

**LOWER JOHN DAY WORK GROUP PARTNERSHIP
PLACE-BASED INTEGRATED WATER RESOURCES PLANNING**

GILLIAM COUNTY, OREGON

INTEGRATED WATER STRATEGIES REPORT

September 1, 2021

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Definitions and Abbreviations

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Consumptive use: Water withdrawn from a stream and lost to crop use (evapotranspiration) or transferred out of the watershed and not returned (municipal, agriculture, storage, and others).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: Discharge is 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): 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 (CO₂) equivalent.

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 needs, including aquatic life and recreation.

Natural stream flow: The stream flow expressed in volume per unit time (cfs or m³/s), that would occur without storage or withdrawal.

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

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 PBP that serves as a roadmap for meeting water needs and informs future updates to the statewide 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 that 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 estimating water availability within a WAB. In general, the system estimates water availability by subtracting instream water rights and estimated out-of-stream consumptive uses from estimated natural streamflow.

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.

Executive Summary

Section 1.0: Introduction

The Lower John Day Placed-Based Partnership (Work Group) represents 17 parties working together to help plan for future instream and out-of-stream water needs in the Lower John Day Basin (Basin). For the past year, the Work Group worked to develop this Step 4 Integrated Water Strategies Report. Much of the Work Group's findings are based on the Step 2 and Step 3 reports, along with public input and professional and scientific expertise of our members and partners. This report, as well as the previous two reports, and a list of the Work Group, can be found on our website:

<https://www.lowerjohndaypbp.com/>

Clean, reliable water is essential to meet basic human needs and support the economy and natural systems upon which all organisms depend. In the previous Planning Steps 1, 2, and 3, the Work Group's focus was to define the current state of water resources in the Basin and present findings on the water needs and demands across instream, agricultural, and municipal sectors. These steps have laid the foundation for the critical issues and strategies outlined in this Step 4 Integrated Water Strategies Report. The report outlines 19 critical issues the Work Group identified that impede the lower Basin's ability to meet both instream and out-of-stream water needs. Along with each critical issue are a set of strategies that, when put into place, will address or help to overcome the critical issue of concern.

This report represents the completion of Planning Step 4 and creates the framework for the Step 5 Integrated Water Resource Plan and accompanying Action Plan for the Basin.

Section 2.0: Development of Critical Issues and Potential Strategies

The critical issues identified by the Work Group's placed-based planning effort were compiled from information presented in the Work Group's two previous reports - the Step 2 State of Water Resources in the Lower John Day Basin report and the Step 3 Water Needs and Vulnerabilities of the Lower John Day. In addition to issues highlighted in these reports, the Work Group conducted public outreach through surveys and public presentations to collect the public's recommendations on critical issues that face the Basin and on strategies or solutions to those issues the public believes should be acted upon to address water issues of concern.

After a broad list of critical issues was identified from the Work Group and public outreach process, the issues were further refined, and a list of strategies was identified and prioritized with the goal of balancing near and long-term instream and out-of-stream water needs.

The process of identifying, inventorying, and listing critical issues and then strategies was done internally and externally over 12 months. The following methods were used:

- In-person Work Group meetings
- Public survey
- Anonymous survey

- Natural Resources Conservation Service, Gilliam County Soil and Water Conservation District, Gilliam Watershed Council meetings, and landowner event surveys
- Spreadsheet strategy development
- Dot voting to rank priority of importance for critical issues
- Work Group exercise to rank strategies using the seven guiding principles
- Presentations from subject experts and information sharing on potential strategies, including certain strategies that could be used by the Work Group
- Development and approval of issues, goals, and strategies guiding document, which included connecting strategies back to the Step 2 and 3 reports
- Developing metrics to measure impact of the strategies
- Subcommittee editing followed by Work Group review and general consensus approval
- Watershed area boundary prioritization and ranking with the creation of a water availability basin (WAB) ranking spreadsheet
- Ranking of strategies under seven subject categories

Section 3.0: Critical Issues, Goals, and Strategies

The Work Group started the Step 4 planning by identifying 19 critical issues facing the Basin. For each critical issue, the Work Group identified an accompanying problem statement, a goal, and “strategies” for addressing the issue. The Work Group also ranked the issues with a “dot voting” exercise to assign the issues they identified as most significant.

The 19 critical issues in order of ranking are:

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

Section 4.0: Results and Findings

A results and findings section for the Step 4 report was created to rank and prioritize the Basin's critical issues, strategies, and water area boundaries to prioritize the next phase of implementation. To rank and prioritize critical issues, the Work Group participated in a "dot voting" exercise. The top ranked critical issue received the most dots, the least prioritized issues received the least. To rate and prioritize Strategies, the Work Group used the Crosswalk Table to rank each listed Strategy (results are shown in Appendix E) under each of seven subject areas in a forced ranking Excel exercise. And finally, to rate and prioritize WABs, the Work Group analyzed WABs for each critical issue (see Appendix D). The Work Group gave a numerical prioritization of 1 for the highest priority and 5 for the lowest priority for each critical issue description.

The Crosswalk Table was developed to list all 19 critical issues across seven subject categories. The general categories (subject and/or resource areas) used for the crosswalk table are bulleted below. The number following the subject area represents the number of strategies included within that category, as shown in Appendix A.

- Riparian, instream, and aquatic restoration (26)
- Upland management and restoration (including irrigation) (30)
- Off-channel storage (3)
- Municipal and domestic water (8)
- Data collection, monitoring, and feasibility (19)

- Outreach and education (18)
- Funding/policy option packages (46)

The group also cross-referenced all 46 strategies with the 19 critical issues shown in a separate Strategy Impact Table (see Appendix B). The exercise illustrated which strategies are likely to address one or more critical issues facing instream and out-of-stream water demands. Because capacity and funding constraints will prevent partners in the Lower John Day from acting on all strategies at once, the work group ranked the strategies (see Appendix E). The Strategy Ranking Table was done for each subject category. The table reflects which strategies are of the highest priority in each of the seven subject categories. This exercise will be carried forward to create an action plan for Step 5.

The list below shows the top five recommended strategies shown in order of priority for each subject category. A full list of prioritized strategies are shown in Appendix E.

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 Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect portion of water saved instream)

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, chem fallow, and CRP as ways to improve soil health, etc.)
- Promote good vegetative cover/cover crops

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 in stream 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 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 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
- Analyze existing groundwater data and conduct a groundwater study in the basin
- Support installation and maintenance of additional gauges at discontinued and recommended new sites
- Conduct 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 Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect 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 and 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

A separate evaluation to prioritize WABs (see Appendix D) for each critical issue was completed by a technical subcommittee where results and discussion occurred in monthly meetings. In Section 3 of this report, priority WABs are listed under each correlating critical issue.

While prioritization of WABs may vary across critical issues and strategies, and while this work should be subject to adaptive management principles, the Step 4 analysis suggested the following WABs should be recognized as top priorities for restoration, further study, analysis, and funding:

1. Bridge Creek (above West Branch)
2. Bridge Creek (mouth)
3. Butte Creek
4. Rock Creek (above Wallace Canyon)
5. Rock Creek (mouth)

Section 5.0: Public Participation and Outreach

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 John Day Basin (see Appendix C). Meetings in April 2020 through May 2021 were held online through the GoToMeeting platform due to COVID-19 safety protocols. Meetings were publicized through newspaper advertisements, radio interviews, and on the Lower John Day Place-Based Planning website (<https://www.lowerjohndaypbp.com>). Project progress was presented at several meetings throughout the area. The Step 4 report was made available for a 30-day public comment period (February 2021). Comments have been incorporated in the final report (see Appendix F).

Section 6.0: References

Documents referenced in this report are included in this section.

Section 7.0: Appendices

Appendices included in this section are:

- Appendix A, Critical Issue and Strategy Crosswalk Evaluation
- Appendix B, Strategy Impact Analysis Evaluation
- Appendix C, Step 4 Meeting Notes
- Appendix D, Water Availability Basin Prioritization Spreadsheet
- Appendix E, Strategy Ranking Table
- Appendix F, Step 4 Public Comments
- Appendix G, Public Anonymous Survey

1.0 - Introduction

Background and Purpose

Water is a finite resource with growing demand across all sectors. Oregon's water resources are at a tipping point with changes in climate, ecosystem health, and aging infrastructure. As the region works to meet these challenges, the region needs to prepare for how climate projections are likely to impact the Basin's water supply and demand. Projections show peak stream flow will occur earlier in the spring as warmer temperatures will cause snowpack to melt earlier. Winter stream flow is projected to increase due to more winter precipitation occurring as rain rather than snow. In the summer months, the Basin is likely to have greater airtime temperatures and increased instream water temperatures, especially at the end of the summer months. A fundamental shift in hydrology and declining snowpack will likely see changes in the timing of water resources and greater scarcity at times for multiple water uses, particularly for irrigation and instream flows for fish. These predictions need to be incorporated as we plan for solutions to meet the growing demand and careful planning of our water resources.

The Oregon Water Resources Commission has adopted the State's 2017 Integrated Water Resources Strategy (Oregon Water Resources Department [OWRD], 2017). The report highlights the role of an integrated place-based planning approach to help communities plan for their water future. In 2015, the Lower John Day Work Group Partnership (Work Group) was selected by the OWRD as one of four funded pilot projects across the state to complete the five steps of place-based planning.

The Work Group was officially awarded funding on February 25, 2016, to be one of four pilots to pursue place-based planning in the Lower John Day River Basin (Basin) in north-central Oregon. See Figure 1-1 below for a map of the planning area. The Work Group has completed Planning Steps 1, 2, and 3 and published completed reports/documents available on the Lower John Day Place-Based Planning website (<https://www.lowerjohndaypbp.com>) (Lower John Day Work Group Partnership, 2016, 2018, and 2019).

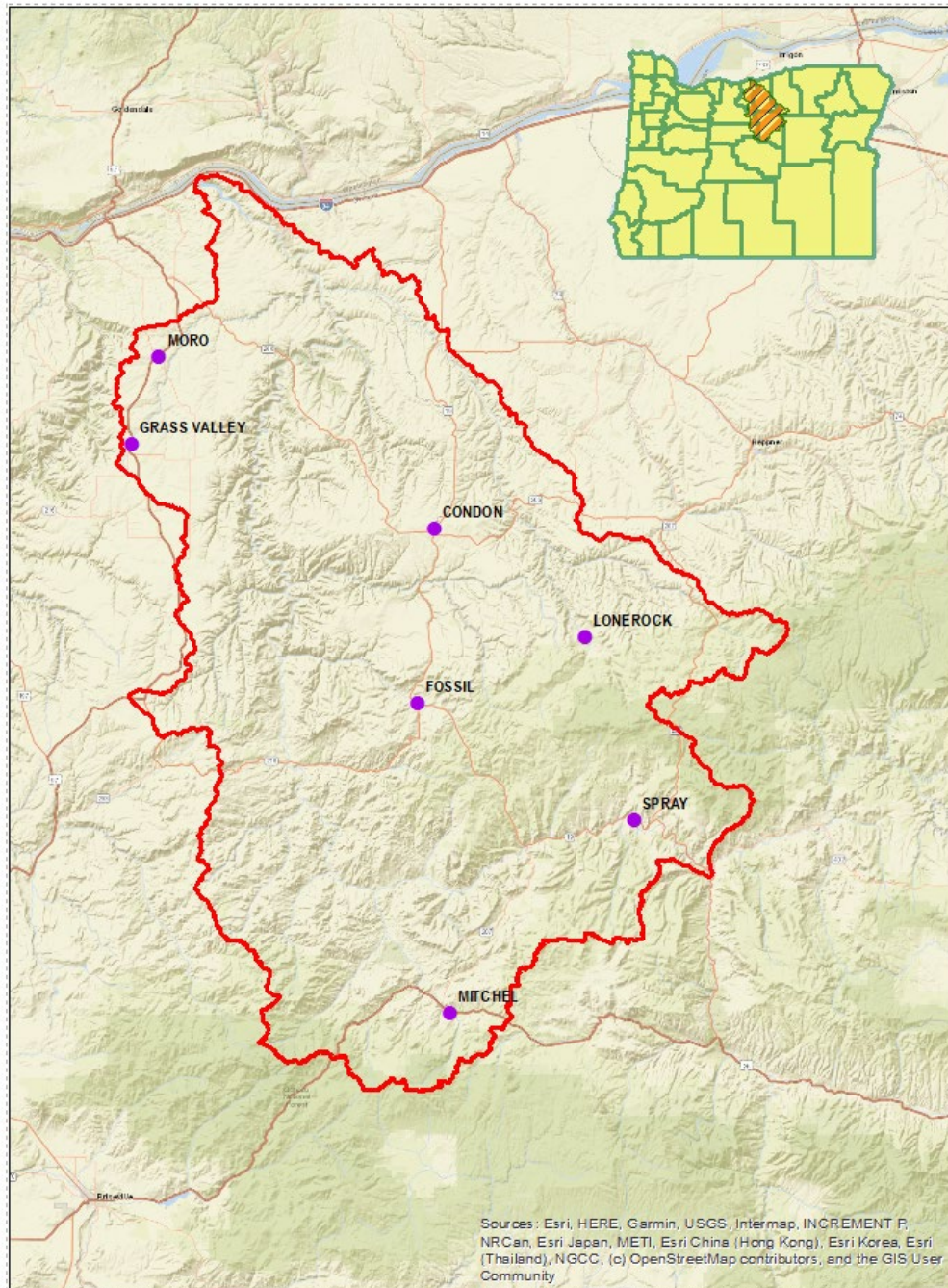
During Planning Steps 1, 2, and 3, the Work Group developed a governance structure and strived to better understand the local water resources and the current and future water demands in the planning area. The purpose of Step 4 is to identify the critical issues facing the planning area, document goals and objectives related to each critical issue, explore a wide range of strategies, and determine which strategies should be pursued to address the identified critical issues. This report represents the completion of Step 4 and sets the groundwork to create an Action Plan for Step 5.

This report is organized into seven sections. Section 1 introduces the Report. Section 2 describes the development of critical issues and potential strategies. Section 3 describes identified critical issues, goals, and objectives. Section 4 details results and findings. Section 5 includes public participation and outreach activities. Section 6 contains references and Section 7 appendices.

The planning area is subdivided into 33 water availability basins (WABs), the sub-watersheds defined by the OWRD to estimate natural stream flow, water uses, and expected actual stream flow. Much of the analysis in Steps 2 and 3 was also analyzed by WABs. Figure 1-1 outlines the planning area. Figure 1-2

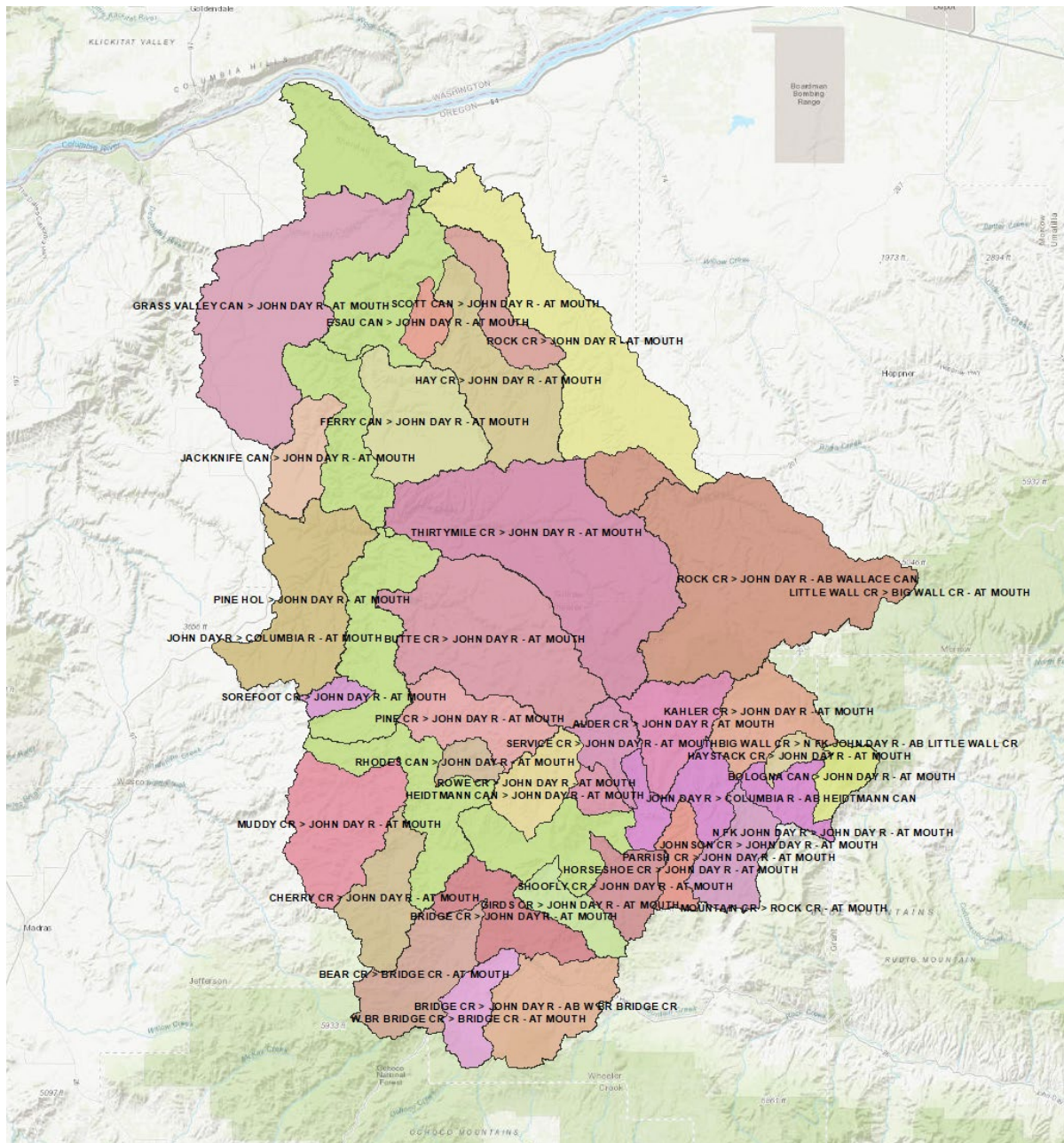
shows the sub-watersheds (i.e., WABs) generally used by the Work Group to assemble data and to analyze and prioritize issues.¹

Figure 1-1
Lower John Day Work Group Planning Area



¹“Water availability basins” are sub-watersheds for which OWRD has estimated natural streamflow and water use. As such, they provide a convenient way to organize data and analysis.

**FIGURE 1-2
WATER AVAILABILITY BASINS IN LOWER JOHN DAY**



2.0 - Development of Critical Issues and Potential Strategies

Introduction

The critical issues identified by the Lower John Day Work Group Partnership (Work Group) Place-based Planning effort were compiled from information presented in the Work Group's two previous reports - the Step 2 State of Water Resources in the Lower John Day Basin report and the Step 3 Water Needs and Vulnerabilities of the Lower John Day. In addition to issues highlighted in these reports, the Work Group conducted public outreach through surveys and public presentations to collect the public's recommendations on critical issues they see in the Basin as well as on strategies or solutions to those issues they believe should be acted upon to address critical issues of concern.

After a broad list of critical issues was identified from the Work Group and public outreach process, the issues were further refined, and a list of strategies and actions was identified with the goal of identifying and prioritizing strategies or solutions that would address the listed critical issues that would most help address meeting instream and out-of-stream water needs.

The discussion below provides an overview of the process used to identify strategies or solutions for each identified critical issue and how those strategies were evaluated and prioritized.

Methods

The methods shown below were used to develop and evaluate potential critical issues and strategies to balance instream and out-of-stream water needs. These methods were chosen to reach the highest amount of public and Work Group participation and feedback. Identifying, inventorying, and listing critical issues and then strategies were done internally and externally over a 12-month process.

