy staff, who are generally based in agency headquarters, and regional field staff who may be more familiar with the planning group submitting the Final Draft Plan.

The primary purpose of the state agency review is to make a recommendation to the Commission as to whether a Plan was developed in a manner consistent with the 2015 Draft Guidelines and statewide IWRS principles and should be recognized by the Commission.

State Agency Review Participants

Different agencies will bring different areas of expertise to the review. Table 1 highlights the expertise and focus of the IWRS Project Team Agencies. In some cases, it may be helpful to consult other agencies with other areas of expertise. Table 2 provides a list of other potential reviewers that OWRD may consult or invite to participate in the review process as needed. If a planning group wants OWRD to invite any particular agency beyond the IWRS Project Team, then they should let their designated Planning Coordinator know so he/she can reach out to the other state agency and invite them to participate.

Table 1. IWRS partner agencies that will participate in the state agency review

Agency	Area of Water Expertise and Review Focus
Oregon Water Resources Department	Water quantity/supply, water availability, water rights, water use
Oregon Department of Environmental Quality	Water quality
Oregon Department of Fish and Wildlife	Ecology, instream water use and demands, water quality
Oregon Department of Agriculture	Agricultural water use and demands

Table 2. Additional reviewers that may be consulted in the state agency review

Agency	Area of Expertise and Review Focus
Oregon Health Authority	Public health and public water supply systems
Oregon Climate Change Research Institute	Climate change, vulnerabilities
Regional Solutions	Regional priorities, economic development
Oregon Watershed Enhancement Board	Watershed restoration
Oregon Department of Energy	Water and energy nexus
Department of Land Conservation and Development	Land use planning
Department of State Lands	Wetlands
Oregon State Marine Board	Boater recreation
Infrastructure Finance Authority	Infrastructure funding

State Agency Review Steps and Timeline

OWRD will coordinate the state agency review process which may require approximately 90 days from submission of a Final Draft Plan to OWRD to the results being communicated and discussed with the Convener(s) as shown in Table 3 below. OWRD will keep the conveners apprised of progress during the review process. If the planning group incorporates changes based on results of the state agency review, it may take OWRD another 30 days to review and verify the changes in consulation with the reviewers. The exact timeline of the state agency review will depend on staff workload and capacity at the time of the request, and the length of the Plan.

If desired, the planning group may want to deliver a presentation to the interagency review team about their planning process and plan. A presentation to the agencies should be considered and in the group's review process and schedule and should be communicated to agencies as early as possible. Requesting a presentation may increase the length of time required for the review, with an in-person meeting in the basin requiring more time to schedule than a conference call/webinar. State agencies will do their best to participate in such a presentation, but may not be able to attend depending on timing and resource availability.

Table 3. State Agency Review Steps and Timeline

State Agency Review Steps	Estimated Timeline
Final Draft Plan submitted to OWRD Planning Coordinator*	Day 1
State agencies complete their review using guidance criteria	Day 60
State agency review team meeting to discuss and develop recommendation	Day 70
Consolidated comments sent to Convener(s)	Day 80
Review team follow-up call or meeting with Convener(s)	Day 90
Opportunity for planning group to revise Final Draft Plan (if needed)	TBD

*Provide advanced notice if possible to assist in scheduling.

State Agency Review Criteria

The criteria developed to assist the state agency review team are included in Appendix B. The state agency review team will review the Plan using the criteria to answer questions divided into three major categories: plan development, plan content, and plan implementation. The questions and criteria were developed primarily to assess whether the Plan includes the required Plan contents and demonstrates it was developed in a manner consistent with the 2015 Draft Guidelines and statewide IWRS principles. These criteria will also help the reviewers check if the Final Draft Plan includes the information needed to have the value described above.

Although there are aspects of the state agency review that require an assessment of the technical work quality, the state agency review will not include a comprehensive review of all technical work performed during the planning process. Planning groups are responsible for assuring the quality and accuracy of technical work conducted during each planning step.

Outcomes of the State Agency Review Process

OWRD will manage the state agency review process and communicate the review results in writing to the convener(s) describing what, if any, changes or improvements the planning group must make to their Final Draft Plan before the state agency team can provide an affirmative recommendation to the Commission. OWRD will be judicious in requesting changes and will only request changes that are essential to ensuring the Final Plan is consistent with the 2015 Draft Guidelines and IWRS Principles. Consolidated review team feedback will be provided in two categories: 1) required changes needed for an affirmative review team recommendation to the Commission, and 2) suggested changes that may help improve the Plan.

The state agency review can add value to the Plan, especially if any actions will necessitate working with state agencies during implementation. State agency reviewers will be reviewing the Plan consistent with the criteria in Appendix B, but will also be looking for opportunities to

strengthen the Plan by proactively identifying potential barriers and challenges and ways they may be able to support implementation.

Agencies may provide other comments for consideration of the planning group as they finalize the Plan and transition to implementation. Agencies may consider writing a letter of support for the Plan, which could form part of the package of information presented to the Commission. Each agency is welcome to determine the intent and content of their support letter. Content can range from general support for the Plan to identification of specific support that the agency may be able to offer. Agencies may consider highlighting any funding or other opportunities they offer that possibly could support Plan implementation.

State agency review and Commission recognition does not:

- Legally bind the State to perform any activity;
- Obligate the State to provide financial assistance for any activity;
- Obligate the State to rely on or utilize any analysis performed in the planning process;
- Indicate all the Plan contents are technically accurate as technical accuracy is the responsibility of the planning groups; and
- Indicate that a proposed action has been approved or is being directly promoted by OWRD or other agencies.

Adoption of Final Plan by Planning Group

The planning group should formally adopt its Final Plan after the state agency review is complete, and the planning group has made any revisions required or recommended by the state agencies. The group should follow the decision-making process outlined in their governance agreement to formally adopt the Final Plan. Following adoption of the Final Plan, the Convener can make arrangements with the OWRD Planning Coordinator to present the Final Plan to the Commission for state-recognition at a regularly-scheduled Commission meeting.

Commission Recognition of Final Plan

This section describes the process of seeking state recognition and the role of the Commission in recognizing the Final Plan. It is not required that a Plan be recognized by the Commission and each planning group can decide whether it desires such state recognition. Commission meetings are held four times a year and it generally takes two months advanced notice to be placed on the agenda.

Steps for Commission Recognition

If a planning group would like the Commission to formally recognize the Final Plan, the process will follow these steps:

1. State agency review results in a recommendation that the Final Draft Plan be recognized;
2. Planning Group adopts a Final Plan;
3. Convener(s) work with Planning Coordinators to request time on a regular Commission agenda;
4. Public notification of the Final Plan on the Commission agenda;
5. Posting of Final Plan, staff report and PowerPoint on OWRD's website;
6. Convener(s) present Final Plan to the Commission;
7. Public comments to the Commission at the meeting; and
8. Commission discussion, motion and decision.

Factors in Commission Recognition

The Commission will make a decision after considering the following factors:

- The Convener(s) presentation of the Final Plan;
- The state agency review team recommendation;
- The Commissioners' review of the Final Plan;
- Letters of support from partners, state agencies and others[1]; and
- Public comments received prior to or during the Commission meeting.

State-recognized Plans will be memorialized by the Commission in a formal resolution signed by the Commissioners. The resolution will recognize that the Plan was developed following the 2015 Draft Guidelines and statewide IWRS principles and will recognize the value of the Plan and its implementation in helping to meet Oregon's instream and out-of-stream water needs.

Plan Updates and Subsequent State Recognition

It is up to the planning group to decide if, when, and/or how frequently it would like to revisit and/or revise their Plan. This could include a specific process or criteria for determining when the plan needs to be revised or updated. The planning groups may choose to periodically update the Commission on progress and accomplishments, needs, and Plan revisions as they implement their Plans. The planning group may consider seeking state recognition again when the Plan is substantially changed.

[1] Letters of support are great ways for planning partners and other to express support for a plan to the Commission. However, they are not required to receive state recognition.

Appendix A. Example Plan Template

Executive Summary

Introduction

- Planning Purpose
- Geographic Scope
- Plan Organization

Chapter 1: The Planning Process (Planning Step 1)

- Planning Participants
- Governance and Organizational Structure
- Public Outreach
- Collaborative, Open and Transparent Public Process

Chapter 2: Water Resources (Planning Step 2)

- Water Resource Supply
- Water Quality
- Ecological Issues
- Data Gaps

Chapter 3: Current Uses and Future Water Demands (Planning Step 3)

- Instream Demands
- Out of Stream Demands
- Data Gaps
- Natural Hazards and Climate Change

Chapter 4: Critical Water Issues and Recommended Actions (Planning Step 4)

- Critical Water Issues (including data gaps)
- Solutions Considered
- Recommended Actions

Chapter 5: Plan Implementation Strategy (Planning Step 5)

- Priority Actions
- Timeline
- Resource Needs
- Implementation Team
- Keeping the Public Engaged

Appendices: References, Acronyms, Acknowledgements, Signatory Page

Appendix B. State Agency Review Criteria

State Agency Review Criteria

The state agency review criteria are organized into three categories: plan development, plan content, and plan implementation. Each criterion includes one or more questions for the reviewers to address as well as examples of what indicators demonstrate that a Plan has met the criteria.

Plan Development

One of the key differences between place-based water planning and other forms of planning is the process by which a plan is developed. A place-based integrated water resources plan ("Plan") is developed through a five-step process that is locally-led and collaborative, voluntary and not regulatory, done in partnership with the state, and conducted through an open and transparent process (among additional planning principles). As such, the first component of the state agency review is to reflect on whether the plan was developed using a process consistent with the Guidelines and IWRS Guiding Principles. A Plan should describe how it was developed. That description should provide insights into whether the plan development criteria are satisfied. The review of Plan development is optional for all agency reviewers with the exception of OWRD. Input from other agencies is welcome, but not required.

Balanced Representation of Interests

Review Question: Did a balanced representation of interests participate in the development of the plan?

The first step of place-based water planning is to develop a collaborative and inclusive process that includes a balanced representation of interests to the best extent possible. This includes instream and out-of-stream interests from various levels of government, tribes, stakeholders, and private and non-profit sectors. Indication of a balanced representation of interests includes:

- Documentation of outreach to and active participation of representatives of all levels of government, private and non-profit sectors, tribes, stakeholders, and the public
- Process for engaging all interests in a fair and balanced manner
- Active participation from instream and out-of-stream interests
- Balanced attention given to instream and out-of-stream needs
- In the event some water sectors did not actively participate, then a description of efforts made to engage that sector should be provided

Indication that a planning process did not include a balanced representation of interests includes:

- Planning group membership is dominated by one sector or interest
- Either instream or out-of-stream needs were not identified by the plan or were significantly out of balance

- Recommended actions or solutions are focused on only one sector

Collaborative and Integrated Process

Review Question: Was a collaborative and integrative process used to develop the plan?

A Plan must be developed through a structure and process that fosters collaboration, bringing together various interests to work toward the common purpose of meeting the instream and out-of-stream water needs of the community, cultures, economy, and environment. Indication of a collaborative and integrated process includes:

- A structured decision-making process for reaching consensus
- A description of any conflict resolution efforts or processes used during plan development (i.e., how did the planning group work through conflicts or disagreements?)

Indication that the Plan was not developed through a collaborative or integrated process includes:

- Products or documentation developed by different sectors or interests that were not integrated together to form a shared understanding
- Decisions to adopt the plan or interim work products were not done in accordance with the planning groups' adopted governance agreement

Public Process

Review Question: Was the plan developed using an open and transparent public process that provided opportunities for meaningful public involvement?

Throughout the planning process, the planning groups should have provided the public with opportunities for meaningful engagement, where the public could affect the outcomes of the planning process. Reviewers should note if a public process was evident and documented within the submitted Plan. Indication of an open and transparent process includes:

- The make-up of the planning group participants – was the public invited to participate in meetings, planning discussions, and/or plan development?
- Public notices of meetings that demonstrate considerable effort to engage the public
- Opportunity for public comment or input into any reports produced by the planning process as well as opportunity for comment and input into the plan itself
- Were meetings accessible in both scheduled times and location

Indication that the Plan was not developed through a public process includes:

- Plan development occurred behind closed doors
- The public was not invited or was excluded from participation
- Minimal public meetings were held
- Public input was not sought at key steps in plan development

- Outreach efforts were not documented in the Plan

Plan Content

This section is largely documentation of work done during planning steps 2, 3 and 4.

Scope of Planning Effort

Review Question: Does the plan identify the scope of the planning effort?

A Plan must define the area or "place" to which it applies. Reviewers will look to see if the plan defines the geographic boundaries of the planning areas as well as the temporal scale. Indication of a defined scope includes:

- A map and description of the planning area including characteristics such as terrain, population centers, major roads, river systems, etc.
- A list of watersheds, sub-watersheds, and aquifers included in the planning area
- Inclusion of a planning timeframe/horizon (i.e., 20 years? 50 years?)

Indication of an undefined geographic scope:

- Lack of a map and any clear description of the planning area's geographic boundaries
- Inconsistent watersheds or aquifers described within the plan
- No consideration of a planning timeframe

Understanding Water Resources Supply, Quality, and Ecological Issues

Central Review Questions:

- *Does the plan document an understanding of the water resource supply, quality, and ecological issues in the planning area?*
- *Does the plan document this understanding for both groundwater and surface water?*

A Plan should include a high-level summary of the efforts made to describe and assess current water supplies, water quality, and the status of ecosystem health to determine any existing challenges and potential opportunities. Reviewers should comment on the completeness of work that resulted from this Step, including whether the group identified existing challenges and potential opportunities.

Indication of an understanding of water resource supply, quality, and ecological issues includes:

- A description of the current and expected future water supply in the planning area, including groundwater and surface water
- A description of the current and future water quality in the planning area, including groundwater and surface water
- A description of the current and future ecological issues in the planning area, including groundwater and surface water
- Identification of relevant gaps in data and information

Indication of a lack of understanding of the water resource supply, quality, and ecological issues includes:

- Exclusion of water supply, water quality, or ecological issues from the plan (note: in some cases the information needed is not available; acknowledging a data gap is an acceptable way to meet this plan requirement)
- Inclusion of raw data or information without any analysis or synthesis to draw conclusions about the status of water in the planning area and what challenges or opportunities the area has as a result of that status

Current and Future Water Needs

Review Question: Does the Plan document the current and future instream and out-of-stream water needs of the planning area?

The Plan should summarize how much water is needed to meet current and future water needs-both instream and out-of-stream. Plans should address how climate change, population growth, and land use affect water resources and the ability to meet these water needs within the community. Meeting water needs should be considered within the context of specific watersheds, accounting for the hydrological, geological, biological, climatic, socio-economic, cultural, legal, and political conditions of a community. Reviewers should comment on the completeness of work that resulted from this Step, including whether comparable effort and treatment was given to defining instream and out-of-stream needs. Indication that a Plan documents current and future water needs includes:

- A list of critical water issues in the planning area
- Identification of water needs relative to the planning timeframe
- Descriptions of current and future consumptive water needs for different out-of-stream uses, including municipal, industrial, and agricultural
- Descriptions of current and future instream needs for different uses, including fish and wildlife, ecological functions, water quality, recreation and scenic uses, and cultural significance
- Descriptions of how climate change, population growth, and land use affect water resources and the ability to meet these needs within the community
- Identification of times and locations where water needs are not met or are likely not to be met in the future
- Identification of data and information gaps and uncertainties

Indication that a plan did not sufficiently document current and future needs includes:

- Failure to document both instream and out-of-stream needs
- Failure to document future needs
- No description of coming pressures (e.g., climate change, population growth, etc.)

Compliance with State Law

Review Task: Identify any plan content that may not be in compliance with state law particular to your agency.

A Plan cannot change existing laws or jeopardize existing water rights. A group can identify that a solution requires that a law be changed; however, the plan does not carry the weight of law. Reviewers should note those proposed activities that may be perceived as changing laws or jeopardizing existing water rights. All solutions and approaches should be legal according to state and federal law and policies, though the review team only includes state agency representatives who may not have sufficient expertise to assess compliance with federal law. Any apparently illegal activities should be identified for the group. Indication that a plan complies with state laws and policies includes:

- Proposed solutions acknowledge authorities of existing agencies and mechanisms for pursuing permits or other regulatory approvals needed
- Identification of legal barriers that might interfere with a proposed solution

Proposing Statute, Rule, and/or Policy Changes in a Plan

It is not illegal to propose pursuing a change in law or policy. Oregon's laws have evolved over time and will continue to evolve. However, that does not mean that changing the law will be easy or successful.

For those reasons, the IWRS recommends pursuing solutions that have an established legal process whenever possible. However, planning groups can include recommendations to pursue changes in statute, rule, or policy. Please remember that a state agency recommendation to accept a Plan is not an agency endorsement of a proposed law change or proposed solution.

Indication that a Plan does not comply with state laws and policies includes identification of illegal solutions, or solutions where the state lacks the authority to facilitate or assist them without acknowledgment that a statute, rule, or policy change is required.

NOTE: The state agency review does not constitute a full legal review – actions not identified here may not have had enough detail associated in order to determine their legality.

Solutions or Recommended Actions

Review Questions:

- *Does the plan identify solutions or recommended actions that address the critical water issues identified during the planning process?*
- *Does the plan identify integrated solutions to the extent practical?*
- *Do the solutions identified adhere to the IWRS Guiding Principles listed in Appendix C?*
- *Does the plan include recommendations for addressing information/data gaps?*

Plans should include a suite of solutions or recommended actions to address the community's water-related challenges with the goal of meeting both instream and out-of-stream needs. Solutions can include methods for addressing existing data and analysis gaps. Table B.1 lists the sub-criteria for evaluating the plan's proposed solutions and recommended actions against the IWRS Guiding Principles.

Table B.1. IWRS Guiding Principles Relevant to Solutions or Recommended Actions

Principle	Positive Indicators	Indicators of plan deficiency
Integration	• To the extent possible, solutions work to address multiple needs • Solutions recognize the relationship between water quantity, water quality, and ecosystem needs	• There is no evidence of an attempt to integrate solutions, where practical
Balanced	• The suite of solutions listed work to address both instream and out-of-stream needs	• Solutions only address instream or out-of-stream needs (not both) or are disproportionally focused on one or the other
Enhance sustainability	• Solutions seek to improve sustainable management of water resources by balancing the needs of Oregon's environment, economy, and communities	• Solutions only address the needs of one group • Solutions are not forward looking; acknowledging climate change and population growth
Accountable and enforceable actions	• Actions comply with existing state laws and policies • Actions include measures of success	• Solutions are illegal* • If feasible, solutions include a description of how success may be measured
Science-based, flexible approaches	• Solutions are based on or supported by on best available science and local input	• Solutions do not accurately reflect or respond to best available science as documented in background information/best available science reflected in the supporting documentation
Streamlined	• To the extent possible, the plan avoids recommendations that are overly complicated, legalistic, or administrative	• The suite of solutions is mostly comprised of projects which are difficult to understand or seem infeasible
Reasonable cost	• Plans weigh the costs and benefits to determine whether one approach is better than another, or whether an approach is worth pursuing • Solutions may reduce the costs of delivering services to the state's residents, without neglecting social and environmental costs	• Solution prioritization does not consider estimated cost

Addresses In-stream and Out-of-Stream Needs

Review Question: Does the plan consider both instream and out-of-stream needs?

Planning groups should quantify current and future instream and out-of-stream water needs in the planning area, keeping in mind that such needs encompass water quantity, quality and ecosystem needs. While the instream and out-of-stream water needs may not be equal, consideration of water needs and solutions should be balanced. Indication that a Plan does give a balanced consideration of needs includes:

- Information about the water needs for the water sectors: agriculture, municipal, instream and ecology, and industry
- Engagement from multiple interests representing each water sector
- Solutions are considered and/or included for each water sector throughout the planning area

Indication that the Plan does not give balanced consideration includes:

- A plan focused primarily on one primary sector with little or no information about the water needs of other sectors
- Recommended actions or solutions are focused to primarily benefit one water sector

NOTE: It is possible that NO critical water issues were identified for a water sector in the planning area.

Validity of Information

Review Question: Is the Plan based on accurate, appropriate, and adequate information in the characterization of the water resources, identification of critical issues, and selection of solutions?

Decisions should be based on best available science, accurate information, and local input. Having a balanced representation of interests involved in the planning process and including the state as a partner will help ensure information presented in the Plan is reviewed, well-vetted, and verified. Critical water issues in the Plan should be substantiated by data or information in the plan. Recommended actions or solutions should correspond to the identified critical water issues. Indication of the validity of information includes:

- Citation of data sources
- A description of appropriate technical approaches used to analyze the data or information demonstrates the appropriation information, data, and analyses were used
- Inclusion of assumptions and description of appropriate use of technical information
- Inclusion of data gaps and how the gaps affect planning
- Critical issues and solutions identified in the plan are supported by appropriate data and information

Indication that the Plan is not based on accurate, appropriate, and adequate information includes:

- Invalid information may be outdated
- Data inappropriate for the purpose described, of the wrong scale or precision
- Conflicting data and information in the plan
- Critical issues or recommended actions are not supported by the appropriate data or information

Comprehensive assessments of the technical information used in the Plan do not fall under the scope of the state agency review.

Plan Adoption and Implementation

Planning Step 5 of Place-based water planning is to "Adopt and implement a place-based integrated water resources plan." Plan adoption by the planning group is not the end of the process, but signals a shift to a new phase: plan implementation. This review category seeks to discern whether the Plan looks ahead towards implementation and is set up for success. While the success of Plan implementation is dependent on a number of factors, (many outside of the planning group's control) the state agency review will help discern whether the Plan is well-positioned for implementation, to the extent feasible.

Plan Adoption by Planning Group

Review Question: Does the planning group have a sound process for Final Plan adoption?

If plan adoption by the planning group is rushed or does not follow a good process, then the value of the Plan may be reduced in the eyes of partners or funders. This could negatively impact future Plan implementation. The state agency review of the Plan happens shortly before Final Plan adoption. This allows for the planning group to consider and incorporate feedback from the state agency review prior to planning partner adoption of the Final Plan. Reviewers should determine if the group has a sound approach for formally adopting the Plan that is consistent with the collaborative process adopted by the planning group. Indication of a sound approach for Final Plan adoption:

- An explanation of the process the planning group will use to adopt or approve the Final Plan
- A reliance on the consensus-based decision making process identified by the planning group and documented in their governance agreement
- Indication that the approach for plan adoption was clearly communicated to planning group partners

Indication of a poor adoption approach includes:

- No opportunity for planning group partners to express concern or provide critical feedback on the Plan
- Inadequate time for partners to review the Plan

- Disregard for decision-making approaches previously adopted by the planning group (e.g., switching from a consensus or consensus minus 1 approach to simple voting majority)

Plan Implementation Strategy

Review Question: Does the Plan propose a clear strategy for implementation?

The Plan should describe how it will be implemented, who will be responsible for implementation, and how implementation will be coordinated and funded. The Plan should have a high likelihood of leading to the implementation of local solutions.

Indication of a strategy for implementation includes:

- Identification of next steps for some or all of the solutions or recommended actions listed in the Plan, including those that are complex and may require additional feasibility or review
- Identification of roles in plan implementation, including who might pursue different solutions or efforts to fill information gaps
- Identification of barriers to solutions or plan implementation and a path forward for addressing those barriers
- Prioritization of proposed solutions and proposed sequence of implementation
- Timelines for plan implementation
- The plan is formatted in a way that allows for easy use in seeking support and funds
- The plan explains how partners and others may use the plan (or alternatively how it should not be used)
- Identification of a timeline for plan revision or amendment

Indication that a Plan does not include an implementation strategy includes:

- Vague, unclear, or no next steps described
- No explanation of who is responsible for plan implementation (note: a general statement that partners or planning group members will individually implement pieces is acceptable, but some level of coordination and communication about progress and success should be evident)
- No acknowledgement of a change in roles and responsibilities as the Plan moves from planning to implementation

Agency Review Worksheet

Instructions: Read through the submitted Plan and review it considering the questions about plan development, content, and implementation below. Check whether the Plan meets these criteria or does not meet the criteria. Include comments about how the Plan did or did not meet the criteria. Please be thoughtful and constructive in your feedback.

Plan Development (Optional for other than OWRD)

Category	Review Question	Yes	No
Balanced Representation of Interests	Did a balanced representation of interests participate in the development of the plan?		
Collaborative and Integrated Process	Was a collaborative and integrated process used to develop the plan?		
Public Process	Was the plan developed using an open and transparent public process that fostered public participation?		
OWRD Consultation	Was the plan developed in consultation with OWRD?		

Reviewer Comments on Plan Content

Plan Content

Category	Review Question	Yes	No
Scope of Planning Effort	Does the Plan identify the scope of the planning effort, including geographic area?		
Understanding Water Resource Supply, Quality, & Ecological Issues	Does the Plan document an understanding of the water resource supply, quality, and ecological issues in the planning area?		
	Does the Plan document this understanding for both groundwater and surface water?		
Current and Future Water Needs	Does the Plan document the current and future instream and out-of-stream water needs of the planning area?		
Solutions or Recommended Actions	Does the Plan identify solutions or recommended actions that respond to or address the critical water issues identified during the planning process?		
	Does the Plan identify integrated solutions to the extent practical?		
	Do the solutions identified adhere to the IWRS Guiding Principles?		
Addresses In-stream and Out-of-Stream Needs	Does the Plan consider current and future instream and out-of-stream needs in a balanced manner?		

Validity of Information	Is the Plan based on accurate, appropriate, and adequate information in the characterization of the water resources, identification of critical issues, and selection of solutions?		
Information and data gaps	Does the Plan clearly identify information and data gaps?		

Reviewer Comments on Plan Content (including compliance with State law)

Plan Adoption and Implementation Strategy

Category	**Review Question**	**Yes**	**No**
Plan Adoption by Planning Group	Does the planning group have a sound process for final review and adoption of the Final Plan?		
Implementation Strategy	Does the Plan propose a strategy or approach for implementation?		

Reviewer Comments on Plan Content

Template for Communicating Inter-Agency Review Results

Below are two draft templates for letters OWRD may use to communicate the results of the state agency review to the planning group. OWRD and its partner agencies may amend this template and tailor any letter to the specific plan being reviewed. These templates are provided to provide some information as to what a planning group can expect to receive as a result of the state agency review.

Letter Template for Recommended Plan

Dear [Insert Convener(s)] and members of [insert planning group name],

Thank you for your submission of the Final Draft of your Place-Based Integrated Water Resources Plan for the [insert planning area]. The Integrated Water Resources Strategy (IWRS) Agency Project Team (the Oregon Water Resources Department, Oregon Department of Agriculture, Oregon Department of Environmental Quality, and Oregon Department of Fish and Wildlife) reviewed your plan and determined that it adheres to the 2015 Draft Place-based water planning Guidelines and IWRS Guiding Principles. Therefore, the agencies recommend the Oregon Water Resources Commission (Commission) recognize your plan as Place-Based Integrated Water Resources Plan.

In addition to their recommendation that the Commission recognize your plan, the agencies offer the following feedback for your consideration.

Recommended Revisions
[The letter may include recommended changes to the plan that would strengthen or improve the plan, but are not required for recognition by the Commission.]

Strengths of the Plan
[The letter may also include a summary of the plan strengths.]

Other Agency Comments
[The letter may also provide other comments related to plan development, content, or implementation. For example, it may identify shared goals of the plan and an agency.]

We commend your hard work in developing an Integrated Water Resource Plan and we look forward to working with you to coordinate a presentation of your plan to the Commission who will decide whether to formally recognize your plan. Please contact [insert contact person] at [insert contact information] to discuss the Commission schedule and when you might be to present your plan to the Commission.

Sincerely,

[insert name]
Planning Coordinator, Oregon Water Resources Department

Letter Template for Plan That Is Not Recommended

Dear [Insert Convener(s)] and members of [insert planning group name],

Thank you for your submission of the Final Draft of your Place-Based Integrated Water Resources Plan for the [insert planning area]. The Integrated Water Resources Strategy (IWRS) Agency Project Team (the Oregon Water Resources Department, Oregon Department of Agriculture, Oregon Department of Environmental Quality, and Oregon Department of Fish and Wildlife) reviewed your plan and determined that it currently does not adhere to the 2015 Draft Place-based water planning Guidelines (Guidelines) and/or IWRS Guiding Principles. Therefore, the agencies recommend that you continue to work through your planning process to address the items listed below. In addition to those changes that are required, the agencies provided other feedback, including recommended changes as well as strengths of the Plan.

Required Changes to Demonstrate Adherence to Guidelines and IWRS Guiding Principles
[The letter will describe why they found that the plan did not adhere to the Guidelines or IWRS Guiding Principles and offer suggestions for how the planning group might address the issue.]