- In-person Work Group meetings
- A public anonymous survey shared with Watershed Councils, soil and water conservation districts (SWCDs), Gilliam County cattlemen, stockgrowers, the County Court, and recreationists (see Appendix G)
- Natural Resources Conservation Service (NRCS), Gilliam County SWCD, Gilliam Watershed Council meetings, and landowner event surveys
- Spreadsheet strategy development led by the Work Group subcommittee
- Dot voting to ranking priority of importance for critical issues conducted by Work Group members
- Work Group internal exercise to identify strategies using the seven guiding principles
- Presentations from subject experts and information sharing on potential strategies, including certain strategies that the Work Group would use during implementation

- Development and approval of issues, goals, and strategies guiding document, which included connecting strategies back to the Step 2 and 3 reports
- Subcommittee editing followed by Work Group review and general consensus approval
- Watershed area boundary prioritization and ranking with the creation of a water availability basin (WAB) ranking spreadsheet
- Subcommittee analysis of strategies across critical issues with the creation of a Strategic Impact Analysis spreadsheet
- Work Group ranked and prioritize strategies using an Excel forced ranking exercise

Each method was applied in the following way:

1. In-person Work Group Meetings - The Step 2 and 3 reports each provided a list of findings that provided the basis for the Work Group's identification of critical issues. In the in-person Work Group meetings, a list of problem statements and goals was developed. The group matched these problem statements and goals to identified critical issues. Nineteen critical issues were identified.
2. Public Anonymous Surveys - Paper surveys were distributed at several public meetings (Watershed Council meetings, NRCS annual meeting, Gilliam County SWCD annual meeting) in the planning area by members of the Work Group. An online survey was also made available online through SurveyMonkey on the Work Group Place-based Planning website. Additionally, Gilliam County SWCD also distributed the survey through the Lower John Day Place-Based listserv. More than 20 surveys were returned and incorporated into the identification of critical issues and strategies (see Appendix G).
3. Spreadsheet Strategy Development - Each major critical issue was listed in a spreadsheet with all of the associated individual strategies or solutions that help address the critical issue of concern. This was done over several months of listing, discussing, and agreeing on strategies identified by the Work Group members and the public through a survey tool.
4. Dot Voting - The Work Group used a dot exercise to rank critical issue priority and importance. Work Group meeting attendees were given five dots and asked to vote on the issues they thought were essential to meet instream and out-of-stream water needs. Those issues receiving the most dots received the highest priority, which will be reflected in action planning and implementation.
5. Guiding Principles Ranking Process - The Work Group identified seven principles to help guide group decision-making for suggested strategies or solutions. The agreed-upon principles that guided strategy development included:
 - Available expertise and capacity Financially feasible and funding is available Community supported
 - Meets long- and short-term goals without being detrimental to other needs

- Minimum negative impacts
 - Voluntary non-regulatory action
 - Action does not infringe on current water rights
6. Development of Actions - Work Group member representatives included natural resource professionals, landowners, agricultural associations, state agency staff, Native American tribal staff, and scientists. Strategy summaries were drafted by those representatives with the most expertise in the topic area.
7. Development and Approval of Critical Issues - The Work Group participated in a group exercise to develop key problem statements and critical issues. Once goals and issues were identified, the Work Group developed a list of key actions called strategies that were agreed upon using guiding principles. A subcommittee was formed to refine issues and delete any duplicates. After the subcommittee met twice and provided a refined list, the entire Work Group finalized a list of 19 from an original list of 20 critical issues shown below. "Unmet water demands" was removed as the group decided all the issues reflect unmet water demands, and, thus, was considered redundant. All of the critical issues received votes with a range of 10 votes to 1. The issues are listed below in order of group priority.
- a. Poor riparian habitat
 - b. Elevated summer stream temperatures and low instream oxygen
 - c. Insufficient instream flow
 - d. Storage needs
 - e. Degraded native plant communities
 - f. Insufficient efficient irrigation infrastructure
 - g. Inadequate gauge data
 - h. Outdated and insufficient municipal water and wastewater infrastructure
 - i. Lack of data on condition of groundwater aquifers and interactions between groundwater and surface water
 - j. Fish passage barriers
 - k. Inadequate diversion data
 - l. Poor soil health in many of the WABs
 - m. Simplified stream morphology

- n. Inadequate surface water for wildlife
- o. Risk of intense or catastrophic wildfire that impacts water quality and quantity
- p. Insufficient data on crops, climate, and datasets to support analysis
- q. Degraded forest health
- r. Erosion and sediment transport/control
- s. Rural and domestic well data gaps

Technical work groups were formed to continue to refine problem statements, refine strategies, and prioritize strategies. Subcommittees were loosely organized into the below categories:

- Instream
- Agriculture and uplands
- Municipal, climate, industrial, and hazards

8. Subcommittees Evaluation and Report on Prioritizing Actions

Instream

The instream subcommittee met twice and refined recommended actions and solutions related to riparian, instream, and aquatic restoration. Instream strategies were ranked and prioritized along with guiding principles. The seven guiding principles were used during the development of all the recommended actions.

Agricultural and Upland

The agriculture and uplands subcommittee met once and modified some problem statements, ranked priorities, and modified some metrics made earlier.

Municipal/Climate/Industrial/Hazards

The municipal subcommittee reviewed their progress. There was discussion around breaking out municipal drinking water and wastewater septic critical issues.

Subcommittee Activities and Discussions

- Unknown water availability for storage
- Lack of understanding of natural and human causes in hydrology
- Lack of information on aquifer condition, capacity, and connectivity
- Adequate water for wildlife

9. Water Availability Basin Prioritization and Ranking - To prioritize the watershed area boundary for each critical issue, the Work Group coordinated with field experts, state agency representatives (Oregon Water Resources Department [OWRD], Oregon Department of Fish and Wildlife [ODFW], and Oregon Department of Environmental Quality [DEQ]) and the Confederated Tribes of Warm Springs Reservation of Oregon (CTWSRO) to rank and assign scores from a scale of 1 (highest priority) to 5 (lowest priority) to 19 WABs for 19 critical issues (see Appendix D). The Work Group also relied on data and ranks from existing resources and planning efforts done in the past and converted those into the Work Group scale of ranking. The scores were averaged across all columns in the spreadsheet to determine a final rank. An outcome of this evaluation was to see which WABs were identified as priorities for multiple critical issues.

- The following partners, agencies, and subject experts contributed directly to the WAB prioritization process summarized in each critical issue below.
- Critical Issue 1: Poor Riparian Habitat: Atlas Rankings - John Day Basin Partnership (JDBP), CTWSRO John Day Subbasin Report (CTWSRO, 2014), Brad Houslet, Scott Turo, Amy Charette, and Brian Cochran, John Day Subbasin Plan (Northwest Power and Conservation Council [NPCC], 2005), Mid-Columbia Conservation and Recovery Plan (ODFW, 2009), Oregon Natural Desert Association (ONDA), Craig Lacy, Gilliam SWCD, and ODFW.
- Critical Issue 2: Elevated Summer Stream Temperatures and Low Instream Oxygen: DEQ, CTWSRO (Nicole Lexson), Gilliam County SWCD (Herb Winters).
- Critical Issue 3: Insufficient Instream Flow: Atlas Rankings - JDBP, ODFW, John Day Subbasin Plan (NPCC, 2005), Mid-Columbia Conservation and Recovery Plan (ODFW, 2009), ONDA, Craig Lacey, Gilliam SWCD, OWRD.
- Critical Issue 4: Storage Needs: Watermaster (John Day Basin, OWRD) and Net Water Available from Step 2 and Step 3 reports.
- Critical Issue 5: Degraded Native Plant Communities: NRCS (Damon Brosnan).
- Critical Issue 6: Insufficient Efficient Irrigation Infrastructure: Wheeler County SWCD, Mid-John Day Bridget Creek Watershed Council (Debbi Bunch), Sherman County Watershed Council (Emily Freilich).
- Critical Issue 7: Inadequate Gauge Data: Sustainable Northwest (SNW) (Shreejita Basu) (from OWRD spatial data on existing and discontinued gages in the planning area).
- Critical Issue 8: Outdated and Insufficient Municipal Water and Wastewater Infrastructure: OWRD (Steve Parrett).
- Critical Issue 9: Lack of Data on Condition of Groundwater Aquifers and Interactions between Groundwater and Surface Water: OWRD (Phil Marcy) and Step 2 and 3 reports.
- Critical Issue 10: Fish Passage Barriers: CTWSRO (Nicole Lexson, Amy Charette) and ODFW 2019 data.
- Critical Issue 11: Inadequate Diversion Data: Watermaster (John Day Basin, OWRD) and ODFW diversion spatial data (Mike Jensen).

- Critical Issue 12: Poor Soil Health in Many of the WABs: NRCS (Damon Brosnan) and SNW (Shreejita Basu) from spatial data.
- Critical Issue 13: Simplified Stream Morphology: CTWSRO (Nicole Lexson).
- Critical Issue 14: Inadequate Surface Water for Wildlife: ODFW (Steve Cherry).
- Critical Issue 15: Risk of Intense or Catastrophic Wildfire that Impacts Water Quality and Quantity: Shreejita Basu from spatial data (Oregon Explorer, Oregon State University).
- Critical Issue 16: Insufficient Crop, Climate, and Datasets to Support Analysis: Spatial data from Step 2 report, SNW (Shreejita Basu).
- Critical Issue 17: Degraded Forest Health: NRCS (Damon Brosnan).
- Critical Issue 18: Erosion and Sediment Transport/Control: CTWSRO (Nicole Lexson).
- Critical Issue 19: Rural and Domestic Well Data Gaps: (Brian Posewitz, Steve Parrett and Shreejita Basu) based on Step 2 and 3 reports.

10. Impact Analysis of Strategies - The Work Group cross-referenced all the strategies to better understand how many and which critical issues are impacted by an individual strategy. Individual strategies were totaled. The exercise illustrates which strategies are likely to address or improve more than one critical issue facing instream and out-of-stream water demands. See Appendix B for the Strategy Impact Analysis spreadsheet.

11. Crosswalk Table of Critical Issues and Subject Categories - The subject or resource area spectrum of potential strategies ranged from upland, soils, and irrigation to aquatics and riparian habitat. Municipal infrastructure and funding and data gaps were also explored. All the critical issues were put into a table (Appendix A) to cross reference resource categories shown bulleted below. The number shown in parentheses references how many strategies fell into that subject category.

- Riparian, instream, and aquatic restoration (26)
- Upland management and restoration (30)
- Off-channel storage (3)
- Municipal and domestic water (8)
- Data collection, monitoring, and feasibility (19)
- Outreach and education (18)
- Funding/policy option packages (46)

12. Subject Expert Presentations - The Work Group sought expert speakers to present on several different strategy topics. These presentations aimed to assist members of the Work Group in developing a deeper understanding of a specific approach and better see how it might be employed where that strategy might fit in the suite of solutions. Presentation topics included but were not limited to the allocation of conserved water, water rights reservations, soil health, conservation reserve program, beaver dam analogs, water markets and transactions, wastewater treatment and management, and state water quality and quantity guidelines.

3.0 - Critical Issues, Goals, and Strategies

Introduction

The Lower John Day Work Group Partnership (Work Group) has completed the Step 2 State of Water Resources in the Lower John Day Basin report and the Step 3 Water Needs and Vulnerabilities of the Lower John Day in a community-led place-based effort to understand better the current and future water needs and demands in the Lower John Day Basin (Basin). This Step 4 Integrated Strategies Report is a summary of identified critical issues based on the analysis from Steps 2 and 3, as well as public outreach and input received from the landowner community and recreation and conservation stakeholders on agreed-upon long-term goals the Work Group hopes to meet, and the strategies or actions agreed upon to meet the goals to improve the identified critical issues. By implementing strategies to address each critical issue of concern the Work Group believes those actions and initiatives will help better balance current instream and out-of-stream water demands with the existing supply, as well as better plan and manage the water resource into the future.

The purpose of this section is to describe the methods, data gaps, prioritization, and overall problem statements and metrics associated with critical water issues.

Critical water issues (“critical issues”) are defined as water-related problems or challenges that, if not resolved, will impact the ability to meet current and projected water demands. These issues are the outcomes of the Step 2 and 3 reports that were synthesized at the beginning of the Planning Step 4 process.

Prioritization of Critical Issues

Below is a summary of each critical issue identified by the Work Group. The critical issues were ranked using a “dot” exercise in which Work Group members were each given a limited number of votes to allocate among the identified issues. The issue receiving the most votes was identified as “Critical Issue 1,” the issue receiving the second most votes was identified as “Critical Issue 2,” and so forth.

Prioritization of Water Availability Basins

The critical issues, goals, and strategies developed by the Work Group are generally applicable throughout the Basin. However, limited resources may require future efforts to focus first on agreed-upon priority areas. Therefore, the Work Group prioritized water availability basins (WABs) for each critical issue. This was done by identifying sources of specialized information for each critical issue that could be used to give priority rankings to each WAB (1 to 5, with 1 being the highest). If more than one source was used, the rankings were averaged to assign an overall priority ranking. A complete ranking by source and by average for each WAB can be found in Appendix D.

Critical Issues, Problem Statements, Goals, and Strategies

The critical issues, problem statements, goals, and strategies identified by the Work Group as discussed above, are as follows:

Critical Issue 1: Poor Riparian Habitat

Problem Statement: Poor riparian habitat prevents full ecological function of high-quality riparian systems.

Goal: *Riparian habitat on the mainstem and tributaries are at a level to provide for bank function, fish and wildlife habitat, and adequate shade.*

Poor riparian habitat was the critical issue the Work Group ranked as the highest issue of concern. Riparian buffers provide shade, reduce stream temperature, create habitat for fish, and contribute to the recruitment of woody debris. High water temperature is a widespread concern throughout the Basin. Current and former human activities (e.g., livestock grazing and channel simplification) have resulted in widespread loss of riparian and floodplain vegetation, contributing to degraded water quality, straightening of former meanders, and reduced riparian complexity. Enhanced riparian buffers have been shown to reduce temperatures by 10° to 16°F (Hiram et al. 2011) and filter sediments in the Basin. Floodplain connection during juvenile salmon outmigration provides additional cover and improves survival rates.

Recommended strategies to improve riparian areas are:

Recommended Strategy 1.1: Protect riparian areas from livestock using fencing and off-stream stock watering systems.

Recommended Strategy 1.2: Protect, enhance, and/or restore native riparian vegetation.

Recommended Strategy 1.3: Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.).

Priority Water Availability Basins

The following sources were used to assign priority rankings to each WAB for the critical issue of riparian habitat:

- Previous prioritizations by the Work Group using the Atlas method.
- Warm Springs Integrated Report: Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) 2014 John Day River Basin Watershed Restoration Strategy (CTWSRO, 2014).

- Mid-Columbia Conservation and Recovery Plan: Reach Specific Restoration Benefit and Proposed Protection Management Areas (Oregon Department of Fish and Wildlife [ODFW], 2009).
- John Day Subbasin Plan (Northwest Power Conservation Council [NPCC], 2005).
- Professional judgment of Jefferson Jacobs of the Oregon Natural Desert Association based on his experience identifying locations for restoration work in the Basin.
- Professional judgment of Craig Lacey, a Work Group participant representing the Conservation Angler, based on his experience as a fishing guide in the Basin.
- Professional judgment of the Gilliam County Soil and Water Conservation District (SWCD).

Note: All members of the Work Group were given the opportunity to assign priority rankings to WABs on any issue if the member (voting or nonvoting) felt they had sufficient knowledge and/or expertise to contribute.

The Work Group emphasizes the WABs noted below for immediate focus on riparian improvement because they are not already receiving significant attention from other restoration efforts of the Greater John Day Basin Partnership:

- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Butte Creek
- Bear Creek
- West Branch
- Bridge Creek
- Grass Valley Canyon

Critical Issue 2: Elevated Summer Stream Temperatures and Low Instream Oxygen

Problem Statement: Year-round water temperatures in the planning area do not meet the Oregon Department of Environmental Quality's (DEQ) water quality standards to protect aquatic life.

Elevated summer temperatures lead to lethal conditions for focal and native fish species.

Goal: *Year-round compliance with applicable water quality standards and viability for focal and native fish species (Chinook, steelhead, redband trout, and Pacific lamprey).*

Stream Temperatures

The primary determinants of stream temperature are climatic drivers (such as air temperature, solar radiation, and wind speed), stream flow quantity, stream morphology, groundwater influences, and riparian canopy.

River temperatures in the Lower John Day tributaries often exceed the DEQ water quality standard of 18°C (64.4°F) in the summer months. The temperature standard is based on biological needs of salmon, trout, and other aquatic species. Cold-water fish, such as salmon and trout, are particularly sensitive to temperature. When stream temperatures exceed the DEQ's standard, they have serious negative impacts on fish, and once they get past 23°C (73°F), they become lethal to salmon (Sauter et al. 2001). Stream temperatures in the Lower John Day have often exceeded 30°C (86°F). It is anticipated that as stream temperatures rise this century, steelhead habitat may/could be reduced by an additional 60 percent.

Peak stream flow is projected to shift earlier into the spring as warmer temperatures cause the snowpack to melt earlier. Higher winter streamflow is expected due to increased winter precipitation in the form of rain more often than snow. And low summer base flow is predicted to arrive earlier in the summer due to earlier snowmelt and hotter summer temperatures, resulting in a pronounced increase in future August instream water temperatures.

Dissolved Oxygen Levels

Dissolved oxygen (DO) is the amount of oxygen dissolved into the water and the amount of oxygen available to living aquatic organisms. Low DO is lethal to fish at all life stages. The most probable cause of low DO is excess algae, which absorbs oxygen as it decays. Algal growth is contributed by heat, light, and dissolved nutrients, which can lead to decreased flow and increased temperature. Increased riparian shading will likely improve DO levels by reducing light and heat and by helping to filter nutrients from runoff. Figure 3-1 shows the impaired watersheds and pollutant rivers from the DEQ 2018 Water Quality Assessment database (DEQ, 2018).

Recommended Strategy 2.1: Identify, protect, and restore seeps and springs supplying cool water.

Recommended Strategy 2.2: Maintain and increase stream flows.

Recommended Strategy 2.3: Conduct additional monitoring for temperature and DO.

Recommended Strategy 2.4: Implement strategies for Critical Issues 1 (Poor Riparian Habitat) and 3 (Insufficient Instream Flow).

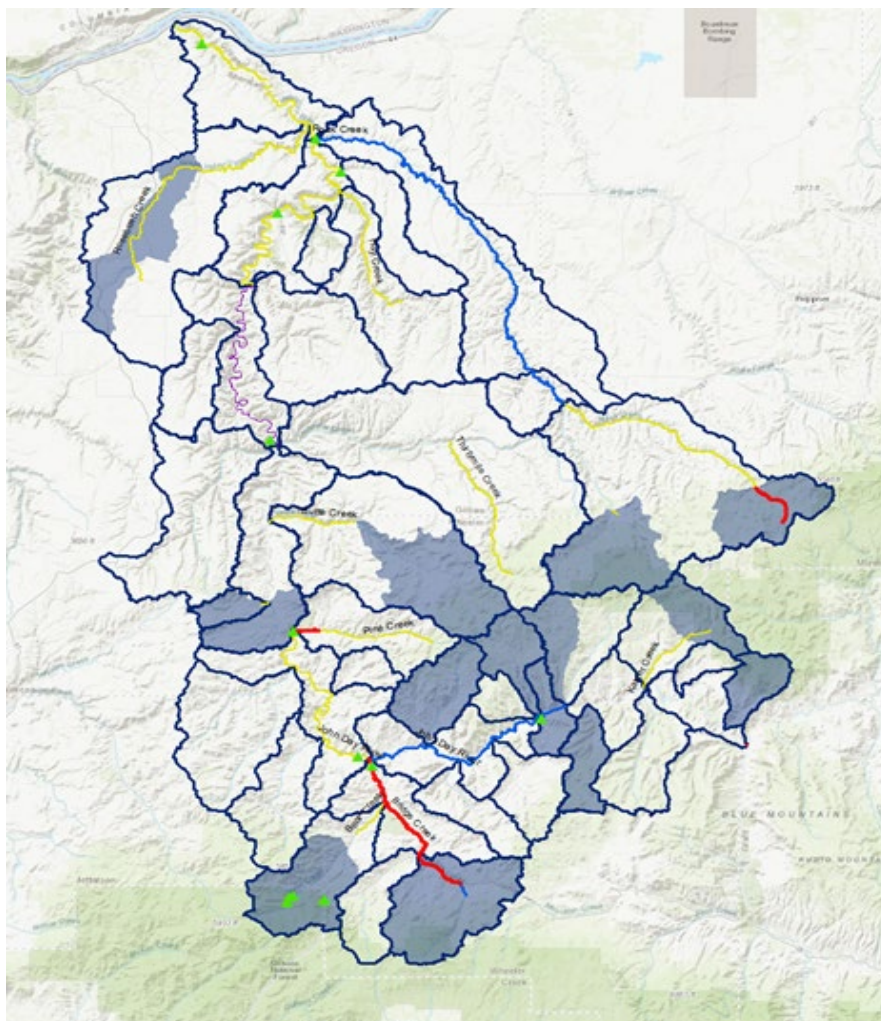
Priority Water Availability Basins

The Work Group obtained rankings on this issue from ODFW, CTWSRO, Gilliam County SWCD, and DEQ reports. To the extent limited resources require prioritization, these WABs should have focus on water quality actions:

- Bear Creek
- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Thirtymile Creek
- West Branch Bridge Creek

Figure 3-1

Highlighted Water Availability Basins have 303(d) Listings and Violations in the Oregon Department of Environmental Quality Total Maximum Daily Limits Report on Water Quality



Critical Issue 3: Insufficient Instream Flow

Problem Statement: Existing instream flows fall well below natural flows during summer and fall months, harming aquatic life, water quality, and recreational use. Instream flows at other times of the year are likely to face future demands for storage and other uses.

Goal: Meet instream flows necessary to support aquatic life, meet water quality standards, and support recreation.

At many times of the year, stream flows are below levels necessary to preserve aquatic ecosystems and support recreation (Step 2 report, pp. 99-110; Step 3 report, p. 77) (Work Group, 2018; Work Group, 2019). In fact, instream demand with respect to components of environmental flow needs are not met for 50 percent of the WABs from July through October (Work Group, 2019). Only a fraction of the instream flow needs for the Basin have been estimated with reliable stream-survey methods or basin-scale investigations.

Insufficient stream flow is likely to be made worse by the effects of climate change as projected near the Columbia River at John Day. The monthly hydrograph is characteristic of a snow-dominated basin with peak flows during the late spring snowmelt season (see Step 3 report, Figure 2-31, p. 81) (Work Group, 2019). By the 2050s, climate projections predict that the peak stream flow will occur earlier in the spring as warmer temperatures cause snowpack to melt earlier. In addition, winter stream flow is projected to increase due to more winter precipitation occurring as rain rather than snow. As a result, a fundamental shift in hydrology and declining snowpack will likely create changes in the timing of water resources causing greater scarcity at times for multiple water uses, including instream flows for fish. Figure 3-2 shows a map from the Oregon Water Resources Department (OWRD) and ODFW highlighting the WABs with particular needs for summer flow restoration.

Recommended Strategy 3.1: Encourage and assist state agencies in creating additional instream water rights.

Recommended Strategy 3.2: Encourage voluntary leases and transfers of existing water rights to instream use.

Recommended Strategy 3.3: 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).

Recommended Strategy 3.4: Implement strategies for Critical Issue 11 (Inadequate Diversion Data)

Recommended Strategy 3.5: Implement strategies for Critical Issue 1 (Poor Riparian Habitat)

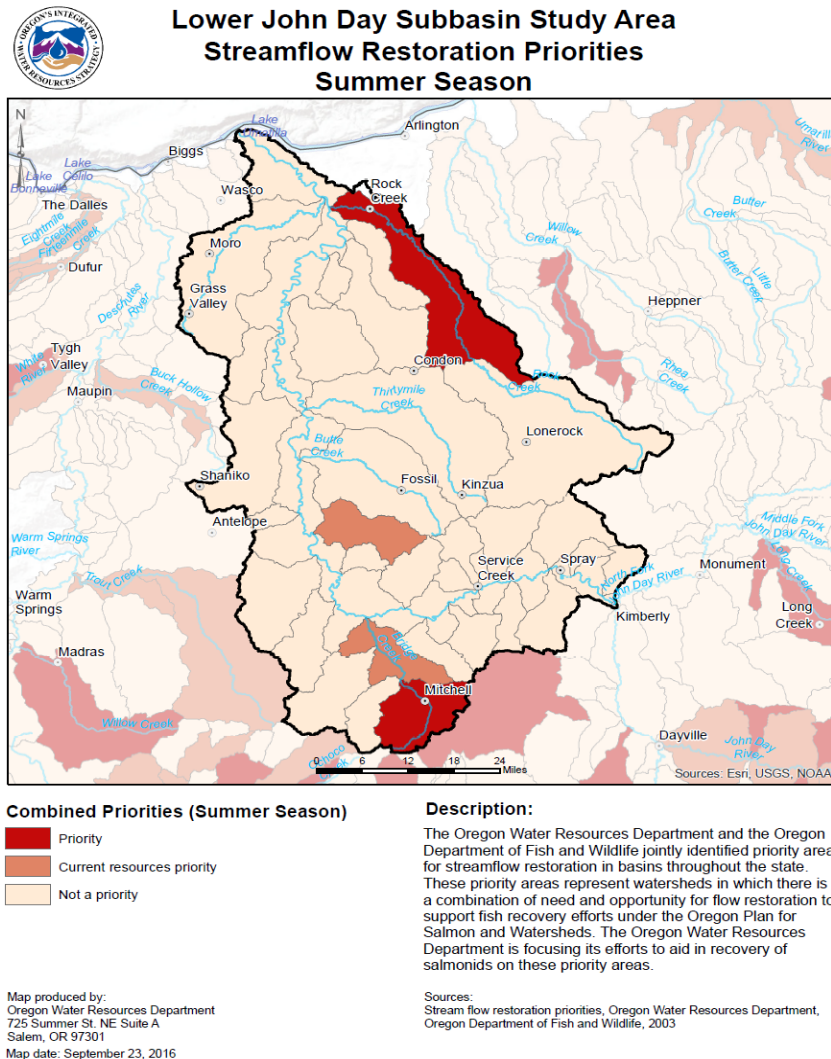
Recommended Strategy 3.6: Implement strategies for Critical Issue 4 (Storage Needs)

Priority Water Availability Basins:

Instream flow priority ranks were obtained from several existing reports: tribes, ODFW, OWRD, Craig Lacy, Gilliam County SWCD, and Work Group Atlas scores. These WABs have a focus on instream flow needs:

- Bear Creek
- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Rock Creek (mouth)
- West Branch Bridge Creek

Figure 3-2
Priority Water Availability Basins Based on Spatial Data on Stream Flow Restoration from Oregon
Department of Fish and Wildlife



Critical Issue 4: Storage Needs

Problem Statement: Water supplies for both instream and out-of-stream needs are generally considered inadequate during low-flow months. Off-channel water storage projects could potentially capture water in high-flow months to supplement water supplies in low-flow months, but the feasibility of such projects, considering ecological impacts and other issues, is not known.

Goal: *Fully informed analysis regarding feasibility and potential locations for off-channel storage project(s); implemented off-channel storage projects as suggested by analysis.*

The Basin has higher flows in the winter and spring, when out-of-stream demands are lower, compared to summer and fall, when out-of-stream demands are higher (Step 2 report, pp. 64-65) (Work Group, 2018). Many stakeholders and interested parties have suggested that additional off-channel water-storage projects could make more water available during low-flow seasons by storing water during high-flow seasons and releasing the water, for both instream and out-of-stream uses, during low-flow seasons (Step 3 report, pp. 23, 121) (Work Group, 2019). Instream and out-of-stream uses could include but not be limited to aquatic species, irrigation, and recreation. Although 25 percent (by volume) of all surface water diversions in the Basin are for water storage, the Basin has few large-scale water storage projects (Step 2 report, p. 77-81) (Work Group, 2018). As recognized in the state's Integrated Water Resources Strategy, pp. 128-29, "Oregon has moved away from locating dams on significant stream and river channels, in large part because of effects on fish and aquatic life that must migrate through these streams" (OWRD, 2017). Oregon Administrative Rules (OAR) define "off-channel" as "outside a natural waterway of perceptible extent which, during average water years, seasonally or continuously contains moving water that flows off the property and has a definite bed and banks which serve to confine the water" (OAR 690-300-0010(31)). The definition adds that "off-channel" may include the collection of stormwater runoff, snowmelt, or seepage that, during average water years, does not flow through a defined channel and does not flow off the property" (OAR 690-300-0010(31)). Although off-channel storage is considered to have fewer environmental impacts, depending on the circumstances, it may also have detrimental effects on streams and/or water quality depending on the location of the project and its dependency on a dam or a barrier. The group would need professional guidance from a private consultant and/or OWRD, ODFW, and DEQ to evaluate the feasibility of an off-channel storage project in the suggested WABs. Thus, the recommended strategies call initially for further study.

Recommended Strategy 4.1: Complete a feasibility study to assess potential off-channel water storage projects, including:

- Potential locations for storage projects;
- 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;
- Instream and out-of-stream needs for water from storage; and
- Other costs and benefits.

Recommended Strategy 4.2: Develop off-channel storage projects as suggested by the feasibility studies.

Priority Water Availability Basins

Recognizing that significant prioritization work will occur as part of the feasibility study suggested above, the following sources were used to assign priority rankings to each WAB for this issue:

- Professional judgment of Ken Thiemann, OWRD Watermaster for the area (considering water availability, topography, soil types, and potential demand for flow augmentation or irrigation).
- Consideration of net water available after instream flow needs for each WAB: estimated natural flow at 50 percent exceedance (according to OWRD's Water Availability Reporting System), minus estimated consumptive use and storage (also according to OWRD's Water Availability Reporting System), minus presumptive total instream needs based on the Richter model of estimating such needs.
- Consideration of potential detrimental impacts from alteration of hydrographs and potential benefits from flow augmentation (professional judgment of ODFW John Day District Fish Biologist).

The above sources suggest that consideration of initial scoping of future off-channel storage locations could include the following WABs depending on professional guidance from other state agencies:

- Pine Hollow
- West Branch Bridge Creek
- Thirtymile Creek
- Sorefoot Creek
- Parrish Creek
- Horseshoe Creek

Critical Issue 5: Degraded Native Plant Communities

Problem Statement: Invasive and non-desirable plants are adversely impacting proper functioning of natural and managed plant communities.

Goal: *Diverse native tree, grass, shrub, and soil communities are dominant and thriving providing for a functioning hydrologic cycle.*

As stated in the Step 3 report, the presence of plant communities differs from the original flora pre-European settlement in the Basin (Work Group, 2019). This is a result of intensive grazing, fire suppression, and introduction and encroachment of non-native and invasive plants. Invasive non-native grasses and weeds, along with invasive native juniper and sagebrush, are altering the

hydrologic cycle of the Basin's watersheds. For example, juniper encroachment denies the understory from capturing water as the canopy can intercept 0.6 percent of rainfall for every percent of juniper canopy (Miller et al., 1991). When exotic annuals dominate the groundcover, there is very little root structure to bind the soils. Juniper and sagebrush can also degrade the herbaceous cover and reduce the ability of the soil to retain moisture and resist erosive events (Bedell et al., 1993). Western juniper lands have been shown to exhibit approximately 1,600 pounds of sediment per acre in a 25-year storm event compared to 400 pounds of sediment per acre for grassland (Bedell et al., 1993, page 5, Table 1). Sediment enters streams due to erosion, increases stream turbidity, and impairs water quality. Stream temperatures may increase due to a loss of native riparian vegetation. The loss or conversion of native plants to non-native plants can change the shading benefits and streambank stability provided by riparian vegetation. Changes in plant community diversity also have an impact on the quality and quantity of fish and wildlife habitat.

Controlling noxious weeds; planting upland grasses, shrubs, and riparian trees; and implementing juniper removal, the Working Group believes, will result in a healthier composition of the native plant and grass communities.

Recommended Strategy 5.1: Control noxious weeds.

Recommended Strategy 5.2: Restore upland function by improving plant communities with juniper removal and planting appropriate perennial bunchgrasses, shrubs, and forbs.

Recommended Strategy 5.3: Implement strategies for Critical Issue 1 (Poor Riparian Habitat).

Priority Water Availability Basins

- Service Creek
- Rock Creek (above Wallace Canyon)
- Rock Creek (mouth)
- Parrish Creek
- Bologna Canyon
- Rowe Creek

Critical Issue 6: Insufficient Efficient Irrigation Infrastructure

Problem Statement: Irrigation infrastructure is outdated and often in poor condition. The area lacks irrigation districts to organize landowners, and there is limited capacity to identify, design, and implement improved infrastructure systems.

Goal: *Energy and water efficient practices are utilized Basin-wide with best available technology for irrigated lands water application.*

An estimated 88 percent of the irrigated fields in the Basin use flood or non-pivot sprinklers for irrigation, often supplied through open ditches (Work Group, 2019, p. 101). These irrigation methods are less efficient than pivot sprinklers and piped ditches. Although most of the fields in the Basin are in dryland farming. Irrigators are often unable to use their whole water right every year (Work Group, 2018, p. 98). Improved irrigation efficiency can reduce labor and operation costs, allow irrigators to withdraw only the water they need, improve crop productivity, and reduce runoff. Efficient irrigation infrastructure can also be used for efficient chemical application. Water savings depend on irrigator's practices including cropping practices, irrigation scheduling, system management, and instream water rights transfers (Roberts, 2012).

Barriers to transitioning to more efficient irrigation infrastructure include inadequate funding, lack of technical knowledge or support, and difficulty navigating the many different water and energy savings and incentive programs.

Recommended Strategy 6.1: Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption.

Recommended Strategy 6.2: Promote utility, state, and federal incentive programs for improving irrigation efficiency.

Recommended Strategy 6.3: Replace inefficient and failing diversions and/or screens such as push-up dams with new structures that maintain or improve native fish passage.

Recommended Strategy 6.4: Pipe open ditches.

Recommended Strategy 6.5: Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers).

Priority Water Availability Basins

- Rock Creek (mouth)
- Kahler Creek
- West Branch Bridge Creek
- Alder Creek
- John Day River

Critical Issue 7: Inadequate Gauge Data

Problem Statement: The planning area lacks current instream flow gauge data. Critical long-term data are being lost from gauge retirements.

Goal: Full access to historical and future stream flow data for watershed modeling. Gauge and associated data are available on all Lower John Day priority tributaries to guide restoration strategies.

Stream gauges are vitally important to understanding the flow of a river and to better manage the water availability and forecast for surrounding communities. Real-time information is particularly valuable for water management, flood monitoring, and recreational purposes. The gauges in the planning area are maintained by the U.S. Geological Survey (USGS) and OWRD, details of which can be found in the Step 3 report (Work Group, 2019, p. 65, Table 2.10). Five of the planning area gauges monitor real-time daily discharge and gauge height; two gauges (Bridge Creek and Pine Creek) also measure stream temperature. Some of these gauges have been operating since the early 1900s and have very valuable long-term historical data. However, many OWRD and USGS gauges have been discontinued in the planning area due to lack of funding for maintenance and data analysis (more than 74 sites in the lower basin) (Work Group, 2019, p. 67, Map 2-23). Continuous records of more than 100 years are available for only two gauges on the John Day River. Also, there are only a few monitoring gauges that measure stream temperature, bacteria, DO, and other water quality parameters in the planning area. Long-term records are particularly valuable for understanding changes in flow over time due to wet and dry cycles, water withdrawal over time, land use, and climate change. The Work Group understands the funding constraints into hiring hydrographic technicians, keeping equipment operating properly, and maintaining gauges. But a robust network is vital to support ongoing USGS and OWRD gauges that provide critical stream flow estimates at nearby ungauged locations, which is essential because it is not economically feasible to measure all rivers and streams at all the most important locations.

Recommended Strategy 7.1: Support maintenance of existing gauges.

Recommended Strategy 7.2: Support installation and maintenance of additional gauges at discontinued and recommended new sites.

Priority Water Availability Basins

The Work Group recommends exploring and reviving funding for discontinued gauges critical to establish daily mean stream flows to determine ecological needs, especially during low-flow periods. See Figure 3-3, which shows the discontinued and active gauges and ecological flow priorities, and Figure 3-4, which shows priority WABs based on gauges and hot spots. The following WAB priorities are based on a spatial overlay of the ecological flow priorities and the discontinued gauges. Highest priorities include:

- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Bear Creek
- Butte Creek

- West Branch Bridge Creek
- Continue lower main stem gauges at McDonald Ferry and Service Creek (100-year data record)

Figure 3-3
Priority Water Availability Basins Based on Gauge Density

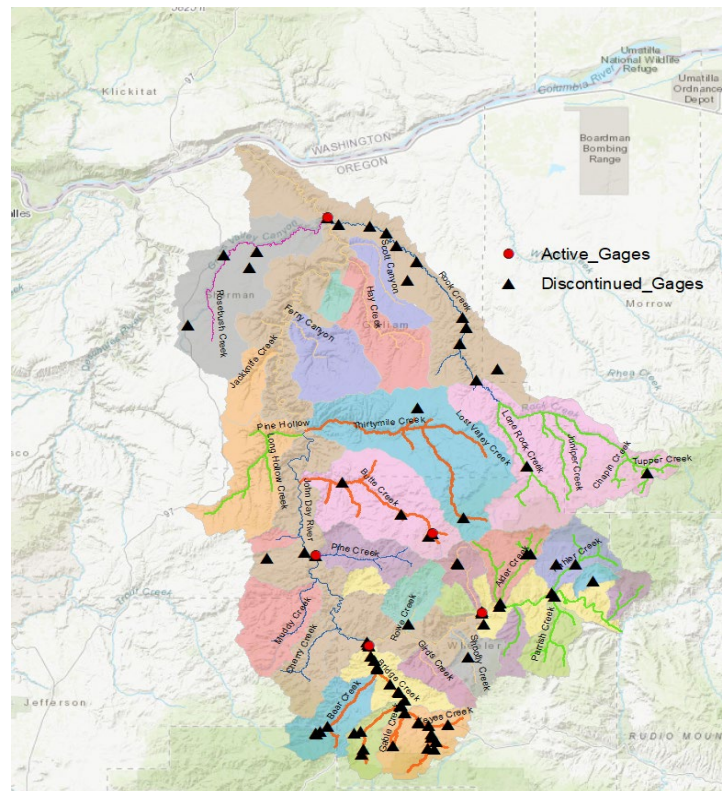
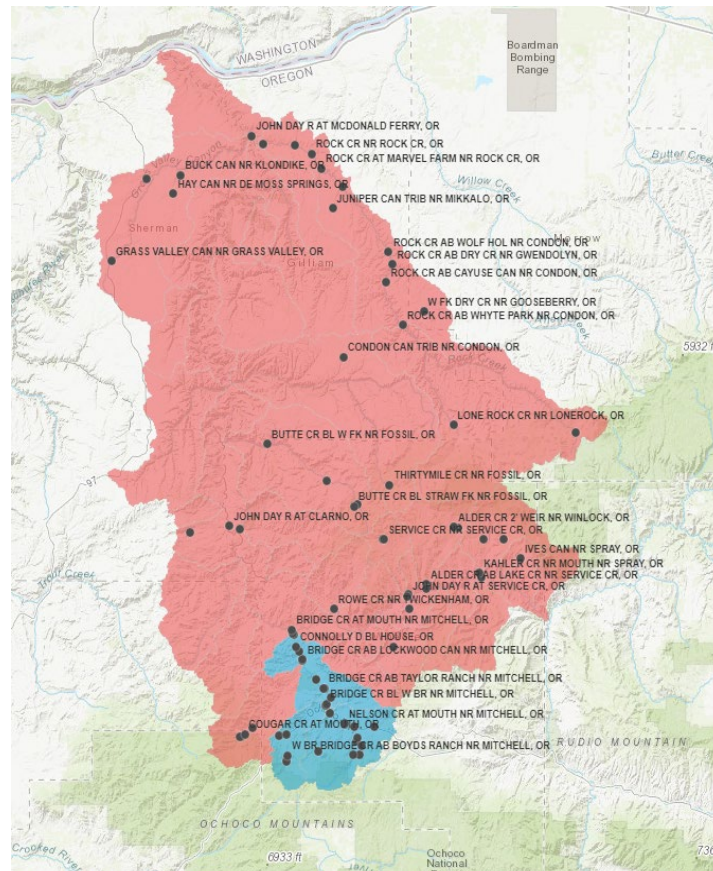


Figure 3-4
Priority Water Availability Basins Based on Gauges and Hot Spots



Critical Issue 8: Outdated and Insufficient Municipal Water and Wastewater Infrastructure

ProblemStatement: Municipal utilities have outdated systems and inadequate access to potable water. Inadequate infrastructure allows municipal wastewater discharge during high flow events which causes sewage flow into the stream and river.

Goal: All municipalities in the planning area have adequate clean water sources and delivery systems and adequate/updated wastewater infrastructure.

Several cities within the planning area have outdated or insufficient water system infrastructure that limit their ability to manage water resources for their constituents. A simple survey was submitted to cities within the Basin during the information gathering phase of Step 3. These cities are small with very limited staff, and maintaining water systems is a substantial and expensive effort. While overall use by local cities is low in volume compared to other user groups, this issue is important because of the relationship between municipal wastewater treatment and river water quality. Of particular importance is identifying support for the City of Mitchell, which does not have a city

sewer system; each building is on its own septic tank. The City of Fossil has a wastewater lagoon, but the community's sewer pipes are outdated and do not meet demand during high flow events.

Additionally, the Water System Master Plans (WSMPs) for Condon and Fossil need updated.

Recommended Strategy 8.1: Assist cities in creating and/or improving WSMPs and/or Water Management and Conservation Plans that identify necessary system improvements. Assess whether these plans cover all needed improvements, including water and wastewater.

Recommended Strategy 8.2: Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects.

Recommended Strategy 8.3: Support and advocate for increased communication for water conservation in public/municipal water systems and infrastructure needs.