Recommended Revisions
[The letter may include recommended changes to the plan that would strengthen or improve the plan, but are not required for recognition by the Commission.]

Strengths of the Plan
[The letter may also include a summary of the plan strengths.]

Other Agency Comments
[The letter may also provide other comments related to plan development, content, or implementation. For example, it may identify shared goals of a plan and an agency.]

If you have any questions about this feedback, please contact me at [insert contact information]. Place-based water planning is done in partnership with the State and we would like to work with you to address these items so that a revised plan can be recommended to the Oregon Water Resources Commission (Commission) for recognition as a Place-Based Integrated Water Resources Plan. We commend your hard work to develop an Integrated Water Resources Plan and look forward to working with you to revise your plan so that it adheres to the 2015 Draft Place-based water planning Guidelines and IWRS Guiding Principles.

Sincerely,

[insert name]
Planning Coordinator, Oregon Water Resources Department

Appendix C. Links to Relevant Funding Programs (Forthcoming)

The Lower John Day Basin Integrated Water Resource Plan

https://www.lowerjohndaypbp.com/ 5/17/22 *(istockphoto.com photo credit)*

Contents

John Day scenery (istockphoto.com photo credit)

Executive Summary

The Lower John Day Placed-Based Partnership (Work Group) consists of 17 parties[1] working together over the last six years (2016-2022) to help plan for future instream and out-of-stream water needs in the Lower John Day Sub-Basin (Lower Basin). This Lower John Day Basin Integrated Water Resource Plan (Step 5 Report or Plan) as well as the previous three reports, which were used to assemble this final Plan, can be found on our website: https://www.lowerjohndaypbp.com/. The planning process examined existing conditions and expected future water needs in the Lower Basin, identified critical water resource issues in the Lower Basin, and developed integrated strategies to address those critical issues. Consistent with Place-Based planning guidance, the planning process was conducted within the framework of existing laws (statutes and rules) and did not consider changes to those laws.

One of the 17 Work Group representatives is the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO). The reservation is located within the north-central part of Oregon and consists of 640,000 acres, many of which are in the planning area. These ceded lands and the CTWSRO's ongoing restoration efforts to improve fish habitat in the Lower Basin is an important part of maintaining cultural foods and fish populations to ensure harvest opportunities for tribal members. Also in the planning area are the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). Acknowledged aboriginal title lands cross the John Day River near the North Fork of the John Day River and John Day River at Kimberly, Oregon, and travel northward to Willow Creek and its confluence with the Columbia River before following the Columbia River upstream.

The planning area was defined to include only the Lower Basin below the confluence of the North Fork John Day River. The Work Group recognizes that flows in the lower mainstem John Day River depend heavily on flows from the Upper Basin, as the Lower Basin produces only approximately 5.6 percent of the total annual surface water yield, despite covering 40 percent of the overall John Day Basin (Step 2 Report, p. 68).

Historical descriptions indicate that the John Day River was once a relatively stable and healthy river with natural riverine processes and habitats. However, like much of the western United States, watershed conditions in the John Day Basin have changed significantly over the past 150 years. A myriad of water and land use practices, including mining, livestock grazing, riverine habitat degradation, and invasive species, have contributed to these changes. Additionally, the region is experiencing rising temperatures, increasing incidents and extent of drought, and increased fire frequency. These disturbances have impaired water quality in hundreds of stream miles, degraded riparian corridors and disconnected floodplains, reduced biodiversity and fish populations, and changed the structure and function of upland habitats (Step 2 Report, p. 23).

These and other influences across the Lower Basin led to a planning process to help improve conditions to meet instream and out-of-stream water needs and demands. Coordination with multiple stakeholders and agencies and adequate funding are critical to meet the challenges facing the Lower Basin.

[1] The parties include government entities and agencies, Native American tribes, industry representatives, and non-governmental organizations. Some participants were initially active but became inactive over time, while others joined later in the process.

The following Plan provides recommended strategies for addressing critical water resources issues identified by the Work Group, now and into the future, in cooperation and coordination with other Lower Basin planning efforts.

Key findings of the Work Group include:

- Municipal, industrial, and commercial out-of-stream water demand is not expected to see significant increases due to the projected low population growth and existing industrial and commercial enterprises.
- Water is not likely available for new surface water appropriations from July through October. Water may be available for appropriation from January through May.
- Few of the Lower Basin's tributary streams have instream water rights, and the instream water rights that do exist, for the mainstem and some tributaries, do not protect flows sufficient to meet all ecological needs.
- Available flows are insufficient to meet several Water Availability Basins' (WABs) monthly/biweekly water demands, most notably the months from July to October.
- High water temperature is the most significant water quality issue in the Lower Basin.
- The vast majority of the irrigation comes from surface waters of the mainstem and its tributaries. Agricultural water use can play a major role in modifying local and regional hydrology.
- Additional climate change scenarios should be modeled and tracked. Changes in hydrograph curves due to loss of and/or earlier snowmelt and increasing summer temperatures are likely to increase lethal conditions for fish that depend on cold water.

A Strategic Action Plan shown in Chapter 5 provides a roadmap of recommended strategies to address the 19 Critical Issues identified by the Work Group. Issues ranked by the group as top Critical Issues (top 5) were:

- Poor riparian habitat
- Elevated summer stream temperatures and low instream oxygen
- Insufficient instream flow
- Storage needs
- Degraded native plant communities

Top strategies, which were ranked within general categories and not collectively, included (one for each Critical Issue above):

- Protect, enhance, and/or restore native riparian vegetation
- Maintain and increase stream flows (to address elevated stream temperatures)
- Encourage improved irrigation efficiency projects and use of Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect a portion of water saved instream)
- Complete a feasibility study to assess potential off-channel water storage projects, including (a) potential locations for storage projects and (b) water availability, including consideration of all categories of instream flow needs (as recognized in the Step 3 Report)
- Restore upland function by improving plant communities with juniper removal and planting appropriate perennial bunchgrasses, shrubs, and forbs

The justification for the above findings and recommended actions as well as others found in this Plan are made from a multi-year, multi-stakeholder effort committed to seeking public input and engagement. Agricultural stakeholders, landowners, conservation groups and local districts, and state and federal agencies all participated in identifying the most Critical Issues facing the Lower John Day and participated in developing strategies or actions that will help improve conditions. Evidence

was found from peer reviewed science documented throughout the plan, and support was provided from state and federal agency experts and scientists from regional conservation organizations. Collectively, the Work Group and the supporting community assembled and analyzed data found in the Work Group Reports from Steps 2 to 4 that support a list of findings and recommendations found in Chapter 5 of this Plan.

Prior to finalizing and approving the Lower John Day Basin Integrated Water Resource Plan, the Work Group reviewed and incorporated comments from the fall 2021 public comment period as well as the Agency Review Team winter 2021-22. Final edits were invited by the Work Group in spring 2022. Finally, the Work Group approved and finalized the Integrated Resource Plan with full consensus in May 2022 (see Appendix E, Declaration of Cooperation Signatories Approval of Lower John Day Integrated Water Resource Plan) and approved by and submitted to Oregon's Water Resources Commission in June 2022.

John Day scenery (istockphoto.com photo credit)

Terms and Definitions

Unless the context requires otherwise, the following abbreviations and terms have the following meaning:

Acre-foot: The volume of water covering 1 acre to a depth of 1 foot.

Consumptive use: Water withdrawn from groundwater or a stream and not returned to the system (e.g., water consumed through evapotranspiration (ET) or transferred out of the watershed and not returned [municipal, agriculture, storage, and others]).

Cubic feet per second (cfs): Volumetric flow rate is equivalent to a volume of 1 cubic foot flowing every second.

Discharge: The volume of water moving down a stream or river per unit of time, commonly expressed in cfs or gallons per day. In general, river discharge is computed by multiplying the area of water in a channel cross section by the average velocity of the water in that cross section.

Evapotranspiration (ET): Water used by plants through a combination of evaporation (liquid water on a surface changing to water vapor) and transpiration (water lost through plant stomata).

Exceedance stream flow: The stream flow exceeded a given percent of the time.

Greenhouse gas emissions: Gases that trap heat in the atmosphere, often measured in carbon dioxide (CO_2) equivalents.

Instream water right: A water right held in trust by the Oregon Water Resources Department (OWRD) for the benefit of the people of the State of Oregon to maintain water in stream for public use.

"Instream water rights" can be created through conversion of minimum perennial stream flows established by administrative rule, applications by selected state agencies, and "transfers" (temporarily or permanently) of water rights for out-of-stream use. As with other water rights, all of these processes for creating instream water rights are subject to public comment and legal challenges.

Instream demand: The amount of instream flow necessary, at each time of year, to support all instream flow needs, including those of aquatic life and recreation.

Natural stream flow: The stream flow expressed in volume per unit of time (cfs or m^3/s), that would occur in a natural state, without storage or withdrawal.

Net irrigation water requirement (NIWR): Evapotranspiration minus effective precipitation.

Off-channel storage: According to Oregon Administrative Rule 690-300-0010(31), "off-channel" means outside a natural waterway of perceptible extent which, during average water years, seasonally or continuously contains moving water that flows off the property owned by the applicant and has a definite bed and banks which serve to confine the water. "Off-channel" may include the collection of stormwater runoff, snowmelt, or seepage which, during average water years, does not flow through a defined channel and does not flow off the property owned by the applicant.

Out-of-stream demand: The demand to use, outside of a stream, water that would normally flow in that stream.

Place-Based integrated water resources planning (PBP): Voluntary, locally initiated and led effort in which a balanced representation of water interests in a basin, watershed, or groundwater area work in partnership with the state to build a collaborative and inclusive process, gather information to understand current water resources and identify knowledge gaps, examine current and future instream and out-of-stream water needs, identify and prioritize strategic integrated solutions to meet current and future water needs, and develop a Place-Based plan that serves as a roadmap for meeting water needs and informs future updates to the statewide Integrated Water Resources Strategy (IWRS).

Planning area: Geography that is the focus of the PBP effort.

Recharge (groundwater): The surface water that moves through the unsaturated zone and enters aquifers. Recharge to the water table can be diffuse (precipitation over the land surface) or localized (streams losing water to groundwater within reaches of the stream).

Voting members: Members of the Lower John Day Partnership who have signed the Declaration of Cooperation.

Watershed: The area of land that drains to a single outlet and is separated from other watersheds by a topographic or subsurface drainage divide.

Water availability basin (WAB): Sub-basins delineated by the OWRD for the purpose of computing available water.

Water Availability Reporting System (WARS): A system of computerized data maintained by the OWRD for the purpose of determining OWRD's estimate of "water availability" within a WAB. In general, the system estimates water availability by subtracting instream water rights, water storage, and estimated out-of-stream consumptive uses from estimated natural streamflow.

The OWRD has created and maintains a database of the amount of surface water available for allocation for most of the waters of the state. The database is used to evaluate applications for new uses of surface water. Water availability is the OWRD's term for describing if, in its view, water is "available" for further appropriation. Available is defined as the amount of water that can be appropriated from a given point on a given stream for new out-of-stream consumptive uses. The OWRD typically does this by subtracting existing in-stream water rights, storage, and out-of-stream consumptive uses from the natural stream flow. This methodology does not take into account instream flow needs beyond those reflected by instream water rights, which many waterways do not have and which do not include instream flow needs such as those for habitat formation (peak and ecological flows), even though some contend the OWRD should, and may be legally required, to take those instream flow needs into account.

Water interests: Local governments, tribal governments, utilities, major industries or employers, agriculture and forestry groups, conservation groups, special districts, and state and federal agencies that are located within, serve, or whose members have interest in the planning area.

Water year: For hydrologic purposes, the water year runs from October of one year through September of the next, so winter storm flows are not split between years. (For example, water year 1990 extends from October 1, 1989, through September 30, 1990).

Wildland urban interface area: Populated area where people live in and around forests, grasslands, shrub lands, and other natural areas.

Work Group: Members of the Lower John Day Partnership involved in the planning process.

Introduction

Place-Based integrated water resources planning (Place-Based water planning) is a voluntary, locally initiated and led effort. The purpose of the Place-Based planning effort is to set a process for a balanced representation of water interests to work in partnership with the state to analyze and understand and then develop a plan to meet the instream and out-of-stream water supply needs in the Lower John Day Basin (Lower Basin). In 2015, the OWRD developed Draft Guidelines that provide a framework for planning. OWRD is a partner in the Work Group and also provides financial, technical, and planning assistance to the Work Group and its subsequent reports and this Lower John Day Basin Integrated Water Resource Plan.

The following planning principles are adapted from the draft Place-Based Planning Guidelines to fit the unique circumstances of the Lower Basin and our local planning process and were developed based on Work Group discussions.

- Maintain a locally initiated and led collaborative process.
- Employ a voluntary, non-regulatory approach in the planning process.
- Use an inclusive process that strives for a balanced representation of Basin water interests.
- Utilize an outside facilitator and facilitated processes.
- Conduct in close partnership with OWRD.
- Include the most current water resource data and scientific concepts.
- Address both instream and out-of-stream needs.
- Cover water quantity, quality, and ecosystem health.
- Build on and integrate existing studies and plans.
- Strive for consensus in decision-making.
- Utilize an open and transparent process that fosters public participation.
- Adhere to IWRS principles, Place-Based Planning Guidelines, and federal, state, and local laws.

Planning Area

Geographic Scope

The Lower Basin in north-central Oregon supports native aquatic fish species and habitat, small rural communities whose economies are centered on agriculture and energy development, and exceptional recreational, historical, and cultural riches. This section compiles and summarizes existing plans, assessments, and other available information to describe the Lower Basin setting. No new data were collected for this section.

The Lower Basin planning area encompasses all of the John Day River Basin downstream of the confluence of the Upper and North Fork John Day Rivers near Kimberly, Oregon (at River Mile 181). It drains an area of 3,149 square miles (over 2 million acres). The majority of the Lower John Day falls within Gilliam, Wheeler, and Sherman Counties, with smaller portions in Morrow, Wasco, Jefferson, Crook, and Grant Counties. The Lower Basin is situated in the interior plateau between the Blue Mountains to the east and the Cascades Range to

the west. The John Day River flow originates in the Strawberry Mountains (elevation 9,000 feet) and flows generally westward and then northward for approximately 284 miles, discharging into the Columbia River east of Rufus (elevation 200 feet). The John Day Dam on the Columbia River created Lake Umatilla and permanently inundated approximately 9 miles of the John Day River upstream from the mouth.

The climate in the Lower Basin is semi-arid. This large area has highly variable precipitation, land cover, elevation, and evapotranspiration (ET). The area has a continental climate, characterized by low winter and high summer temperatures, low average annual precipitation, and dry summers. The low annual rainfall on the majority of the landscape is characteristic of the Intermountain Region, which receives most precipitation (70 to 80 percent) between November and March. Less than 10 percent of the annual precipitation falls as rain during July and August, usually from sporadic but violent thunderstorms (ODA, 2017).

John Day Fossil Bed formation along irrigated fields in Rowe Creek drainage. (Jeffrey Kee photo credit)

Most surface water is derived from the upper watersheds of the Lower Basin, primarily in the form of melting snow. The North and Middle Forks provide 60 percent of the flow to the mainstem (Northwest Power and Conservation Council [NPCC], 2005). Major tributaries of the Lower John Day include Wallace Canyon, Bridge Creek, Thirtymile Creek, Butte Creek, Rock Creek, Grass Valley Canyon, Pine Hollow, Bear Creek, Dry Creek, and Juniper Creek (ODA, 2017). There are 981 stream miles in the Lower Basin. Section 5 of the Step 2 Report provides further detail on surface flows.

Plan Organization

The following Integrated Water Resource Plan (Step 5) is a summary of previously published reports starting with Step 1, which began in 2016, through Step 4, completed in 2021. This final Plan was completed in June 2022.

Chapter 1 of this Plan summarizes the Work Group, its members and contributors, governance procedures, and public engagement strategy. Chapter 2 characterizes the state of the water resources including water rights and the Lower Basin's water budget and highlights found data gaps in the planning area. Chapter 3 summarizes current uses and future water demands. Chapter 4 identifies 19 Critical Issues and a list of recommended actions and priority subwatersheds, which will

be referred to throughout this report as WABs. WABs are essentially small watersheds used by OWRD to calculate if water is available for future allocation. There are approximately 30 WABs in the Lower Basin. Their names usually correlate with tributary names. And finally, Chapter 5 summarizes implementation through a Strategic Action Plan.

Chapter 1: The Planning Process (Step 1)

Members of the Work Group break for lunch on a field tour examining fish passage barriers (Lee Rahr photo credit)

In Chapter 1, the Plan summarizes the Work Group, its members and contributors, governance procedures, and public engagement strategy.

Acknowledgments

The Lower John Day Basin Integrated Water Resource Plan represents the dedicated work of many individuals and organizations. In particular, we would like to thank the members of the Lower John Day Basin Work Group (Work Group) and all those who put in extra time and effort serving on a variety of subcommittees. Special thanks to Gilliam County Soil and Water Conservation District (SWCD), Mid John Day-Bridge Creek Watershed Council, and Sustainable Northwest for compiling the data and assembling the first draft of this report. We acknowledge the vital contribution of the authors of the existing plans, assessments, studies, data sets, and other materials that informed this document. Finally, we offer our deep appreciation to OWRD for funding this effort under a Place-Based integrated water resources planning grant, to The Ford Family Foundation for learning partnership funding, and to those group members who offered match funding and countless in-kind hours.

"ODFW and the Warm Springs tribes were critical in better understanding our fisheries resource. We believe our action plan and our coordinated efforts with the JD Partnership puts the Lower John Day on solid footing for improving existing instream conditions."

– Herb Winters, Gilliam County SWCD Co-Convener

Field trip to observe beaver dam analogs on Bridge Creek, 2018 (Debbi Bunch photo credit)

Contributors

This Plan was developed by the Work Group and its subcommittees. Current members of the Work Group include:

- Gilliam County SWCD
- Gilliam-East John Day Watershed Council
- Mid John Day-Bridge Creek Watershed Council
- Natural Resources Conservation Service (NRCS)
- Oregon Natural Desert Association (ONDA)
- Sherman County Area Watershed Council
- Sherman County SWCD
- Gilliam County Cattlemen Association
- WaterWatch of Oregon
- Oregon Department of Environmental Quality (DEQ)
- OWRD
- Confederated Tribes of the Warm Springs
- Wheeler SWCD
- Sustainable Northwest
- The Conservation Angler

The following groups also participated in the planning process:

- Oregon Department of Agriculture (ODA)
- The Freshwater Trust
- Port of Arlington
- Oregon Department of Fish and Wildlife (ODFW)

The following cities participated through field tours, meetings, surveys, and/or public comments processes:

- Arlington
- Condon
- Fossil
- Grass Valley
- Mitchell
- Moro
- Spray

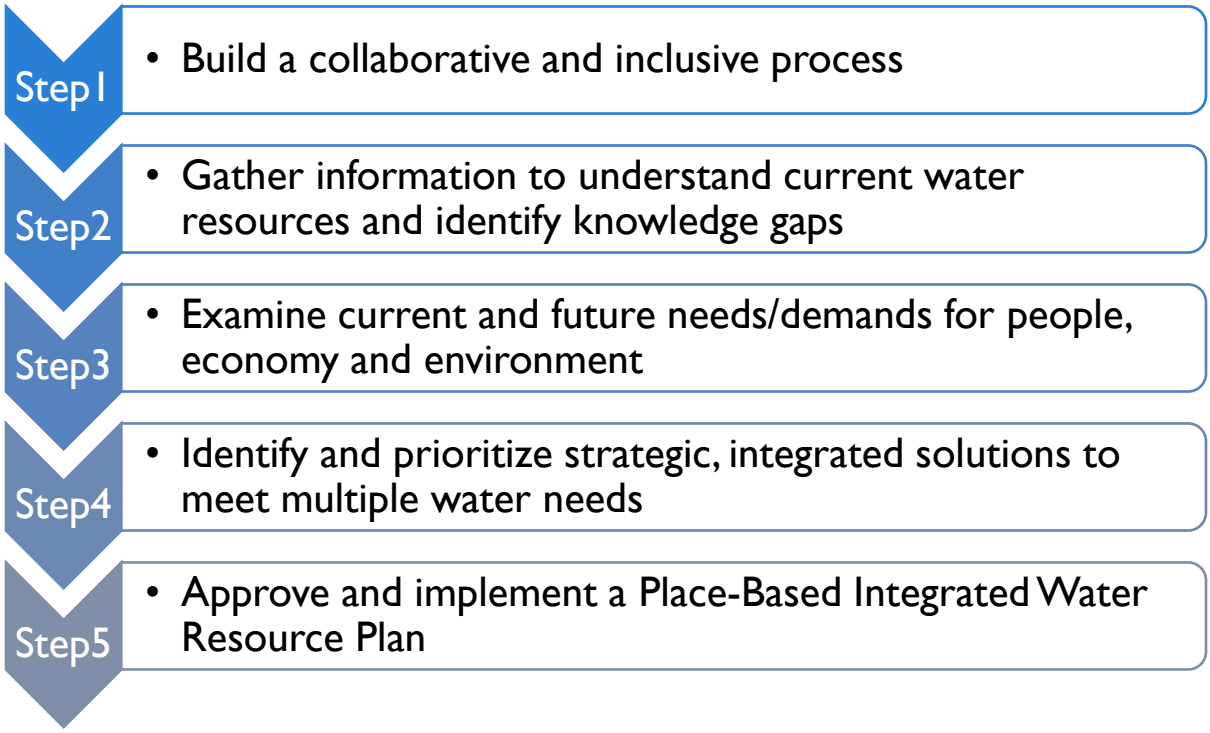
The following groups and individuals provided comments (incorporated) on the Draft Step 5 Plan (9/1/2021):

- WaterWatch
- ONDA
- Jeffrey Kee
- DEQ (Roxy Nayar and Smita Mehta)
- OWRD (Steve Parrett)
- The Conservation Angler (Craig Lacy)
- City of Condon
- ODFW
- Bill Marlett
- Native Fish Society

> "Water is the most basic of our needs. Over the last five years, the Place Based Planning process has worked to develop a plan to meet that need for people and our environment. The Integrated Water Resource and Action Plan encompasses the work that began with a locally initiated and led effort with close coordination between local stakeholders, watershed councils, and soil and water conservation districts. That effort was quickly expanded and made stronger by the involvement of a balance of representation from regional and statewide interests."
>
> – Debbi Bunch, Mid John Day-Bridge Creek Watershed Council Co-Convener

Governance and Organizational Structure

In December 2017, the Oregon Water Resources Commission adopted an updated IWRS, a framework for better understanding and meeting instream and out-of-stream water needs, including water quantity, water quality, and ecosystem needs. The IWRS recommended that OWRD help communities undertake a Place-Based approach to integrated water planning. Place-Based integrated water resources planning is a voluntary, locally initiated and led effort in which a balanced representation of water interests in a Basin, watershed, or groundwater area work in partnership with the state to:



OWRD developed draft Place-Based Planning Guidelines that lay out the five-step process for pursuing Place-Based planning efforts. In 2016, OWRD awarded grants to four communities to pilot the Place-Based process. The Work Group applied and was officially awarded funding on February 25, 2016.

The purpose of the integrated plans is to develop a shared understanding of the water quantity, water quality, ecological health, and other conditions in the planning area. This area experiences water supply shortages for instream and out-of-stream uses, which are expected to intensify in the future.

The vision of the Work Group is to help the Lower Basin create the condition for clean, cold water and healthy watersheds to provide for local ecosystems, economies, and communities. The mission of the Work Group is to restore and maintain the Lower Basin for the ecological, economic, social, and cultural well-being of the communities the river supports. Our partners and participants have brought a deep knowledge of the region, best available science, and cooperative planning and fundraising to more actions that establish healthy and resilient native habitats, balanced water use, and working landscapes for future generations. Lower John Day Place-Based Planning participants signed a Declaration of Cooperation and the Gilliam County SWCD has been the official convener and fiscal agent of the Work Group. The Mid John Day-Bridge Creek Watershed Council has been a co-convener since June 2016. A Declaration of Cooperation for the group was signed by 14 partners in April 2017 and three additional groups signed on later in the planning process. Signers of this declaration constitute the voting body and agreed to seek consensus for all decision-making processes. Decisions can be made at any properly noticed meeting by consensus of those in attendance with no quorum requirement. As outlined in the Declaration of Cooperation, each organization is allowed one vote, regardless of the number of representatives in attendance. Consensus minus 10 percent can carry an action.

This Plan helps to implement the State of Oregon's Integrated Water Resources Strategy and related policies. Under Oregon law, all water belongs to the public and is managed in accordance with many state and federal laws and policies. This planning effort will help understand and meet both the water needs of our communities, economy, and environment consistent with existing law and policy and will not jeopardize any existing rights to use water.

Local technical experts from SWCDs, the NRCS, and watershed councils have been working with public and private land managers for decades to improve rangelands and riparian areas and increase water availability (Jeffrey Kee photo credit).

Public Engagement

Initial outreach to form the Work Group was based on the suggested stakeholder list from the Place-Based Planning Guidelines. Initial meetings were well represented by the conservation community that work in the Lower Basin. As the Work Group continued to form, water user groups and interests were identified that were missing. The co-convenors looked at broader stakeholder groups for additional participation and identified possible representatives. Adding staff from three watershed councils and three SWCDs, many of whom are landowners, was a strategy used to ensure a more balanced representation of interests in the Work Group. That staff briefed the board members throughout the process and each provided feedback when necessary, including the identification of Critical Issues and strategies from the Step 3 process. In addition, the group has reached out to the public in multiple ways to ensure as many people are informed and involved as possible.

An outreach committee was formed, and an outreach plan was developed early in the process. It was recognized that many people may not be able to make the regularly scheduled meetings due to work or other responsibilities, so multiple avenues were used to reach people where they were. Work Group members presented information on the Place-Based Planning process and progress to county court and city council meetings, local agricultural group meetings, and SWCD and watershed council boards. A website was developed to serve as a central location to access meeting information and group documents, especially the Step Reports. Surveys were developed and circulated in a variety of ways to collect feedback and information from members of the public.

Cottonwood Canyon public outreach event and Place-Based Planning September 2019 meeting (Lee Rahr photo credit)

Balanced Participation

Balanced participation in the Place-Based planning was a priority for the Work Group. The co-conveners, facilitators, and other group members regularly assessed the participant group to ensure it was as balanced as possible. An email distribution list was created for Work Group members and all interested parties; the list was used to distribute monthly meeting notices, meeting notes, and all draft and final reports and to request public comment on draft reports. The following sectors and interest groups are represented in the distribution list serve:

- Local governments (cities and counties)
- Tribal governments
- Municipal water and wastewater utilities
- Major industries or employers
- Agriculture
- Forestry
- Self-supplied water users
- Conservation/environmental groups
- Power companies
- Small businesses
- Private landowners
- Special districts (e.g., irrigation, public utilities, flood control, parks/recreation, drainage, ports, etc.)
- State and federal agencies (natural resources and management, business development)

Step 1

The original planned convener for the Place-Based Planning process was the John Day Basin Partnership with coordination by the Lower John Day Work Group, a subgroup of the Partnership. Ultimately, the convenorship was held by Gilliam County SWCD with the Mid John Day-Bridge Creek Watershed Council added as a convener. The original members of the Lower John Day Work Group then began the initial outreach to additional stakeholders identified in the Place-Based Planning Guidelines. As outreach for Step 1 (June 2016 to April 2017) continued, the Work Group asked/identified which water users or interests were missing. The Work Group looked at broader stakeholder groups and then identified possible representatives of those groups and reached out to them.

Included in the Declaration of Cooperation are these statements:

Diverse Water Interests active in the Lower John Day planning area are invited to participate in the planning process as members of the Stakeholder Group by becoming a party to this Declaration. Stakeholders that sign the Declaration and fulfill membership requirements will be voting members of the Lower John Day water resource Work Group.

For the purposes of implementing this planning process "Basin Water Interests" will be interpreted to mean local governments, tribal governments, utilities, major industries or employers, agriculture and forestry groups, conservation groups, special districts, and state and federal agencies that are located within, serve, or whose members have interest in the planning area.

Step 2

The Work Group met monthly or every other month throughout the Step 2 process (April 2017 to January 2019). Meeting notices were sent to the distribution list and placed in local newspapers and on the Lower John Day Work Group Facebook page. The Draft Step 2 Report was shared with the public for a 30-day public comment period. During the public comment period, the Work Group held a meeting for the general public in Condon. Copies of the report were available at this meeting, and several Work Group members were selected to speak on a panel about the process. Thirty-seven people attended this meeting. After comments were incorporated into the final draft of the Step 2 Report, it was recirculated to the email list. Hard copies were available at the SWCD offices.