Priority Water Availability Basins

The Work Group recommends prioritizing any WAB with an existing municipal or city water source. WABs using more than 100 acre-feet (AF) of domestic and municipal consumptive water should be a priority for infrastructure improvements. Eight WABs meeting that criterion are listed on Table 3-1.

TABLE 3-1
WATER AVAILABILITY BASINS USING MORE THAN 100 ACRE-FEET AND WITH A CITY SOURCE OF CONSUMPTIVE WATER USE FROM SPRINGS AND GROUNDWATER

WAB	City	Domestic/ Municipal AF	Water Availability Basin Name
30620409	Fossil	184.32	Butte Creek > John Day River (mouth)
209		178.65	John Day River > Columbia River (mouth)
30620401	Grass Valley, Moro	174.95	Grass Valley Can > John Day River (mouth)
210	Spray	174.28	John Day River > Columbia River - Ab Heidtmann Can
70250	Mitchell	127.70	Bridge Creek > John Day River - Ab W Br Bridge Creek
30620407	Condon	124.46	Thirtymile Creek > John Day River (mouth)
30620403	Condon	107.28	Hay Creek > John Day River (mouth)
30620408	Shaniko	11.99	Pine Hollow> John Day River (mouth)

These WABs should be prioritized for municipal and wastewater infrastructure upgrades:

- Butte Creek
- John Day River above Heidtmann Canyon
- Grass Valley Canyon

- John Day River Heidtmann Canyon to North Fork of John Day River
- Bridge Creek (above West Branch)

Critical Issue 9: Lack of Data on Condition of Groundwater Aquifers and Interactions between Groundwater and Surface Water

Problem Statement: Groundwater data and information are not sufficient for adequate understanding of groundwater conditions and hydrological connections within aquifers and between aquifers and surface water.

Goal: *Improved understanding of groundwater and connectivity among aquifers and between aquifers and surface water.*

The Basin lacks adequate data and information on groundwater conditions, including data on groundwater levels, pumping rates, and interactions both within and among different aquifers and among aquifers and surface water. Additional data will allow more informed determinations regarding the capacity of groundwater resources to permit additional uses, the extent to which groundwater use is currently affecting surface flows, and the extent to which future groundwater uses could affect surface flows. Groundwater discussions in previous reports are predicated on minimal data on current groundwater conditions.

Recommended Strategy 9.1: Conduct a process-based hydrologic study including how stream flow and groundwater change with land use and future climate change.

Recommended Strategy 9.2: Analyze existing groundwater data and conduct a groundwater study in the Basin.

Recommended Strategy 9.3: Establish, support, and help fund additional groundwater monitoring wells and support community groundwater monitoring networks.

Priority Water Availability Basins

WABs were prioritized by OWRD's hydrogeologist based on areas of relatively higher user and relatively lower number of observation wells. The WABs that emerged on the prioritization list are:

- Grass Valley Canyon
- Jackknife Canyon
- Rock Creek (above Wallace Canyon)
- Rock Creek (mouth)
- Hay Creek

Critical Issue 10: Fish Passage Barriers

Problem Statement: Artificial fish passage barriers prevent or limit movement of native migratory fish (resident and anadromous) at various life stages. Lack of passage and access to spawning and rearing habitat negatively impacts the short- and long-term survival of native fish and other aquatic species.

Goal: *Full passage for native fish species through restoration and maintenance of upstream and downstream passage and habitat connectivity at artificial barriers.*

The planning area is home to several populations of anadromous fish, including Mid-Columbia steelhead, spring Chinook, and Pacific lamprey, as well as many resident native fish populations that depend on the ability to migrate within the Basin. Hydrologic changes, stream structure changes, and summer stream temperature are major challenges to fish populations, but fish passage barriers are also a challenge. Passage barriers include culverts, dams, and weirs, which reduce available spawning, rearing, and migration habitat. Structures that are currently passable, or at least partially passable, may become impassable in the future with lower stream flows. There are more than 262 passage barriers in the Basin. Twelve of the barriers in the Basin are on ODFW's 2019 Statewide Fish Passage Barrier Priority List (ODFW, 2019), which are shown below on Table 3-2 and spatially on Figure 3-5. ODFW has constructed a prioritization list to identify barriers that maximize the return of native migratory fish to critical habitats. Scoring criteria are calculated to estimate the amount of habitat gained for purposes of prioritizing artificial obstructions at which fish passage would benefit native migratory fish. The rankings the group used was based on average score from ODFW and CTWSRO. Challenges to barrier removal include available funds and hiring experienced engineers.

Recommended Strategy 10.1: Provide full fish passage (removal, repair, and/or replacement) at priority artificial obstructions including culverts and dams.

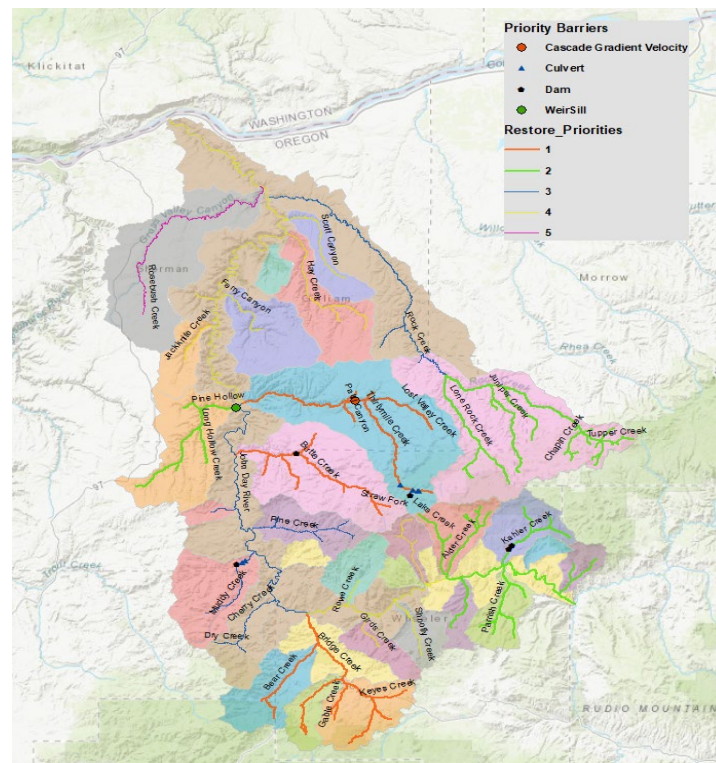
Recommended Strategy 10.2: Assist ODFW with updating list of priority fish passage barriers if necessary.

See Table 3-2 below.

TABLE 3-2
PRIORITY WATERSHED AREA BOUNDARIES FISH PASSAGE

Owner	Barrier ID	Barrier Name	Barrier Type	Stream Name
Unknown	32764	Unnamed weir	Weir/sill	Pine Hollow Creek
Unknown	6354	Unnamed bedrock chute	Chute/velocity	Thirtymile Creek
Unknown	32686	Unknown	Dam	North Fork Butte Creek
Unknown	32761	Unknown	Dam	Kahler Creek
Unknown	32760	Unknown	Dam	Kahler Creek
Wheeler County	12231	Kinzua Lane culvert	Culvert	Thirtymile Creek
Young Life	46473	Triple culvert	Culvert	Muddy Creek
Young Life	46472	Twin culvert	Culvert	Muddy Creek
Three Valleys Ranch	18186	Kinzua Lane Culvert	Dam	Searcy Creek
Young Life	5947	Muddy Station Reservoir Dam	Dam	Muddy Creek
Wheeler County	11168	Fire 21 Road Culvert	Culvert	Thirtymile Creek
Wheeler County	11167	Fire 21 Road Culvert	Culvert	Thirtymile Creek
Wheeler County	11166	Fire 21 Road Culvert	Culvert	Thirtymile Creek

Figure 3-5
Priority Water Availability Basins Based on
Oregon Department of Fish and Wildlife Fish Barrier Spatial Data



Priority Water Availability Basins

The prioritization was based on the rankings from ODFW and CTWSRO experts. The top 5 WABs that emerged are:

- Alder Creek
- Bear Creek
- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Butte Creek

Critical Issue 11: Inadequate Diversion Data

Problem Statement: Most surface water diversions are not measured, making management difficult.

Goal: Increased water use information to better inform management and planning.

Diversion data help water right holders ensure diversions are consistent with their water rights and can help make water available for junior users as well as instream flows. Measurement also helps inform Basin planning by providing information on rates and volumes of diversion from specific water sources at different times and locations.

Recommended Strategy 11.1: Support additional state personnel for flow and diversion monitoring and management.

Recommended Strategy 11.2: Advocate for irrigator incentives for measurement of diversions, including installing measurement devices.

Recommended Strategy 11.3: Promote existing incentives for measurement of diversions.

Priority Water Availability Basins

The Work Group looked at diversion spatial data from OWRD, Step 2 report, and diversions that need to be metered from ODFW. The priority WABs are:

- Bridge Creek (above West Branch)
- Bear Creek
- West Branch Bridge Creek
- Rock Creek (mouth)
- Thirtymile Creek
- Butte Creek

Critical Issue 12: Poor Soil Health in Many of the Water Availability Basins

Problem Statement: Indicators show insufficient soil health for current and future agricultural and ecological function.

Goal: *Improve soil health indicators (structure, micro-organisms, water holding capacity).*

Current soil indicators do not meet commonly accepted soil health, which is necessary to meet current and foreseen agricultural and ecological demands within the Basin. A key opportunity to improve Basin soil is by reducing inversion tillage and wheel traffic on soils. Excessive tillage is harmful to soil health and, when not managed carefully, most inversion and non-inversion or conservation² tillage methods compact the subsoil, which restricts root growth and access to water and nutrients in the subsoil. When maintaining or increasing soil organic matter levels, inputs of organic matter must meet or exceed the losses of organic matter due to decomposition.

Incorporation of cover crops or perennial crops and judicious additions of animal and green manure and compost can also be used to increase or maintain soil organic matter. The use of cover crops contributes numerous benefits to soil health. Cover crops keep the soil covered during the winter and/or when production crops are not growing, reducing the risk of erosion and reducing solar inputs to the soil. Cover crops protect water quality within watersheds by reducing loss of nutrients, pesticides, and sediments. Healthy, high-functioning soils store more water and exhibit higher rates of water infiltration. More water infiltration means less winter runoff and reduced soil erosion and sediment inputs into streams and rivers within the watershed. The improved capacity of soils to receive and store water can also increase the summer base flow in streams, which is important to dilute pollutants, decrease stream temperatures, and increase DO in the water column. Figure 3-6 shows the areas in the planning area with warmer colors that are susceptible to poor soil health.

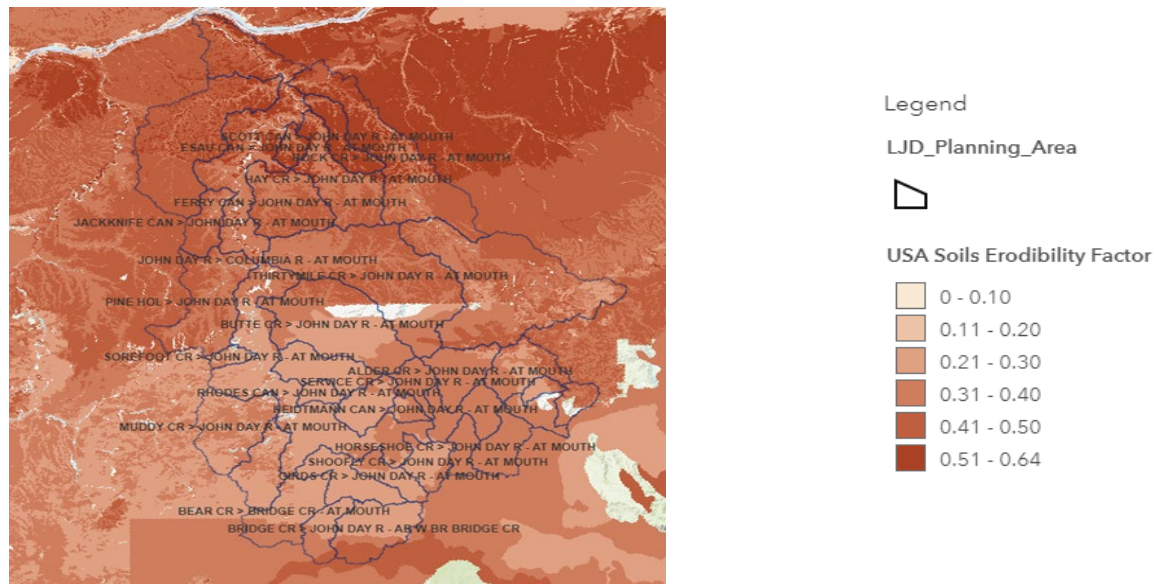
Recommended Strategy 12.1: Promote good vegetative cover/cover crops.

Recommended Strategy 12.2: Promote conservation tillage (mulch tillage, ridge tillage, zone tillage, and no-tillage, etc.).

Recommended Strategy 12.3: Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions.

²Generally defined as any tillage system that maintains at least 30 percent residue cover on the soil surface after drilling to reduce the risk of soil erosion, conserve soil organic matter, and improve soil structural stability.

Figure 3-6
Priority Water Availability Basins for Soil Health Improvement



Priority Water Availability Basins

The spatial data from the Natural Resources Conservation Service ([USA Soils Erodibility Factor](#)) was used to find priority WABs across the planning area that have soils with higher k-factor³ and are more susceptible to erosion. The top five WABs are:

- Grass Valley Canyon
- Esau Canyon
- John Day River - Heidtmann Canyon to N Fork
- Rock Creek (above Wallace Canyon)
- Rock Creek (mouth)

Critical Issue 13: Simplified Stream Morphology

Problem Statement: River and tributaries are simplified, constrained, and channelized, reducing river and stream health with lack of complexity.

Goal: Enhance complexity to create high functioning, diverse, and varied river morphology and instream habitat.

³Soil erodibility factor that represents both susceptibility of soil to erosion and the rate of runoff.

Stream and river morphology in the Basin has been altered significantly from historic impacts as well as natural influences. In much of the basin, channel morphology is strongly influenced by valley form, alluvial fans, and large terraces (Step 2 Report, p. 23 [Work Group, 2018]).

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 Basin have changed significantly over the past 150 years. A myriad of water and land use practices have contributed to these changes, from mining to livestock grazing to riverine habitat degradation to invasive species. 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. Dams, water withdrawals, channel engineering (bank hardening, straightening, etc.) and the removal of vegetation (upland, riparian, and large woody debris) alter the drivers of stream temperature, the structure of streams, or both. The hydrologic curve has shifted from historic times, with peak flow 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. (Step 2 Report, p. 23 [Work Group, 2018]).

Strategies to address simplified stream morphology overlap with the strategies in Critical Issues 1 (Poor Riparian Habitat) and 3 (Insufficient Instream Flow). Strategies for those issues that also apply to this issue are shown below (Recommended Strategy 13.0).

Recommended Strategy 13.0: Implement strategies for Critical Issues 1 (Poor Riparian Habitat) and 3 (Insufficient Instream Flow).

Recommended Strategy 13.1: Protect riparian areas from livestock using fencing and off-stream stock watering systems.

Recommended Strategy 13.2: Protect, enhance, and/or restore native riparian vegetation.

Recommended Strategy 13.3: Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.).

Recommended Strategy 13.4: Encourage and assist state agencies in creating additional instream water rights.

Recommended Strategy 13.5: Encourage voluntary leases and transfers of existing water rights to instream use.

Recommended Strategy 13.6: 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).

Priority Water Availability Basins

This critical issue affects the entire Basin. WABs were prioritized based on an average score from rankings done by the CTWSRO and ODFW. The top five WABs are:

- Bear Creek
- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Butte Creek
- Thirtymile Creek

Critical Issue 14: Inadequate Surface Water for Wildlife

Problem Statement: Lack of surface water for drinking may be contributing to decrease in wildlife populations.

Goal: *Increased surface water availability for wildlife populations.*

Clean and adequate supplies of water are necessary to promote healthy watersheds. Improving drinking water sources for wildlife helps maintain and distribute healthy wildlife communities. Due to decreasing mule deer populations, the Work Group and public input stressed the need to ensure surface water availability for wildlife. Restoring springs' state and improving vegetated cover will help ease local landowners from having to use their own wells to produce drinking sources for wildlife. Since water can be a weak link in the habitability matrix for a variety of wildlife, one of the fundamental premises is that increased distribution of water allows increased usable space for those localized populations of wildlife. This would enhance efficiency in making use of all habitat features across the landscape by bridging this distribution of use through water provisions. When increasing wildlife population numbers through improved water distribution, these same populations tend also to be more stable with greater resilience to various environmental pressures.

Recommended Strategy 14.0: Implement strategies for Critical Issues 1 (Poor Riparian Habitat), 2 (Elevated Summer Stream Temperatures and Low Instream Oxygen) and 5 (Degraded Native Plant Communities) shown below (Recommended Strategies 14.3 through 14.6).

Recommended Strategy 14.1: Conduct study regarding changes in prevalence and function of springs and causes of changes.

Recommended Strategy 14.2: Protect riparian areas from livestock using fencing and off-stream stock watering systems.

Recommended Strategy 14.3: Protect, enhance, and/or restore native riparian vegetation.

Recommended Strategy 14.4: Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.).

Recommended Strategy 14.5: Control noxious weeds.

Recommended Strategy 14.6: Restore upland function by improving plant communities with juniper removal and planting of appropriate perennial bunchgrasses, shrubs, and forbs.

Priority Water Availability Basins

WABs were prioritized for this critical issue based on recommendations from ODFW. Six wildlife management units are part of the planning area: Fossil, East Biggs and West Biggs, Ochoco, Heppner, and Grizzly. The population estimates provided by district biologists from the ODFW East Biggs and Fossil units show decline in mule deer populations from 2014 to 2020. Also there has been an almost 40 percent decrease in mule deer populations in West Biggs from 2013 to 2018. Based on this information, the priority WABs are part of the Fossil and East and West Biggs management units:

- Bear Creek
- Bridge Creek (above West Branch)
- Butte Creek
- Thirtymile Creek
- West Branch Bridge Creek

Critical Issue 15: Risk of Intense or Catastrophic Wildfire that Impacts Water Quality and Quantity

Problem Statement: Multiple factors, including climate change, conifer encroachment, non-native plant communities, and historic land management, have changed fire frequency and intensity, which impact water quality and quantity.

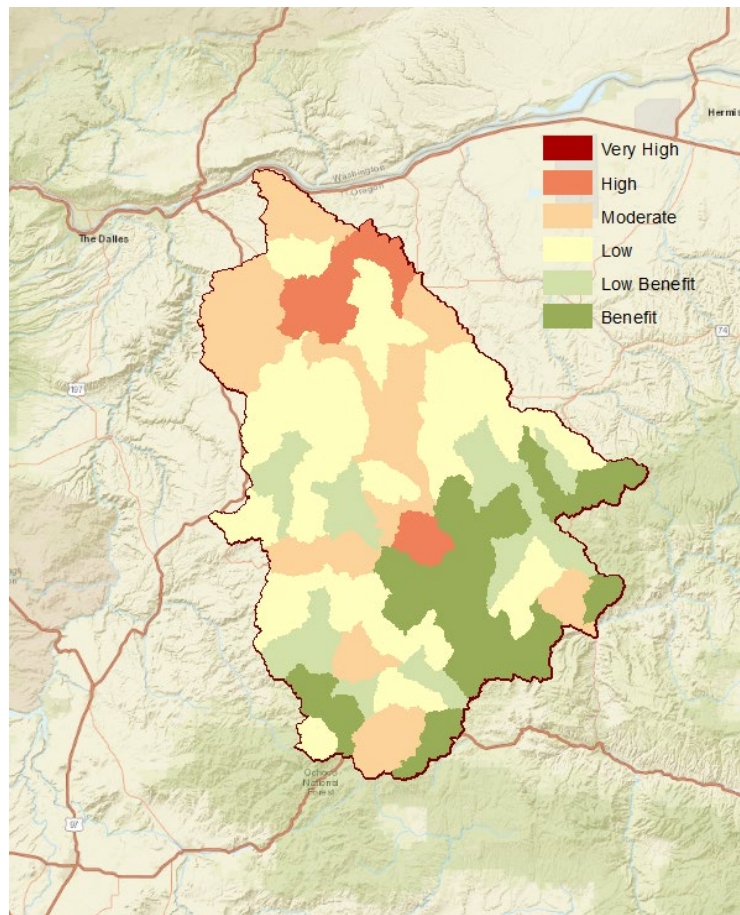
Goal: *Mitigate the risk of wildfire through improved land management practices.*

Almost all areas in the planning areas experience some level of wildfire risk. Conditions vary widely with local topography, fuels, weather, and, especially, high winds. All areas under warm, dry, windy, and drought conditions can expect a higher likelihood of fire starts, higher fire intensities, and more ember activity. By creating fuel buffers around town centers and private and public property, the community can help reduce and prevent structure fires. Increasing the pace and scale of forest restoration along with developing or gaining support of community response to create a future fire plan will help control the impact of wildfires.

Overall wildfire risk reflects the susceptibility of resources and assets to wildfire of different intensities, and the likelihood of those intensities.

Water supplies can be adversely affected during the active burning of a wildfire and for years afterwards. Erosion and flooding can cause naturally occurring and anthropogenic substances to migrate and impact drinking water. Drinking water utilities face a considerable challenge to develop plans and strategies for treating polluted water. Information and tools are needed to help water storage and treatment managers better prepare for wildfire impacts.

Figure 3-7
Overall Wildlife Risk



Recommended Strategy 15.1: Create and promote wildland urban interface buffers and defensible space around rural homes and buildings.

Recommended Strategy 15.2: Increase pace and scale of forest restoration, including prescribed burning and thinning.

Recommended Strategy 15.3: Support community wildfire response plans.

Priority Water Availability Basins

WABs were prioritized for this critical issue by averaging ranks obtained from ODFW and spatial data from Oregon Explorer, which takes into account burn probability, risk to people, proximity to infrastructure and assets and fire history at the watershed scale. Overall wildfire risk combines both the likelihood of a wildfire and the expected impacts of a wildfire on highly valued resources and assets. The WABs that emerged were:

- Butte Creek
- Rock Creek (mouth)
- Thirtymile Creek
- West Branch Bridge Creek
- Pine Creek
- Pine Hollow

Critical Issue 16: Insufficient Data on Crops, Climate, and Datasets to Support Analysis

Problem Statement: The planning area lacks AgriMet stations, resulting in reduced knowledge of local weather data.

Goal: *New AgriMet stations capturing current climate and crop monitoring data.*

No AgriMet stations are in the planning area, so little local weather data are available. By adding an AgriMet data station(s) in the planning area, current and future crop and climate data will be available to local landowners. As reported in Step 3, the data used in computing evapotranspiration crop and net irrigation demands are based on the outdated assumption that precipitation, temperature, and other weather/climate and hydrologic processes do not vary significantly over time or are stationary. Access to local climate information would allow a better understanding of the impact weather has on the quality of local harvest, critical for both overseas and domestic markets. AgriMet stations would help farmers and conservationists understand soil water use efficiency in producing crops and forage in the area and help growers choose crops with the greatest water use efficiency per unit of production. Local AgriMet stations are likely to be even more important with greater extremes in precipitation and temperature predicted with climate change. AgriMet data could also help farmers utilize their water sources and provide significant savings in water pumping costs as well as prevent overuse. Farmers would benefit from reduced soil erosion, as well as have protection of surface and groundwater quality. Precipitation and temperature information would be useful to agricultural producers in the management of diseases, insects, and weeds in crop and forage fields. As an example, the recording of growing degree days would allow agricultural producers to utilize more efficient field practices, minimizing the amount of fuel consumed and pesticides applied. AgriMet data would further serve in the better development of local climate

cycle forecasting, building on the historic climate models that currently utilize tree ring data and Pacific Decadal Oscillation sea surface temperatures in their forecasts.

Recommended Strategy 16.1: Support AgriMet stations(s) in the Basin.

Recommended Strategy 16.2: Support collection of additional light detection and ranging data (LiDAR).

Recommended Strategy 16.3: Analyze existing data on crop and climate.

Priority Water Availability Basins

Priority area boundaries for new AgriMet stations are not applicable or are out of scope for the Work Group. However, the irrigated area per WAB from Step 2 was used to rank this critical issue by considering WABs with more irrigated area to be a higher priority. The top five priority WABs are:

- Bridge Creek (mouth)
- West Branch Bridge Creek
- Parrish Creek
- John Day River - Heidtmann Canyon to N Fork
- John Day River - Mouth to Heidtmann Canyon

Critical Issue 17: Degraded Forest Health

Problem Statement: Multiple factors including encroaching juniper and overstocked conifers have contributed to decreased forest health. Impaired conditions adversely impact meadow habitats, interrupt the hydrologic cycle, and increase forest pests and pathogens.

Goal: *Improve forest health, resilience, and species composition/complexity.*

Twenty percent of the planning area is forested. Healthy forestlands supply clean, cold water to stream systems. Overstocking and drought have far-reaching environmental consequences that include increasing frequency and severity of forest pests, pathogen outbreaks, and wildfire. These events can have immense impacts on water quality and quantity. Degraded forest health contributes to changing and likely reducing flow, increasing sediment and other pollutants, and changing water temperature and chemistry.

Recommended Strategy 17.0: Implement strategies for Critical Issues 5 (Degraded Native Plant Communities) and 1 (Poor Riparian Habitat).

Recommended Strategy 17.1: Control noxious weeds.

Recommended Strategy 17.2: Restore upland function by improving plant communities with juniper removal and planting of appropriate perennial bunchgrasses, shrubs, and forbs.

Recommended Strategy 17.3: Protect riparian areas from livestock using fencing and off-stream stock watering systems.

Recommended Strategy 17.4: Protect, enhance, and/or restore native riparian vegetation.

Recommended Strategy 17.5: Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.).

Recommended Action 17.6: Implement prescribed burn and thinning for forest management.

Priority Water Availability Basins

The watersheds identified below were identified by the Agricultural and Upland sub-committees having juniper and forest issues and rank high for forest and juniper treatment and stand improvement. The top five WABs listed under this critical issue are:

- Bear Creek
- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Kahler Creek
- Parrish Creek

Critical Issue 18: Erosion and Sediment Transport/Control

Problem Statement: Land management practices and road infrastructure can cause fine and unwanted sediment introduction to aquatic systems.

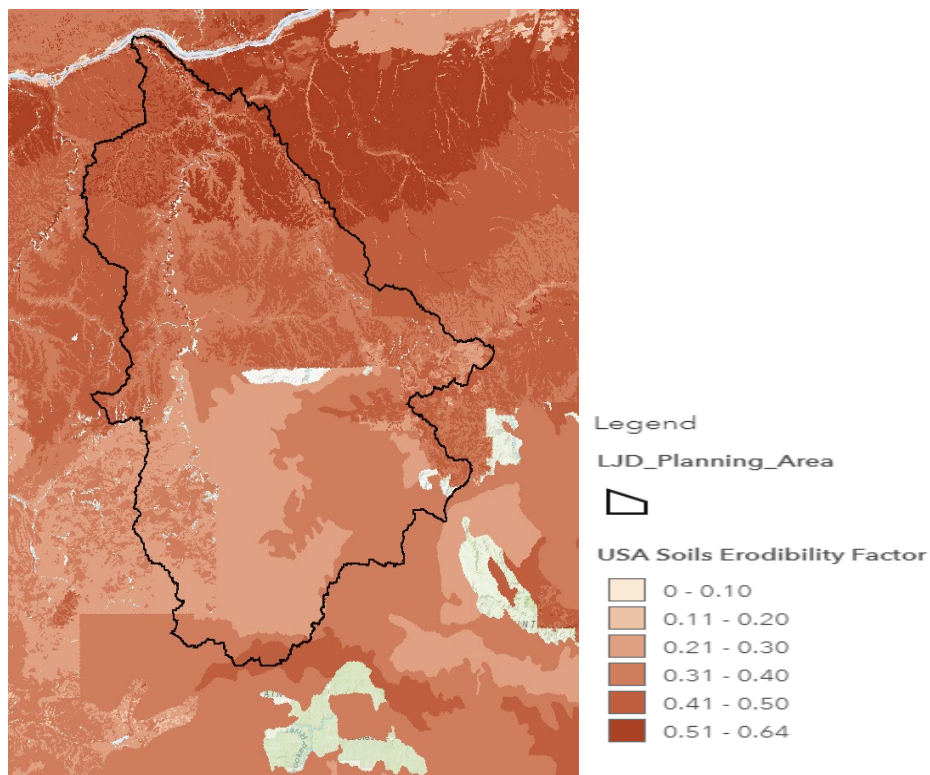
Goal: *Improved land and road management practices to limit influx of unwanted and fine sediment transfer to streams and rivers.*

The main stem of the John Day River and many tributary streams within the planning area have water quality impairments including sedimentation (31 stream segments). Streams and their impairments are detailed in the Clean Water Act 303(d) list and the John Day River Total Maximum Daily Load Assessment from the DEQ (Step 2, p. 51, 2.3.3 Water Quality Needs and Infrastructure affecting flows and passage). Droughts have far-reaching environmental consequences that include increased erosion and scouring, leading to severe damages to fish habitat and water quality.

A significant concern taken from DEQ reports is that half the total phosphorus values in Lower Rock Creek exceed the Oregon Department of Agriculture benchmark (Lower John Day Agricultural Water Quality Management Area Plan, ODA). The highest phosphorus values coincide with the highest suspended sediment values at both locations, so phosphorus likely enters streams via soil erosion. Given geologic sources of phosphorus (concentrations in soil) are likely to be similar in both disturbed and undisturbed areas, undisturbed and natural areas tend to be low, and Rock Creek,

with its high phosphorus values, has a predominance. Cropping is predominant in the lower and middle sections; timber and range factor in the upper reaches. Phosphorus is likely entering Rock Creek from sediment transport of organic sources such as manure and/or fertilizer. See Figure 3-8 for areas in the planning area that have higher erosion rates from sediment runoff.

Figure 3-8
Priority Water Availability Basins for Erosion and Sediment Transport and Control



Recommended Strategy 18.1: Promote good vegetative cover/cover crops.

Recommended Strategy 18.2: Promote conservation tillage (mulch tillage, ridge tillage, zone tillage, and no-tillage, etc.).

Recommended Strategy 18.3: Promote transition of cropland to crops or systems that use less water (Conservation Reserve Program, perennial grass, etc.).

Recommended Strategy 18.4: Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions.

Recommended Strategy 18.5: Promote best management practices for the capture and safe release of water (water and sediment control basins, etc.).

Priority Water Availability Basins

WABs were prioritized based on the rankings obtained from the CTWSRO. The top five are:

- Butte Creek
- Thirtymile Creek
- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Bear Creek

Critical Issue 19: Rural and Domestic Well Data Gaps

Problem Statement: There is a current lack of understanding of the condition, distribution, and use of rural and domestic wells.

Goal: *Improved data and knowledge of rural and domestic well data to identify any groundwater supply and/or management issues.*

Oregon Revised Statutes 537.545 exempts from water-use permit requirements the use of a groundwater well for watering of any lawn or noncommercial garden not exceeding one-half acre and/or single or group domestic use in an amount not exceeding 15,000 gallons per day. Well drillers are required to submit a completed well log to the state at the time wells are drilled, and these well logs are entered into a database. However, the condition of or problems with wells or domestic supply is largely unknown beyond the well log information.

Recommended Strategy 19.1: Conduct a voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality.

Recommended Strategy 19.2: Provide assistance or technical expertise through OWRD support on installing well level monitors.

Recommended Strategy 19.3: Provide information on where to get well water testing kits and technical support for water quality issues.

Priority Water Availability Basins

This critical issue affects the entire planning area. WABs were prioritized for this critical issue based on the information on domestic and rural well data from OWRD and groundwater use by volume in the Step 2 report. The top five WABs are:

- Grass Valley Canyon
- Rhodes Canyon
- Rock Creek (above Wallace Canyon)

- Butte Creek
- Hay Creek

4.0 - Results and Findings

Evaluation and Prioritization of Strategies

To prioritize the Step 4 analysis, the Work Group ranked and prioritized strategies and water areas to pursue actions. As discussed above, 19 critical issues of concern were identified that the Work Group felt best summarized problems (critical issues) that impede the ability of the John Day River to meet instream and out- of-stream water demands. These issues were identified from Step 2 findings and through concerns raised by the public through Step 3 public outreach.

The 19 critical issues were developed and then prioritized by the Work Group through dot voting. A crosswalk table (Appendix A) was created that paired critical issues with subject or resource areas to help determine which critical issues fall into which subject or resource category. A second table, the Strategy Impact Table (Appendix B) was created to cross-reference which strategies overlap with each critical issue. The exercise illustrates which strategies are likely to address one or more critical issues facing instream and out-of-stream water demands.

The crosswalk table was also used to develop a method to rank all 46 strategies for each of the seven subject/resource categories. Because capacity, time, and funding constraints will prevent partners in the Lower John Day from acting on all strategies at once, the Work Group ranked the strategies shown in a Strategy Ranking Table (Appendix E). The table reflects which strategies are of the highest priority in each of the seven subject categories. This exercise will be carried forward to create an action plan for Step 5.

Recommended Strategies

Recommended strategies are summarized under each subject area below. A complete list of prioritized strategies is shown in Appendix E.

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 Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect portion of water saved instream)

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, chem fallow, and Conservation Reserve Program (CRP) as ways to improve soil health, etc.)
- Promote good vegetative cover/cover crops

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 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 in-stream 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 basin

- Support installation and maintenance of additional gauges at discontinued and recommended new sites
- Conduct 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 Conserved Water Act (to reduce out-of-stream demand through efficiency improvements and to protect 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 and transfers of existing water rights to instream use

Funding/Policy Options

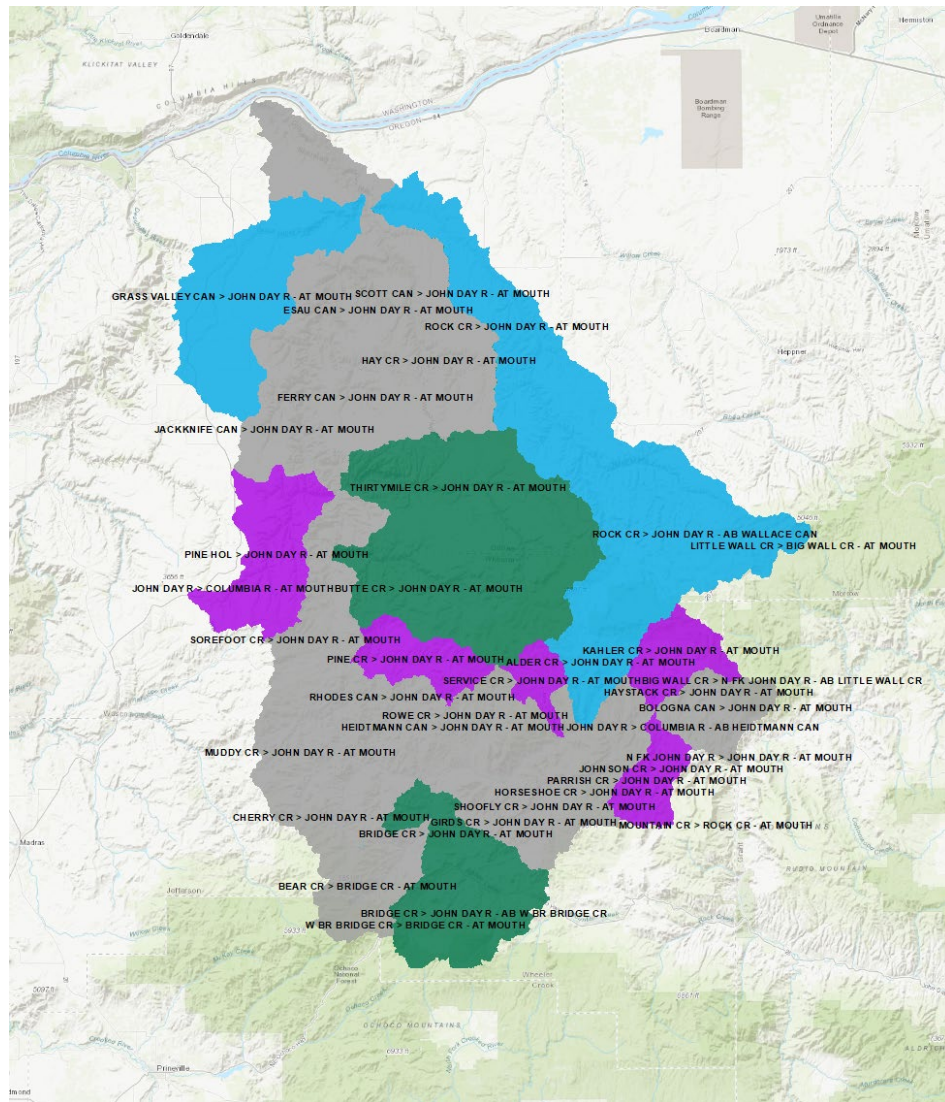
- Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)
- Protect, enhance, and/or restore native riparian vegetation
- Maintain and increase stream flows
- Protect riparian areas from livestock using fencing and off-stream stock watering systems
- Restore upland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

Evaluation and Prioritization of Water Availability Basins

Throughout the Work Group's planning process, instream and out-of-stream needs have been analyzed through subbasins delineated by the Oregon Water Resources Department for the purpose of computing available water. To evaluate which strategies should be pursued in each subbasin, the Work Group analyzed water availability basins (WABs) for each critical issue (Appendix D). A numerical value of 1 was given for the highest priority and 5 for the lowest priority for each critical issue description; other scales were converted to this scale as noted; NR denotes not rated.

While prioritization is likely to vary across critical issues, and while most critical issues are problems throughout the Basin, the Work Group identified five WABs that emerged across all issues for priority restoration, funding, study, or further needed analysis. 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 are green in color, followed by Tier 2 in blue, and Tier 3 in purple.

Figure 4-1
Water Availability Basins Prioritization



The highest ranked for priority WABs restoration (Tier 1) include:

- Bridge Creek (above West Branch)
- Bridge Creek (mouth)
- Butte Creek
- West Branch Bridge Creek
- Thirtymile Creek

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 15 WABs with the highest ranking across all 19 critical issues are shown below, along with the lower ranked WABs⁴. The WABs that fall out of the top 15 are still important for prioritizing other critical issues depending on priorities set by the Work Group and funding available for implementation.

TABLE 4-1
WATER AVAILABILITY BASIN RANKING OVERLAP

Critical Issue	Critical Issue Description	Bridge Creek (above West Branch)	Bridge Creek (mouth)	Butte Creek	West Branch Bridge Creek	Thirtymile Creek	Bear Creek	Rock Creek (above Wallace Canyon)	Rock Creek (mouth)	Grass Valley Canyon	Alder Creek	Parrish Creek	Pine Hollow	Pine Creek	Kahler Creek	Service Creek
1	Poor riparian habitat	1	1	2	1	2	1	3	3	3	4	3	4	2	4	4
2	Elevated summer stream temperatures and low instream oxygen	1	1	1	1	1	1	3	2	3	3	3	3	3	3	3
3	Insufficient instream flow	1	1	2	1	2	2	2	1	4	4	2	2	2	2	4
4	Storage needs	2	5	4	1	1	5	5	3	4	5	2	2	5	5	3
5	Degraded native plant communities	1	2	1	1	1	1	1	1	3	2	2	2	2	2	1
6	Insufficient efficient irrigation infrastructure	2	2	2	1	3	4	5	1	4	1	5	5	4	1	5

⁴ The Work Group intends the Feasibility Study to address: 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.

Critical Issue	Critical Issue Description	Bridge Creek (above West Branch)	Bridge Creek (mouth)	Butte Creek	West Branch Bridge Creek	Thirtymile Creek	Bear Creek	Rock Creek (above Wallace Canyon)	Rock Creek (mouth)	Grass Valley Canyon	Alder Creek	Parrish Creek	Pine Hollow	Pine Creek	Kahler Creek	Service Creek
7	Inadequate gauge data	1	1	1	1	1	1	2	1	2	2	2	2	1	2	2
8	Outdated and insufficient municipal water and wastewater infrastructure	2	NR	1	NR	2	NR	NR	NR	1	NR	NR	NR	NR	3	NR
9	Lack of data on condition of groundwater aquifers and interactions between groundwater and surface water	3	4	2	4	2	5	1	1	1	4	5	4	5	4	5
10	Fish passage barriers	1	1	1	1	3	1	2	2	3	1	2	4	4	3	4
11	Inadequate diversion data	1	3	2	1	2	1	3	2	3	2	4	4	5	2	4
12	Poor soil health	3	4	2	3	1	3	1	1	1	3	2	3	4	2	3
13	Simplified stream morphology	1	1	1	1	1	1	2	2	2	2	2	4	2	2	3
14	Inadequate surface water for wildlife	1	2	1	1	1	1	1	1	3	2	2	2	2	2	2
15	Wildfire risk	3	3	1	1	1	3	2	1	2	2	4	2	2	2	2
16	Insufficient crop and climate data	3	1	2	1	4	3	3	3	5	4	1	5	5	5	2
17	Degraded forest health	3	1	NR	NR	NR	2	NR	NR	NR	3	2	NR	NR	2	NR
18	Erosion and sediment transport/control	2	2	1	2	5	2	5	5	3	3	3	5	4	3	4
19	Rural and domestic well data gaps	3	4	2	3	4	5	1	4	1	3	4	5	3	2	4

Next Steps

The Work Group will provide final edits and input for this report in June 2021. Once the Work Group has provided final input, a consensus vote to approve will be requested. After the Integrated Strategies Report (Step 4) is approved, the Work Group will create a final report (Step 5) summarizing findings from Steps 1 through 4, including an action plan to serve as a roadmap to implementation.