Step 3

Throughout the Step 3 process (January 2019 to July 2019), the Work Group met once per month in a standing meeting open to the public. Meeting notices were sent to the distribution list and to local newspapers and were posted on Facebook. In addition, the Technical Subcommittees usually met once per month and the Outreach Committee presented information about the planning process at numerous county commission meetings, city council meetings, agricultural outreach events, and agency annual dinners and events. Field trips were also held during the Step 3 period, which included, but were not limited to, wastewater treatment plants, fish passage barriers, juniper management, and restoration and beaver dam analog installations.

The draft report was circulated to the public for a 30-day comment period. During this time, the Work Group hosted a public meeting in Mitchell to present the draft document. In addition to the Mitchell outreach meeting, which 10 local landowners attended, the Work Group presented at the annual SWCD meeting in Condon. In addition to the Work Group presentation, Nick Weber, a Fish Biologist with EcoLogical Research, LLC, also presented their contracted work on instream restoration through beaver dam analogs. More than 50 local residents, landowners, agencies, and Work Group members attended the dinner meeting. After comments were incorporated into the final draft of the Step 3 Report, a final Water Needs and Vulnerabilities of the Lower John Day Basin

report was circulated to the email list. Hard copies were available at the SWCD and watershed council offices.

Step 4

Throughout the Step 4 process (July 2019 to May 2021), the Work Group met once per month in meetings open to the public at meeting spaces in the Lower Basin. Meetings in April 2020 through May 2021 were held online through the GoToMeeting web-based platform due to COVID-19 safety protocols. The GoToMeeting platform provides a call-in only option to allow those with no or limited internet service to attend. Meetings were publicized through the distribution list, newspaper advertisements, radio interviews, and on the Lower John Day Place-Based Planning website (https://www.lowerjohndaypbp.com) and Facebook. Project progress was presented at several meetings throughout the area.

The Step 4 Report outlines 19 Critical Issues and 46 strategies that were identified through analysis from Steps 2 and 3, as well as public outreach and input received from the landowner community and recreation and conservation stakeholders. The Work Group spent time during several meetings to collect and prioritize the Critical Issues. Final ranking was achieved through a "dot" voting exercise. Strategies to address the Critical Issues were brainstormed during group meetings and collected from other stakeholders and members of the public through several survey collections. Both paper and electronic surveys were distributed at NRCS and SWCD public meetings, and watershed council board meetings and through the website and email distribution. Feedback from public surveys was included in the internal process to identify 19 Critical Issues and 46 strategies summarized in Chapter 4.

The Step 4 report was made available for a 30-day public comment period (February 2021). Comments were incorporated into the final report. A separate in-person public meeting was not held to present this report due to COVID-19 risks and restrictions but can be found with other final documents on the Lower John Day Work Group website.

Step 5

Similar outreach as was completed in Steps 1 to 4 has continued for Step 5. Meetings have still been conducted virtually. Instead of in-person field tours, throughout the Step 4 and Step 5 process, we have hosted guest speakers on topics related to Critical Issues and on information related to the implementation phase of our work.

Overall Outreach and Diversity Considerations

The Work Group worked exceptionally hard to be inclusive to underrepresented communities. Special outreach and inclusivity actions taken over the course of the planning process included:

Multilingual material was considered. However, less than 5 percent of the population of Wheeler, Gilliam, and Sherman Counties is non-English speaking according to the U.S. Census, so this outreach method was rejected as difficult to implement, with low chance of impact.

Diversity of membership was considered when evaluating participation by those who are making decisions. It was determined that the group was adequately diverse and included women and tribal representatives. The Confederated Tribes of the Warm Springs directed participation to tribal staff who regularly participated. The Work Group strives to be inclusive but is aware of the lack of immigrant agricultural representation.

Diversity of input methods - Different methods were offered to promote meetings and public comment periods of reports including electronic email list serve, hard copy documents provided at agency offices, social media promotion, local newspaper advertisements, public message board flyers,

in-person meetings and, in 2020, phone and GoToMeeting online were made available as our main meeting platform.

Meeting landowners and the public at existing events was an outreach strategy used to gain a balance of feedback and ensure the local community was aware of the planning process. The Work Group attended and presented (prior to March 2020) on the planning process and progress at NRCS local workgroup meetings, SWCD monthly meetings and annual dinners, watershed council monthly and annual meetings, stockgrowers meetings, bull tour, and city council and county court meetings.

Meeting times - Meeting times were selected to help provide opportunities for all people to attend, including those with conflicting responsibilities (i.e., evening care of children). Remote meetings and Work Groups provided opportunities for participation. The majority of meetings began at 10 a.m. Daytime meetings did arise as a barrier for landowners. To mitigate this issue, Work Group members attended and provided updates at landowner and watershed council meetings noted above.

The Work Group met monthly through the entirety of the six-year (2016 to 2022) planning process. Additionally, the technical subcommittees often met monthly and the Outreach Committee presented updates and findings during public review for Steps 2 through 5. Prior to COVID-19, outreach was targeted to county commission meetings, city council meetings, agricultural outreach events, and agency annual dinners and events. Public outreach since COVID-19 has focused primarily on news outlets, public message boards, newspaper advertisements, social media forums, and on the Lower John Day Place-Based Planning website (https://www.lowerjohndaypbp.com).

As a result of COVID-19, the Work Group's usual in-person meetings held throughout the Lower Basin were held online through the GoToMeeting platform, meeting COVID-19 safety protocols. All meetings were publicized through newspaper advertisements and on the Lower John Day Place-Based Planning website (https://www.lowerjohndaypbp.com).

Gilliam County SWCD annual dinner, Place-Based Planning Step 3, and beaver dam analog presentations, 2019 (Lee Rahr photo credit)

Chapter 2: The Lower John Day's Water Resources (Step 2)

John Day scenery (istockphoto.com photo credit)

Chapter 2 summarizes the characteristics of the state of water resources in the Lower Basin as reported in the Step 2 Report. Major findings include:

- Most of the water, by unit area, is coming from the smaller southern basins (groundwater and surface water). Specific examples include Upper Rock Creek, Thirtymile Creek, Butte Creek, Bridge Creek, and Bear Creek.
- Nearly 60 percent of all mid-summer natural surface outflow comes from Rock Creek above Wallace Canyon, Bridge Creek above West Branch, Thirtymile Creek, Butte Creek, Rock Creek at the mouth, and Bear Creek. There is minimal surface water contribution from the Lower Basin between Service Creek and McDonald Ferry (100 to 200 cfs during high flow periods and 3 to 10 cfs during late summer).

- The Lower Basin produces only 5.6 percent of the total annual surface water yield, despite covering 40 percent of the overall basin.
- Of the total amount of water coming into the Lower Basin, 84 percent is lost to ET, 7 percent goes to surface water, and 9 percent goes to groundwater.
- More than 80 percent of surface water consumption comes from the mainstem, Rock Creek, Butte Creek, and Muddy Creek.
- The Grass Valley Canyon, Scott Canyon, and Lower Rock WABs have groundwater pumping rates significantly greater than estimated within-basin groundwater production.
- Approximately 24 percent of the total amount of existing water rights is being used. This is believed to be due to limited water availability and may also be due to other factors including on-farm management decisions.
- The static amount of instream rights (30 and 20 cfs year-round) is considerably below the Scenic Waterway flows and the estimated instream flow needs of fish. Instream water rights are much less frequently met where they exist on tributary streams. Six of 31 tributary WABs have instream established targets/rights.
- Water is not likely available for new surface water appropriations from July through October. Water may be available for appropriation from January through May.
- Instream low flows during key migration periods are a primary factor leading to serious steelhead and Spring chinook population declines. By 2070-2099, stream reaches with mean August temperatures less than or equal to 18˚C are primarily limited to lower-order higher-elevation subwatershed tributaries due to changing climate conditions. It is estimated that total steelhead-bearing stream miles with water temperature conditions less than or equal to 18˚C will reduce by 60 percent from the period 1993-2011 to the period 2070-2099. WABs with the greatest amount of suitable stream miles under future conditions include Upper Rock, Butte, Pine, and the Bridge Creek Basin. Other current important steelhead spawning grounds include Thirtymile, Service, and Mountain Creeks.

The major sections of the report are summarized below.

Basin Overview

The Lower Basin, defined as the entire Basin downstream from the North Fork John Day River confluence with the John Day River are represented as the ancestral home of the CTWSRO and the CTUIR. The Lower Basin supports native aquatic fish species and habitat, small rural communities whose economy is centered on agriculture and energy development, and exceptional recreational, historical, and cultural riches. It drains an area of 3,149 square miles, with the mainstem flowing generally westward and then northward to the Columbia River near Rufus. The majority of the Lower Basin is in Gilliam, Wheeler, and Sherman Counties. Smaller portions are in Morrow, Wasco, Jefferson, Crook, and Grant Counties. The Lower Basin has a plateau form, broken by the sinuous valley of the mainstem and its steep-walled tributaries.

The John Day Basin harbors the greatest assemblage of fossils from the Age of Mammals. This is the Clarno Unit West of Fossil, Oregon, which is a National Park Service managed area of the John Day Fossil Beds National Monument (Jeffrey Kee photo credit)

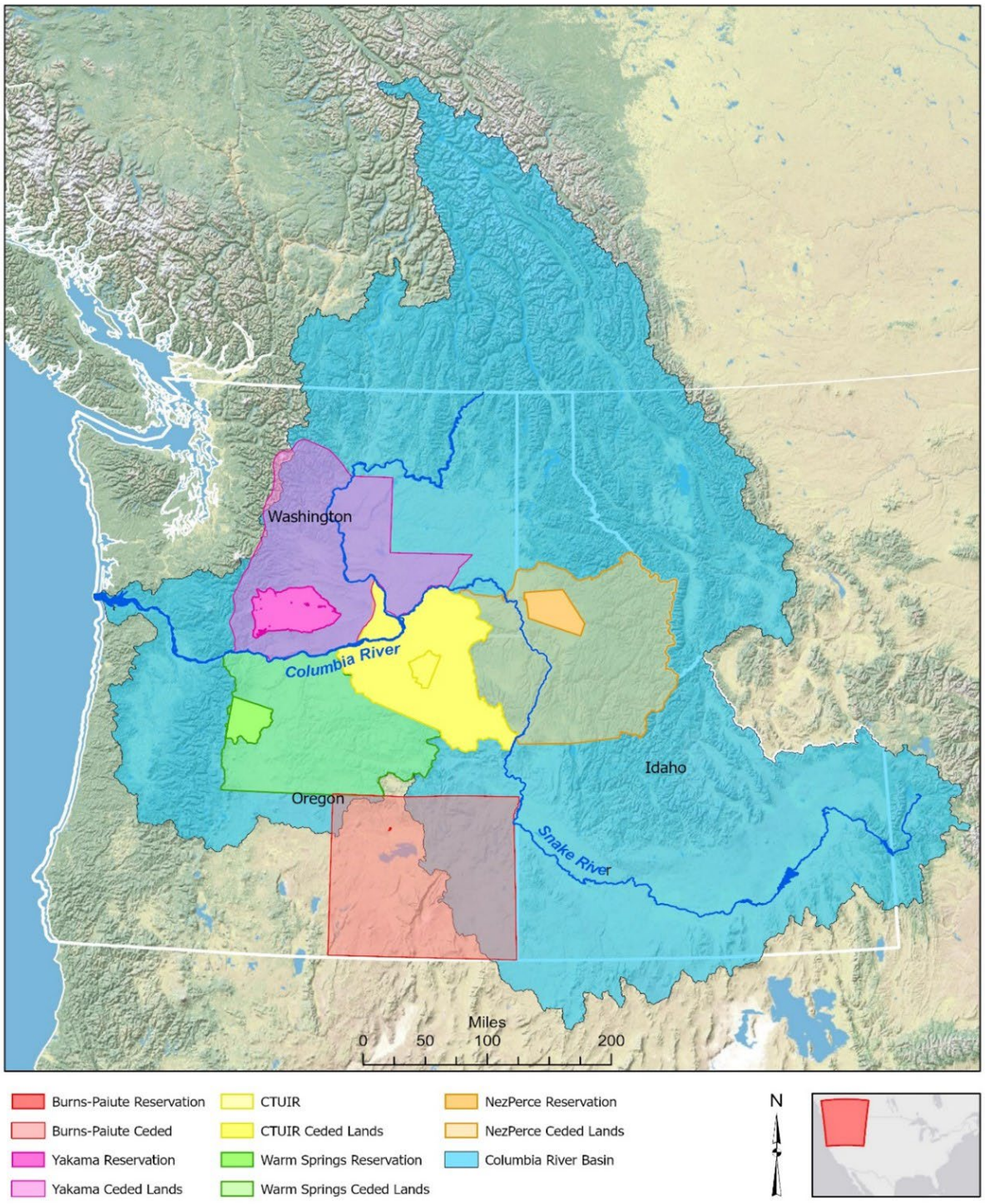
The low annual rainfall on the majority of the landscape is characteristic of the Intermountain Region, which receives most precipitation (70 to 80 percent) between November and March. Less than 10 percent of the annual precipitation falls as rain during July and August, usually from sporadic but violent thunderstorms. Annual rainfall in the Lower Basin as a whole varies from about 8 inches in the northeast to about 28 inches in the extreme southeast, higher elevation, forested areas. Most of the agricultural areas receive between 10 and 14 inches of precipitation per year.

Most surface water flow in the mainstem Lower John Day comes from the upper watersheds, primarily in the form of melting snow. The two largest WABs, Butte Creek and Upper Rock Creek, generate the largest total annual surface outflows. The John Day is primarily a free-flowing system (no large-scale dams), with highly variable discharge from peak to low flows. Discharge usually peaks

from March through June, and seasonal low flows typically occur from August to October. Major tributaries of the Lower Basin include Wallace Canyon, Bridge Creek, Thirtymile Creek, Butte Creek, Rock Creek, and Bear Creek. Major aquifers are found in alluvial deposits and in the Columbia River Basalt and Clarno/John Day geological units.

Historical descriptions indicate that the John Day River was once a relatively stable and healthy river with natural riverine processes and habitats. However, watershed conditions in the Lower Basin have changed significantly over the past 150 years. A myriad of water and land use practices, from mining to livestock grazing to riverine habitat degradation to invasive species, have contributed to these changes. These disturbances have impaired water quality in hundreds of stream miles, degraded riparian corridors and disconnected floodplains, reduced biodiversity and fish populations, and changed the structure and function of upland habitats.

The CTWSRO is a federally recognized Indian tribe that resides in the John Day Basin, secured by the Treaty of Middle Oregon (1855). The reservation is located in north-central Oregon, 104 miles southeast of Portland and 60 miles north of Bend, and consists of 640,000 acres. Three tribes live on the reservation: the Warm Springs, Wasco, and Paiute, with each tribe having its own diverse history and heritage. The John Day River is one of the most critical watersheds for fisheries in the entire Columbia River Basin. The Lower John Day River subbasin is within the CTWSRO-ceded lands and supporting partner projects such as this are an integral part of maintaining cultural foods and fish populations. Actions identified in this Plan are also represented with the goals set forth in the John Day River Watershed Restoration Strategy (CTWSRO, 2015).



The CTWS reservation is dark green and the land they ceded to the United States is light green. The Columbia Basin is blue. Map Credit: Columbia River Inter-Tribal Fish Commission

The CTUIR lands are also located in the planning area. The CTUIR is a union of three tribes: Cayuse, Umatilla, and Walla Walla formed from negotiations with the U.S. government during the 1855 treaty. The Walla Walla and Umatilla people shared areas surrounding the Columbia River, while the Cayuse lived along the tributary river valleys in the Blue Mountains. Acknowledged aboriginal title lands cross the John Day River near the North Fork of the John Day River and John Day River at Kimberly, Oregon, and travel northward to Willow Creek and its confluence with the

Columbia River before following the Columbia River upstream. Traditional winter and summer use areas extended beyond these geographic landmarks with large historic villages on the Lower John Day River closer to the confluence with the Columbia River and near Kimberly, Oregon (Hunn et al., 2015). Forays for food, trade, or of cultural significance extend further into the Lower John Day River upstream beyond Cottonwood State Park and downstream from Kimberly, Oregon, to below Spray, Oregon (Hunn et al., 2015). More than 600 places of special importance are identified in Hunn et al. (2015) across the aboriginal title lands, and this document acknowledges the potential for even more.

In spite of past human disturbances, the Lower Basin continues to support wild runs of anadromous salmonids and a wide assemblage of resident wildlife. In addition, public and private landowners have increased awareness of the negative impacts of some land management practices. Current practices have been, and continue to be, improved to minimize these impacts while at the same time furthering the long-term interests of natural resource industries in the subbasin.

The John Day still supports the strongest wild runs of spring Chinook and summer steelhead in the Columbia River drainage, and fall Chinook salmon and anadromous Pacific lamprey are among other fish species present in the Lower Basin. Overall, it is estimated that there are 27 species of fish, including 17 native species, in the Lower Basin. Many fish populations in the Lower John Day River have declined significantly from historic levels.

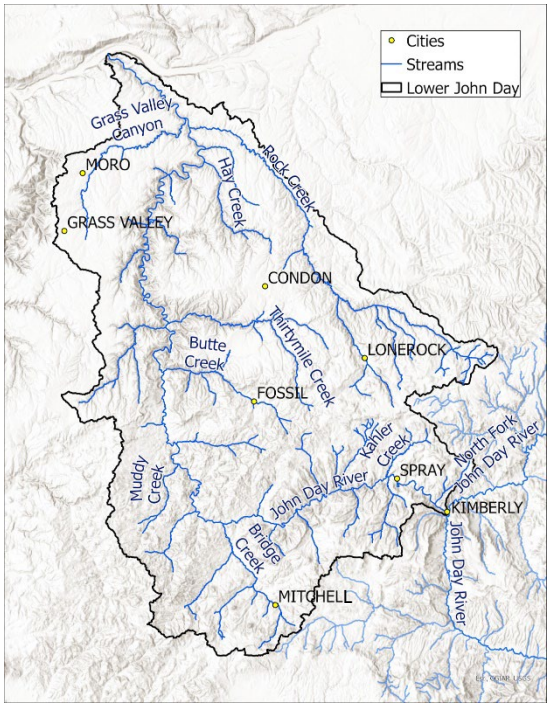
> …of the total amount of precipitation in the Lower Basin, 84 percent is lost to ET, 7 percent becomes part of the surface water flow of rivers and streams, and 9 percent goes to groundwater.

Private ownership is substantial in the Lower Basin. Land ownership in the Lower Basin is roughly 91 percent private and 9 percent federal (approximately 8 percent Bureau of Land Management [BLM] and 1 percent Forest Service). Private lands are mostly in agricultural use. There are approximately 327 farms and ranches in the Lower Basin. The primary agricultural products in the planning area are small grain, pasture and hay, and beef cattle production. While the region still relies on the production of food and forest products, the economy has diversified and is predominantly driven by agricultural, wind energy, and waste handling.

More recently, the Lower Basin has worked to become more of a recreation and tourist destination. Many small businesses cater to tourists. Hunting, fishing, boating, camping, wildlife observation, photography, hiking, swimming, fossil hunting, and scenic viewing on public and leased private lands are among the most common recreational activities.

Water Budgets, Surface Water, and Groundwater

Most of the surface water in the John Day River comes from the upper watersheds of the John Day River Basin from melting snow. For instance, the North and Middle Fork tributaries provide 60 percent of the flow to the mainstem river (NPCC, 2005).



Major tributaries of the Lower John Day include Wallace Canyon, Bridge Creek, Thirtymile Creek, Butte Creek, Rock Creek, Grass Valley Canyon, Pine Hollow, Bear Creek, Dry Creek, and Juniper Creek (ODA, 2017). There are 981 stream miles in the basin. Major aquifers are found in areas of the Columbia River Basalt Group (CRBG).

More information on groundwater, aquifers, and storage is provided in Sections 6 and 7 of the Step 2 Report, pages 69 through 81.

Twelve reservoirs in the region have dams taller than 10 feet, with four on Muddy Creek. The John Day is a primarily free-flowing system (no large-scale dams) with highly variable discharge from peak to low flows (ODA, 2017). Discharge usually peaks from March through June and seasonal low flows typically occur from August to October. The John Day River tends to experience flood events in December and January when warm temperatures and high precipitation result in rain on snow events, which lead to extreme runoff (ODA, 2017). Peak flows can account for 70 percent of the annual discharge. From year to year, peak flows can vary from 300 to 700 percent.

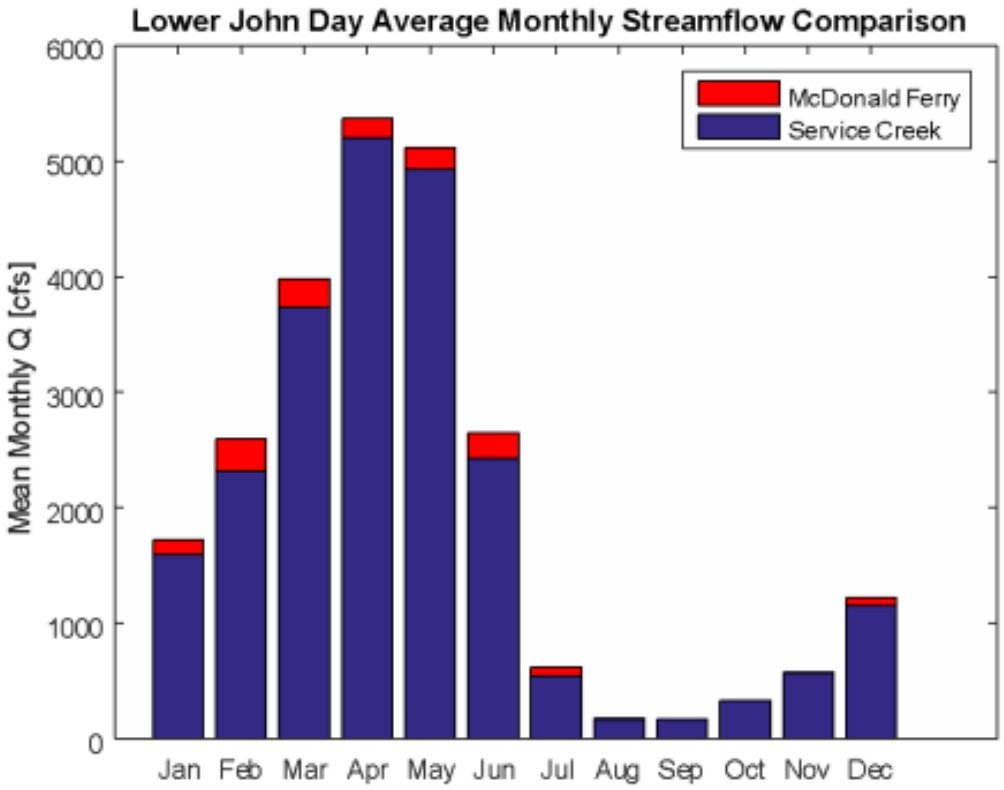
The hydrologic curve has shifted from historic times, with peak flows higher than the past and late season flows more diminished. It is suspected that these effects are due to greatly reduced rates of soil infiltration, reduced capacity for groundwater/riparian storage, and diminished in-channel storage in beaver ponds (NPCC, 2005). Flow data are available beginning in 1904, with a mean annual discharge into the Columbia River of 2,000 cubic feet per second (cfs) (NPCC, 2005). Average annual discharge of the John Day River into the Columbia River is approximately 1.5 million acre-feet (or 2,103 cfs), with a range of 1 million to 2.25 million acre-feet. Peak flow at the McDonald Ferry gauging station (River Mile 21) is typically more than 100 times greater than the lowest flows the same year. Groundwater provides much of the base flow for the Lower River in the summer (NPCC, 2005). In much of the basin, channel morphology is strongly influenced by valley form, alluvial fans, and large terraces (DEQ, 2010).

The Step 2 Report estimates that, of the total amount of precipitation in the Lower Basin, 84 percent is lost to ET, 7 percent becomes part of the surface water flow of rivers and streams, and 9 percent goes to groundwater. Most of the water, by unit area, is coming from the smaller, southern basins (groundwater and surface water). Specific examples include Upper Rock Creek, Thirtymile Creek, Butte Creek, Bridge Creek, and Bear Creek. Rock Creek above Wallace Canyon, Bridge Creek above West Branch, Thirtymile Creek, Butte Creek, Rock Creek at mouth, and Bear Creek account for nearly 60 percent of all mid-summer natural surface outflow. The Lower Basin produces only an estimated 5.6 percent of the total annual surface water yield, despite covering 40 percent of the

overall Lower Basin. As previously noted, there are significant water inputs above Kimberly from the North Fork John Day River, Middle Fork John Day River, and Upper main-stem John Day River.

The figure below, "Lower John Day Average Monthly Streamflow Comparison," illustrates the inter-annual and intra-annual variability in streamflow in the Mainstem Lower John Day River. Mean monthly flows peak during periods of snowmelt in April and May at more than 5,000 cfs, while in late summer flows are typically less than 200 cfs. Relative to incoming mainstem flows, there is minimal surface water contribution from the Lower Basin between Service Creek and McDonald Ferry (100 to 200 cfs during high flow periods and during late summer). The bulk of streamflow production in the entire basin (Lower, Upper, Main, North) occurs in months either outside the irrigation season (December through March) or during the early portion of the season when demand is not high (April and May).

The U.S. Geological Survey (USGS) gauge at McDonald Ferry (No. 14048000) regularly recorded instream flows of less than 20 cfs between the months of July and September. On September 3, 2018, a flow of 5.99 cfs was recorded at McDonald Ferry. In 2021, flow at McDonald Ferry fell below 20 cfs on August 5 and did not rise above that static threshold until September 19.



Pivot irrigation (Jeffrey Kee photo credit)

The Lower Basin has groundwater in three primary geological formations: the Columbia River Basalt Group, the Clarno/John Day Formation, and alluvial deposits. Average annual groundwater recharge rates over the Lower Basin were estimated at 0.4 to 0.6 inch/year.

There is a distinct, increasing spatial gradient from south to north in the number of, and ultimately the abstraction volume associated with, groundwater water rights within the Lower Basin. The vast majority of certificated groundwater rights is in the very northern reaches of the Lower Basin, where surface water production is typically relatively low.

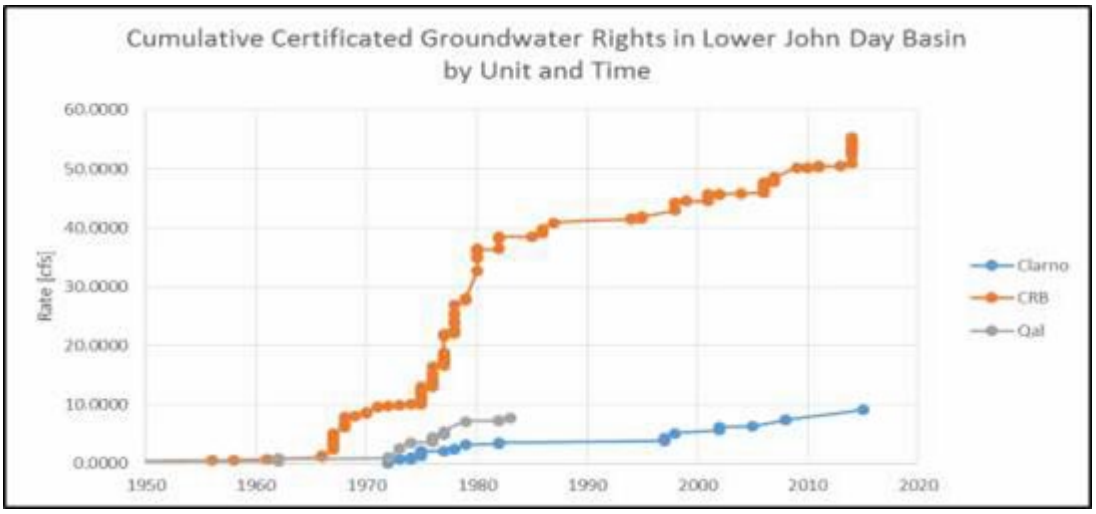
The Lower Basin is composed of five primary geologic units: CRBG, John Day/Clarno Group, Quaternary Alluvium (Qal), Mitchell Group, and The Dalles Group. CRBG dominates in terms of total coverage area. Similarly, the majority of certified wells in the Lower Basin draw from CRBG units (77 percent), followed by John Day/Clarno Group (12 percent) and Alluvium units (11 percent).