The Action Plan will be a living, long-term conservation and outreach strategic document that will guide funding priorities, research and state policy recommendations, and restoration, education, and outreach for the Work Group. The Action Plan will guide the implementation strategies to address each critical issue of concern to balance current instream and out-of-stream water demands and restore the basin so that the future water resource is available for all instream and out-of-stream demands. The Work Group anticipates finalizing Step 4 by June 2021, creating an Action Plan by July 2021, and completing a Step 5 full report draft by September 2021.

5.0 - Public Participation and Outreach

Throughout the Step 4 process (July 2019 through December 2020), the Lower John Day Work Group Partnership (Work Group) met once per month in meetings open to the public at meeting spaces in the lower John Day Basin. Meetings in April 2020 through December 2020 were held online through the GoToMeeting platform due to COVID-19 safety protocols. Meetings were publicized through newspaper advertisements, radio interviews, and on the Lower John Day Place-Based Planning website (<https://www.lowerjohndaypbp.com/>). Project progress was presented at several meetings throughout the area.

Guest speakers and subject experts were invited to present at many of the Step 4 meetings. Presentations were focused on issues of concern and strategies or actions the Work Group could undertake to better understand and improve the Work Group's ability to propose strategies to balance Lower John Day Basin water demands.

In addition to regular monthly meetings, as mentioned in Section 2.0, the Work Group also met outside the larger Work Group in subcommittees for instream, agriculture, municipal, climate, industrial, and hazards subcommittees, and watershed area boundary prioritization.

Below is a list of meeting dates, locations, and special presentations. See Appendix C for an overview of meeting agendas and notes. It should be noted volunteers and Work Group members dedicated hundreds of person hours to develop this report, representing more than 25 diverse water interests including but not limited to soil and water conservation districts, watershed councils, Confederated Tribes of the Warm Springs Indians, natural resource nonprofits, and federal and state agencies. All monthly public meetings were publicized through newspaper advertisements, radio interviews, on social media and on the project website. Project progress was presented at several meetings throughout the area.

Meeting No. 28: June 25, 2019: Location: Conference Call "Go-To-Meeting," Step 4 work planning.

Meeting No. 29: August 21, 2019: Location: U.S. Department of Agriculture (USDA) Service Center, Condon, Oregon, Step 4 Strategies and Solutions Brainstorm.

Meeting No. 30: September 17, 2019: Location: Conference Call "Go-To-Meeting," Public Outreach for Step 3 report, Step 4 solutions brainstorming continued.

Meeting No. 31: October 22, 2019: Location: USDA Service Center, Condon, Oregon, followed by Lonerock for juniper field tour.

Meeting No. 32: November 20, 2019: Location: Painted Hills Natural Beef Office Building, Fossil, Oregon, followed by City of Fossil, Municipal Public Works Tour hosted by Bill Potter, Fossil Public Works.

Meeting No. 33: December 17, 2019: Location: Conference Call "Go-To-Meeting."

Meeting No. 34: January 29, 2020: Location: USDA Service Center, Condon, Oregon, Technical Resource Presentation: Damon Brosnan, Natural Resources Conservation Service on the Conservation Reserve Program and Enhancement Program.

Meeting No. 35: February 24, 2020: Location: USDA Service Center, Condon Oregon, Technical Resource Presentations: Steve Parrett, Oregon Water Resources Department (OWRD) presented on the Water Availability Report System. Critical issues voted on.

Meeting No. 36: March 31, 2020: Conference Call “Go-to-Meeting” (COVID-19 stay-at-home mandate), Technical work groups for Step 4 evaluation and deciding principles.

Meeting No. 37: April 21, 2020: Location: Conference Call “Go-To-Meeting,” Subcommittee Evaluation and Metrics report out.

Meeting No. 38: May 20, 2020: Location: Conference Call “Go-To-Meeting,” Subcommittee Evaluation and Metrics cleanup.

Meeting No. 39: June 23, 2020: Location: Conference Call “Go-To-Meeting,” Technical Resource Presentation, Herb Winters, Gilliam County Soil and Water Conservation Service, John Day Partnership and Place-Based Planning Atlas Update and Presentation with Jessie, Bonneville Power Administration Atlas, and Shreejita Basu, Sustainable Northwest, on the Oregon Water Restoration Inventory. Conservation Angler joined the Work Group.

Meeting No. 40: July 28, 2020: Location: Conference Call “Go-To-Meeting,” Crosswalk Table and Summary Strategy Discussion and Input.

Meeting No. 41: August 18, 2020: Location: Conference Call “Go-To-Meeting,” Technical Resource Presentations, Allocation of Conserved Water: Teri Hranac, Steve Parrett, and Ken Thiemann with OWRD. Instream Lease programs: Tony Malmberg, The Freshwater Trust, landowner, and water rights.

Meeting No. 42: September 15, 2020: Location: Conference Call “Go-To-Meeting,” suggested changes to the critical issue wording. The Work Group approved most of the suggestions and opted to keep Degraded Forest Health separate.

Meeting No. 43: October 20, 2020: Location: Conference Call “Go-To-Meeting,” Technical Resource Presentation, Margaret Matter, Oregon Department of Agriculture; Practice of withdrawing and withholding water from availability and hold potential from the future.

Meeting No. 44: November 17, 2020: Location: Conference Call “Go-To-Meeting,” Technical Resource Presentation, Steve Parrett, Connecting Place-Based Planning to the State’s Integrated Water Resource Strategy.

Meeting No. 45: December 15, 2020: Location: Conference Call “Go-To-Meeting,” review crosswalk tables and water availability basin prioritization. Draft Step 4 review.

Meeting No. 46: January 19, 2021: Location: Conference Call “Go-To-Meeting,” review crosswalk tables and water availability basin prioritization and results and findings. Outreach committee to prepare Step 4 public comment outreach and notification.

Meeting No. 47: February meeting canceled due to snow, ice, and power outage. March 16, 2021. Location: Conference Call “Go-To-Meeting,” The group reaffirmed the Crosswalk Table, including the Critical Issue ranking order, agreed to pull Critical Issue 19 - Unmet Water Needs from the Critical Issue

list and Step 4 narrative as long as it is captured that it is implied by the rest of the critical issues and strategies. Add Excel spreadsheet of public comments to a Step 4 Appendix. Formally accounts for all comments received.

Meeting No. 48 April 20, 2021: Location: Conference Call “Go-To-Meeting,” Shreejita presented results to date from Steps 2 through 4 in a PowerPoint. The group will rework Crosswalk Table and vote/approve via email. Rework Strategy ranking exercise based on finalized and approved Crosswalk Table.

Meeting No. 49 May 18, 2021: Location: Conference Call “Go-To-Meeting,” Guest presentation by Don Butcher, Oregon Department of Environmental Quality, on Lower Basin total maximum daily limits. Norie presented the results and summary table. Will be sent to the group after the meeting and data will be used to update Step 4 summary and included as an appendix. Will help inform strategic action plan to prioritize strategies over the next several years. Herb gave a high level overview of the John Day Basin Partnership’s Strategic Action Plan, which is primarily focused native fish and aquatic habitat in response to Oregon Watershed Enhancement Board’s Focused Investment Partnership (FIP) program.

6.0 - References

Bedell, T.E., L.E. Eddleman, T. Deboodt, and C. Jacks, 1993. Western Juniper -- Its Impact and Management on Oregon Rangelands. Oregon State University Extension Service, Extension Circular EC 1417. 15 pp.

Confederated Tribes of the Warm Springs Reservation of Oregon, 2014. Warm Springs Integrated Report: Confederated Tribes of the Warm Springs Reservation of Oregon 2014 John Day River Basin Watershed Restoration Strategy. <https://fisheries.warmsprings-nsn.gov/2019/10/john-day-basin-watershed/>

Hiram W. Li, Gary A. Lamberti, Todd N. Pearsons, Cynthia K. Tait, Judith L. Li, and John C. Buckhouse, 2011. Cumulative Effects of Riparian Disturbances along High Desert Trout Streams of the John Day Basin, Oregon. Transactions of the American Fisheries Society, 123:4, 627-640, DOI: 10.1577/1548-8659(1994)123<0627:CEORDA>2.3.CO;2

Jasinsky, Alejandra, D.A. Mattiauda, Mateo Ceriani, Alberto Casal, and Mariana Carriquiry, 2019. Heat production and body composition of primiparous Holstein cows with or without grazing pastures in early lactation. Livestock Science. 225. 10.1016/j.livsci.2019.04.017.

Lower John Day Work Group Partnership (Work Group), 2016. Step 1 Report. Declaration of Cooperation. <https://www.lowerjohndaybp.com/>

Work Group, 2018. Step 2 Report. State of Water Resources in the Lower John Day Basin. <https://www.lowerjohndaybp.com/>

Work Group, 2019. Step 3 Report. Water Needs and Vulnerabilities of the Lower John Day. <https://www.lowerjohndaybp.com/>

Miller, P.M., L.E. Eddleman, J.M. Miller, 1991. The seasonal course of physiological processes in *Juniperus occidentalis*. Forest Ecology and Management, Volume 48, Issues 3-4, 1992, Pages 185-215, ISSN 0378-1127 [https://doi.org/10.1016/0378-1127\(92\)90145-Y](https://doi.org/10.1016/0378-1127(92)90145-Y). (<http://www.sciencedirect.com/science/article/pii/037811279290145Y>)

Mote, P. W., S. Li, D. P. Lettenmaier, M. Xiao, and R. Engel, 2018. Dramatic declines in snowpack in the western US. Nat. Partner J. Climate Atmos. Sci., 1, 2, <https://doi.org/10.1038/s41612-018-0012-1>.

Mote, P.W., A.F. Hamlet, M. Clark, and D.P. Lettenmaier, 2005. Declining mountain snowpack in western North America. Bulletin of the American Meteorological Society 86(1):39-49.

Northwest Power and Conservation Council, 2005. John Day Subbasin Plan. <http://www.wheelerswcd.org/sites/default/files/PlanRevised.pdf>

Oregon Administrative Rules 690-300-0010(31). Off-Channel definition.

Oregon Climate Change Research Institute, 2017. The Third Oregon Climate Assessment Report (2017).
http://www.occri.net/media/1042/ocar3_final_125_web.pdf

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

Oregon Climate Change Research Institute, 2018b. Future Climate Projections Gilliam County (2018).
https://www.oregon.gov/lcd/CL/Documents/OCCRI_PDM16_GilliamCoFutureProjections2018.pdf

Oregon Department of Fish and Wildlife, 2009. Mid-Columbia Conservation and Recovery Plan: Reach Specific Restoration Benefit and Proposed Protection Management Areas
<https://nrimp.dfw.state.or.us/DataClearinghouse/default.aspx?p=202&XMLname=895.xml>

Oregon Department of Fish and Wildlife, 2019. Statewide Fish Passage Barrier Priority List.
<https://www.dfw.state.or.us/fish/passage/docs/2019%20Fish%20Passage%20Priority%20List.pdf>

Oregon Department of Environmental Quality, 2010a. John Day River Basin TMDL, Appendix B: Temperature Model Scenario Report.

Oregon Department of Environmental Quality, 2010.b John Day River Basin Total Maximum Daily Load and Water Quality Management Plan. www.epa.gov/waters/tmdl/docs/JohnDayTMDLandWQMP_FINAL.pdf

DEQ 2018 Water Quality Assessment database. <https://www.oregon.gov/deq/wq/Pages/WQ-Assessment.aspx>

Oregon Explorer, nd.
https://tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfire#gcx-SKs6SxDoPyUUGTPKHFaWxN1AAAw32-cOWiu06X8uDWYu2SIAAAVzjwbZN6sROL9WShgpE784I_

Oregon Water Resources Department (OWRD), 2017. 2017 Integrated Water Resources Strategy.
<https://www.oregon.gov/OWRD/programs/Planning/IWRS/Pages/default.aspx>

Poole, G.C., and C.H. Berman, 2000. Submitted. Pathways of human influence on water temperature dynamics in stream channels. Environmental Management.
http://www.krisweb.com/biblio/gen_usepa_pooleetal_2000_pathways.pdf

Roberts, Michael, 2012. "Conversion from Flood to Sprinkler Impacts."

Sauter, S. T., J. McMillan, and J. B. Dunham, 2001. Salmonid behavior and water temperature. Seattle, WA: United States, Environmental Protection Agency, Region 10 Office of Water. Final Report to the Policy Workgroup of the EPA Region 10 Water Temperature Criteria Guidance Project. EPA 910-D-01-001. 36 p.

University of Oregon's Community Service Center, 2014. Sherman (2014) Multi-Jurisdictional Natural Hazards Mitigation Plans. <https://www.co.sherman.or.us/documents/sherman-county-natural-hazard-mitigation-plan/>

University of Oregon's Community Service Center, 2018. Gilliam (2018) Multi-Jurisdictional Natural Hazards Mitigation Plans. <http://www.co.gilliam.or.us/Gilliam%20County%20NHMP%20update%202018%20small.pdf>

7.0 - Appendices

Appendix A - Critical Issue and Strategy Crosswalk Evaluation

Appendix B - Strategy Impact Analysis Evaluation

Appendix C - Step 4 Meeting Notes

Appendix D - Water Availability Basin Prioritization

Appendix E - Strategy Ranking Table

Appendix F - Step 4 Public Comments

Appendix G - Public Anonymous Survey

APPENDIX A

Critical Issue and Strategy Crosswalk Evaluation

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	
	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										
Critical Issue #7: Solutions/Strategies	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
	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
	Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)		1				1	1
	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
	Increase pace and scale of forest restoration, including prescribed burning and thinning		1					1
	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
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
Critical Issue 19: Rural and domestic well data gaps								
Critical Issue #19 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

26 30 3 8 19 18 46

Oregon Watershed Enhancement Board Open Solicitation
Oregon Watershed Enhancement Board Small Grants
Oregon Watershed Enhancement Board Focused Investment Partnership
Natural Resources Conservation Service Regional Conservation Partnership Program/Environmental Quality Incentive Program
Oregon Department of Forestry
Oregon Water Resources Department
Bonneville Power Administration-Columbia Basin Water Transaction Program
Confederated Tribes of the Warm Springs
United States Department of Agriculture-Rural Development Initiative
Bureau of Reclamation
Federal Appropriations
Northwest Power Planning Council

OWEB-OS
OWEB-SG
OWEB-FIP
NRCS RCPP/EQIP
ODF
OWRD
BPA
CTWS
USDA RDI
BOR
NWPPC

1	OWEB-OS, OWEB-FIP for Butte and
2	Thirtymile WS, OWEB-SG
3	
5	
5	
2	OWEB-OS, OWEB-SG, NRCS-
2	RCPP/EQIP
2	OWEB-OS, OWEB-SG, NRCS-
2	RCPP/EQIP
1	
2	
2	ODF?
2	ODF?
2	
2	
2	
1	OWEB-OS, OWEB-SG, NRCS-
	RCPP/EQIP, ODF?, Cooperative
	agreements with USFS
3	
3	OWEB-OS, OWEB-SG, NRCS-
	RCPP/EQIP
4	
4	

APPENDIX B

Strategy Impact Analysis Evaluation

	Strategies	1. Poor riparian habitat	2. Elevated summer stream temp/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
5	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	x		2
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	x		2
11	Promote existing incentives for measurement of diversions	x	x	1	x	x	x	x		x	x	1	x	x	x	x	x	x	x		2
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

Step 4 Meeting Notes

Appendix C: Step 4 Meeting Notes

Meeting # 28 06/25/2019

- o Location: Conference Call “Go-To-Meeting”

- o Agenda

- § Learning partnership feedback

- § Budget & Administrative Update

- Norrie waiting for Step 3 invoices. Can’t pay expenses beyond June 30th. Planning Step 4. Budget is much like Step 3. It is close to \$25,000. If they want to take more as putting the document together as part of the integrated Step 4 solution report. The date to respond to RFP is July 1st. Spencer and Ben will continue to take part. Hannah won’t be able to take part in Step 4. Open to more contribution for report writing. Spencer did most of the Step 2 report. Third party consultant to write the report?

- § Legislative Update

- \$550,000 POP 101. Got two policy packages.
 - 6 positions and a team to work on Groundwater studies.

- § HB 20

- Dam safety program and modernize it. \$100,000 for John Day after Step 5 for Implementation. Coordination of implementation will be a new grant. Later this year. Water watch POP included money for ODFW to participate in PBP, not included by Joint Committee. It is a challenge to not have ODFW to be on board.

- § Draft of Step 3 to be distributed for internal work group review

- § LJDWG Research

- Discussion: what’s working, what needed?

- § Step 4 workplan

- Goal of Step 4
 - Scope of our work
 - Frame critical issues & strategies
 - Form subcommittees (outreach & engagement, critical issues & strategies, and evaluation & ranking)
 -

- Meeting # 29 08/21/2019

o Location: USDA Service Center, Condon OR

o Agenda:

§ Budget and Administrative Update

- Step 4 being executed, thank you to the reviewers (Amy, Margaret, Damon, and Sue)! Step 4 Budget, like Step 3 is \$53,000. \$25,000 will be distributed for Step 4 RFP partner recipients. Note that Hannah and Herb's time counts for 100% match \$10,000 for Step 4 is being held for consultant or report writing.

- OWRD's POP 101 passed and was allocated \$550,000. \$15,000 for LJDWG to finish Step 4-5. \$60k additional for coordinating implementation. We will have to provide \$25,000 cash match. OWRD receiving funding for internal needs to include statewide assessment needs, evaluation of pilot, and coordination of extension of place-based planning beyond 2020

- September learning partnership – agencies planning to participate. This is an important opportunity for us to ask for support in implementation of our findings.

§ Step 3 workgroup comment review

- July 11, the Step 3 draft was completed and was sent to partners and agency for review.

- Comments were returned by the August 3rd deadline. For staff from OWRD, Sue Greer and Brian P, all made comments. High level comments include: do a better job combining Step 2 and 3 in the narrative, the executive summary needs to be a stand-alone document, clean up sources/definitions/assumptions, strategies should be held for Step 4, add Step 3 conclusions and findings for each section.

- Only 10 of 30 WABs have minimum and optimum flow requirements from ODFW. We will infer instream values from the Richter report. Need to clarify instream lease and water rights. Add lamprey to focal fish species.

§ Workgroup Discussion:

- Instream
- Agriculture
- Municipal

§ Step 3 Report Public Comment and Outreach Strategy

- Hannah is coordinating Step 3 report distribution. She and subcommittee is making a flyer, a website, organizing paid advertising, updating strategies for Step 4 survey monkey. Outreach committee will plan to release Step 3 September 15 for public review. Partners will be asked to make individual requests to stakeholders to ask for public comment or additional data (municipal section)

§ Step 4 Work Planning

- Group discussion on categorizing bucket issues. Lee to add a problem statement for each category and send out a google share excel for people to add strategies in each category.

§ Water Supply

- Address summer flow, timing and flow.
- Address temperature, according to TMDLs.
- Address sediment and erosion concerns.
- Address upland management.
- Identify water source areas; geological influence of springs and seeps.
- Address vegetation change, soil health.
- Irrigation efficiency management.
- Address instream flow needs.
- Address fish passage barriers.

§ Water Quality

- Address temperature

· Meeting # 30 09/17/2019

- o Location: Conference Call “Go-To-Meeting”
- o Agenda

§ Step 3 workgroup review and update

- Shreejita review Step 3 report edit progress.
Discuss remaining needs prior to public view.

§ Step 3 Public outreach schedule and strategy

- Hannah to review LJDWG website
- Hannah to discuss deadline in reference to above discussion. Hannah to discuss process and progress in preparing the following: email distribution list (updates) with survey monkey, paid ads, flyers, agencies hard copies on display. Municipal engagement for public

comment—assigns leads for personal follow-up. Lead stakeholders and landowners – assign leads for personal follow-up

§ Step 4 work planning

- Review LJDWG: Step 4 Strategies & Solutions Brainstorm Excel Spreadsheet on Go-To-Meeting
- Review Categories and Problem Statements
- Group discussion: Keep a living document- further develop list of critical issues through outreach events, surveys and other meetings.
- New Subcommittees, needed to manage Critical Issues & Strategies document and develop an evaluation & ranking methodology to present to the work group.

§ Update on October Juniper Field Tour

- Damon and Norie provide update on Oct 22nd tour and schedule. Appoint Fossil Nov. 20th municipal tour planning lead. Discuss January-February, soil health workshop-evening dinner outreach event.