A John Day Basin-wide evaluation for groundwater resources in 1984 showed groundwater movement is generally northward toward the Columbia River; however, it is locally structurally controlled. Average annual groundwater recharge rates over the Lower Basin were estimated at 0.4 to 0.6 inch/year. The high horizontal transmissivity and relatively shallow static water levels in the CRBG make yields adequate for domestic and stock use in most areas. And although some small- scale irrigation use is assumed possible, the overall regional low recharge and significant depth of wells necessary to extract high volumes of water in the CRBG likely make large-scale groundwater irrigation development uneconomical or impractical. Low vertical transmissivity and precipitation input are primarily responsible for the low recharge in the CRBG group.

The alluvial deposits located in river and stream valleys are one of the most important aquifer units in the John Day Basin, second only to the CRBG. Significant Quaternary alluvial deposits are located in the vicinity of Spray, Twickenham, and Clarno and have high porosity, permeability, specific yields of up to 25 percent, and a high potential for recharge. Well yields can often be adequate for irrigation, but the shallow aquifers in alluvial deposits are typically directly connected to surface

waters. As such, removal of alluvial aquifer water can cause decreases in streamflow, and the management of the two resources must be considered together (Gannett, 1984).

The figure below shows that the cumulative certificated groundwater use in the Lower Basin has increased dramatically over the last 50 years. The period between 1965 and 1980 saw significant growth in the number of wells, particularly those targeting production from aquifers within the CRBG unit.

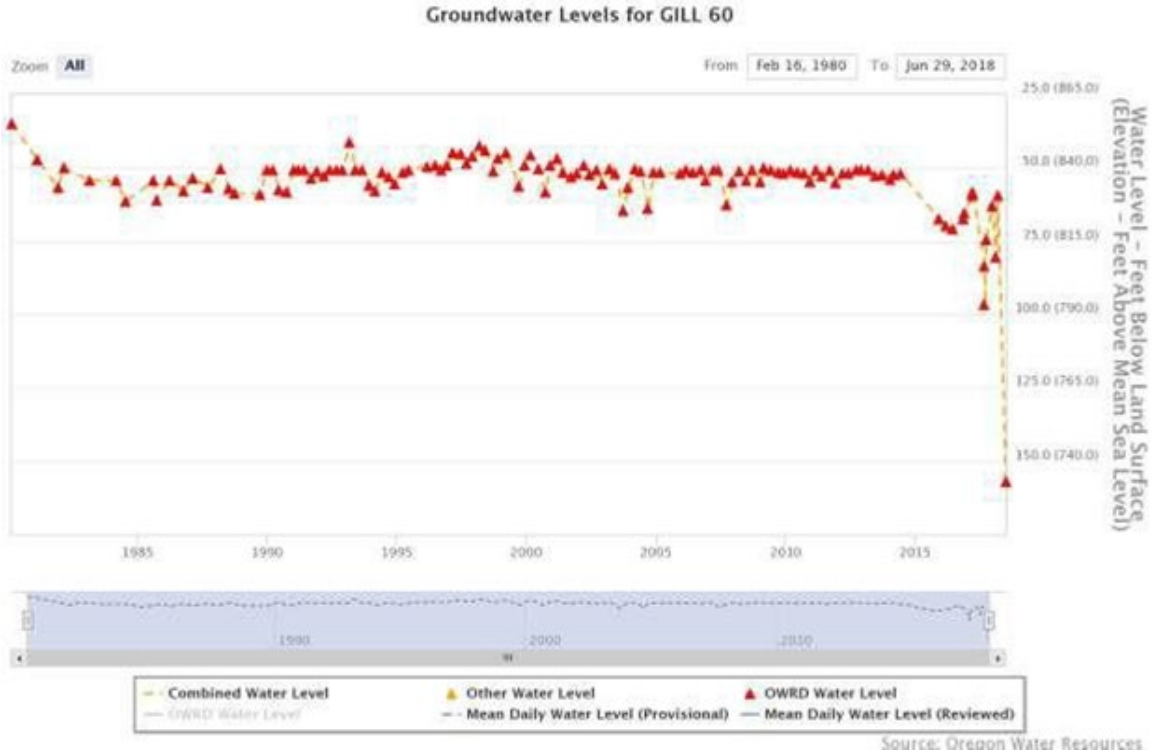


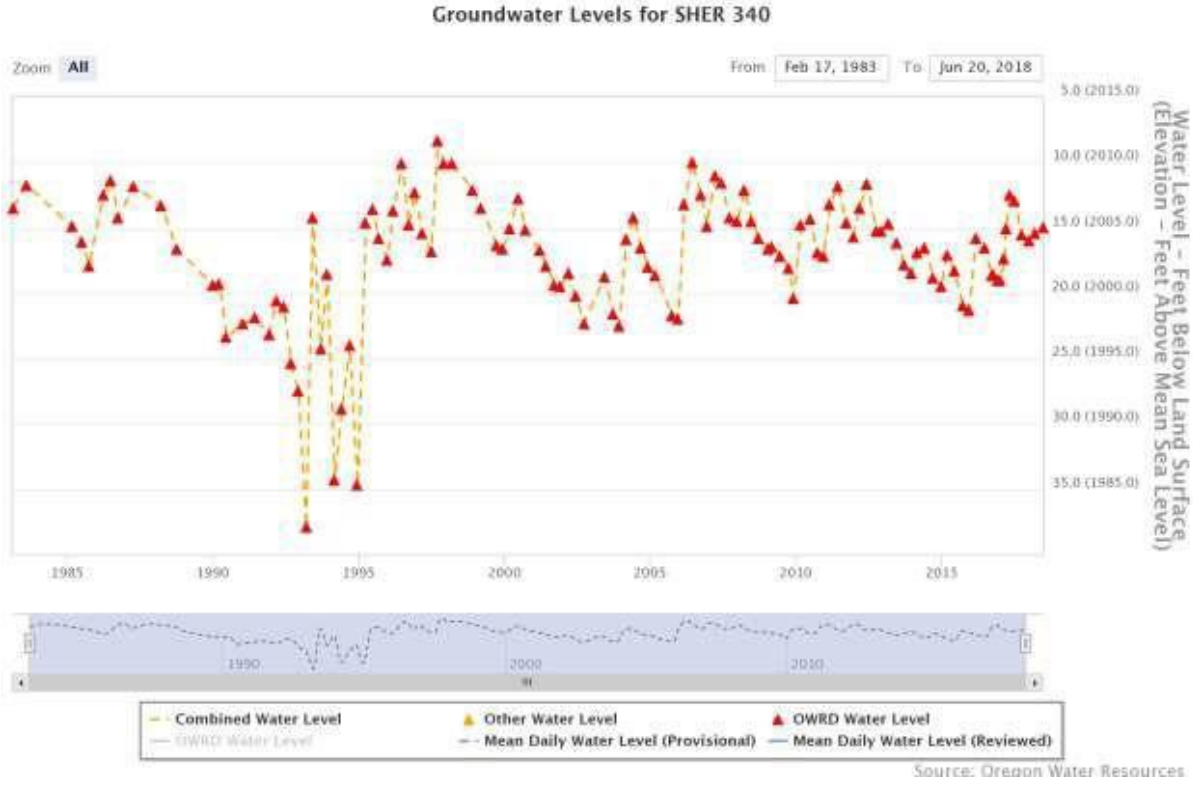
Trends in Groundwater Water Right Certificates in the Lower John Day by Aquifer (Clarno, CRBG, and Qal)

Relatively minimal increases in groundwater appropriations have occurred since the early 1980s.

Observation wells are used to track changes in water table elevations with time. Unfortunately, there are only two long-term and operational state observation wells in the entire Lower John Day Basin. Both of these wells are completed into CRBG aquifers and display annual fluctuations and some short-term declines; however, they do not indicate any long-term water table declines. It is impossible to extrapolate the long-term water table trends in the greater basin based on such sparse data. Groundwater data from other nearby areas (Olex, Willow Creek, and Umatilla) do show sharp downward trends of groundwater head with time. There are no long-term water level records available for wells situated in alluvial aquifers in the Lower John Day Basin.

An analysis of groundwater pumping versus calculated recharge suggests that recharge may not meet long-term demand in areas of intense groundwater development, but that the vast majority of sub-basins have little development (Step 2 Report, pages 70-73). This analysis assumes that effects of groundwater pumping and recharge are isolated within each drainage basin, and at this time it is unknown to what extent groundwater moves between these basins, as shown on the two well logs below.


Groundwater Levels for GILL 60
Zoom All
From Feb 16, 1980
To Jun 29, 2018
25.0 (865.0)
50.0 (840.0)
75.0 (815.0)
100.0 (790.0)
125.0 (765.0)
150.0 (740.0)
Water Level - Feet Below Land Surface (Elevation - Feet Above Mean Sea Level)
1985
1990
1995
2000
2005
2010
2015
Combined Water Level
Other Water Level
OWRD Water Level
Mean Daily Water Level (Provisional)
Mean Daily Water Level (Reviewed)
Source: Oregon Water Resources


Groundwater Levels for SHER 340
Zoom All
From Feb 17, 1983
To Jun 20, 2018
5.0 (2015.0)
10.0 (2010.0)
15.0 (2005.0)
20.0 (2000.0)
25.0 (1995.0)
30.0 (1990.0)
35.0 (1985.0)
Water Level - Feet Below Land Surface (Elevation - Feet Above Mean Sea Level)
1985
1990
1995
2000
2005
2010
2015
Combined Water Level
Other Water Level
OWRD Water Level
Mean Daily Water Level (Provisional)
Mean Daily Water Level (Reviewed)
Source: Oregon Water Resources

The number of, and water use of, exempt wells in Oregon is largely unknown. Many wells drilled before the 1960s are not registered with the state (Jeffrey Kee photo credit)

Water Storage

The Step 2 analysis found that roughly one-quarter of all surface water diversions in the Lower Basin are for storage. Of these storage rights, the vast majority designate livestock or wildlife as the intended use. WABs with the greatest number include Upper Rock, Muddy, Lower Bridge, and Rowe Creek, accounting for more than 85 percent of all storage in the Lower Basin. The table below depicts Lower Basin storage categories as documented in the OWRD Water Rights Database.

Category	POU Count
LIVESTOCK	205
WILDLIFE	127
FIRE PROTECTION	42
IRRIGATION	36
MULTIPLE PURPOSE	22
RECREATION	19
STORAGE	18
SUPPLEMENTAL IRRIGATION	14
FISH CULTURE	11
DOMESTIC	5
MUNICIPAL USES	3
POND MAINTENANCE	3
DOMESTIC EXPANDED	2
AESTHETICS	1
AGRICULTURE USES	1
FOREST MANAGEMENT	1
INDUSTRIAL/MANUFACTURING USES	1

POU = point of use

Water Use

Water use in the Lower Basin includes withdrawals from surface water and groundwater for irrigation, stock watering, domestic and municipal uses, and instream use for fish, wildlife, recreation, and maintenance of water quality. More than 77 percent of all certificated groundwater wells are located in two subwatersheds, Grass Valley and Lower Rock. (This analysis excludes wells that are exempt from water-use permitting requirements, including wells for stock watering and limited domestic use.) Surface water consumption in the region is dominated by the large WAB encompassing the mainstem John Day River Valley, from Service Creek down to the Columbia River confluence.

…from July to October, the period when water is generally in greatest demand, there is no available new surface water in the Lower Basin.

The analysis conducted in Step 2 compared modeled natural streamflow from OWRD's Water Availability Reporting Systems with existing consumptive uses and found that from July to October, the period when water is generally in greatest demand, there is no available new surface water in the Lower Basin. Winter water may still be available for diversion and/or off-channel storage. WABs with the greatest amount of available water are Thirtymile, Parrish, Butte, Alder, Kahler, and Shoofly Creeks. This analysis does not include instream flow needs beyond those reflected in existing instream water rights.

The vast majority of the irrigation comes from surface waters of the mainstem and its tributaries, so agriculture can play a major role in modifying local and regional hydrology (DEQ, 2010). On average, less than 24 percent of Basin surface water irrigation water rights are estimated to be used in mid- to late summer, suggesting that low flows make those rights "unreliable."

The table below shows the mid-summer water reliability by WAB. The two exceptions are Lower Bridge Creek and the mainstem John Day above Heidtmann Canyon, which have 87 percent and 56 percent of water rights with reliable summer water, respectively. However, this may also be due in part to on-farm management decisions.

Average Mid-Summer Water Right Reliability by WAB

NAME	% of Water Right Area Irrigated in August
ALDER CR > JOHN DAY R - AT MOUTH	1%
BEAR CR > BRIDGE CR - AT MOUTH	12%
BOLOGNA CAN > JOHN DAY R - AT MOUTH	0%
BRIDGE CR > JOHN DAY R - AB W BR BRIDGE CR	16%
BRIDGE CR > JOHN DAY R - AT MOUTH	87%
BUTTE CR > JOHN DAY R - AT MOUTH	21%
CHERRY CR > JOHN DAY R - AT MOUTH	0%
ESAU CAN > JOHN DAY R - AT MOUTH	0%
FERRY CAN > JOHN DAY R - AT MOUTH	0%
GIRDS CR > JOHN DAY R - AT MOUTH	3%
GRASS VALLEY CAN > JOHN DAY R - AT MOUTH	0%
HAY CR > JOHN DAY R - AT MOUTH	0%
HAYSTACK CR > JOHN DAY R - AT MOUTH	15%
HORSESHOE CR > JOHN DAY R - AT MOUTH	0%
JOHN DAY R > COLUMBIA R - AB HEIDTMANN CAN	56%
JOHN DAY R > COLUMBIA R - AT MOUTH	33%
KAHLER CR > JOHN DAY R - AT MOUTH	0%
MUDDY CR > JOHN DAY R - AT MOUTH	15%
PARRISH CR > JOHN DAY R - AT MOUTH	23%
PINE CR > JOHN DAY R - AT MOUTH	0%
PINE HOL > JOHN DAY R - AT MOUTH	0%
RHODES CAN > JOHN DAY R - AT MOUTH	0%
ROCK CR > JOHN DAY R - AB WALLACE CAN	10%
ROCK CR > JOHN DAY R - AT MOUTH	13%
ROWE CR > JOHN DAY R - AT MOUTH	15%
SERVICE CR > JOHN DAY R - AT MOUTH	23%
SHOOFLY CR > JOHN DAY R - AT MOUTH	1%
SOREFOOT CR > JOHN DAY R - AT MOUTH	0%
THIRTYMILE CR > JOHN DAY R - AT MOUTH	3%
W BR BRIDGE CR > BRIDGE CR - AT MOUTH	21%

Permanent instream water rights currently exist for the lower mainstem river and a small subset of tributaries. The majority of the lower mainstem river is classified as a State Scenic Waterway and also has associated instream flow recommendations (500 cfs from July to January, 1,000 cfs in February, and 2,000 cfs from March to June). In general, the mainstem John Day instream rights are nearly always met. However, the static amount of those rights (30 and 20 cfs year-round) is considerably below the Scenic Waterway flows and the estimated instream flow needs of fish. Instream water rights are much less frequently met where they exist on tributary streams. The timing of low flows is a critical concern because low flows occur when Endangered Species Act-listed summer steelhead are beginning to migrate into the John Day system.

Altered hydrology is frequently identified as a primary limiting factor for steelhead recovery in the Lower Basin. The Lower Basin is characterized by hot, precipitation-free summers and cold, relatively dry winters. This natural combination of minimal annual precipitation input and long, warm, dry seasons naturally results in conditions that can be problematic for cold-water fish. Coupled with surface water withdrawals, summertime conditions in Lower John Day tributary streams can easily become inhospitable.

Recreation is an integral part of the Lower Basin. Data from the BLM and other field guides suggest that over the last couple of years, minimum flows needed for canoes, drift boats, kayaks, and rafts are not met in the summer peak time (August to October).

Winter flows from the North Fork John Day meet the mainstem at Kimberly, Oregon (Jeffrey Kee photo credit)

Water Quality

Many streams in the Lower Basin are on the Clean Water Act 303(d) list, meaning that streams fail to meet water quality standards, particularly for water temperature. Temperature, sedimentation, flow modification, and habitat modification are the leading causes of impairment. The WABs with impairments and the Total Maximum Daily Load (TMDL) limits established by the DEQ, and approved by the Environmental Protection Agency (EPA), are listed in the Step 2 Report. The NorWeST dataset provides measured and modeled water temperature data for the John Day River Basin and can be used to forecast the distribution of suitable future cold-water fish habitat based on climate change projections. It is estimated that total steelhead-bearing stream miles with water temperature conditions less than or equal to 18˚C will reduce by 60 percent from the period 1993-2011 to the period 2070-2099 (Step 2, Figures 64 through 66 extrapolated from NorWeST). WABs with the greatest amount of suitable stream miles under future conditions include Upper Rock, Butte, Pine, and Bridge Creek Basins.

The DEQ has established TMDLs in the Lower Basin for temperature and bacteria. Dissolved oxygen (DO) and impaired biologic conditions have also been identified as impairments but will be addressed through implementation of the temperature TMDL. Streams in this basin have also been listed for sedimentation, which has been co-assessed during TMDL monitoring and assessment. A sedimentation TMDL has not yet been established, but many measures that can reduce stream temperatures will also address sedimentation.

Beneficial uses in the Lower Basin that water quality standards are seeking to protect include domestic water supply, industrial water supply, irrigation, livestock watering, fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, and aesthetic. Standards are set based on the most sensitive beneficial use. In this case, temperature and DO standards are based on salmon and trout, and the bacteria standard is based on water contact recreation (Step 2 Report, p. 24). Water withdrawals have reduced stream flows, especially during the summer, and contributed to higher water temperatures. Poorly managed grazing, mining, timber harvesting, and

maintenance of push-up dams have reduced riparian vegetation and shade, contributing to higher water temperatures (Step 2 Report, p. 27).

Steelhead and salmon in the Lower Basin need clean, cool water to thrive (Jeffrey Kee photo credit)

Chapter 3: The Lower John Day's Current Uses and Future Water Demands (Step 3)

Cattle ranching is common in the Lower Basin and accounts for part of the water demand (Brian Posewitz photo credit)

Chapter 3 summarizes the Step 3 Integrated Water Resources Needs and Vulnerabilities Report. This report examined current and future water needs in three categories: (1) instream uses; (2) agricultural uses; and (3) municipal, domestic, industrial, and commercial uses. The report also includes a section on the expected impacts of climate change and discussions on infrastructure needs, natural hazards, and man-made obstructions to fish passage.

Major conclusions from the Step 3 analysis include:

- A percent-of-flow approach was used to determine instream flow needs for the 30 WABs in the planning area, and it was found that 50 percent of the WABs do not meet the current instream demand from July through October.
- Base and subsistence environmental flow values, which are a fraction of instream needs, are known for 10 out of 30 WABs.

- The mainstem river and many tributary streams have water quality impairments including high temperature (43 stream segments), sedimentation (31), flow modification (26), habitat modification (25), biological criteria (16), pH (10), and low oxygen concentrations (9).
- While the Lower Basin has no major dams, numerous smaller obstructions (dams, weirs, culverts, etc.) present barriers to fish passage.
- Irrigation certificated water rights in the Lower John Day Basin amount to 90,000 acre-feet per year (AFY). Based on water right acres, crop types, and irrigation inefficiencies, basin-wide annual irrigation demand is estimated to be as much as 101,000 AFY using AgriMet, which uses potential ET as defined as the amount of water required for the plant to be most productive. Alternatively, the Cuenca method (Cuenca, 1992) showed 67,000 AFY water used. Irrigation is used primarily for alfalfa, grass hay, and grass seed.
- The total water use by the livestock population in the planning area is estimated to be approximately 614.87 AFY.

Significant elements of this analysis are summarized as follows:

Instream Needs

A stream gauge on the South Fork John Day River (Jeffrey Kee photo credit)

Instream uses of water include recreation such as fishing, boating, and swimming, habitat for fish and wildlife, and maintaining water quality (by diluting pollutants and making streams more resilient to adverse warming, for example). Instream flows also help create habitat for fish and wildlife and maintain a healthy river ecosystem by moving materials such as gravel, sediment, and woody debris through the stream system, and by creating and maintaining habitat features such as gravel bars and side channels.

ODFW has identified five categories of instream flows necessary to fully support aquatic life: subsistence, base, pulse, bankfull, and overbank flows. Subsistence flows and base flows were estimated by ODFW in 1977 for the mainstem river and for approximately 25 percent of its tributary basins. In a few tributary basins, subsistence flow needs are protected by instream water rights, subject to prior rights. The mainstem Lower John Day River also has instream water rights, but the amounts are well below estimated instream flow needs. The Oregon Scenic Waterway Act protects a higher rate of flow against new applications for out-of-stream rights.

Instream flow needs have not been estimated by ODFW for all categories of environmental flows in the mainstem or any tributary basin. Moreover, some tributary basins have no ODFW estimates of instream flow needs.

> …close to 80 percent of the WABs have fish presence or are used for fish passage and habitat.

For its Step 3 Report, the Work Group adopted the 1977 ODFW Basin Investigation Report as the best available estimates of subsistence and base flow needs for the mainstem river and the tributary streams for which the estimates were prepared. To estimate total instream flow needs for the mainstem river and each tributary stream for aquatic life, the group adopted a methodology from academic literature suggesting that, for a "moderate level of ecological protection," actual flows should not vary from estimated natural flows by more than 20 percent. As described in the literature, this is a "presumptive" standard to be used only when no better estimate of instream flow needs is available.[2]

With the best available information (see Step 3, Section 2.5.2), instream flow demands for each WAB are estimated annually, in AFY and in a range of instantaneous flows in cfs, as shown in the table below titled *Instream Demand for WABs Annually,* assuming a moderate level of protection of instream flows at 80 percent of median flows. Even though the annual demand seems to be met at 50 percent exceedance flows, available flows are insufficient to meet monthly/biweekly water demands in several WABs, especially July to October. Insufficient flow in these months is a serious concern to anadromous fish population recovery and persistence. Low summer and fall flow also reduce the recreational use and potential economic input from the boating and recreational community.

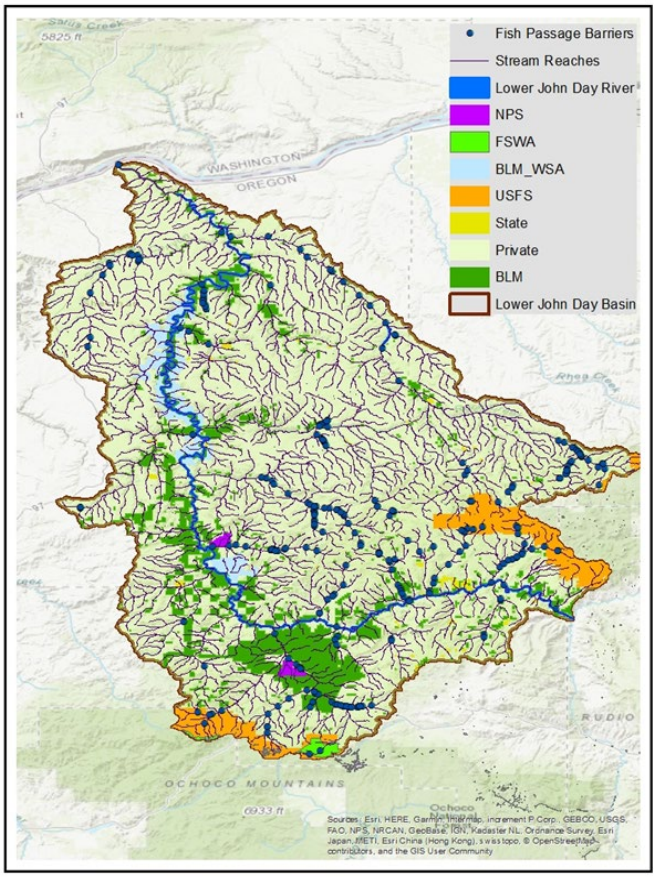
Instream Demand for WABs Annually

WAB No.	Subwatershed Name	Surface Water Quantity (Natural Stream Flow) (from OWRD Portal) AFY (50th Percentile)	Instream Demand (AFY) (Presumptive Standard, Richter)	Instream Flows Min and Max in cfs Monthly (Presumptive Standard, Richter)
1	Alder Cr > John Day R - at Mouth	6584.15	5267.32	0.79-18.56
2	Bear Cr > Bridge Cr - at Mouth	6578.79	5263.03	1.44-16.32
3	Bologna Can > John Day R - at Mouth	1459.64	1165.33	0.06-5.05
4	Bridge Cr > John Day R - Ab W Br Bridge Cr	9207.69	7366.15	2.79-27.92
5	Bridge Cr > John Day R - at Mouth	19,833	9,245	3.28-37.04

[2]*As noted in the Step 3 Report, these are estimates of total instream flow needs to be balanced against other needs, not proposed allocations of water.*

6	Butte Cr > John Day R - at Mouth	7,681	6,145	1.832-28.08
7	Cherry Cr > John Day R - at Mouth	3,081	2,465	0.712-10.48
8	Esau Can > John Day R - at Mouth	388.56	310.85	0.0-2.456
9	Ferry Can > John Day R - at Mouth	2101.10	1680.88	0.2-11.36
10	Girds Cr > John Day R - at Mouth	3360.62	2167.38	0.712-8.48
11	Grass Valley Can > John Day R - at Mouth	3300.11	2640.09	0.24-23.84
12	Hay Cr > John Day R - at Mouth	2649.13	2119.30	1.584-6.224
13	Haystack Cr > John Day R - at Mouth	550.41	440.33	0.008-2.288
14	Heidtmann Can > John Day R - at Mouth	718.22	574.57	0.048-2.888
15	Horseshoe Cr > John Day R - at Mouth	4223.61	3378.89	0.824-10.32
16	Jackknife Can > John Day R - at Mouth	921.72	737.38	0.048-5.264
17	Kahler Cr > John Day R - at Mouth	6496.08	5196.87	0.648-20.48
18	Muddy Cr > John Day R - at Mouth	3084.70	2467.76	0.456-13.2
19	Parrish Cr > John Day R - at Mouth	6959.62	5567.70	1.04-19.12
20	Pine Cr > John Day R - at Mouth	2819.91	2256.81	1.688-6.624
21	Pine Hol > John Day R - at Mouth	3162.06	2529.65	0.408-15.12
22	Rhodes Can > John Day R - at Mouth	458.18	366.55	0.048-2.176
23	Rock Cr > John Day R - Ab Wallace Can	19130.63	15304.50	0.96-73.2

24	Rock Cr > John Day R - at Mouth	23658.31	18856.44	1.792-98.4
25	Rowe Cr > John Day R - at Mouth	1929.72	1543.78	0.304-7.592
26	Scott Can > John Day R - at Mouth	683.70	546.96	0.0-5.064
27	Service Cr > John Day R - at Mouth	3522.06	2817.65	0.384-9.84
28	Shoofly Cr > John Day R - at Mouth	5772.51	4618.01	1.016-14.64
29	Thirtymile Cr > John Day R - at Mouth	10731.00	8584.80	2.88-41.2
30	John Day River > Mouth	1353008.43	1082406.74	216.0-4040.0
31	John Day River > H Canyon	1238641.19	990912.95	208.0-3816.0



Fish passage barriers located in the Lower Basin

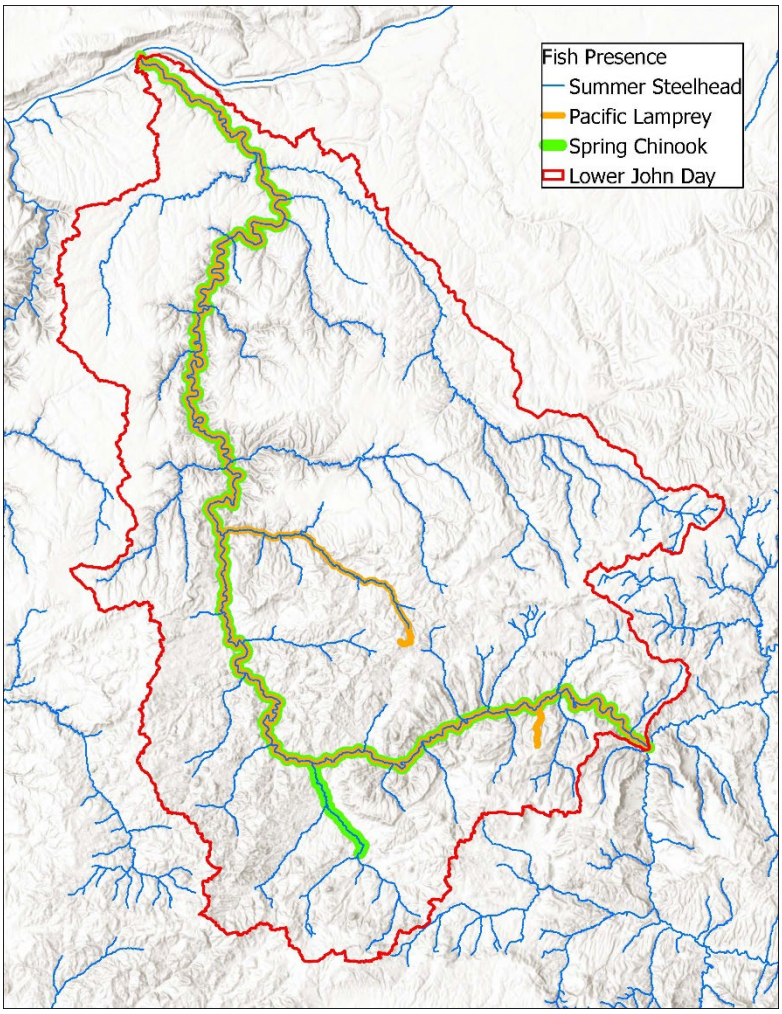
ODFW is updating its instream needs guidance document (expected 2022) in order to provide a foundational assessment, particularly on streams with sensitive, threatened, or endangered species that currently lack instream targets. The new ODFW guidance builds on the Step 3 existing analysis and will provide a means to utilize additional data sources for estimating instream needs.

Based on the fish presence data shared by ODFW (ODFW, 2021), close to 80 percent of the WABs in the planning area have fish presence. However, there is not enough information to estimate all categories of instream flow needs. The Lower Basin has a total of 230 fish passage barriers.

The Work Group noted that climate change, and resulting lowering instream flow conditions, are likely to exacerbate flow, temperature, and passage issues for fish and wildlife in the planning area.

The Lower John Day is home to numerous fish species, including some listed under the Endangered Species Act or listed as species of concern. The John Day hosts one of the few remaining wild fish runs in the Pacific Northwest; summer steelhead and spring Chinook salmon returning for spawning contribute to the largest entirely wild run in the mid- and upper Columbia River (see Step 2 Report, p. 26; CTWSRO, 2015; NPCC, 2005).

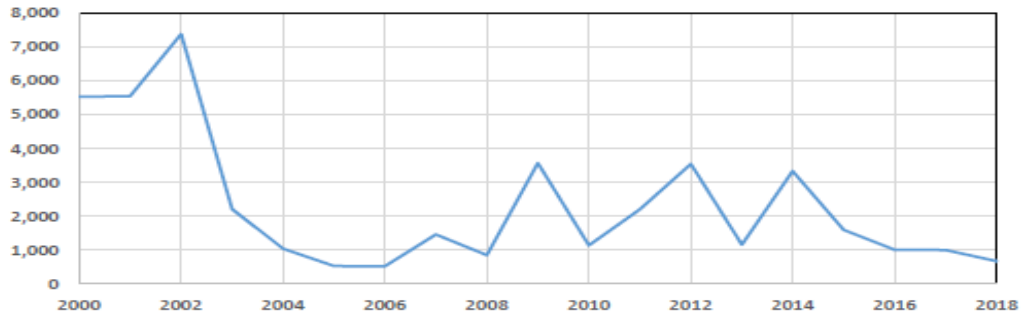
The return of summer steelhead to the Columbia in 2021 was the lowest since dam counts began at Bonneville Dam in 1939. The count of wild summer steelhead passing the John Day Dam from June 1 through November 12 was 17,718 wild or adipose-intact steelhead (some adipose-intact steelhead are unmarked hatchery-origin fish). The low return in 2021 follows several low run years for wild steelhead in the Columbia, resulting in several years of spawning escapement (fish successfully returning to their home river or stream) estimated to be well below recovery goals for the John Day River. Critically low abundance, poor marine survival, and low estimated hatchery origin stray rates for John Day-origin steelhead returning in 2021 led to an angling closure on the John Day River from September 1, 2021, through at least the end of 2021. It should be noted that this was part of a larger coast-wide phenomenon affecting multiple steelhead Distinct Population Segments.



Fish presence and use in the Lower Basin

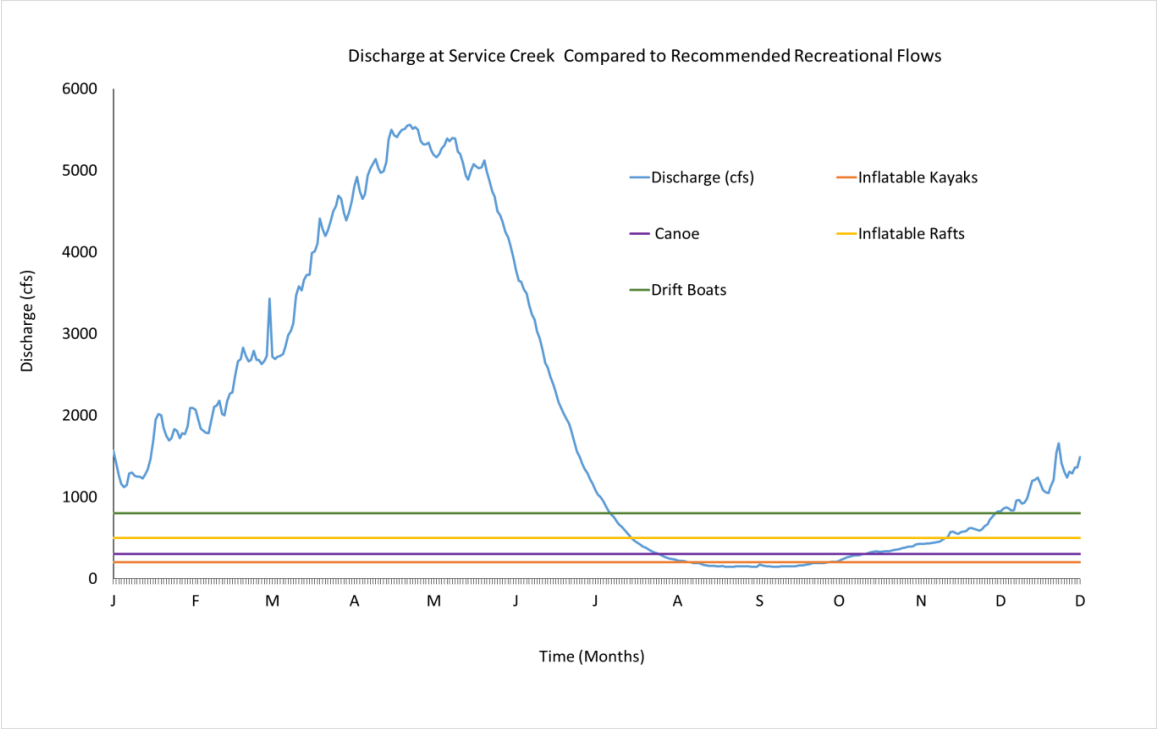
In addition to anadromous fisheries, this river section contains prime habitat for smallmouth bass. Also present are rainbow trout, Pacific lamprey, bridgelip sucker, and speckled and longnose dace.

Steelhead spawning surveys have been conducted since 1959 on many tributaries throughout the Lower Basin. The lower mainstem John Day steelhead population is at a moderate risk based on current abundance and productivity and is considered to be a maintained population with abundance above the minimum 500 (ODFW, 2010, 2019). The steelhead natural origin spawner abundance (NoSA) estimate for the Lower John Day below the South Fork John Day River from 2000 to 2018 is displayed below.



Lower mainstem John Day summer steelhead NoSA, 2000-2018 (ODFW recovery tracker)

In addition to the instream flow and passage needs of aquatic life, the Work Group looked at instream flow needs for floating the river, which is a popular recreational activity in the Lower Basin. Published information on necessary recreation flows for the Lower Basin are not available. However, based on interviews with staff at the Service Creek Station and guides, target flows for on-water recreation were estimated from the Step 2 Report. The figure below depicts the median daily discharge of the John Day River at Service Creek and the suggested minimum flows for various boat types.



Discharge versus recommended recreation flows, John Day River at Service Creek

Since 1998 there has been a steady increase in boater permits issued for the Lower John Day (roughly a 30 percent increase in the past 20 years). In 2017, the BLM recorded more than 28,000 boater-use-days between Kimberly and Tumwater Falls. According to the BLM, boater use correlates positively with instream flow levels. An online permit is required year-round to boat between Service Creek and Tumwater Falls, and the BLM recently began limiting the number of permits issued for some seasons.

Recreational use of the John Day River has increased significantly in the last decade. The BLM recently instituted a permit system to float the lower river (Jeffrey Kee photo credit)

Out-of-Stream Needs

Agriculture Needs

The Lower Basin is composed of 20 percent forest land, 54 percent rangeland, 25 percent agriculture, and less than 1 percent urban (U.S. Department of Agriculture, 2005). In 2012, Grant, Wheeler, Gilliam, and Sherman Counties had 1.9 million acres in agriculture that generated a market value of products sold of $138 million. While the region still relies on the production of food and forest products, the economy has diversified into recreation, wind energy, and waste handling. Agriculture is dominated by dryland wheat along with livestock pasturing. Primary out-of-stream water demands come from agriculture, municipal, domestic, and industrial uses.

Irrigated agriculture in the Lower John Day watershed is used predominantly by commercial crops, hay, grass, orchards, and livestock watering. Agricultural products in the planning area include small grain, pasture and hay, and beef cattle production. Approximately 135,000 acres are in small grain crops, 12,000 acres are in pasture and hay, and 150,000 are fallow or idle cropland. The maximum allowable acreage (25 percent of total cropland) has been enrolled in the Conservation Reserve Program, removed from crop production, and planted to perennial grasses (USDA, 2005). In recent years, large tracts of private agricultural land have been purchased by absentee landowners; these landowners have placed a greater emphasis on recreational use rather than agriculture. In addition to irrigation of crops, approximately one-quarter of all surface water diversion in the region is used for storage water rights, the majority of which is for livestock or wildlife water use. In Step 2,

irrigation water demand for the Lower John Day Basin was assessed per WAB by analyzing water rights, crop types, irrigation methods, and estimates of growing season ET.

Non-irrigated spring and winter wheat are the predominant crops produced in the Lower Basin. Primary irrigated crops include alfalfa and grass pasture with alfalfa. Irrigation methods in the Lower Basin include flood, hand lines, wheel lines, big guns, center pivots, and a host of other less common techniques (see Appendix B of the Step 3 Report).

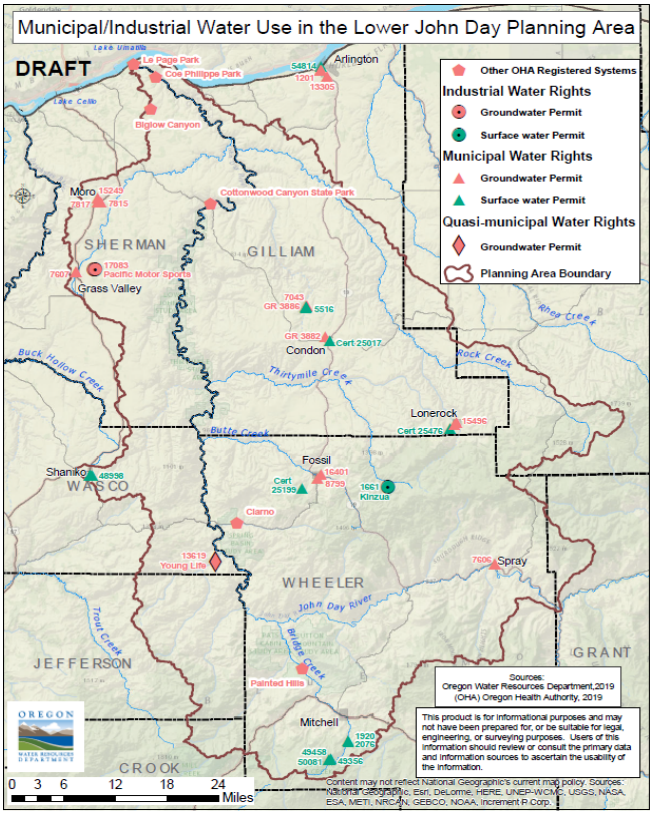
As documented in the Step 2 Report, irrigation methods were mapped in five of the most irrigation-intensive WABs, and these data were used to estimate irrigation methods throughout the Lower Basin as shown in the table titled "Probability of Irrigation Method" below. In general, flood irrigation is limited to tributary WABs, center pivots to mainstem WABs, and non-pivot sprinkler methods are the most common (approximately 75 percent of all evaluated fields). Flood irrigation prevalence increases notably with elevation, and center pivot use declines with increasing elevation in the basin. Elevation/irrigation relationships were developed to estimate irrigation in WABs not mapped.

The table below from the Step 3 Report highlights the probability of irrigation methods based on WAB classification (tributary or mainstem river).

	Probability of Irrigation Method		
Group	**Flood**	**Non-Pivot Sprinkle**	**Pivot**
Tributary	22%	73%	5%
Mainstem	0%	75%	25%
Basin Totals	**15%**	**74%**	**12%**

To calculate agricultural water use in the planning area, two methods were used: First, water rights from OWRD's Water Right Information Search database and, second, ET-based estimate for crop water use. Net irrigation demand was estimated at 49,000 AFY using AgriMet data and 32,000 AFY using the Oregon Crop Water Use and Irrigation Requirements dataset (Cuenca, 1992). Irrigation water rights in the Lower Basin authorize appropriation of approximately 90,000 AFY.

Irrigated pasture is an important part of livestock production in the Lower Basin (Jeffrey Kee photo credit)



Map of Important MDIC Water Uses in the Planning Area

Municipal, Domestic, Industrial, and Commercial Needs

The category of water use known as "MDIC" includes municipal, domestic, industrial, and commercial uses. All of these uses are often served by a municipal water system, but there are also "self-supplied" commercial, industrial, and domestic uses with an independent water supply system outside a municipality. There can also be self-supplied uses within a municipality, such as an industry with an independent well for process water but connected to the municipal water system for potable water. Self-supplied domestic uses are commonly served by a small well.

MDIC water users in the planning area include six public water systems, two self-supplied commercial and industrial users, and one quasi-municipal user. Some of the municipal water users, such as Lonerock, Mitchell, and Shaniko, have a relatively high maximum allowed water use per person compared to other cities, such as Condon,

Moro, Grass Valley, and Fossil, which have lower gallon per minute (gpm)/person ratios. See Step 3, Appendix C, for a chart illustrating each municipal water need and demand for the Lower Basin.

The cities each have water rights issued by OWRD that, among other parameters and conditions, set the upper legal limit of their uses from various authorized water sources. They also have the water-related infrastructure designed to capture, treat, store, distribute, meter, and deliver the water to their customers. The monthly and annual water use from each source is important for understanding how much the water rights and different sources are used over time. In the Step 3 analysis, each city reported annual water use from 2008 to 2018 from wells, springs, and diversion points to calculate average to estimated use. Moro, Condon, and Grass Valley had the highest monthly water use in summer when irrigation requirements for landscape, parks, and ball fields are greatest. Gallons per capita day (gpcd) demand ranged from 44 gpcd in Shaniko up to 655 gpcd in Moro. The data also showed the ratio of maximum month use to lowest month use ranges widely from as low as 2:1 in Fossil to as much as 19:1 in Mitchell.

COMPARISON OF USE

CITY	Gallons per Capita-Day	Ratio High:Low Month Use
Arlington*	529.81	10:1
Condon	274.91	5:1
Fossil	215.21	2:1
Grass Valley	592.35	6:1
Lonerock	125.58	6:1
Moro	655.29	5:1
Mitchell	251.50	19:1
Shaniko	44.03	3:1
Spray	408.59	9:1

Most domestic wells for single household use are exempt from the requirement to seek a water use permit from OWRD. Water use from these exempt wells is estimated at approximately 1,280,000 gallons per day. Annually that would be 467,200,000 gallons or 1,434 AF of rural exempt well water use. This estimate was determined using 2010 Census data for the planning area and the average water use per capita. Domestic exempt well use makes up 78.5 percent of the combined domestic and municipal annual use, while municipal use within the cities is only 21.5 percent. The greatest estimated annual volume of municipal and domestic demand is in the WAB near the mainstem above Heidtmann Canyon, at 1,057.85 AF annually. The Municipal Work Group determined that because of the dispersed nature of the domestic wells and relatively small annual volume of water used for domestic purposes, a deeper analysis of domestic use and issues was not warranted at this time. The District 21 watermaster has not received significant complaints about domestic well issues in the planning area. A survey of domestic well users was not conducted for this planning effort. Future work could include a survey of domestic well users, additional well log research to understand the depths aquifer wells are commonly drilled to, and how often domestic wells are being deepened.

Municipal water suppliers indicated a need for improvements to their water system infrastructure. The survey results show that Fossil needs to replace outdated distribution piping and has limits on the water volume the city can deliver, particularly in summer months. Condon has noted several substantial needed infrastructure improvements but can meet future demand at current growth rates. Spray indicated that their infrastructure was upgraded in 1997, but during summer months the city is reaching the output capacity of its two wells. Moro has needs for infrastructure upgrades and is concerned about their water supply capacity. Mitchell indicated a need for increased storage and a problem of insufficient supply during drought, fire, or large events. Lonerock and Shaniko did not respond. These small cities have very limited staff and maintaining water systems is a substantial and

expensive effort, so cataloging their water system needs as a group of cities may provide a benefit through coordination (Step 3 Report, Chapter 4, pp 123 through133).

The Cities of Mitchell (shown) and Fossil have regularly instituted water use restrictions (Jeffrey Kee photo credit)

MDIC demands are relatively modest and not projected to grow significantly by 2050; however, population concentrations in cities can stress local drinking water supplies. Based on the results of a statewide demand forecast conducted by OWRD in 2015, MDIC demand in the planning area is expected to remain stable through 2050 due to the stable or even declining population projections for Wheeler, Gilliam, and Sherman Counties, so planning for a large population influx appears to be unnecessary.

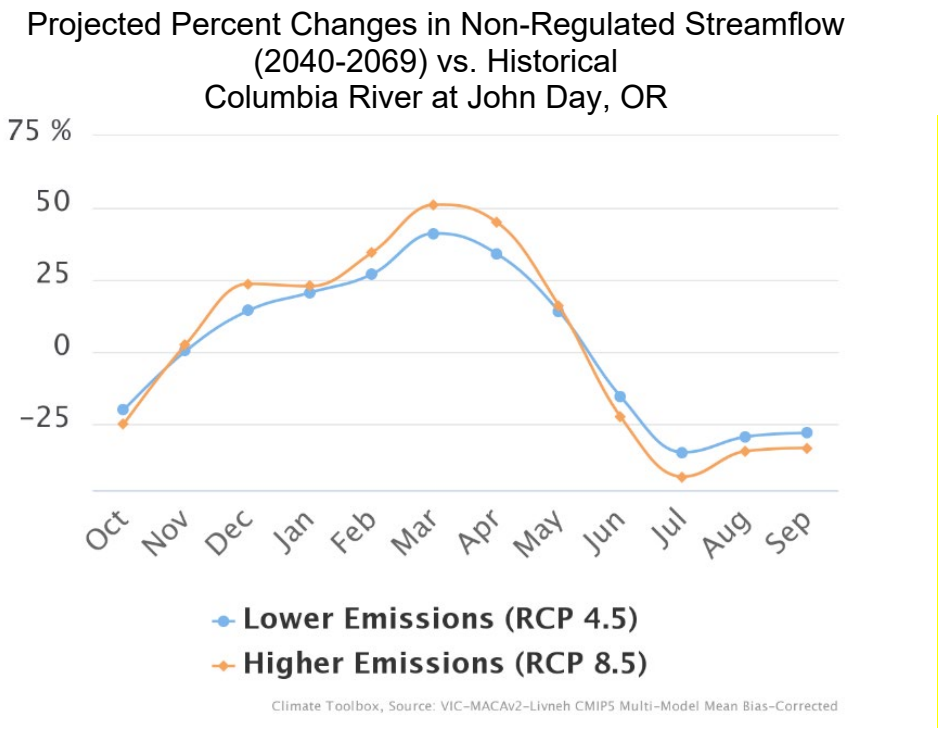
Natural Hazards and Climate Change

Drought, wildfire, windstorm, flood, and winter storms are all natural hazards that rank high for the planning area. Determining whether future demands for water in the Lower Basin can be met is dependent on many issues including the severity of climate change and whether conservation and restoration measures are implemented. A changing hydrograph is a leading area of concern.

Winter flows from the North Fork John Day River regularly produce significant ice (Jeffrey Kee photo credit)

The Lower Basin monthly hydrograph is characteristic of a snow-dominated basin with peak flows during the late spring snowmelt season. By the 2050s, the peak streamflow is projected to shift earlier in the spring as warmer temperatures cause the snowpack to melt earlier. In addition, winter streamflow is projected to increase due to increased winter precipitation and that precipitation falling more as rain than snow.

The greatest changes in peak streamflow magnitudes are projected to occur at intermediate elevations in the Cascade Range and the Blue Mountains (Safeeq et al., 2015). This represents a fundamental shift in hydrology, and declining snowpack will likely result in changes in the timing of water resources and greater water scarcity at times for multiple water uses, particularly for irrigation and instream flows for fish. Changing climate could have a detrimental impact on fish and wildlife in the planning area.



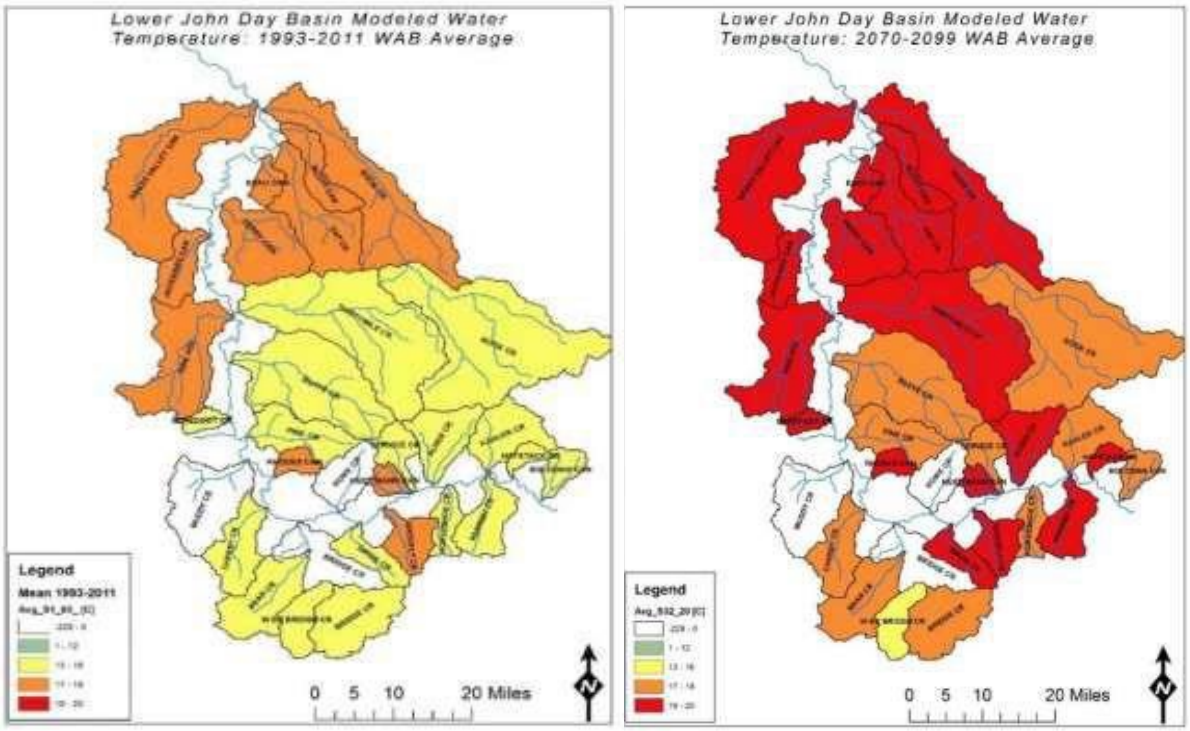
Projected percent changes in non-regulated streamflow (2040-2069) compared to historical levels from 1971 to 2000, Climate Toolbox, Hegewisch, K.C., Abatzoglou, J.T., and Chegwidden, O., 'Future Streamflows' web tool. NW Climate Toolbox (https://climatetoolbox.org/) accessed on 5.17.2019. RCP = representative climate pathway.

Drought conditions are represented by a low spring snowpack, low summer soil moisture, and low summer runoff (Oregon Department of Land Conservation and Development [DLCD], 2019). Climate change is expected to result in lower summer streamflow in historically snow-dominated basins across the Pacific Northwest as snowpack melts off earlier due to warmer temperatures and summer precipitation decreases (Dalton et al., 2017). As Oregon has experience in 2021, droughts have far-reaching environmental consequences that include increasing frequency and severity of forest insect/crop pest and pathogen outbreaks, expanding invasion of non-native weeds (University of Oregon's Institute for Policy Research and Engagement [UO], 2018), and worsening erosion and scouring leading to severe damages to fish habitat (UO, 2019). Drought also has a profound effect on these counties because of the counties' reliance on the local agricultural-based economies; drought impacts livestock health, damages crops, and results in reduced yields (UO, 2018). Droughts also increase the risk and impact of wildfire, as they leave the landscape dry and prone to ignition and low stream flows, which limit water availability for fire suppression. Widely reported by climate scientists, the probability of drought was listed as a high hazard probability by both Gilliam and Wheeler Counties as reported in the two counties' recent Multi-Jurisdictional Natural Hazards Mitigation Plans (UO, 2018; DLCD, 2019).

The climate and landscape in Gilliam and Sherman Counties are both conducive to wildfire, and these trends are increasing due to a reduction of moisture in vegetative fuels and soils. All communities in Gilliam County are within the Wildland Urban Interface area (ODF, 2006), and in Sherman County there are several areas within the interface area (UO, 2019). Both counties face increasing threats to human life as well as property including agricultural lands, crops, livestock, and livestock infrastructure.

Sherman and Gilliam County wind farms supply renewable electricity to Portland General Electric, Bonneville Power Administration, Eugene Water & Electric Board, and other power companies regionwide (Jeffrey Kee photo credit)

Over the last several decades, warmer and drier conditions recorded during summer months have contributed to an increase in dry fuels, which have enabled more frequent large fires, increased total acres burned, and prolonged fire season across the western United States (Dennison et al., 2014; Jolly et al., 2015; Westerling, 2016; Williams and Abatzoglou, 2016, in UO, 2018). The lengthening of the fire season is largely due to declining mountain snowpack and earlier spring snowmelt (Westerling, 2016, in UO, 2018). As shown below, climate change predictions show an increase in the frequency of "very high" fire danger days per year on average by nearly 15 days (with a range of -6 to +38 days) by the 2050s under the higher emissions scenario compared to the historical baseline for Gilliam County (UO, 2018) and by 14 days (with a range of -4 to +37 days) for Wheeler County (DLCD, 2019).



NorWeST dataset comparing August water temperatures for 1993-2011 and future forecast from year 2070- 2090

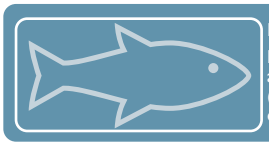
The likelihood of extreme heat and the number of hot days greater than or equal to 90°F are likely to increase by 29 days on average in Wheeler County and 33 days for Gilliam County with a range of approximately 11 to 39 days by the 2050s (Oregon Climate Change Research Institute [OCCRI], 2018a and 2018b). Extreme heat, lessening snowpack, and increased frequency and prolonged wildfire are all outcomes related to a changing climate. These very real vulnerabilities need to be considered in planning for current and future instream and out-of-stream water demands for the Lower Basin.

Warmer and drier conditions recorded during summer months have contributed to an increase in dry fuels, which have enabled more frequent large fires (Jeffrey Kee photo credit)

Data Gaps and Research Needs from Steps 2 and 3

Streamflow data

The Lower Basin has very few streamflow gauges, in part because several stream gauges have been discontinued. There is a need to include several additional stream gauges with efficient systems for collecting streamflow data.



Instream flow needs

Base and subsistence flow needs have not been determined for many tributary basins, and the mainstem and tributary basins all lack estimates, other than our percent-of-natural-flow estimates as discussed in Step 3, for the full range of flow needs (including pulse, bankfull, and overbank flows). Needs include instream flow specialists to conduct work necessary to better estimate all instream flow needs.

Groundwater levels and trends

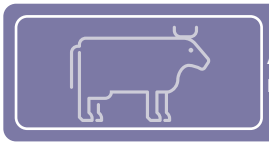
The Lower Basin has only a few groundwater monitoring wells. Because the groundwater is held in multiple layers of multiple aquifers that may or may not be connected, these wells cannot provide a complete picture of groundwater conditions or trends in the Lower Basin. Needs include numerous additional groundwater monitoring wells, monitoring for different aquifers in different locations with efficient systems for collecting data on groundwater levels and trends in groundwater levels, and a volunteer network of exempt well owners to improve knowledge.