§ List next steps, assign action items and schedule fall meetings.

- Compile action items from today's meeting and preview next steps.

· Meeting # 31 10/22/2019

- o Location: USDA Service Center, Condon OR
- o Agenda

§ Step 4 Budget Update

- Norie to provide updaters on Step 4 Budget

§ Step 3 workgroup review update

- Lee and Shreejita to provide an update of Step 3 updates.
- Distribute Executive Summary, Data gaps and conclusion with group discussion

§ Step 3 Public Outreach Schedule and Strategy

- Hannah to review LDJWG website
- Hannah to discuss process and progress on Step 3 report distribution: email distribution list (updates) with survey monkey, paid ads, flyers, agencies hard copies on display. Municipal engagement for public comment –

Volunteer discussion for personal follow-up for key stakeholders and landowners, municipal government, agencies and other. Assign leads for personal follow-up

§ Step 4 work planning

- Step 4 strategies & solutions
 - o Group exercise - Step 4 Strategies & Solutions – Herb/Hannah adding to list on Go-To-Meeting
 - o Group Discussion: How to build strategies for Step 4- dinner outreach, round table discussion, small group meetings, surveys and other meetings o Review Harney work group Step 4 1-pgr. Discuss how to use a similar tool.
 - o Discuss when new subcommittees will be needed to manage Critical Issues & Strategies document and develop an Evaluation & Ranking methodology to present to the work group.

§ List next steps, assign action items and schedule fall meetings.

- Compile action items from today's meeting and preview next steps. Appoint Fossil Nov. 20th municipal tour planning lead. Discuss January-February, soil health workshop – evening dinner outreach event.

§ Juniper Field Tour

- Carpool to Lonerock for Juniper field tour.

· Meeting # 32 11/20/2019

- o Location: Painted Hills Natural Beef Office Building, Fossil OR
- o Agenda

§ Budget and Administrative Update

- OWRD working on grant extensions. OWRD received \$550k.
- Step 3 December and January 2021, Step 4 – February through June (\$53,000 - \$9,000), Step 5 June through December 2020 (\$50,000), January through June 2021 – Implementation (\$36,000)
- Hannah leaving Gilliam Watershed Council going to Puerto Rico to teach ESL. Spencer leaving Freshwater Trust and going to ODF&W.

§ Step 3 Comments to Date

- Public comment is open until the end of the month. Debbi has asked the SWCD stock growers and watershed council for comments. Rita has distributed Step 3 to Cattlemen's and asked for comments. Damon has distributed Step 3 to NRCS list and asked for comment. Water Watch sent to its email distribution list asking for comment. SNW posted on Facebook. Sherman County posted on Facebook.
- Comments to Date include:
 - o Concern about CRP going away, and thus creating more water demand for land production.
 - o Water for storage availability is missing for Step 3 report.

§ Step 4 Work Planning Discussion of Deciding Principles

- Available expertise and capacity
- Financially feasible / funding available
- Community supported
- Meets long and short-term effectiveness evaluation without being detrimental to other needs.
- Minimum negative impacts

§ Discussion of Areas of Action-how to evaluate and propose the strategy or solution? Discussion and recommendations followed:

- Focus on WAB or reach; county or city when data does not fit into a WAB
- Identify specific priority areas from Step 3
- Utilize BPA Atlas or other best practices from FIP process.

§ City of Fossil, Municipal Public Works Tour

- Bill Potter, Fossil Public Works provide tour: Visited two reservoirs, discussed well pump and issues Fossil is facing with Sulphur, fluoride, and overflow due to high wet season. Discussed and planning needs for infrastructure improvement to reduce overflow. Visited water treatment facility.

· Meeting # 33 12/17/2019

- o Location: Conference Call "Go-To-Meeting"

o Agenda

§ Budget and Administrative Update

- Norie provided budget update and review of contract amendment to OWRD. As reported, the original budget 1st Amendment: Step 1: 32,472.00, Step 2: 52,800.00, Step 3: 53,000.00, Step 4: 53,000.00, Step 5: 11,183.26= 200,000.00
The actual billed budget per Step: Step 1: 30,016.74, Step 2: 51,940.43, Step 3: 53,000.00, Step 4 Total available 53,859.57 (53,000+859.57 remaining from step 2), Step 5: 11,183.26 = 200,000.00
- Norie reviewed the Terms of Agreement and discussion followed. Sustainable Northwest has requested to be added as a voting member as their role has grown from contracted facilitator (Lee Rahr) to technical representative (Shreejita Basu). The work group approved by full consensus. Debbi Bunch asked if 90% of the work group had to be present or 90% of attendees. Hannah reviewed Agreement and reported those present. Steve reported that Oregon Dept of Ag does not wish to be a voting member, just a technical contributor. Port of Arlington has been a regular meeting participant but has not signed Agreement. Norie will check in with Peter Mitchell on Terms of Agreement interest and updated participation from Freshwater Trust.

§ Step 3 comments review

- Lee reviewed the comments presented in excel format. This was an that was sent in from email by 6 individuals. Dave Moskowitz from Conservation Angler noted his comments were not listed, Lee will add them as well as capture other comments from the 14 online surveys and redistribute. Lee will put list of comments and take out names as well as survey report and add to the Step 3 appendices, so they are recorded in the public record.

§ Review Step 4 Deciding Principles

- Discussion of the first 5 principles as agreed to in the November meeting. Brian suggested that it was important to create a balanced approach – give and take approach.

Discussion on best way to capture this principle and way of collaboration. Group decided on the following:

- o Available expertise and capacity
- o Financially feasible / funding available
- o Community supported
- o Meets long and short-term effectiveness evaluation without being detrimental to other needs
- o Minimum negative impacts
- Steve suggested addition two following additions.

Work group agreed

- o Voluntary non-regularity action
- o Action does not infringe on current water rights

§ Step 4 Work planning

- Review LJDWG Step 4 strategies excel spreadsheet

§ Discuss process for next steps

- More outreach events to gather more feedback.
- How do we get that information back into master document
- Form technical workgroup to identify WABs, prioritization (evaluation and ranking), and action plans, and coordination with existing initiatives (FIP prioritization and RCPP)

· Meeting # 34 01/29/2020

- o Location: USDA Service Center, Condon OR
- o Agenda

§ Budget and Administrative Update

- Norie provided budget update and review of contract amendment to OWRD. As reported, the Step 4: 53,000.00, \$13,00 has been spent. \$39,000 remaining in Step 4. Gilliam SWCD is working to execute OWRD contract, and then will update grant agreements. The new grant agreement will include \$36,000 for Implementation. Freshwater Trust will not be invoicing but ask that they continue to receive email and notices. Hannah has settled in Puerto Rico and doing well. Gilliam Watershed Council is hiring a new

coordinator who should be in place at the next meeting. Sherman SWCD and Watershed Council will also have a new position. Peter will talk to the Port of Boardman on whether they would like a March presentation on Step 3 and ask if they would like to sign on as a formal voting partner.

- Steve, OWRD announce that they are doing a Water Supply Assessment. OWRD is also starting an evaluation of the place-based planning (PBP) pilots. Process is about 1 year to collect data another 6 monthly to finish process and report. Legislature provided \$10,000 for this work. Assessment to include:

- o Review current status and authorities. Ensure planning being done or planned is consistent with current authority.
- o Look in and outside of Oregon. Is PBP the best way to do water resource planning? What are other best practices planning we can learn from.
- o Evaluate current and past water planning. What worked well, what did not?
- o What is the demand for water planning statewide?

§ Finalizing Step 3

- Peter suggested work groups need to do a food need assessment. Rise in food demand. Do we have the available dry land cropping to produce a growing 50% demand? Discussion – ODA does not forecast food demand. State does not have resources on estimating demand.
- Step 3 report addresses needs for environmental flow
 - o Question: Can we quantify storage ability beyond high peak flow for winter storage beyond environmental flow? How do we get this done?
 - § A: WARS February presentation by OWRD may help address questions.
- Work groups reviewed the changes made to Step 3

report from public work group comments. (Appendix D).

The following recommendations were made:

- o Damon suggested keeping the reference of livestock water use demand by County, not WAB for simplification and accuracy. Discussion how the entire demand was similar to Condon. Add that reference.
- o Pg 96, Don't double count storage demand. Work group agreed on language change to be incorporated and reflected in Appendix D memo.

§ Technical Resource Presentations

- Damon Brosnan with NRCS did a presentation of the Conservation Reserve Program (CRP) and Enhancement Program (CREP)

§ Step 4 Work Planning

- Group exercise on Step 4 excel spreadsheet to refine problem statements, goals, and strategies.

Step 4 Meetings

§ Meeting # 35 02/24/2020

- o Location: USDA Service Center, Condon OR
- o Agenda

§ Budget and Administrative Update

- Norie provided budget update and review of contract amendment to OWRD. As reported, the Step 4: 53,000.00, \$13,750 has been spent. Step 3 took one year. We have a budget goal to finish Step 4 by August 2020. Monthly budget is \$1,500, \$1,000/month for facilitation. The longer our Step 4 process goes, the thinner our budget will be.
- Damon with NRCS reported on the NRCS Annual Meeting. They had 29 landowners in attendance. Some concerns were raised about water unknowns. Damon and Herb acknowledged and addressed concerns. They received 6 one-page survey responses back. The one-pager seemed too technical with jargon. Suggest updating to remove that type of language. Examples "riparian" and "surface water".

§ Technical Resource Presentations

- Steve Parrett with OWRD presented on the Water Availability Report System (WARS). See attached PPT.

§ Step 4 Work Planning

- Additional critical issues from landowner one-pager
 - o Unmet water demands
 - o Degraded riparian area in public campsites
 - o Lack of off-stream storage opportunities
 - o Off-stream watering for cattle and wildlife
 - o Juniper removal and prescribed burning
 - o Groundwater protection
 - o Water recharge through Juniper treatment
 - o Upland sediment basins
- The work group participated in a group exercise to work on finalizing critical issue, goals and problem statements. The group deleted duplicate issues and discussed likelihood of removing topic areas and working off one major list. After finalizing issues, goal and problem statement, the work group voted on highest priority critical issues to address. The following list represents critical issues receiving the most support to the least. All of the below critical issues received votes with a range of 10 votes to 1. The items are in order of most to least received votes
 - o Poor Riparian Habitat
 - o Elevated summer stream temps
 - o Insufficient instream flow (summer and fall)
 - o Unknown water availability for storage
 - o Degraded native plant communities
 - o Insufficient irrigation infrastructure
 - o Outdated municipal infrastructure
 - o Unknown aquifer supply
 - o Fish passage barriers
 - o Insufficient well data / aquifer concerns
 - o Soil health
 - o Hydrology changes (natural and manmade)
 - o Water for wildlife
 - o Wildfire prevention
 - o No local Agri met Stations

§ Meeting # 36 03/31/2020

- o Location: Conference Call “Go-to-Meeting”
- o Agenda:

§ Administrative and Budget Update

- The LJDWG’s first remote meeting during COVID-19. State and federal offices are all shut down but workflow and some field work continue.
- Norie provided a budget update noting the work group has used \$20,000 with a remaining \$34,000. The grant agreement with OWRD has been executed.

§ Step 4 Guidance Review

- Steve gave a PPT presentation (see attached) providing guidance on our step 4 process. Flagged that the term solutions and strategies are used interchangeably, and that Step 4 is a difficult phase to reach consensus and to be sure not to mistake silence as agreement. He also reminded us that critical issues need to come from facts found in Steps 2 and 3 and suggested we have metrics to measure our proposed solutions effectiveness. Steve suggested the group problem statements be clearly defined and be made as specific as possible. Guidance report as a sample report. Discussion on actions that are nominated be at the front of our report.
- Metrics discussion- BEF and OWEB has a results chain metrics

§ Step 4 Work Planning

- The work group reviewed and finalized the strategies in the Step 4 Excel Spreadsheet. Strategies that were finalized included those for critical issues for: Water quality standards, fish passage barriers, degraded forest health, insufficient crop and climate data, aquifer conditions, unknown storage availability and adequate surface water for wildlife. Discussion included:
 - o Storage
 - o Ground and Surface water interaction
 - o Domestic Well log data
 - o Fish passage

§ Form technical workgroups for Step 4 Evaluation and Deciding Principles

- Work groups were formed to continue to refine problem statements, strategies and prioritize strategies.

Subcommittees:

- o Instream
- o Ag
- o Municipal

§ Public Comment

- Craig Lacy provided comments largely focused on concerns around instream flow and temperature. See Lacy memo following meeting notes.

§ Meeting # 37 04/21/2020

- o Location: Conference Call “Go-To-Meeting”
- o Agenda:

§ Administrative and Budget Update

- Work group partners remain working from home during COVID-19. We will plan our May 20th meeting using the GoToMeeting platform.
- The Gilliam SWCD was awarded an NRCS Regional Conservation Partnership Program (RCPP) award for \$3.9M for work that will enhance over 40 miles of Mid-Columbia Steelhead habitat in the Lower John Day Basin. The project will include restoration activities, such as the installation of fences, manufactured beaver dam structures and riparian plantings to improve native fish habitat. (See attached news release). Two of the three awards were for the John Day Basin. The RCPP application was able to capitalize on the OWEB FIP funding awarded in 2018-19 for match, a great demonstration of leveraging state and federal investment. Congratulations Gilliam SWCD!
- OWEB has paused all new grant awards. Many partners were anticipating awards this April. Loss of lottery funds is likely to reduce restoration funding for months and maybe years to come.
- OWRD water project grant and loan program application has been extended to May 28. Pre-applications

consultations are underway. Feasibility grants are scheduled for October. OWRD budget is likely to be tight for 2020 and 2021.

- Norie budget update: work group has spent \$20,712 and has \$33,000 remaining. Our goal is to wrap up Step 4 in June.

§ Step 4 Subcommittee Evaluation & Metrics report out

- Instream
 - o Instream group met twice. Still have a few more critical issues to work through. The subcommittee did not feel the numerical ranking of the guiding principles fully captured prioritization. They also were struggling a bit with the metrics. Lee suggested writing as many metric ideas as needed to capture ideas for measuring impact. Lee also suggested we will work through an additional strategy to further prioritize recommended strategies.
- Agriculture
 - o The agriculture committee met once and modified some problem statements and ranked priorities and modified some metrics made earlier by Herb. They are happy to work with instream subcommittee on another meeting to finalize Step 4 critical issues categorized under instream and ag.
- Municipal/Industrial/Hazard
 - o Municipal group reviewed their progress. Group discussion around breaking out municipal drinking water and wastewater septic critical issue under 7b.

§ Step 4 Group Activity

- Unknown water availability for storage
 - o Lively group discussion around storage
- Lack of understanding of natural and Human Causes in Hydrology
 - o The group completed this critical issue and removed some solutions which they felt were already tackled in Step 2 report.

- Lack of information on aquifer condition, capacity and connectivity
 - o Steve said that John Day is not in an immediate list for a groundwater feasibility study for the state as these studies are long term and require lot of staff time and money.
- Adequate water for wildlife
 - o Emily and Herb suggested that ODFW can provide us data or a report on wildlife populations to better understand population trends.

§ Further Solution/Strategies Priorities Discussion

- Debbi suggested we measure further prioritization based on how impactful the strategies are likely to be for water flow and temperature given those are the driving forces behind the work group. Identify and prioritize strategies that give us the “biggest bang for the buck”. Brian agreed with this concept. She also suggested separating on the ground projects from data gaps and feasibility study needs. Shreejita suggested we create a map to identify existing projects and initiatives to better understand where we may have gaps. Herb through a latitude and longitude map could be used – he and Shreejita said they would look into that and possibly look to layering on the Tractor tool from the JD Partnership FIP priority project map.

§ Meeting # 38 05/20/2020

- o Location: Conference Call “Go-To-Meeting”
- o Agenda

§ Administrative and Budget Update

- Work group partners remain working from home during COVID-19. We will plan our June 23rd meeting using the GoToMeeting platform.
- OWEB has paused all new grant awards. Many partners were anticipating awards this April. Loss of lottery funds is likely to reduce restoration funding for months and maybe years to come.

- OWRD is responding to a state request to reduce 17% budget reduction. Plans to meet this target by no filling unfulfilled position. An additional \$500,000 savings will come from reducing the \$2.5 million feasibility grant program to \$2 million. Place based Planning assessment budget will be reduced by \$50,000 from the original \$100,000 budgeted and not hold its in person assessment meeting.
- NRCS is meeting with landowners remotely.
- Norie budget update: costs are down resulting in no in person meeting, work group has spent \$20,712 and has \$33,000 remaining. Invoice for Step 4 are due end of June. Norie will be sending time extensions to extend Step 4 contracts. Goal to complete Step 4 by August 31st, 2020.
- OWRD Planning Assessment (attached). OWRD is developing their future role in water resource planning. The Governor's 100-year water plan was not funded in the 2020 session but a lot of the information and listening sessions will be useful and incorporated into OWRD's assessment. Discussion: Craig Lacy asked what the dept as done to meet water availability uncertainties. Dept of focused on protecting existing water rights

§ Step 4 Subcommittee Evaluation & Metrics clean up

- Discussion on finalizing the last three critical issues
 - o 1.) Outdated and insufficient municipal. Infrastructure. Discussion included work group skill set and how-to best support municipalities meet needs. We will refer to the Step 3 survey and highlight needs in step 4.
 - o 2.) Adequate surface water for wildlife. Still unclear if deer numbers are declining and if this can be attributed to reduced summer surface waters. Discussion included restoring seeps and

springs, riparian vegetation to address warm temperatures will also improve surface water availability.

- o 3.) High instream bacteria discussion. Damon raised that the planning area is not listed in the TMDL for bacteria. Group agreed to go back to the Step 3 report and talk with Roxy and DEQ to clarify if this is a critical issue that should remain for Step 4.

§ Step 4 Strategies ranking review- Survey

- Discussion about how our ranking strategies comes from our values and the agreed upon 7 guiding principles. Agreed that our ranking is not necessarily a scientific process although many of our points of view are guided by scientific training. The survey was broken in 5 major questions: 1) improve stream morphology, 2) improve stream water quality, 3) increase instream flow, 4) feasibility, studies, or planning needed, and 5) upland actions to improve flow and in-stream water quality.
- The survey instrument did not provide clear priorities. Herb suggested using Ian at ODFW to help us break down the results to better present results of the strategies prioritization. The work group agreed to continue to prioritize strategies look for redundancy, what may be missing, what actions are already being funded and deployed.

§ Public Comment

- Jeffrey Key provided recommendations: 1) more monitoring to measure base flow. Need to measure the impact of juniper treatments. Need real data, not just anticipated results. 2) Small reservoir for winter storage on private land. - Before an application for an Alternate Reservoir water right is submitted, the applicant must contact the local Fish and Wildlife office to assess what fish passage and screening requirements will need to be

addressed.1 ODFW will provide the Alternate Reservoir Application Review Sheet form to be included with the application:

[https://www.oregon.gov/OWRD/WRDFormsPDF/alt_res.p](https://www.oregon.gov/OWRD/WRDFormsPDF/alt_res.pdf)

[df](#) 3) Allocation of Conserved Water Right Program The Allocation of Conserved Water Program allows a water user who conserves water to use a portion of the conserved water on additional lands, lease or sell the water, or dedicate the water to instream use. Use of this program is voluntary and provides benefits to both water right holders and instream values.

§ General discussion on steelhead populations as reported by Ian at ODFW in the IMW meeting.

- Lower Rock Creek fish grow almost as fast as hatchery given lowland favorable conditions compared to high elevation fish in the Upper John Day. See the two attached PPT from Ian Tattam research that show the higher growth rates in Rock Creek – other observations include reduced freshwater rearing, fewer species in Lower John Day, higher fall-spring productivity, faster growth but compressed life history
- Craig Lacy also mentioned research by Jim Lichatowich. Jim is the author of *Salmon without Rivers: A History of the Pacific Salmon Crisis*. He has worked on Pacific salmon issues as a researcher, manager, and scientific advisor. Jim was involved with Ecosystem Diagnosis and Treatment (EDT) developing and implementing watershed plans in the John Day. EDT helps planners develop working hypotheses as a basis for moving forward with watershed protection and restoration activities. See [A Multi-Species Framework Approach for the Columbia River Basin Integrating Fish, Wildlife, and Ecological Functions \(Version: February 2002\)](#). Lichatowich more recently outlines Steelhead recovery for the John Day in the [Osprey, Issue 73](#).