Water temperature data

Basin-wide stream temperature data are not fully available. Needs include additional temperature loggers to record stream temperatures in all tributary basins with efficient systems for collecting measurement data.

Updated evapotranspiration data for crops

The data used in computing ET crop and net irrigation demand are old, and the approach is based on an obsolete assumption that precipitation, temperature, and other weather/climate and hydrologic processes do not vary significantly over time or are stationary. Need to include updated ET estimates and/or models.



Agricultural water demands

Future agricultural water demands were not estimated.

Climate data

There are no AgriMet stations within the Lower Basin. Needs include an AgriMet weather station in the Lower Basin.

Rural exempt well water

Greater understanding of groundwater use and quantification of rural exempt well water use is needed.

Lack of metering

The lack of metering and use reporting on many irrigation water rights poses a challenge to estimating out-of-stream diversions and groundwater appropiations.

Surveying water right holders

Survey and outreach to water right holders about knowledge of water conservation opportunities would provide some important insights into water use, i.e., how many know that they can expand their irrigated lands utilizing the Allocation of Conserved Water Program?

Chapter 4: Critical Water Issues and Recommended Strategies for The Lower John Day (Step 4)

Water savings can be achieved with improved maintenance and upgrading irrigation system efficiency in the Lower Basin (Jeffrey Kee photo credit)

Chapter 4 summarizes the Step 4 Integrated Water Strategies Report. In this report, the Work Group identified 19 Critical Issues facing the Lower Basin. For each Critical Issue, an accompanying problem statement, goal, and "strategies" for addressing the issue were compiled. The Work Group also ranked the issues using a "dot voting" exercise to prioritize issues in order of importance and significance.

Major conclusions from the Step 4 Report include:

- The highest priority issues of concern were poor riparian habitat, elevated summer stream temperatures, low instream oxygen, insufficient instream flow, storage needs, and degraded native plant communities. In addition, insufficient efficient irrigation infrastructure, inadequate gauge data, outdated and insufficient municipal water and wastewater infrastructure, lack of data on condition of groundwater aquifers and interactions between groundwater and surface water, and fish passage barriers were among the top identified issues both by the Work Group and through public outreach.
- The following strategies and related restoration actions were identified as addressing multiple basin water-related challenges:

- Protect riparian areas from livestock using fencing and off-stream stock watering systems;
- Protect, enhance, and/or restore native riparian vegetation, reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.); and
- Restore upland function by improving plant communities with juniper removal and planting of appropriate perennial bunchgrasses, shrubs, and forbs.

- While many issues are persistent throughout the planning area, the Work Group's analysis indicated the following basins may be priorities for restoration: Bridge Creek (above West Branch), Bridge Creek (mouth), Butte Creek, Rock Creek (above Wallace Canyon), and Rock Creek (mouth).

Steelhead can still be caught on the John Day River, but only hatchery strays can be kept (Ian Tattam photo credit)

The 19 Critical Issues in order of ranking are shown below. Each issue has an icon next to it to indicate the four primary demand groups (instream, agricultural, municipal, and climate) that are most affected by this Critical Issue. This demonstrates our commitment to balance and integration of all strategies and Critical Issues.

Critical Water Issues and Ranking of Critical Issues

Key

Instream Demand	
Agricultural Demand	
Municipal Demand	
Climate Change/Natural Hazards	
All Benefit Equally*	

*The Critical Issues are intended to benefit multiple demand groups. The icon illustrates those most likely to receive the greatest benefit by implementing associated strategies.

1. Poor riparian habitat
2. Elevated summer stream temperatures and low instream oxygen
3. Insufficient instream flow
4. Storage needs
5. Degraded native plant communities
6. Insufficient efficient irrigation infrastructure
7. Inadequate gauge data
8. Outdated and insufficient municipal water and wastewater infrastructure
9. Lack of data on condition of groundwater aquifers and interactions between groundwater and surface water
10. Fish passage barriers
11. Inadequate diversion data
12. Poor soil health in many of the WABs
13. Simplified stream morphology
14. Inadequate surface water for wildlife
15. Risk of intense or catastrophic wildfire that impacts water quality and quantity
16. Insufficient data on crops, climate, and datasets to support analysis
17. Degraded forest health
18. Erosion and sediment transport/control
19. Rural and domestic well data gaps

Strategies and Ranking of Strategies by Category

The Work Group identified seven Guiding Principles for the Ranking Process (further described in Step 4) to help guide group decision-making for suggested strategies. They include:

1) Available expertise and capacity
2) Financially feasible and funding available
3) Community supported
4) Meets long- and short-term goals without being detrimental to other needs
5) Minimum negative impacts
6) Voluntary non-regulatory action
7) Action does not infringe on current water rights

In addition to ranking Critical Issues and developing strategies to address each Critical Issue, the group also ranked strategies within seven general categories that described either the general focus of the strategy (e.g., riparian, instream and aquatic; upland management and restoration) or the nature of approach (e.g., outreach and education; data collection, monitoring, and feasibility). The list below summarizes the five top-ranked strategies, in order of priority, for each of the seven general categories. A full list of prioritized strategies is shown in the Step 4 Report. These 47 strategies (separated into seven categories) and their relations to the 19 Critical Issues are shown in Appendix A - Crosswalk Table. How strategies are integrated and anticipated to improve Critical Issues are shown in Appendix B - Strategy Impact Connection Table. It is important to note that not all strategies were included in all categories for ranking and that the Work Group did not rank all strategies together independent of the Critical Issues that the strategies are intended to address.

The characteristics of East Bologna Creek are common in the Lower Basin, where steelhead utilize spring flows for spawning and for rearing even when the majority of the water flows subsurface in the late summer and fall. Isolated pools provide cool water that supports life during the hot and dry seasons (Jeffrey Kee photo credit)

The Work Group also cross-referenced all 46 strategies with the 19 Critical Issues shown in a separate Strategy Impact Table in the Step 4 Report. The exercise illustrates which strategies are likely to address one or more Critical Issues facing instream and out-of-stream water demands.

Each strategy is integrated with the others to achieve multiple benefits as shown in the crosswalk table in Appendix A of the Step 4 Report. The following sections show the strategies prioritized by the Work Group within each subject area.

Riparian, Instream, and Aquatic Restoration

- Maintain and increase stream flows.
- Protect, enhance, and/or restore native riparian vegetation.
- Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.).
- Protect riparian areas from livestock using fencing and off-stream stock watering systems.
- Encourage improved irrigation efficiency projects and use of the Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect a portion of water saved instream).

Bridge Creek is recognized as an Intensively Monitored system by the National Oceanic and Atmospheric Administration and is a priority for Plan implementation (Jeffrey Kee photo credit)

Upland Management and Restoration (including Irrigation)

- Restore upland function by improving plant communities with juniper removal and planting appropriate perennial bunchgrasses, shrubs, and forbs.
- Identify, protect, and restore seeps and springs supplying cool water.
- Promote best management practices (BMPs) for the capture and safe release of water (water and sediment control basins, etc.).
- Promote mulch tillage, ridge tillage, zone tillage, no till, chemical fallow, and Conservation Reserve Program as ways to improve soil health, etc.).
- Promote good vegetative cover/cover crops.

Uplands in the entire John Day Basin have been encroached upon by Western juniper. This invasive tree, robs the soil of moisture and degrades historically desired plant communities (Jeffrey Kee photo credit)

Off-channel Storage

- Complete a feasibility study to assess potential off-channel water storage projects, including (a) potential locations for storage projects and (b) water availability, including consideration of all categories of instream flow needs (as recognized in the Step 3 Report).
- Promote BMPs for the capture and safe release of water (water and sediment control basins, etc.).
- Develop off-channel storage projects as suggested by feasibility studies.

Municipal and Domestic Water

- Assist cities in creating and/or improving Water System Management Plans and/or Water Management and Conservation Plans that identify necessary system improvements. Assess whether these plans cover all needed improvements.
- Analyze existing groundwater data and conduct a groundwater study in the Lower Basin.
- Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects.
- Support and advocate for increased communication for water conservation in public/ municipal water systems and infrastructure needs.
- Establish, support, and help fund additional groundwater monitoring wells and support community groundwater monitoring networks.

Data Collection, Monitoring, and Feasibility

- Support maintenance of existing gauges.

- Complete a feasibility study to assess potential off-channel water storage projects, including (a) potential locations for storage projects; (b) water availability, including consideration of all categories of instream flow needs (as recognized in the Step 3 Report) and changing hydrographs due in part to climate change; (c) instream and out-of-stream needs for water from storage; and (d) other costs and benefits.
- Analyze existing groundwater data and conduct a groundwater study in the Lower Basin.
- Support installation and maintenance of additional gauges at discontinued and recommended new sites.
- Conduct a process-based hydrologic study including how stream and groundwater flows change with land use and future climate change.

Outreach and Education

- Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption.
- Encourage improved irrigation efficiency projects and use of the Allocation of Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect a portion of water saved instream).
- Promote utility, state, and federal incentive programs for improving irrigation efficiency.
- Promote BMPs for the capture and safe release of water (water and sediment control basins, etc.).
- Encourage voluntary leases, conservation easements, and permanent transfers of existing water rights to instream use.

Funding/Policy Options

- Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.).
- Protect, enhance, and/or restore native riparian vegetation.
- Maintain and increase stream flows.
- Protect riparian areas from livestock using fencing and off-stream stock watering systems.
- Restore upland function by improving plant communities with juniper removal and planting of appropriate perennial bunchgrasses, shrubs, and forbs.

Riparian habitat growth from restoration (Lee Rahr photo credit)

Priority Water Availability Basins

The Critical Issues, goals, and strategies developed by the Work Group are generally applicable throughout the Lower Basin. However, limited resources may require future efforts to focus first on agreed-upon priority areas. Therefore, an evaluation to prioritize WABs for each Critical Issue was completed by a technical subcommittee and discussed in monthly meetings. A full list of strategies and accompanying priority WABs is provided in Section 3 of the Step 4 Report.

While prioritization of WABs may vary across Critical Issues and strategies, and while this work should be subject to adaptive management principles, the WAB priority analysis suggested the following WABs should be recognized as top priorities for restoration, further study, further analysis, and funding and investment:

1. Bridge Creek (above West Branch)

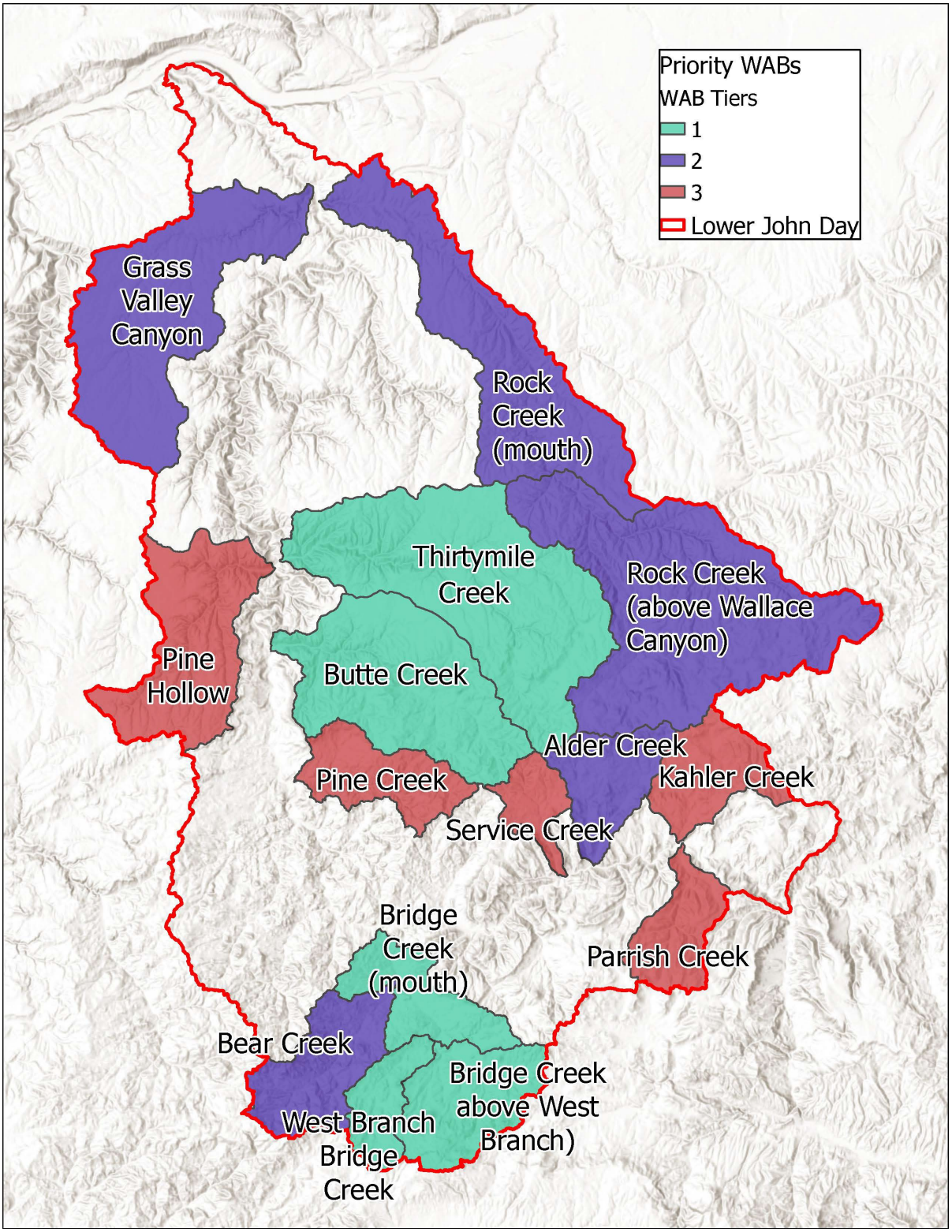
2. Bridge Creek (mouth)

3. Butte Creek

4. West Branch Bridge Creek

5. Thirtymile Creek

These WABs were identified as Tier 1. The next five WABs (6 through 10) were ranked as Tier 2, and the final five WABs (11 through 15) were ranked as Tier 3, as shown below and also on Map 4.1. Tier 1 WABs are green, Tier 2 are blue, and Tier 3 are purple.



The second group of prioritize WABs (Tier 2) includes:

- Bear Creek
- Rock Creek (above Wallace Canyon)
- Rock Creek (mouth)
- Grass Valley Canyon
- Alder Creek

The next group of priority WABs (Tier 3) includes:

- Parrish Creek
- Pine Hollow
- Pine Creek
- Kahler Creek
- Service Creek

The WABs that fall out of the top 15 are in no way precluded from restoration work. These areas are still important for prioritizing other Critical Issues depending on priorities set by the Work Group and funding available for implementation.

Chapter 5: The Lower John Day Plan's Implementation Strategy (Step 5)

Thirtymile Creek with a beaver dam analog - a key implementation strategy for the creek (Herb Winters photo credit)

Chapter 5 summarizes and outlines the process for implementation of a Strategic Action Plan. The Work Group has finalized and approved three plans (Steps 2 through 4). The next step was to compile the analysis and findings into an implementation plan. The Strategic Action Plan outlines the Critical Issues, strategies, priority watersheds, partners, funding, and metrics, with a timeline for implementation. The Lower John Day Basin Integrated Water Resource Plan and this implementation guided by the Strategic Action Plan is an outcome of the State of Oregon Integrated Water Resources Strategy, which lays out guidance and guidelines to help communities better understand and meet Oregon's consumptive and environmental water needs.

Implementation of the Strategic Action Plan is intended to take place over the next 8 years, 2022 to 2030. Although this Plan and Action Plan are living documents, Appendix C - Strategic Action Plan, represents the prioritization of the Critical Issues, followed by the strategies or actions needed to be undertaken to address each Critical Issue of concern listed with the prioritized WABs. The eight-year Strategic Action Plan is divided into three phases. Each phase addresses approaches to balance instream, municipal, and agricultural water demands.

Phase I (2022 to 2025)

- Poor riparian habitat
- Elevated summer stream temperatures and low instream oxygen

- Insufficient instream flow
- Storage needs
- Degraded native plant communities

Phase II (2025 to 2027)

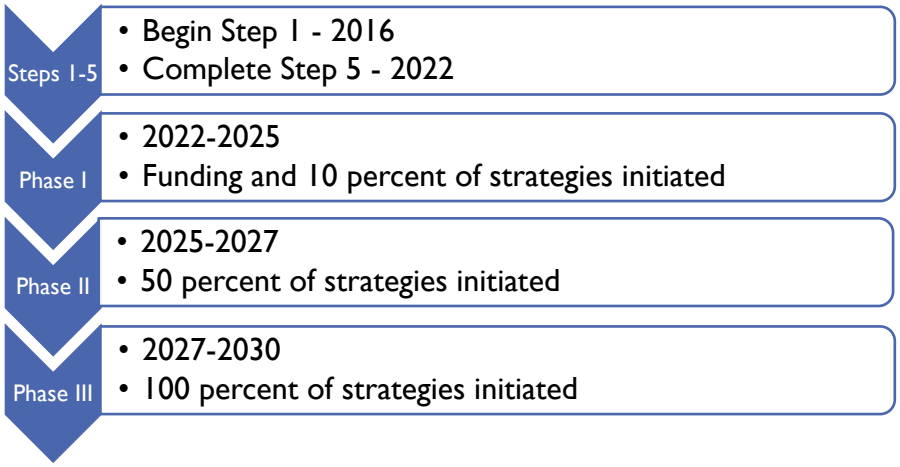
- Insufficient efficient irrigation infrastructure
- Inadequate gauge data
- Outdated and insufficient municipal water and wastewater infrastructure
- Lack of data on condition of groundwater aquifers and interaction between groundwater and surface water
- Fish passage barriers

Phase III (2027 to 2030)

- Inadequate diversion data
- Poor soil health in many of the WABs
- Simplified stream morphology
- Adequate surface water for wildlife
- Risk of intense or catastrophic wildfire that impacts water quantity and quality
- Insufficient data on crops, climate, and datasets to support analysis
- Degraded forests
- Erosion and sediment transfer/control
- Rural and domestic well data gaps

Implementation of the Action Plan and monitoring efforts will be coordinated with the John Day Basin Partnership. Many of the Critical Issues are connected to one another. For example, streamflow (Critical Issue 3) affects water quality (Critical Issue 2) and riparian condition (Critical Issue 1). Effective implementation of the Action Plan in Appendix C will require that multiple strategies addressing multiple Critical Issues be pursued and implemented simultaneously.

The simplified timeline below shows the phasing of the Strategic Action Plan. This phasing represents areas of focus for the Work Group; however, strategies in later phases may be addressed opportunistically and thus occur sooner if funding or individual stakeholder priorities warrant this approach.



The Strategic Action Plan also lists funding sources and resource needs for each of the implementing strategies or actions. Funding sources range from federal grant programs such as BLM

WaterSMART, NRCS programs, and USGS to Oregon Department of Geology and Mineral Industries, OWRD, and Oregon Watershed Enhancement Board grants, and then to more local utility and county programs and private foundations. The Oregon legislature in 2021 passed extensive funding to expand OWRD staff, Place-Based planning and more than $30 million to provide water project grants and loans to evaluate, plan, and develop instream and out-of-stream water projects. Despite alarming drought conditions facing most of the state, the Work Group believes there are federal and state resources more readily available to address much of the implementation strategies outlined in this Plan.

The Work Group continued to meet monthly until their Plan integrated public comments and was approved by the Oregon Water Resources Commission in June 2022. Following the Plan's approval, the Work Group will meet quarterly and shift focus from planning to implementation. At this time, the Work Group will begin to coordinate implementation funding as a subgroup of the John Day Partnership and will coordinate with the Partnership to implement the Strategic Action Plan. The John Day Partnership has an existing reporting and monitoring protocol, which will also be used to provide clarity and track progress and effectiveness.

Strategic Action Plan

The Strategic Action Plan includes the following sections for each Critical Issue:

- Priority WABs
- Strategies
- Funding
- Team Lead
- Timeline Phase I, II, III
- Status
- Implementation Metric: What was done, how much was completed?
- Effectiveness Monitoring Metric: Did it have primary and secondary impacts in the short and then long term?
- Monitoring/Reporting: Have the actions created healthier or better conditions?
- Notes on how to implement, measure, monitor, and report

See Appendix C for the full Strategic Action Plan. Implementation designs, metrics, and reporting requirements will be refined as distinct projects are developed.

Following is a summary of the 2021-22 Lower John Day Basin Integrated Water Resource Plan (Plan) adoption process and proposed implementation timeline:

- Distribution of the Plan (October 2021)
- Incorporate internal and public comments
- Agency review of Draft Plan (December 2021)
- Incorporate agency comments (see Appendix D - Required Improvements)
- Work Group reviewed and incorporated agency-required edits and all final Work Group edits (March and April 2022)
- Work Group approved and finalized the Plan with full consensus (May 2022). See Appendix E - Declaration of Cooperation Signatories Approval of Lower John Day Integrated Water Resource Plan.
- Approved Plan was submitted to OWRD and the Oregon Water Resources Commission for review
- Co-convenors and select Work Group members presented the final Plan to the Oregon Water Resources Commission (June 2022) for recognition
- Public distribution and publication of the Plan (July/August 2022)

- Publish biennial (2024, 2026, 2028, and 2030) short reports on implementation progress, metrics reporting, funds invested, and case studies to be shared with distribution list and present updates and accomplishments to the Oregon Water Resources Commission
- Update Plan in 2033 based on adaptive management and implementation progress

John Day Basin scenery (Jeffrey Kee photo credit)

Chapter 6: References

Confederated Tribes of the Warm Springs Reservation of Oregon. 2015. John Day River Watershed Restoration Strategy.

Cuenca, R.H. 1992. Oregon crop water use and irrigation requirements: Corvallis, Oregon State University, Department of Bioresource Engineering, Extension Miscellaneous 8530, p. 184.

Dalton, M.M., K.D. Dello, L. Hawkins, P.W. Mote, and D.E. Rupp. 2017. The Third Oregon Climate Assessment Report, Oregon Climate Change Research Institute, College of Earth, Ocean and Atmospheric Sciences, Oregon State University, Corvallis, Oregon. http://www.occri.net/publications-and-reports/third-oregon-climate-assessment-report-2017/

Dennison, P.E., S.C. Brewer, J.D. Arnold, and M.A. Moritz. 2014. Large wildfire trends in the western United States, 1984–2011. Geophysical Research Letters 41(8): 2014GL059576. DOI: 10.1002/2014GL059576.

Gannett, Marshall. 1984. Ground Water Assessment of the John Day Basin. Prepared for the Strategic Water Planning Group. http://filepickup.wrd.state.or.us/files/JD_basin/GW_John_Day_Basin.pdf

Hunn, E. S., E. T. Morning Owl, P. E. Cash Cash, and J. Karson Engum. 2015. Cáw Pawá Láakni / They are not forgotten: Sahaptian place names atlas of the Cayuse, Umatilla, and Walla Walla.

Jolly, W.M., M.A. Cochrane, P.H. Freeborn, Z.A. Holden, T.J. Brown, G.J. Williamson, D.M.J.S. Bowman. 2015. Climate-induced variations in global wildfire danger from 1979 to 2013. Nature Communications 6: 7537. DOI: 10.1038/ncomms8537.

Lauman, J.E. 1977. The Fish and Wildlife Resources of the John Day Basin, Oregon and their water use requirements, July 1977. A report with Recommendations to the Oregon State Water Resources Board from the Oregon State Game Commission, Federal Aid to Fish Project F-69-R-1; Job Number 4 Portland OR 131 p.

Northwest Power and Conservation Council. 2005. John Day Subbasin Revised Draft Plan. www.nwcouncil.org/fw/subbasinplanning/johnday/plan

Oregon Climate Change Research Institute (OCCRI). 2018a. Future Climate Projections Wheeler County (2018). https://www.oregon.gov/lcd/CL/Documents/OCCRI_PDM16_WheelerCoFutureProjections2018.pdf

OCCRI. 2018b. Future Climate Projections Gilliam County (2018). https://www.oregon.gov/lcd/CL/Documents/OCCRI_PDM16_GilliamCoFutureProjections2018.pdf

Oregon Department of Agriculture (ODA). 2017. Lower John Day Basin Agricultural Water Quality Management Area Plan. www.oregon.gov/ODA/shared/Documents/Publications/NaturalResources/JohnDayLowerA WQMAreaPlan.pdf

Oregon Department of Environmental Quality. 2010. John Day River Basin Total Maximum Daily Load and Water Quality Management Plan. www.epa.gov/waters/tmdldocs/John Day TMDLandWQMPFINAL.pdf

Oregon Department of Fish and Wildlife (ODFW). 2010. Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment. Accessed September 23, 2019. https://www.dfw.state.or.us/fish/crp/docs/mid_columbia_river/Oregon_Mid-C_Recovery_Plan_Feb2010.pdf

ODFW. 2019. Oregon Middle Columbia River Steelhead Recovery Plan Appendices A through J (February 2010). Accessed September 23, 2019. https://www.dfw.state.or.us/fish/CRP/docs/mid_columbia_river/Oregon_Mid-C_Recovery_Plan_Appendices_Feb2010.pdf

ODFW. 2021. Mid Columbia Fall Chinook Status Report. Accessed September 16, 2021. https://www.dfw.state.or.us/fish/ONFSR/report.asp#fall_chinook

Oregon Department of Forestry. 2006. Statewide Forest Assessment.

Oregon Department of Land Conservation and Development. 2019. Wheeler County Multi-Jurisdictional Natural Hazards Mitigation Plan. https://app.box.com/s/1aopdyh6qwf68z4xsyyg6nuh8pf4uneg

Safeeq M., G.E. Grant, S.L. Lewis, and B. Staab. 2015. Predicting landscape sensitivity to present and future floods in the Pacific Northwest, USA. Hydrological Processes 29(26): 53375353. DOI: 10.1002/hyp.10553.

U.S. Department of Agriculture. 2005. Conservation Reserve Program's Summary and Enrollment Statistics. https://www.fsa.usda.gov/Internet/FSA_File/fy2005.pdf

University of Oregon's Institute for Policy Research and Engagement. 2018. Gilliam County Multi-Jurisdictional Natural Hazards Mitigation Plan. http://www.co.gilliam.or.us/Gilliam%20County%20NHMP%20update%202018%20small.pdf

University of Oregon's Institute for Policy Research and Engagement. 2019. Sherman County Multi-Jurisdictional Natural Hazards Mitigation Plan. https://www.co.sherman.or.us/documents/sherman-county-natural- hazard-mitigation-plan/

Westerling, A.L. 2016. Increasing Western US Forest Wildfire Activity: Sensitivity to Changes in the Timing of Spring. Phil. Trans. R. Soc. B 371(1696): 20150178. DOI: 10.1098/rstb.2015.0178.

Williams, A.P., and J.T. Abatzoglou. 2016. Recent Advances and Remaining Uncertainties in Resolving Past and Future Climate Effects on Global Fire Activity. Current Climate Change Reports 2(1): 1–14. DOI: 10.1007/s40641-016-0031-0.

Chapter 7: Appendices

Appendix A - Crosswalk Table

	Strategies	Riparian, Instream and Aquatic Restoration	Upland Management and Restoration (including Irrigation)	Off-channel Storage	Municipal and Domestic Water	Data Collection Monitoring and Feasibility	Outreach and Education	Funding/ Policy Options	Number of Categories	Possible funding sources
Critical Issue 1: Poor Riparian Habitat										
Critical Issue #1 Solutions/Strategies	Protect riparian areas from livestock using fencing and off-stream stock watering systems	1						1	1	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
	Protect, enhance, and/or restore native riparian vegetation	1						1	1	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
	Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	1	1					1	2	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
Critical Issue 2 : Elevated Summer Stream Temperatures and Low Instream Oxygen										
	Identify, protect, and restore seeps and springs supplying cool water	1	1					1	2	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
	Maintain and increase streamflows	1						1	1	
	Conduct additional monitoring for temperature and dissolved oxygen	1				1		1	2	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS
	Implement strategies for Critical Issues 1 (Riparian) and 3 (Streamflow)									
Critical Issue 3: Insufficient Instream Flow										
Critical Issue #3 Solutions/Strategies	Encourage and assist state agencies in creating additional instream water rights	1						1	1	
	Encourage voluntary leases and transfers of existing water rights to instream use	1					1	1	2	
	Encourage improved irrigation efficiency projects and use of Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect portion of water saved instream)	1					1	1	2	
	Implement strategies for Critical Issue 11 (Diversion Data)									
	Implement strategies for Critical Issue 1 (Riparian)									
	Implement strategies for Critical Issue 4 (Storage)									
Critical Issue 4: Storage Needs										
Critical Issue #4 Solutions/Strategies	Complete a feasibility study to assess potential off-channel water-storage projects, including: (a) potential locations for storage projects; (b) water availability, including consideration of all categories of in-stream flow needs (as recognized in the Step 3 Report) and changing hydrographs due in part to climate change; (c) in-stream and out-of-stream needs for water from storage; and (d) other costs and benefits	1	1	1		1		1	5	OWRD
	Develop off-channel storage projects as suggested by feasibility studies	1	1	1		1		1	5	OWRD
Critical Issue 5: Degraded Native Plant Communities										
Critical Issue #5 Solutions/Strategies	Control noxious weeds		1					1	1	OSWB, OWEB-OS, OWEB-FIP (Butte/Thirtymile)
	Restore upland function by improving plant communities with juniper removal, and planting of appropriate perennial bunchgrasses, shrubs, and forbs.		1					1	1	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
	Implement strategies for Critical Issue 1 (Riparian)									
Critical Issue 6: Insufficient Efficient Irrigation Infrastructure										
Critical Issue #6 Solutions/Strategies	Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	1	1				1	1	3	
	Promote utility, state and federal incentive programs for improving irrigation efficiency	1	1				1	1	3	
	Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	1	1					1	2	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
	Pipe open ditches	1	1					1	2	OWEB-OS, OWEB-SG
	Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	1	1					1	2	OWEB-OS, OWEB-SG
Critical Issue 7: Inadequate Gauge Data										
	Support maintenance of existing gauges	1	1			1		1	3	
	Support installation and maintenance of additional gauges at discontinued and recommended new sites	1	1			1	1	1	5	
Critical Issue 8: Outdated and insufficient municipal water and wastewater infrastructure										
Critical Issue #8 Solutions/Strategies	Assist cities in creating and/or improving Water System Management Plan and/or Water Management and Conservation Plan that identify necessary system improvements. Assess whether these plans cover all needed improvements.				1			1	1	
	Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects				1			1	1	
	Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs				1		1	1	2	
Critical Issue 9: Lack of data on *condition of groundwater* aquifers and interactions *between groundwater and surface water*										
Critical Issue #9 Solutions/Strategies	Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	1	1			1		1	3	
	Analyze existing groundwater data, and conduct a groundwater study in the basin	1	1		1	1		1	5	
	Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	1	1		1	1	1	1	6	
Critical Issue 10: Fish passage barriers										

Critical Issue #10 Solutions/Strategies	Provide full fish passage (removal, repair and/or replacement) at priority artificial obstructions including culverts and dams.	1						1	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
	Assist ODFW with updating list of priority fish-passage barriers if necessary	1				1		1	
Critical Issue 11: Inadequate diversion data									
Critical Issue #11 Solutions/Strategies	Support additional personnel for flow and diversion monitoring and management	1	1			1		1	
	Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	1	1			1	1	1	
	Promote existing incentives for measurement of diversions	1	1			1	1	1	
Critical Issue 12: Poor soil health in many of the Water Availability Basins									
Critical Issue #12 Solutions/Strategies	Promote good vegetative cover/cover crops.		1				1	1	OWEB-OS, OWEB-SG, NRCS-RCPP/EQIP
	Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)		1				1	1	OWEB-OS, OWEB-SG, NRCS-RCPP/EQIP
	Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions		1				1	1	
Critical Issue 13: Simplified Stream Morphology									
Critical Issue #13 Solutions/ Strategies	Implement strategies for Critical Issues 1 (Riparian) and 3 (Streamflow)								
Critical Issue 14: Adequate surface water for wildlife									
Critical Issue #14 Solutions/Strategies	Conduct study regarding changes in prevalence and function of springs and causes of changes					1		1	
	Implement strategies for Critical Issues 1 (Riparian) and 5 (Native Plants)								
Critical Issue 15: Risk of intense or catastrophic wildfire that impacts water quantity and quality									
Critical Issue #15 Solutions/Strategies	Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings.		1				1	1	ODF?
	Increase pace and scale of forest restoration, including prescribed burning and thinning		1					1	ODF?
	Support community wildfire response plans		1				1	1	
Critical Issue 16: Insufficient data on crops, climate, and datasets to support analysis.									
Critical Issue #16 Solutions/Strategies	Support Agri Met station in Basin		1			1		1	
	Support collection of additional Lidar data		1			1		1	
	Analyze existing data on crop and climate		1			1		1	
Critical Issue 17: Degraded Forest Health									
Critical Issue #17 Solutions/Strategies	Implement strategies for Critical Issue 5 (Native Plants)								
	Implement prescribed burn and thinning for forest management		1					1	OWEB-OS, OWEB-SG, NRCS-RCPP/EQIP, ODF?, Cooperative agreements with USFS
Critical Issue 18: Erosion and Sediment Transport/Control									
Critical Issue #18 Solutions/Strategies	Implement strategies for Critical Issue 12								
	Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)		1	1			1	1	OWEB-OS, OWEB-SG, NRCS-RCPP/EQIP
Critical Issue 19: Rural and domestic well data gaps									
Critical Issue #20 Solutions/Strategies	Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality				1	1	1	1	
	Provide assistance or technical expertise through OWRD support on installing well level monitors.				1	1	1	1	
	Provide information on where to get well water testing kits and technical support for water quality issues				1	1	1	1	
		25	30	3	8	19	18	46	

OWEB-OS	Oregon Watershed Enhancement Board Open Solicitation
OWEB-SG	Oregon Watershed Enhancement Board Small Grants
OWEB-FIP	Oregon Watershed Enhancement Board Focused Investment Partnership
NRCS RCPP/EQIP	Natural Resources Conservation Service Regional Conservation Partnership Program/Environmental Quality Incentive Program
ODF	Oregon Department of Forestry
OWRD	Oregon Water Resources Department
BPA	Bonneville Power Administration-Columbia Basin Water Transaction Program
CTWS	Confederated Tribes of the Warm Springs
USDA RDI	United States Department of Agriculture-Rural Development Initiative
BOR	Bureau of Reclamation
	Federal Appropriations
NWPPC	Northwest Power Planning Council

Appendix B - Strategy Impact Connection Table

	Strategies	1. Poor riparian habitat	2. Elevated summer stream temps/low instream oxygen	3. Insufficient instream flow	4. Storage needs	5. Degraded native plant communities	6. Insufficient efficient irrigation infrastructure	7. Inadequate gauge data	8. Outdated and insufficient municipal water and wastewater infrastructure	9. Lack of data on condition of groundwater aquifers and interactions between groundwater and surfacewater	10. Fish passage barriers	11. Inadequate diversion data	12. Poor soil health in many of the Water Availability Basins	13. Simplified stream morphology	14.Adequate Surface water for wildlife	15. Risk of intense or catastrophic wildfire that impacts water quantity and quality	16. Insufficient data on crops, climate, and datasets to support analysis	17. Degraded forest health	18. Erosion and sediment transport/control	19. Rural and domestic well data gaps	Total
1	Protect riparian areas from livestock using fencing and off-stream stock watering systems	1	1	1	x	1					x		x	1	1	x		x	x		6
1	Protect, enhance, and/or restore native riparian vegetation	1	1	1	x	1					x		x	1	1	x		x	x		6
1	Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	1	1	1	x	1					1		x	1	1	x		x	x		7
2	Identify, protect, and restore seeps and springs supplying cool water	x	1	x	x	x					x		x	x	x	x		x	x		1
2	Maintain and increase streamflows	x	1	x	x	x					1		x	x	x	x		x	x		2
2	Conduct additional monitoring for temperature and dissolved oxygen	x	1	x	x	x					x			x	x	x	x				1
3	Encourage and assist state agencies in creating additional instream water rights	x	1	1	x	x					x		x	1	x	x		x	x		4
3	Encourage voluntary leases and transfers of existing water rights to instream use	x	1	1	x	x					x		x	1	x	x		x	x		4
3	Encourage improved irrigation efficiency projects and use of Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect portion of water saved instream)	x	1	1	x	x	1				x		x	1	x	x		x	x	x	5
4	Complete a feasibility study to assess potential off-channel water-storage projects, including: (a) potential locations for storage projects; (b) water availability, including consideration of all categories of in-stream flow needs (as recognized in the Step 3 Report) and changing hydrographs due in part to climate change; (c) in-stream and out-of-stream needs for water from storage; and (d) other costs and benefits	x	x	1	1						x		x	x	x	x		x	x		3
4	Develop off-channel storage projects as suggested by feasibility studies	x	1	1	1						x		x	x	x	x		x	1		5
4	Control noxious weeds	x	x	x		1							x		1	x		1	x		3
5	Restore upland function by improving plant communities with juniper removal, and planting of appropriate perennial bunchgrasses, shrubs, and forbs	x	x	x		1					x		x	x	1	x		1	x		3
6	Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	x	x	x	x	x	1				x	x	x	x	x	x		x	x	x	2
6	Promote utility, state and federal incentive programs for improving irrigation efficiency	x	x	x	x	x	1				x	x	x	x	x	x	x	x	x	x	2
6	Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	x	x	x			1				x	x		x	x	x			x		2
6	Pipe open ditches	x	x	x	x	x	1			x	x	x		x	x	x			x	x	2
6	Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	x	x	x	x	x	1			x	x	x	x	x	x	x	x	x	x	x	2
7	Support maintenance of existing gauges	x	x	x	x	x	x	1		x	x	x	x	x	x	x	x	x	x		2
7	Support installation and maintenance of additional gauges at discontinued and recommended new sites	x	x	x	x	x	x	1		1	x	x	x	x	x	x	x	x	x		3
8	Assist cities in creating and/or improving Water System Management Plan and/or Water Management and Conservation Plan that identify necessary system improvements. Assess whether these plans cover all needed improvements.		x		x				1	x		x				x					1
8	Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects		x						1												1
8	Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs		x		x				1												1
9	Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change	x	x	x	x	x				1	x		x	x	x	x	x	x		x	1
9	Analyze existing groundwater data, and conduct a groundwater study in the basin	x	x	x	x					1	x			x	x	x	x	x		x	1

9 Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	x	x	x	x					1	x			x	x	x	x	x		1	2
10 Provide full fish passage (removal, repair and/or replacement) at priority artificial obstructions including culverts and dams	x	x	x							1			x							1
10 Assist ODFW with updating list of priority fish-passage barriers if necessary	x	x	x							1			x							1
11 Support additional personnel for flow and diversion monitoring and management	x	x	1	x	x	x	x		x	x	1	x	x	x	x	x		x		3
11 Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	x	x	1	x	x	x	x		x	x	1	x	x	x	x	x		x		3
11 Promote existing incentives for measurement of diversions	x	x	1	x	x	x	x		x	x	1	x	x	x	x	x		x		3
12 Promote good vegetative cover/cover crops	x	x	x		x					x		1	x	x	x	x		1		2
12 **Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)**	x	x										1	x					1		2
12 Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions	x	x										1	x					1		2
14 Conduct study regarding changes in prevalence and function of springs and causes of changes	x	x	x	x	x				x		x	x	x	1	x	x	x	x		2
15 Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings	x	x		x	x							x			1		x	x		1
15 Increase pace and scale of forest restoration, including prescribed burning and thinning					x										1		1			2
15 Support community wildfire response plans															1					1
16 Support Agri Met station in Basin				x												1				1
16 Support collection of additional Lidar data	x	x	x	x	x	x	x		x		x	x				1				1
16 Analyze existing data on crop and climate	x	x	x	x	x	x	x		x	x	x	x	x	x	x	1	x	x	x	1
17 Implement prescribed burn and thinning for forest management	x	x	x		x							x			x		1			1
18 Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	x	x	x	x	x					x		x	x	x			x	1		1
20 Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality		x	x	x					x		x		x			x			1	1
20 Provide assistance or technical expertise through OWRD support on installing well level monitors		x	x	x					x		x		x			x			1	1
20 Provide information on where to get well water testing kits and technical support for water quality issues								x	x		x					x			1	1

Appendix C - Strategic Action Plan

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
PHASE I 2022- 2025										
Critical Issue 1: Poor riparian habitat	Bridge Creek (above West Branch) Bridge Creek (mouth) Bear Creek West Branch Bridge Creek Butte Creek	Protect riparian areas from livestock using fencing and off-stream stock watering systems	NRCS-CREP, CTWS,OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG, DEQ 319 grant, BLM, private foundations/organizations (Rocky Mountain Elk Foundation, Blue Mountain Land Trust, ONDA, Ruffed Grouse Society),ODA	SWCD's, WC, ONDA	2022-2025	In Progress	Linear feet of fencing; number of troughs installed.	Increase in area of healthy riparian vegetation at project sites.	yes/no	Conduct suneye measurements or obtain solar input imagery through drone imagery, measure % shade, measuree % of active erosion, measure change in stream temp; Quantify change in solar input per unit area; Quantify # of Acres treated, Linear Ft fenced, number of off stream troughs installed
		Protect, enhance, and/or restore native riparian vegetation	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG,DEQ 319 grant,ODA	SWCD's, WC, ONDA	2022-2025	In progress	Number of protection/restoration projects completed; number of stream miles treated with projects.	Increase in areas of healthy riparian vegetation at project sites.	yes/no	Number of Acres treated; Quantify change in: shannon's diversity index; volume, depth and width of pool/riffle habitat; pool to riffle ratio. Reduction in stream temp., increase in groundwater levels, reduce channel incision,% shade,%active erosion, increase stream sinuouscity, Total suspended solid in m3, no. of fish count, ., increase in linear ft of floodplain, Conduct vegetation surveys to document change in vegetation. Quantify Linear Ft installs, acres of planted natives, acres of invasive species treated, how many species and individual plants planted, Survival rate of plantings,% shade change, % active erosion, Reduction in stream temp, Quantify % change in ground cover, understory, and canopy cover.
		Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG, OWRD grants and loans?	SWCD's, WC, ONDA	2022-2030	In progress	Number of projects completed; stream miles treated.	Increase in streamflows, reductions in stream temperatures, increased, increase in groundwater levels, increase in channel sinuousity, increase in beaver habitation, and increase in area of healthy riparian vegetation (all as measured in project areas).	yes/no	Install and monitor pressure logger pre and post treatment upstream and downstream of restored reach; Conduct habitat surveys (i.e. CHaMP lite), Monitor beaver activity, document presence and count of dams, volume and surface area of ponds created by dams vs volume and surface area of water before dams;Quantify the change in the number of dams. Quantify the volume and surface area of beaver ponds. Use remote sensing to map heterogeneity in thermal patterns near BDA's and in control areas

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 2: Elevated Summer Stream Temperatures and Low Instream Oxygen	Bridge Creek (above West Branch) Bridge Creek (mouth) West Branch Bridge Creek Butte Creek Bear Creek	Identify, protect, and restore seeps and springs supplying cool water	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG,DEQ 319 grant, The Freshwater Trust, Trout Unlimited, Mid- Johnd Day/Bridge Creek Watershed Council, Bullet Foundation, Ford Family Foundation, Oregon Community Foundation	CA, ONDA	2022-2025		Number of springs identified, then number protected and restored. Number of spring source fenced off	Reduction in stream temp., Increase in Dissolved Oxygen levels; increase in flows from springs,	yes/no	Quantify change in volume of cool water avaiable to salmonids (volume of water <18°C 7DAM) pre and post treatment
		Maintain and increase streamflows	OWRD, Columbia Basin Transcation Program (NWIF), Freshwater Trust	OWRD, WW, CA, ONDA			Number of water right applications, Number of conserved water projects,Number of irrigation efficiency projects~~, etc. - to maintain and increase streamflows.~~	Increase in streamflows.	yes/no	Quantify reduction in stream temp., Quantify icrease in Dissolved Oxygen levels; Quantify change of increase in streamflows. Install and monitor pressure logger pre and post treatment upstream and downstream of restored reach
		Conduct additional monitoring for temperature and dissolved oxygen	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS	CA	2022-2025		Number of additional devices installed to measure/monitor temperature and dissolved oxygen.	Increase in available data on temperature and dissolved oxygen.	yes/no	Install and monitor temperature loggers pre and post treatment, install monitoring devices dissolved oxygen. Measure change in 7DAM temperature.
		Implement strategies for Critical Issues 1 (Riparian) and 3 (Streamflow)			2022-2025					

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 3: Insufficient Instream Flow	Bridge Creek (above West Branch) Bridge Creek (mouth) Rock Creek (mouth) West Branch Bridge Creek Bear Creek Butte Creek	Encourage improved irrigation efficiency projects and use of Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect portion of water saved instream)	CBWTP, BPA, NWPPC, SWCDS NRCS, TU	SWCD, WC	2022-2025		Number of irrigation efficiency projects installed/upgraded; quantity of water projected instream using Conserved Water Act. Number of irrigators educated on efficiency opportunities.	Increase in streamflow resulting from projects completed.	yes/no	Quantify irrigation projects installed or upgraded - VFD pumps, sprinkler nozzles, irrigation converted from gun to wheel, or wheel to pivot. Number of new monitoring stations installed;quantify the volume of water saved and estimate distance held as instream flow (volume x distance from improved POD to next downstream POD where water is removed, include water temperature of diverted water saved
		Encourage voluntary leases and transfers of existing water rights to instream use	OWRD, CBWTP, Ag groups, Columbia Basin Transaction Program (NWIF)	SWCD, WC, WW	2022-2025		Number of leases identified and then transferred. Amount of water protected instream through leases and permanent transfers of existing water rights to instream water rights.	Increase in streamflow resulting from leases and tranfers.	yes/no	Install and monitor pressure logger pre and post treatment upstream and downstream of restored reach Quantify the number of leases, and cfs recruited.
		Encourage and assist state agencies in creating additional instream water rights	ODFW, OWRD	OWRD, WW	2022-2025		Number of actions taken to encourage agencies to seek additional instream water rights.	Number of additional instream water rights applied for; number approved; increase in streamflows resulting from additional instream water rights.		Percent increase in streamflows (cfs) measured at priority WAB gages, number of agency personnel trained or hired for instream flow work.
		Implement strategies for Critical Issue 11 (Diversion Data)			2022-2025					
		Implement strategies for Critical Issue 1 (Riparian)			2022-2025					
		Implement strategies for Critical Issue 4 (Storage)			2022-2025					

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 4: Storage Needs	West Branch Bridge Creek Thirty mile Sorefoot creek Pine Hollow Bridge creek (above West Branch)	Complete a feasibility study to assess potential off-channel water-storage projects, including: (a) potential locations for storage projects; (b) water availability, including consideration of all categories of in-stream flow needs (as recognized in the Step 3 Report) and changing hydrographs due in part to climate change; (c) in-stream and out-of-stream needs for water from storage; and (d) other costs and benefits	OWRD, Oregon Cattlemens Association, Oregon Farm Bureau, Oregon Department of Agriculture, DEQ 319, USDA Rural Initiative	OWRD, SNW, WW	2022-2025		Number of applications submitted for funding feasibility study.	Study findings presented to LJDWG, JDP and community.	yes/no	Study findings presented to LJDWG, JDP and community. Number of AcreFeet of storage proposed or not proposed from study, off chanel storage sites recommended or not recommended.
		Develop off-channel storage projects as suggested by feasibility studies	OWRD, NRCS, SWCD, Watershed Councils, OCA, OFB	TBD	2022-2025		Number of projects consistent with studies implemented (if any).	Increase in water available for instream and out-of-stream needs during dry months; maintenance instream flow needs throughout the year.	yes/no	TBD based on feasibility study outcomes

Appendix C - Strategic Action Plan

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 5: Degraded Native Plant Communities	Bear Creek Bridge Creek (above west branch) Butte creek Rock creek (above Wallace Canyon), Rock creek (mouth)	Control noxious weeds	OSWB, OWEB-OS, OWEB-FIP (Butte/Thirtymile), SWCD, Oregon Cattlemans Association, Oregon Farm Bureau, ODA, National Parks (JD Fossil Beds National Monument) ONDA. BlueMountain Land Trust, RMEF	SWCD, NRCS	2022-2025		Number of projects and acres treated to control noxious weeds.	Decrease in noxious weeds.	yes/no	Quantifiy acres treated, projects completed. Document conditions pre and post treatment by estimating density of invasive plants, note methods used
		Restore upland function by improving plant communities with juniper removal, and planting of appropriate perennial bunchgrasses, shrubs, and forbs.	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG	SWCD, NRCS	2022-2025		Number of projects completed; area covered by projects.	Number of acres treated, land owners/managers participating Increase in area of healthy native plant communities.	yes/no	Identify areas to be thinned, Monitor plant density, vigor, and compostion pre and post treatment. Include 2yr survival post planting
		Implement strategies for Critical Issue 1 (Riparian)			2022-2025					

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
PHASE II 2025-2027										
Critical Issue 6: Insufficient Efficient Irrigation Infrastructure	Alder Creek, Kahler Creek, Rock Creek (mouth), West Branch Bridge Creek, Rock creek (mouth), John Day mainstem-Heidtmann Canyon to N.Fork, Mouth to Heidtmann Canyon	Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	Oregon Farm Bureau, Oregon Cattlemens Association, DEQ 319, ODA, Columbia Basin Water Transaction Program, OWEB, CWDS, NRCS, TU, National Parks (JDFBNM)	SWCD, WC	2025-2027		Workshop delivered, # Field tours	Number of irrigators educated, presence of BPA irrigation specialists providing services, Number of projects upgraded or converted.	yes/no	
		Promote utility, state and federal incentive programs for improving irrigation efficiency	Oregon Farm Bureau, Oregon Cattlemens Association, DEQ 319, ODA, Columbia Basin Water Transaction Program, OWEB, CWDS, NRCS, TU, National Parks (JDFBNM)		2025-2027		Workshop delivered, # Field tours	Presence of utility services provided through BPA .Irrigation efficiency projects implemented as a result of promotion.	yes/no	
		Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	ODFW, OWEB, Private Foundations		2025-2027		number of failing diversions, push up dams fixed and removed Number of diversions replaced and/or screened to improve fish passage.	Improved fish passage; fewer fish pulled into diversion works Increase (or reduced decline) in native migratory fish populations due to fish passage improvements at projects.	yes/no	
		Pipe open ditches	BOR (WaterSmart), OWRD (Water projects grants and loans), Local SWCD, EQIP NRCS		2025-2027		Linear feet piped	Amount of water conserved	yes/no	
		Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	OWEB, NRCS, CBWTP, BPA, Tribes		2025-2027		# projects upgraded; Number of irrigation systems replaced with more efficient systems.	Amount of water conserved for in and out of stream needs from efficiency projects; Amount of water conserved as a result of efficiency projects.	yes/no	

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LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 7: Inadequate Gauge Data	Bear Creek, Bridge Creek(above West Branch), Bridge Creek (mouth), Butte Creek,Thirty mile	Support maintenance of existing gauges	OWRD, USGS, ODA, Columbia basin water transaction program, Oregon Cattlemens Association, Oregon Farm Bureau		2025-2027		OWRD capacity increase and prioritization Actions taken to support maintenance of existing gauges.	Number stream gages maintained	yes/no	
		Support installation and maintenance of additional gauges at discontinued and recommended new sites	OWRD, USGS, TU, ODA		2025-2027		OWRD capacity increase and prioritization Actions taken to support installation and maintenance of additional gauges.	Number of stream new and/or restored gages installed	yes/no	

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 8: Outdated and insufficient municipal water and wastewater infrastructure	Butte Creek, Grass Valley Canyon,John Day Mainstem,Mouth to Heidtmann Canyon,Bridge Creek (above West Branch),Thirtymile Creek	Assist cities in creating and/or improving Water System Management Plan and/or Water Management and Conservation Plan that identify necessary system improvements. Assess whether these plans cover all needed improvements.	USDA Rural Intiative, local cities, local counties, State of Oregon, Oregon Community Foundation, Collins Foundation, create Local Improvement Districts, WaterSmart (BOR)		2025-2027		# of cities and municipal systems assisted	Number of plans developed	yes/no	
		Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects	same		2025-2027		Number of cities and municipal systems assisted	Number of projects developed, wastewater treatment updrades, gallons of water treated	yes/no	
		Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	OWRD, State of Oregon Legislature, Capacity grants (OWEB), Association of Oregon counties?		2025-2027		Number of newsletters and communication material distributed by water utilities, SWCD, Watershed Councils and other related and earned media news outlets	Increase in water conservation attributable to outreach; increase in support for necessary infrastructure projects	yes/no	Number of wastewater systems funded and improved

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 9: Lack of data on condition of groundwater aquifers and interactions between groundwater and surface water	Grass Valley Canyon,Jackknife Canyon,Rock Creek (above Wallace Canyon),Rock Creek (mouth),	Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	OWRD, USDA rural intititives, O Department of Geology and Mineral INdustries, Oregon Groundwater Association, Oregon Community Foundation, Ford Family Foundation. Association of Oregon Counties		2025-2027		Whether study was completed. Number of watersheds analyzed	Increase in knowledge regarding issues addressed.	yes/no	LJDWG/JDP outreach to community to share study results.
		Analyze existing groundwater data, and conduct a groundwater study in the basin	OWRD, OWEB, Gilliam, Sherman, Wheeler, Grant Counties, OCA, OFB, BOR,USGS		2025-2027		Number of groundwater studies conducted, Analysis of existing groundwater data;	Increase in knowledge re condition of groundwater aquifers and interactions between groundwater and surface water	yes/no	LJDWG/JDP outreach to community to share groundwater data,
		Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	Association of Oregon Counties, OCA, OFB				Number of additional groundwater monitoring wells installed; number of participants in community groundwater monitoring network.	Increase in knowledge re condition of groundwater aquifers and interactions between groundwater and surface water. Percent change in groundwater levels.	yes/no	Quantify % Change in aquifer levels.

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 10: Fish passage barriers	Alder Creek, Bear Creek, Bridge Creek (above West Branch), Bridge Creek (mouth), Butte Creek	Provide full fish passage (removal, repair and/or replacement) at priority artificial obstructions including culverts and dams.	USFS, BLM, OWEB, ODFW, CT of the Warm Springs and the Umatilla, SWCDS, Watershed Councils, TU, Built Foundation, RMEF		2025-2027		Number of priority obstructions at which full fish passage provided.	Increase (or reduced decline) in native migratory fish populations due to fish passage improvements at projects.	yes/no	Monitor, quantify fish distribution as a result of fish barrier improvements. Number of barriers improved/ removed, quantify fish presence, estimate length of stream occupied pre and post restoration; Quantify change in % survival via PIT tagging and passive redetection.
		Assist ODFW with updating list of priority fish-passage barriers if necessary	BLM, USFS, Councils, SWCD, TU		2025-2027		Number of inputs to ODFW regarding identification of priority fish passage barriers (if necessary)	Accuracy of list of priority fish-passage barriers.	yes/no	Monitor, quantify fish distribution as a result of fish barrier improvements. Number of barriers improved/ removed, quantify fish presence, estimate length of stream occupied pre and post restoration; Quantify change in % survival via PIT tagging and passive redetection.

LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
PHASE III 2027-2030										
Critical Issue 11: Inadequate diversion data	Bridge Creek (above West Branch), Bear Creek, West Branch Bridge Creek,Rock Creek (mouth),Thirtymile Creek ,Butte Creek, BLM, USFS	Support additional personnel for flow and diversion monitoring and management	OWRD, ODA, NW Power Planning Council, Bonneville Power Administration, Tribes, BLM USFS, USGS. NOAA		2027-2030		Number of actions taken to support increase in personnel for flow and diversion monitoring and management.	Number of additional personnel for flow and diversion monitoring and management.	yes/no	
		Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	OWRD, OCA, OFB, Association of Oregon Counties		2027-2030		Actions taken to advocate for incentives.	Number of measuring devices installed as a result of incentives obtained.	yes/no	
		Promote existing incentives for measurement of diversions	OFB, OCA, OWEB, NRCS, SWCD's		2027-2030		number of entities adopting new rules ie, all SWCD's require Actions taken to promote incentives.	Number of measuring devices installed as a result of incentives obtained.	yes/no	

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LOWER JOHN DAY INTEGRATED WATER RESOURCE PLAN: STRATEGIC ACTION PLAN

Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 12: Poor soil health in many of the Water Availability Basins	Grass Valley Canyon,Esau Canyon,John Day River - Heidtmann Canyon to N Fork, Rock Creek (above Wallace Canyon), Rock Creek (mouth)	Promote good vegetative cover/cover crops.	ODA< Cattlmen, Farm Bureau, SWCD, USDA NRCS		2027-2030		Actions taken, acres covered, number of actions/proejects taken to promote veg cover.	Increase in acreage/area with good vegetative cover/cover crop as a result of promotion.	yes/no	Quantify downstream habitat protected, measure sediment storage post treatment
		Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)	SWCD, NRCS, ODA		2027-2030		Actions taken to promote impoved soil condition, number of acres under changed tillage practices	Increase in promoted practices resulting from promotion.	yes/no	Measure carbon uptake in soils through NRCS/SNW pilot. Quantify downstream habitat protected, measure sediment storage post treatment
		Support payment programs for landowners adopting soil carbon improvement practices and management that mitigates for greenhouse gas emissions	Ecotrust, private companies, Oregon Tilth, Climate Trust,		2027-2030		Number of projects and action taken to promote carbon sequestering	Number of projects completed as a result of payment programs promoted.	yes/no	Number of landonwers, numbers of projects, number of soil samples, carbon increased

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Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 13: Simplified Stream Morphology	Bear Creek, Bridge Creek (above West Branch), Bridge Creek (mouth), Butte Creek, Thirtymile Creek	Implement strategies for Critical Issues 1 (Riparian) and 3 (Streamflow)	OWEB, Councils, Tribes, Private Foundations, BPA, NWPPC, TU		2027-2030				yes/no	

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Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 14: Adequate surface water for wildlife	Bear Creek, Bridge Creek (above West Branch), Butte Creek, Thirtymile Creek, West Branch Bridge Creek	Conduct study regarding changes in prevalence and function of springs and causes of changes	RMEF, TU, Ruffed Grouse Society, Oregon Wildlife Society, Tribes		2027-2030		number of studies	Increase in knowledge resulting from study.	yes/no	Track spring protection and restoration.
		Implement strategies for Critical Issues 1 (Riparian) and 5 (Native Plants)			2027-2030				yes/no	

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Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 15: Risk of intense or catastrophic wildfire that impacts water quantity and quality	Butte Creek, Rock Creek (mouth), Thirtymile Creek, West Branch Bridge Creek, Pine Creek, Pine Hollow	Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings.	Oregon Department of Forestry, USDA, OWEB, Private Foundations, Tribes, OR cattlemens association Oregon Farm Bureau, SWCD's BLM, USFS		2027-2030		number of acres treated, number of structure protected	Reductions (or reduced increases) in damage from wildfire as a result of projects.	yes/no	
		Increase pace and scale of forest restoration, including prescribed burning and thinning	ODF, USFS, BLM		2027-2030		Acres treated	Reductions (or reduced increases) in damage from wildfire as a result of projects.	yes/no	
		Support community wildfire response plans	ODF, USFS, FEMA, Local WC's and cities		2027-2030		Actions taken to support plans.	Reductions (or reduced increases) in damage from wildfire as a result of projects.	yes/no	Track identified actions

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Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 16: Insufficient data on crops, climate, and datasets to support analysis.	Bridge Creek (mouth),West Branch Bridge Creek,Parrish Creek, John Day River - Heidtmann Canyon to N Fork, John Day River - Mouth to Heidtmann Canyon	Support Agri Met station in Basin	ODA, Cattlemen, Farm Bureau, SWCD"s NRCS		2027-2030		Actions taken to support station.	Number of stations added.	yes/no	
		Support collection of additional Lidar data	NRCS, DOGAMI (State Dept. of Geology and Industries)		2027-2030		Actions taken to support collection of additional data.	Amount of additional data collected.	yes/no	
		Analyze existing data on crop and climate	Agrimet (BOR), ODA?, OSU (OCCI),ARS, National Agriculture Statistics Census USDA		2027-2030		Actions taken to analyze data.	Increase in knowledge resulting from analysis.	yes/no	

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Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 17: Degraded Forest Health	Bear Creek,Bridge Creek (above West Branch), Bridge Creek (mouth), Kahler Creek, Parrish Creek	Implement strategies for Critical Issue 5 (Native Plants)	USFS BLM SWCDS, Or Cattlemen, Oregon Farm Burea ODF		2027-2030				yes/no	
		Implement prescribed burn and thinning for forest management	ODF,USFS,FEMA, Local WC's and cities, NRCS,OWEB		2027-2030		Number of projects and acres treated.	Acres thinned/treated, projects completed. Increase in area of healthy forest resulting from projects.	yes/no	Quantify acres thinned and transpriton loss due to vegitation pre and post treatment. Record forest stand compostion pre and post treatment

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Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 18: Erosion and Sediment Transport/Control	Butte Creek Thirtymile Creek Bridge Creek (above West Branch) Bridge Creek (mouth) Bear Creek	Implement strategies for Critical Issue 12	NRCS, SWCD's, AG groups, ODA		2027-2030				yes/no	
		Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	OWRD,DEQ-319,NRCS,SWCD's		2027-2030		Actions taken to promote.	Number of projects undertaken as a result of promotion; improvements in water quality as a result of projects.	yes/no	Quantify downstream habitat protected, measure sediment storage post treatment

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Critical Issue	Priority WABS	Strategies	Funding	Team Lead	Timeline (Phase I, II, III)	Status	Implementation Metric	Effectiveness Monitoring Metric	Monitoring/Reporting (have the actions created healthier or better conditions?)	Notes on how to implement, measure, monitor and report:
Critical Issue 19: Rural and domestic well data gaps	Grass Valley Canyon Rhodes Canyon Rock Creek (above Wallace Canyon) Butte Creek Hay Creek	Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	OWRD,OWEB?, Private foundations, USDA		2027-2030		Whether survey conducted.	Increase in knowledge regarding issues associated with domestic water availability and quality.	yes/no	
		Provide assistance or technical expertise through OWRD support on installing well level monitors.	OWRD,USGS,BOR		2027-2030		Number of people assisted	Number of monitors installed; increase in knowledge regarding groundwater as a result of increased number of monitors.	yes/no	
		Provide information on where to get well water testing kits and technical support for water quality issues	OWRD,OHA		2027-2030		Actions taken to provide information from local water district or agency or county or municipal services agency	Number of people assisted; number of tests conducted; improvements to water quality from rural and domestic wells.	yes/no	

Appendix D - Required Improvements

Attachment 1 – Strengths Identified by the Plan Review Team

In the review of the Lower John Day Work Group's DRAFT place-based integrated water resources plan, the plan review team identified many strengths of the Draft Plan. They are documented below and organized by the criteria identified in the Draft Planning Step 5 Guidance.

Planning Guideline or IWRS Principle	Strengths Identified by Plan Review Team
Balanced Representation of Interests	The Plan indicates that multiple and diverse stakeholders including local, state, and federal agencies Tribes, landowners, industry, and municipalities participated in the planning. Overall, the Work Group included diverse interests, a balanced representation of instream and out-of-stream water needs, inclusivity, and multiple outreach pathways during the planning process (e.g., site visit tours, frequent outreach to landowner groups, consideration of recreation/tourism interests, etc.). The plan describes a process for engaging all interests in a fair and balanced manner. There is a description of efforts made to engage water sectors which did not participate frequently. The plan describes the outreach conducted to reach people using a variety of techniques. The plan describes how the meetings were open to the public and efforts taken to consider public input and comment on reports and the draft plan. Decisions were made following the Declaration of Cooperation and consensus minus 10% voting system. The plan is generally attractive, readable, and approachable to a general reader.
Collaborative and Integrated Process	The Plan demonstrates agility and adaptation when trying to incorporate participation from a wider range of participants. It acknowledges weakness, describes efforts to accommodate different scheduling needs, and explains why certain paths were not pursued (e.g. multi-lingual outreach materials). It can be daunting to be the first group to participate in a new program, and the Work Group is certainly to be commended for a commitment to exploring collaborative approaches and all the work of planning.
Public Process	The Work Group allowed for public comment throughout the process with every meeting open to the public with a public comment opportunity. The Plan includes a detailed description of the outreach process and the effort to go to community members instead of expecting them to come to the group. The definitions section that will aid in public outreach and understanding. The section, Overall Outreach Considerations, demonstrates the group's self-awareness and reflection abilities. The footnotes about changing participation (page 1, Executive Summary) reflects good transparency about participant involvement over time. The PRT appreciated the outreach utilizing Soil and Water Conservation District and Watershed Council contacts and meetings.

OWRD Consultation	The plan was conducted in consultation with the Department and other state agency partners.
Scope of Planning Effort	Excellent visuals in much of the plan make the plan generally easy to understand, including the scope of the planning effort.
Understanding Water Resource Supply, Quality, & Ecological Issues	The plan documents an understanding of water resources supply, quality, and ecological issues to the extent data is available, for both groundwater and surface water, and identifies data gaps where they exist.
Current and Future Water Needs	The Plan found added information to help fill data gaps, for example on page 28, the plan references local field guides and Bureau of Land Management data to surmise that summer flows are too low for many recreational activities.
Solutions or Recommended Actions	The strategies and related restoration actions outlined will improve agricultural management practices which will improve agricultural water quality. In addition, the Plan has prioritized areas for restoration which could be an opportunity to overlap an Oregon Department of Agriculture Strategic Implementation Area. The Plan Review Team (PRT) appreciates that the planning group incorporated evaluating the strategies based on whether they would address multiple Critical Issues (page 50). This approach will hopefully result in maximizing limited resources and encouraging participants to think more broadly about how many issues (and solutions) are interrelated.
Addresses In-stream and Out-of-Stream Needs	The PRT commends the Work Group for using best available information and methodology for calculating instream demand. The Work Group analysis included a summary of existing Instream Water Rights (ISWRs) in the planning area, estimates of minimum and optimum flows found in the Oregon Fish and Wildlife Department's (ODFW) Basin Investigation Report, and an additional use of a presumptive standard when flow targets were not available. The PRT is pleased that the Work Group looked beyond existing instream water rights and recognized limitations in the analysis, because using instream water rights as a proxy for instream need has limitations. The Work Group also looked at future flow needs based on the Oregon Climate Change Research Institute's climate change projections.
Validity of Information	In most cases the information is explained or referenced.
Information and data gaps	A great deal was accomplished given the limited time and resources, and the PRT acknowledges that much of the information needed for the assessment was not readily available when needed. We appreciate the recognition that ISWRs are "well below estimated instream flow needs," that some tributary basins have no instream flow estimates, and not all categories of instream flows are estimated. The general language of the

	plan and clear identification of data gaps indicates a real desire to better understand these limitations. The PRT is pleased to see that the Work Group recognizes the value of instream flows and is committed to acquiring information to fill data gaps - including a full suite of instream needs - and using that information to plan, implement, and monitor pilot projects in high-priority areas.
Plan Adoption by Planning Group	The plan describes a process for incorporating PRT feedback and adopting the Final Plan by consensus.
Implementation Strategy	The plan cross-walked critical issues and actions to assure success is more likely. The plan identifies potential funding sources for various actions and has a roadmap of next steps once the plan is approved, including team leads and timelines. The plan utilizes the John Day Basin Partnership as an umbrella to foster this subgroup, serve as a receptacle for data and metrics. The Appendices include the Strategic Action Plan spreadsheet where detail of critical issues is easy to read when enlarged. The implementation plan is strategic and clearly defines implementation priority areas, rationale for these areas, and interrelated components of the proposed strategic actions. The PRT appreciated the prioritization of Water Availability Basins and assume that this will be used to prioritize locations for the strategies listed in Appendix C. We also appreciate the notes on how to implement, measure, monitor, and report because it indicates that the group has spent time considering these issues.

Attachment 2 – Required Improvements

The changes identified in the table below are those that are required for the Lower John Day Work Group's Integrated Water Resources Plan to receive a recommendation from the review team that the Water Resources Commission recognize the plan. The changes are organized by requirement category and question in column 1 (see Appendix B of the Draft Step 5 Guidance for full list of required categories). In addition to the review team finding (column 2), the table lays out a proposed solution (column 3) as well as notes where in the draft plan the solution might be placed to address the issue (column 4). In addition to helping secure a recommendation to the Commission that the plan receive state recognition, there are many other benefits to adopting these changes, including 1) demonstrate, document, and memorialize that the plan and planning process followed the Draft Planning Guidelines and IWRS principles, 2) improve appeal to funders, and 3) facilitate and aid implementation.

Requirement Category and Review Question	Review Team Finding	Proposed Solution	Location in Draft Plan	Comments added
Current and Future Water Needs	Meeting water needs should be considered within the context of specific watersheds, accounting for the hydrological, geological, biological, climatic, socio-economic, cultural, legal, and political conditions of a community. The Warm Springs Tribes are listed as a planning partner, but the plan does not describe their historic or current cultural uses of aquatic resources in the planning area.	The plan should describe how the Warm Springs Tribes have used aquatic resources in the planning area, current activities related to those interests such as ownership, restoration programs, and protection of significant cultural fishing sites. The Tribes' John Day Basin Restoration Strategy may be one source of such information. The PRT recommends this information be summarized in the Basin Overview section to provide context to the planning effort.	Place in the Basin Overview section.	Chapter 2. Basin Overview pg. 22-24 Map- pg. 23

Understanding Water Resource Supply, Quality, and Ecological Issues Does the Plan document an understanding of the water resources supply, quality, and ecological issues in the planning area for both surface and groundwater?	The PRT found the Draft Plan lacks a clear explanation of major surface water resources early in the document to orient the reader to major tributaries and sources of water in the planning area, or entering the planning area, that would help demonstrate an understanding of water supply. The map provided of the planning area, in the Geographic Scope section on page 5, does not include streams or the community of Kimberly which is mentioned as an important location. The Plan does not clearly describe the water quality impairments and TMDLs identified by the Oregon DEQ.	The PRT recommends inclusion of a stream network map and description be included in the Basin Overview section, and in Chapter 2, showing the river and names of major tributaries and including the confluence of the North Fork and mainstem river at the upper end of the planning area, at Kimberly, where a large portion of the planning area water comes from. The PRT recommends including in the water quality section the following information: There are currently TMDLs for Temperature and Bacteria. Dissolved Oxygen and impaired biologic conditions have also been identified as impairments but will be addressed through the implementation of the Temperature TMDL. Streams in this basin have also been listed for sedimentation, which has been co-assessed during TMDL monitoring and assessment. A Sedimentation TMDL has not yet been established but many measures that can reduce	Basin Overview and Chapter 2 Water Quality Section in Chapter 2 Page 28	Chapter 2, Water Budget pg. 25 added map and verbiage on major tributaries influences from Step 2 report. Pg. 41 Added as suggested page 33 additional and additional language from Step 2 Report

	While Chapter 2 describes the causes of watershed degradation (page 20), the Water Quality Section does not reference the causes of the water quality concerns (e.g. human-related land-use and landscape modifications)	stream temperatures will also address sedimentation. By providing more detail explaining the contributing causes of the impairments, the Plan will more clearly demonstrate an understanding of both water quality conditions, the contributing causes, and how they will be addressed through the Implementation Strategies in this particular section. Please add more detail to page 28. For example, this excerpt is taken from DEQ's 2010 Water Quality Management Plan for the Lower John Day (page 4) and it bridges the connection between the impairments and human activities: *The Temperature Water Quality Standards is based on fisheries as the most sensitive beneficial use of waters. Cold-water fish are particularly sensitive to stream temperatures, and substantial heating occurs each year due to human-related landscape modifications (DEQ, Water*		

		Quality Management Plan, 2010).		
Solutions or Recommended Actions Does the Plan identify integrated solutions to the extent practical? Do the solutions identified adhere to the IWRS Guiding Principles?	Consideration of reasonable cost in the prioritization of strategies/solutions is an IWRS guiding principle. It is unclear if strategy prioritization considered estimated cost.	Please describe in Chapter 4 if cost was considered during the prioritization of strategies/actions. If it wasn't, please describe when costs will be considered.	Chapter 4	Add step 4 report principles on page 55 1. Available expertise and capacity 2. Financially feasible and funding available 3. Community supported 4. Meets long- and short-term goals without being detrimental to other needs 5. Minimum negative impacts 6. Voluntary non-regulatory action 7. Action does not infringe on current water rights
Addresses In-Stream and Out-of-Stream Needs Does the Plan consider current and future instream and out-of-stream needs in a balanced manner?	The plan only briefly describes water needs for agriculture and municipal needs, identifies critical issues related to municipal water interests and agricultural interests, but it is unclear that implementation of strategies to address those issues will be done in a balanced manner with instream issues. The plan appears heavily geared toward addressing instream needs with much less	The PRT recommends the Work Group supplement the descriptions of municipal and agricultural water needs more in balance with instream needs. And the PRT recommends that the three phases of initiating strategies each contain strategies for instream, municipal, and agricultural water issues. This approach could be stated in Chapter 5 on page 58 near the phasing graphic, so the	Chapter 3, pages 39-41 and Chapter 5, page 58	Pg 43-Added out of steam uses-Added irrigation data Pg 45- added more municipal Pg 63 added verbiage

	emphasis placed on addressing out-of-stream needs. In Chapter 4, the language talks about priorities for "restoration" rather than plan implementation in the broader sense.	reader understands this balanced intent during phasing.		
Validity of Information	Much of the definition of a Water Availability Basin explains the Water Availability Reporting System.	Other than the first sentence of the WAB definition, the remainder should be moved to the WARS definition.	Terms and Definitions, Page 4	Page 4
Plan Adoption by Planning Group Does the planning group have a sound process for final review and adoption of the Final Plan?	The Commission will review the adopted Final Plan, not comment on a Draft Plan to then be finalized. The PRT points this out at this stage to be sure the Work Group has a clear understanding and so the Final Plan will document *what was done* between the Draft Plan and adopted Final Plan.	The Final Plan should describe the process ***that was used*** to convert the Draft Plan into an adopted Final Plan for Commission review and recognition.	Executive Summary, Page 2 and Chapter 5, page 58 and 59	Pg 2 Pg 65

Attachment 3 Considerations for Plan Implementation

This attachment provides some considerations for plan implementation identified by the plan review team agencies. These are offered to help the group transition to successful implementation of the plan. Over the next several months, the Lower John Day Work Group and state agencies can discuss how best to partner during plan implementation.

Implementation Generally

The Work Group should consider tracking of lessons learned as this process matures and possibly report on progress to the Water Resources Commission in the future.

Outreach

Consider refining outreach strategy and continuing outreach committee and shift focus to keeping community informed of implementation actions and adaptive management. How will the Work Group keep members and community engaged and informed during 8 years of implementation?

During implementation of proposed actions, the Plan Review Team encourages initiating outreach with Tribal members, immigrants, and immigrant agricultural workers. There is still opportunity to engage and exchange information with these groups. For ideas and examples of collaboration and inclusion of historically marginalized and excluded communities, please review the report written by the Oregon Water Futures Project: https://www.oregonwaterfutures.org/.

Pursuit of Recommended Actions

A cost-benefit analysis of top strategies or actions can help determine those with a high likelihood of being effective at a reasonable cost.

A crosswalk table with the statewide Integrated Water Resources Strategy recommended actions would help the Commission, and others, understand in which areas the place-based plan is aligned with the IWRS and help state agencies in directing resources to aligned actions. This could be included as an Appendix to the plan and/or in the presentation to the Commission.

New instream water rights are useful in setting restoration goals but will be junior in priority to existing uses and alone aren't an effective tool in improving flows in WABs that are already fully/over allocated.

The Work Group should consider focusing priorities on irrigation efficiencies and flow restoration in basins where it will result in wet water (e.g., larger tributaries with higher natural flow and where currently irrigated) and where there are willing landowners with senior, reliable rights.

Project implementation would be more beneficial in locations that work together synergistically (e.g., watershed-based approach as opposed to a more random, opportunistic approach).

Climate change projections are discussed, but there was limited connection to future needs. The Work Group should be open to adaptive strategies and potential shifting priorities to account for climate change moving forward.

Technical Work and Filling Data Gaps

Is there a roadmap for funding acquisition of data, identified in the data gap analysis?

For surface and groundwater data gaps, consider reaching out to OWRD staff early during implementation to discuss where stream-gaging is most critical from the Work Groups' perspective, and next steps in expanding the groundwater monitoring network. The Work Group could help OWRD identify well owners who may be willing to have their wells monitored to help understand the groundwater conditions.

ODFW guidance will be available soon if the Work Group wants to use it to update the Instream Demand. Additional datasets include StreamStats and NHD; see ODFW letter dated October 25, 2021, and "Implementation" section below for more information. ODFW will be happy to continue collaboration with the Work Group to further refine the Instream Demand as you look towards Plan implementation.

The Plan could explicitly call out the need for more in-depth field studies and possibly prioritize locations, as well as include an implementation action that clearly identifies the need to address data gaps and identify how new instream demand estimates (if calculated) will be utilized in project prioritization.

Implementation Coordination

<u>ODFW Partnership</u>

- ODFW recommends the following items for consideration as the Work Group moves forward with implementation:
    - More fully characterize basin-wide instream needs using ODFW's updated guidance document (expected early 2022) to provide a foundational assessment, particularly on streams with sensitive, threatened, or endangered species that currently lack instream targets. The new ODFW guidance builds on your existing analysis and will provide a means to utilize additional data sources for estimating instream needs. ODFW may be able to assist with this analysis as time and resources allow.
    - Use outcomes of the updated instream needs assessment, along with existing data, to identify high-priority locations for pilot projects that address instream needs. Existing data may include (but are not limited to):
        - ODFW's Aquatic Habitat Prioritization (expected 2022) and other relevant geospatial datasets that will contribute to location prioritization.
        - Findings from earlier Work Group planning steps.
        - Existing IFIM studies or other studies that address habitat requirements.
        - Sites with water temperature data.
        - Other relevant data from local, state, tribal, and federal partners, and data from other restoration scientists/practitioners (e.g., NGOs, academia, consultants).
    - Plan, implement, and monitor pilot projects that focus on:
        - Seasonally Varying Flow (SVF) Targets
            - Existing ODFW instream flow targets are based on species-specific instream needs for each life stage (e.g., springtime flows necessary for steelhead spawning, summer flows for juvenile rearing, and fall flows

for Chinook and Coho spawning). Streamflows necessary for broader habitat maintenance and formation (e.g., pool development, gravel recruitment, etc.) are not currently incorporated into ODFW instream flow target development. Present methodologies primarily base late fall-early spring instream flow targets on juvenile rearing and/or egg incubation needs, which are typically minimal relative to natural flow conditions during this period of peak annual flows. ODFW intends to identify and develop techniques for the determination of peak channel maintenance and formation flows in the next several years. The Lower John Day planning area may provide an ideal pilot location to test techniques and collect field data.

- Temperature-based Flow Targets
    - Similar to peak habitat maintenance and formation flows, relationships between water temperature, streamflow, and species thermal limits have not, until recently, been incorporated into ODFW instream flow target development. As climate change progresses, water temperature is anticipated to become a primary limiting factor for cold-water species. ODFW is initiating pilot projects around the state to incorporate relationships between water temperature and streamflow into development of instream flow targets. These assessments typically require several years of paired water temperature and streamflow datasets. ODFW is interested in working with the Work Group to scope potential data collection locations and collaborate on water temperature logger deployment and retrieval. Following several seasons of data collection, ODFW would develop updated water temperature-based instream flow targets for study sites, which could aid in prioritizing actions for implementation.
- Instream Water Right Monitoring
    - ODFW has applied for the vast majority of instream water rights in Oregon, with the intent of identifying and legally protecting the flows necessary for the health of aquatic ecosystems. However, in many parts of the state, these instream water rights are junior to most out-of-stream water rights (senior rights in terms of prior appropriation) and, therefore, result in minimal actual protection of instream flows. ODFW is interested in collaborating with OWRD and the Work Group to develop a monitoring framework that assesses gaps in stream gage coverage and identifies priority locations for additional gages to improve protection of streamflows afforded by instream water rights.
    - Strategic placement of new gages in priority locations can also aide in identifying areas in need of additional instream flow protection or in assessing success of ongoing restoration work. For example, a new gage in Thirtymile Creek would complement ongoing fish research and project implementation and allow ODFW to correlate flows with fish/restoration response.

- ODFW will conduct limited IFIM studies in the Planning Area, but not this year as preliminarily discussed (likely 2023).
    - ODFW would appreciate the Work Group's assistance in seeking access to private properties (e.g., Grass Valley is mostly private), particularly where there are currently no instream protections, as access is currently limiting ODFW site selection.
    - Priority sites identified in the Plan line up well with ODFW's priorities, so we hope to collaborate on site selection where there is a nexus.
- ODFW has initiated studies in Bridge Creek regarding flow targets based on temperature.
- ODFW may be interested in collecting new data on streams/reaches where BIR targets appear inadequate.

Appendix E - Declaration of Cooperation Signatories Approval of Lower John Day Integrated Water Resource Plan

Declaration of Cooperation Signatories Approval of Lower John Day Integrated Water Resource Plan-

Partners Participating in the Place-Based Integrated Water Resource Planning Pilot in the Lower John Day Subbasin (Grant #G-0601-LJD). Signatories below have acknowledged and approved the Final Lower John Day Integrated Water Resource Plan as of May 17th, 2022.

Organization and Representative

1. Gilliam County SWCD

   5-17-22

   Herb Winters 5-17-2022

2. Gilliam-East John Day Watershed Council

   5-17-2022

   Katie Garthwaite 5-17-2022

3. Mid-John Day/Bridge Creek Watershed Council

   Debbi Bunch 5-17-2022

4. ONDA DocuSigned by:

   Ryan Houston

   8C260E3C4272445...

   Ryan Houston 5-17-2022

5. NRCS DocuSigned by:

   Damon Brosnan

   CC0D00FA0648445...

   Damon Brosnan 5-17-2022

6. Sherman County Area Watershed Council

   5/17/2022

   Hannah Fatland 5-17-2022

7. Sherman County SWCD

   5/17/2022

   Amanda Whitman 5-17-2022

8. Gilliam County Cattleman

   5/17/22

   Rita Rattray 5-17-2022

9. Water Watch Of Oregon

Brin Posewitz 5-17-2022

10. Oregon Water Resources Department

Steve Parrett 5-17-2022

11. DEQ

DocuSigned by:
Peter Markos
F9C8E08F7B224C9...

5-17-2022

12. Confederated Tribes of Warm Springs

DocuSigned by:
Nicole Lexson
67EF8B623BC947A...

Nicole Lexson 5-17-2022

13. Wheeler SWCD

Cassi Newton 5-17-2022

14. Sustainable Northwest

DocuSigned by:
Dylan Kruse
4CE70A1E00784E7...

Dylan Kruse 5-17-2022

15. Conservation Angler

DocuSigned by:
Craig Lacy
4A2243CD3A4B40D...

David Moskowitz/Craig Lacy 5-17-2022

Draft Resolution of the Oregon Water Resources Commission
Recognizing a Place-Based Integrated Water Resources Plan

Whereas the Oregon Water Resources Commission adopted Oregon's first Integrated Water Resources Strategy (IWRS) in 2012, and an updated version in 2017, carrying out its vision of bringing various water sectors and interests together to work toward the common purpose of maintaining healthy water resources to the meet the needs of Oregonians and the environment for generations to come;

Whereas, an important recommended action of the IWRS was to create and test a framework for developing place-based integrated water resources plans, which resulted in development and publication of a draft set of Planning Guidelines in 2015;

Whereas, the Legislature in 2015 invested in the pilot-phase of place-based water planning and granted authority through Senate Bill 266, which resulted in financial and technical support for four communities to begin planning in accordance with the Guidelines;

Whereas, the [*insert partnership name*], in partnership with the State and in consultation with the Department, worked diligently to develop a Place-Based Integrated Water Resources Plan (Plan);

Whereas, the Commission recognizes the immense value and expresses gratitude for all those who contributed to the Plan;

Whereas, the Plan was developed in collaboration with a balanced representation of diverse water interests, representing both instream and out-of-stream values;

Whereas, the actions in the Plan are consistent with existing state laws concerning the water resources of this state and state water resources policy;

Whereas, the Plan contains the vision of the Partnership, improves our understanding of water conditions and needs, both instream and out-of-stream;

Whereas the Plan identifies critical water issues to be addressed, and recommends sound strategies for addressing the issues, implementation of the Plan will have significant value to the Partnership, the broader local community, and the people of Oregon;

Whereas, the Plan will facilitate implementation of local solutions that will balance instream and out-of-stream water needs now and in the future;

Whereas, [*insert partnership name*] has been and remains committed to utilizing an open and transparent process that fosters public participation;

Whereas, the Plan has been locally adopted by the Partnership and the State's inter-agency review team has determined that the plan follows the Guidelines and is consistent with principles of the IWRS;

Whereas, information contained in the Plan will inform future updates to the IWRS;

Whereas, implementation of the Plan will help meet the state's instream and out-of-stream water needs and support Oregon's economy, its renowned wildlife and nature, bountiful agricultural products, and healthy and livable communities as described in the IWRS; Now, therefore,

Be It Resolved, we the undersigned members of Oregon's Water Resources Commission do hereby recognize the importance of the Partnership's Plan on this X day of X month, 2022.

_____
Meg Reeves, Chair
Westside at Large

Others