§ Meeting # 39 06/23/2020

o Location: Conference Call “Go-To-Meeting”

o Agenda:

§ Administrative and Budget Update

- Herb & Damon update-office staff back in the office. Gilliam County is in Phase 2 - the public can come in by appointment. Phase 3 will be with PPE, but open to walk-ins. Gilliam Service Center office May be able to host a LJDWG meeting in Service Center by the end of summer if the state continues to progress.
- Norie- on budget with some savings due to no in person meetings. Invoices are needed by the end of the month - OWRD funds request end of June. Contract amendments have been sent out – please sign and return if you have not already.
- OWEB Update- Last board meeting a virtual meeting, focused on spending plan changes. OWEB staff presented three options, board chose to lower funds available for certain FIPs, which put more in the open solicitation and small grant categories. The board funded fall 2019 applications, including acquisitions. Next open solicitation deadline is in July. John Day Partnership FIP will spend the remaining \$800,000 this biennium. There is uncertainty on the second biennium. OWEB staffing has been reduced – they reported to expect processing times will be longer and likely fewer new grants and programs. Normal budget and staffing timeline is uncertain.
- Conservation Angler- David Moskowitz gave an organizational overview. The Conservation Angler (CA) was founded 2003. It's small nonprofit conservation group with remote offices in WA and OR. The organization focuses on wild fish and wild rivers, with emphasis on wild fish management, harvest and hatchery issues. John Day River is an important river for the organization. Dave has followed LJDWG work and attended Cottonwood Canyon event. He

described personal interest and experience on the John Day. CA commented on Step 3 report. Craig Lacy said the JD River is one of the passions of his life. He was a fly-fishing outfitter from mid-80-mid-90s. Worked with several agencies to write plans, and map the river for wild and scenic status. He pursued his fishery science degree and had research on the JD. His family has property in the watershed. He attended some of the early meetings, is very interested in helping out.

- o Brian made a motion for the Conservation Angler to become a member of the PBP group, represented by Craig. Shreejita seconded the motion and the entire group present approved their membership on the phone meeting. After the vote, Brian reminded everyone that their membership was contingent on signing the declaration of cooperation.

§ Follow up actions from May meeting

- The City of Condon and Fossil both have Water System Management Plans. See notes in spreadsheet in Step 3, table 4.2 on survey of needs from planning municipalities. (cities with more than 300 connections have to have a WSMP). Only Wasco has WMCP-Water Management and Conservation Plan, expiring in June 2020. Wasco is not in the planning area.
- TMDL Bacteria follow up -Memo was sent to the LJDWG outlining DEQ's recommendation on whether the Lower John Day has a bacteria issue. Don Butcher, DEQ- "it's not accurate to call bacterial bio criteria a critical issue in the Lower John Day." ODA-no declining trends. Group agreed to pull bacteria from the Critical Issues spreadsheet. The group also asked if DEQ had plans for more monitoring stations- answer was not at this time, but there are funding sources available to help communities monitor water quality issues through voluntary efforts.
- Allocation of Instream Water presentation (August)- It will be helpful to know how can we incorporate it as a strategy. Steve and possibly Teri and Ken from OWRD will

present in August. Steve gave a similar presentation to Upper Grande Ronde. Discussion- What amount of instream flow does DEQ feel is necessary to meet standards, have they ever filed for instream water rights/would they consider that on the John Day? Brian is not aware of any instream water rights filed by DEQ.

Steve- they are one of the state agencies allowed to, but typically does not. Have they done any modeling to answer that question? Follow up with Don Butcher.

- ODFW Mule deer – There are three management units in our planning area, declining numbers are reported in all three, W. Biggs numbers not updated, so not in shared chart. ODFW is currently focusing on improving mule deer habitat in several units. Projects include removing sheep wire and rehabilitating CRP fields in winter range. They are coordinating with NRCS in Morrow County and trying to expand into neighboring counties. What are the theories of what's causing decline? Habitat changes (loss of browse/more grass cover), hunting pressure, water access? How do we link it to our work? This issue links with upland project types for our plan. Group suggested we identify more concrete info on causes of the decline if we can especially if tied to surface water.

§ John Day Partnership & Place-Based Planning Atlas Update Presentation-Herb Winters

- Prioritization overview-John Day Basin Partnership (JDBP) and LJDWG-PBP have similar objectives and goals. Atlas overview of steps- prioritize habitat types, focus species, limiting factors, restoration actions, ranking watersheds, scoping and mapping restoration actions, ranking project opportunities. JDBP is currently working on prioritizing uplands. Prior Atlas efforts have been aquatic/instream. The process prioritizes and highlights sites and projects with the highest ecological benefit. JDBP funds projects starting at the highest ranking and then down the rankings list.

- Project update-most restoration will be focused

process-based restoration actions- i.e. Beaver Dam Analogues (BDAs), Post assisted log structures (PALS)

- Next Steps- goal to have uplands prioritization completed in 2 years.
 - o 1- Identify local species and prioritize limiting life factors conditions
 - o 2- Prioritize habitat limiting factors
 - o 3- Prioritize restoration actions
 - o 4- Rank sub watersheds

§ Oregon Water Restoration Inventory- Shreejita

- Oregon Water Restoration Inventory (OWRI) is managed by OWEB. The database tracks instream, riparian, and upland restoration projects funded through OWEB and ODFW. Shreejita took OWRI data and moved it to ArcGIS Online to make a dashboard to capture/share/analyze that information. Allows us to look at projects by WAB, and analyze what has been done in the planning area.
Discussion- How can we use this to come up with an action plan? What is PBP role vs. individual implementer's role? How specific/granular do we get on project recommendations? How do we incorporate both partnerships' efforts? OWRI is a way to look at where we've been, Atlas is project level planning. These are in place or close to in place to have a good plan/toolbox to use to get work done. Suggested that we capture OWRI projects in Step 4 report. Municipal and other needs not covered under JDBP; our group needs to make sure those needs aren't lost. Ranking watersheds/WABs priority is helpful. Note-OWRI information is just a portion of the work that's being done. NRCS, especially, is not included. Shreejita is working on a way to share the data

§ Step 4 outline & subcommittees

- Subcommittees groups volunteer to lead write up of Step 4 report sections (leads in bold)
 - o Instream
 - o Upland
 - o Feasibility & Planning
 - o Lee proposes three kickoff meetings.
Shreejita and Lee will better organize outline and break out into different google docs, one for each group to work on/edit as needed.

Members are assigned writing tasks. Norie can help subcommittees organize meetings.

§ Public Comment

- Jesse will follow up on his role with the JDP Atlas. He mentioned the Lower John Day Steelhead population is highly important to BPA and programs. He plans on engaging with our work and will provide technical insight and input as needed. He asked that the group lean on him as a resource.

§ Meeting # 40 07/28/2020

- o Location: Conference Call “Go-To-Meeting”
- o Agenda:

§ Administrative and Budget Update

- Covid-19 related office workflow update, general updates invited
- Norie-Budget & Administrative update-request for Match for Semi-Annual Report.
- Other updates invited

§ Follow up on Action items from June Meeting

- Shreejita Basu: Gives summarization of follow up with Don Butcher on DEQ’s position on instream water right requests, instream needs, and whether any modeling has been done.

§ Draft Step 4 Report Update

- Subcommittee updates: Norie Wright reviews Critical Issues write-up and requests group review, edits, and comments to be returned by September 1st, 2020.

§ Crosswalk Table Discussion

- Shreejita Basu walks us through Crosswalk Table
- Summary Strategy Discussion and Input
- Prioritization Request
- August subcommittee tasks: Detailed write up of each strategy summary

§ Meeting # 41 08/18/2020

- o Location: Conference Call “Go-To-Meeting”
- o Agenda:

§ Administrative and Budget Update

- Damon - COVID-19 related office and workflow update, general updates invited

- Norie - budget & administrative update
- Steve - 2019-2020 Feasibility Study Grant Funding Cycle

§ Presenters

- Allocation of Conserved Water: Teri Hranac, Steve Parrett, and Ken Thiemann with OWRD.
- Instream Lease programs: Tony Malmberg, The Freshwater Trust, landowner, and water rights. Tony will provide commentary on Instream Lease programs and offer his perspective as a landowner.

§ Step 4 Subcommittee work completed by July & August

- Subcommittee updates on progress to date, see Step 4 write up
- September subcommittee tasks-
 - o Adding WABs and timeline to Step 4 writeup, Finalizing crosswalk table and refining strategies and actions in to an action plan.

§ Meeting #42 09/15/2020

- o Location: Conference Call “Go-To-Meeting”
- o Agenda:

§ Administrative and Budget Update

- Damon-COVID-19 related office and workflow update, general updates invited
- Norie-budget & administrative update
 - o Changing end date for Step 4 changed to September 30. Invoices due October 15. RFP for Step 5 should be out end of next week. Waiting on amendment from OWRD. Asking for implementation funding to be moved to Step 5. Looking to use some for outside source to help with Step 5 process and some for additional partner funding to complete the process. Steve-Amendment requests will probably take 60 days to execute.
- Budget amendment proposal for OWRD implementation funds (vote required)
 - o Potential Options-Anderson Perry
 - o Chase moved to shift \$36,183 from implementation to step 5 planning funds. Shreejita seconds. All in favor. Brian asked for clarification of

what Step 5 entails. Consolidation of previous steps into one report, and approval from our organizations, Oregon Water Resources Commission, public outreach.

- Legislative water committee lunchtime webinar today- from Plan to Action Zoom

§ Follow up on action items

- OWRD Feasibility Study Application, Off channel storage
 - o Feasibility application subcommittee- group met last week to discuss the opportunity. Looked at the information required to submit. Group came to consensus that the deadline is too tight to complete information gathering and analysis that would be required to submit. Next grant cycle would be next October. Scheduled a meeting with OWRD on September 24th to make final determination. Also felt like this might be better after Step 4 is adopted. At that point, all the options would be prioritized and weighed. Is there a way to narrow the scope to make the application easier? This is one of the reasons the group is struggling and is one of the follow-up questions for the OWRD meeting. Storage is a high priority
- Cross walk table edits
 - o Debbi walked through the suggested changes to the Critical issue wording. The group approved most of the suggestions and opted to keep Degraded Forest Health separate.
- Don Butcher ODEQ invite for fall/winter presentation
 - o Will present in December

§ Presenters

- NRCS Nick Sirovtka, NRCS Soil Scientist
 - o A foundation for sustainability and productivity.

§ Step 4 Next Subcommittee work completed in August- September

- Future Feasibility Study Grant and deadlines
- Review changes and updated to critical issues: Debbi Bunch
- Subcommittee update on progress to date, see Step 4 write up

October subcommittee tasks-

o Adding WABs-SB

§ Shreejita, Brian were able to work through riparian and instream critical issues with input from tribes, ODFW, etc. Shreejita is doing the other 15 issues, would appreciate help with these. Asking for the three groups to help with this. Will follow- up with email.

o Finalizing crosswalk table- Debbi Bunch

§ Debbi is working with the subcommittee to finalize wording to send out to the larger group. Asking for feedback by a deadline to be set.

o Refining strategies-Debbi Bunch

§ Then the strategies will be analyzed by how many critical issues they impact. This information will be set into the action plan.

o Outreach- Plan of approach with final draft

§ Step 4 and looking ahead to Step 5, need new lead or co-lead. November/December expected for Step 4 push. Norie and Kristina can co-lead, will table for now and pick up again in October. Schedule initial meeting in October.

o Create Action Plan- Form subcommittee to form Action Plan

§ Public Comment

o Jeffrey Keelots of misinformation out there about water rights. Especially about instream rights being forfeited. Water right holders should be informed about Allocation of Conserved Water before any public money spent on irrigation efficiency projects. American Rivers report on endangered rivers. John Day River should be part of that due to the lack of vegetation. A nomination to that would give some attention to the watershed. Suggests participants look at the Reasonable Person Model in regards to conservation. It says get potential adopters of new conservation practices out in the field (or zoom) to visit with people that

have done the practice and had success.

§ Meetings #43 10/20/2020

- o Location: Conference Call “Go-To-Meeting”
- o Agenda
 - § Administrative and Budget Updates
 - Budget, administrative update and Step 5 RFP timeline (Norie)
 - o Step 4 Extensions sent out, working with Herb, Debbi, and Lee on Step 5 RFP. Goal is to have them out by end of the week.
 - Step 5 contractor support (Herb and Debbi)
 - o Debbi working to draft contract and statement of work with Anderson Perry. Includes proofreading and editing Step 4 report, assistance with Step 5 Action Plan and final document production, preparation of a handout and PowerPoint presentation.
 - § Follow up on Action items from September Meeting
 - OWRD Feasibility Study Application, off channel storage update (Shreejita)
 - o Shreejita followed up with Becky Williams, OWRD and Nick on technical requirements for application. Subcommittee met and discussed possibility of going forward on Step 1, but due to lack of capacity and short turnaround time they felt they were too shorthanded and Step 4 was not far enough. Would be much more prepared for an application next year instead. Shreejita would like to discuss this topic more and get more in-depth info on what the group feels is needed from off channel storage.
 - Strategy edits (Debbi)
 - o Discussion on recharge, hold off on adding new strategies until we can get more info. Is the question storage vs. recharge. Would be great if someone wanted to give a presentation on the topic. Feasibility studies include addressing water quality. Soil health/CRP discussion on wording that might sound like pointing fingers. Thinning is added to forestry related strategies. Well level monitor

assistance may be outside of the group (OWRD).

§ Presentation

- Margaret Matter, ODA; Practice of withdrawing and withholding water from availability and hold potential from the future.
 - o Reservoirs and Reservations of Unappropriated Water: Potential Water Supply Options in the LJD Basin. What are reservations, pending JD Basin Reservations, Hydroclimate trends and changes, options, Points to consider.

§ Step 4 WAB Prioritization Process and Subcommittee work completed in September

- Google Sheets WAB prioritization document (Shreejita & Brian)
 - o several local plans and prioritizations have been converted to a 1-5 system. Those were averaged and each WAB given a rank. Some critical issues have more data/information/plans than others. Water quality only has info from DEQ-2018. Group members would like more information on the process behind some of the rankings by individuals or entities. Include that background information as an appendix. Shreejita shared several WAB maps. Shreejita and Brian could use more help if someone wants to volunteer. Lee is sending individual requests for help on specific critical issues.
- Discuss tools for WAB prioritization – Step 2 & 3, interviews, other reports (Shreejita & Brian)
 - o Steve will present in November
- Step 4 strategies coordinated with the IWRS recommended actions (Steve)
- Subcommittee next steps to draft a final WAB prioritization by Nov. 1st (Lee)
 - o Lee asked for help on prioritization for a few critical issues from the group: Wildfire risk information-overstocked forest areas, Wildland Urban Interface, historic fire info. Insufficient crop and climate data, general suggestion or prioritize by WAB? Choose by land/crop type. Erosion/Sediment Transport-Highly erodible lands. Rural & domestic well data gaps- number of wells by

WAB and proximity to municipal water sources?
Prioritize by WAB or discuss gaps and strategies
overall? Should do some WAB prioritization.

§ Public Comment

- Craig Lacy
 - o What is the definition of off-channel? Please send a copy of the definition or we could discuss in the next meeting.

§ Meeting #44 11/17/2020

- o Location: Conference Call “Go-To-Meeting”
- o Agenda:

§ Administrative and Budget Update

- Budget, administrative update and Step 5 RFP timeline (Norie)
 - o Norie-Thank you everyone for sending in invoices. Gilliam SWCD is currently working with OWRD on a funds request. Step 5 RFP has been distributed. Proposals are due 11/18.
- Review Step 4 timeline and deadlines for comment and public distribution
 - o Lee-Step 4 timeline and deadlines for comment and public distribution (December 1 internal draft to Anderson Perry for format support and editing. December 15 internal work group review. January 3 all comments due from work group, January 15 agency and public distribution for 30 days.)

§ Follow up on Action items from October meeting

- Public Comment Follow Up- Definition of “Off-Channel”
 - o Off-Channel definition-Shreejita found definition from OWRD website for water right permitting. ““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 storm water run-off, snow melt 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”
<https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3194>

· WAB Prioritization (Shreejita)

o Shreejita working with Brian to develop prioritization and ranking spreadsheet and collecting information from existing data and other plans and resources. Each tab is a separate critical issue. Shreejita sent out the spreadsheet two weeks ago, please respond to Shreejita in the next week so she can finish up the process. Each source gives a score and those are averaged and transferred to a ranking priority for each WAB by Critical Issue. A few critical issues have been worked through. Waiting on ranking from other agencies for other critical issues. Please submit ranking feedback at your earliest convenience.

§ Step 4 Group Discussion and Follow Up

· WAB Discussion on priority process- goal of 5 WABs- review what WABs have maximum critical issues

o CI 4 (Storage Needs) How should WABs be prioritized for storage needs - where water is short or where water available? Need more information. Where is the greatest need for water/dry season irrigation? Prioritize areas minimizing water quality impacts, costs should be a factor, also. Tributaries that are well shaded, cooler water out of tight tributaries. Look at potential for tributaries to add more water to the main stem. Is it meeting WQ standards? Makes sense to target bigger tributaries with good shade. Why is Storage a CI where it is really more of a strategy/solution. Group sentiment and importance.

o CI 11 (Inadequate Diversion Data) -where to look or prioritize this critical issue? Can we say there isn't enough data to prioritize? Ken might have places that would be helpful to him for his work, but that's a different question that what's useful for

this group. Piggy back to WABs to intensify impact with more water mgt data. Would be voluntary request from this group. OWRD can help with equipment at significant points of diversion. Use water rights data, WABs with greater water rights allocation get higher ranking. Follow up with Ken to help prioritize.

- o CI 9 (Lack of Ground Water Data) Work group discussed we may not rank this critical issue by WAB. Recommended action to develop proposal for expanding the network of groundwater monitoring in the planning area. Might make sense to target a couple of priority WABs with wells in them. Could connect to areas of greater use. Long term solutions in the basin may be/include groundwater/aquifer recharge. Number of wells (domestic) or volume of use for example municipal, industrial, and irrigation. Should follow progress from Upper John Day study on aquifer recharge.

- o CI 16 (Insufficient data on crops) Group suggested suggesting a station in the WABs with the greatest irrigated water use. Openetdata.org could work in concert with an Agrimet system. Jordan Beamer OWRD would be best contact person.

- o CI 20 (Rural and Domestic Well Data Gaps) Number of wells by WAB – highest number receive priority.

- Work through missing WABs for critical issues

- o Steve, Brian, Kristina, Norie, Debbi. Subcommittee meeting and then will share results with LJDWG for any further action.

- Subcommittee group volunteer to review and finalize WAB spreadsheet.

- Results & findings new section: how do we want to define and show our findings in Step 4 report? Summarize with each critical issue, or on a WAB basis? Will this inform how we approach the Action Plan?

- o Should we add a new section: Summarize with each critical issue (already in there), or on a WAB basis? Will this inform how we approach the Action Plan? Ranking system after 20 Critical issues, doesn't necessarily mean that's where we focus if we have compelling reasons to choose a lower ranked WAB. May have a larger water impact in a lower ranked WAB because of the amount of work that has been completed in the higher ranked WABS. How do we want to define and show our findings in the step 4 report? Goal of highlighting 10 WABs – review what WABS have maximum critical issues. Ground truthing.

- Timeline and Public benefits-propose we move this section to Step 5? Lots of missing data here and would work well with an action plan.

- o Lee proposed we move this section to Step 5. There is a lot of missing data and would work well with action plan. Workgroup agreed to move time line and public benefits section under each critical issue to Step 5.

§ Public Comment

- Dave Moskowitz, Conservation Angler shared what he sees is the real significance of the John Day - Wild Fish and the importance of the access to small streams. Realizes that small streams can be difficult to prioritize but during different times of the year they provide important refuge. Steelhead use these streams even when there is barely any water. Fish get up into so many of these little tributaries. When on tour of the John Day with ODFW Screen shop, late April, early May saw spawning steelhead in the tiniest high creeks. John Day is an incredible place because it's so connected. Prioritization is a very difficult process. Not

enough funding to see to all of them. Please do not cut off the small streams that make up the John Day from the restoration prioritization process.

- Steve- provided Debbi with OWRC Commissioners contact info to invite to a future meeting. Grant amendment should be executed this week.

§ Presentation

- Steve Parrett, Connecting Place Based Planning to the State's IWRS-
- Steve presented on the State's IWRS strategy and made comparison to our solutions and how the Step 4 report is helping the state implement their recommended actions. He suggested that we draw that connection when we present to the OWRC and with communications with the legislature, state agencies, funders, and public to demonstrate our cooperative and aligned efforts. The purpose of the IWRS is to better understand and meet Oregon's water needs, consumptive and environmental, while including water quantity, quality, and ecosystem needs.
- Place based planning is Recommended Action 9A. Identify which of the State's recommended actions are we helping to implement? Compare PBP CI with State CI, yes, no, maybe and Compare Strategy with State Recommended action, yes, no, maybe
 - o Yes, review IWRS and describe how they match,
 - o No, but we need the state to do this or that and here's why.
 - o Maybe, review IWRS and evaluate
- Results could be in an appendix, could be a standalone focused communication tool, highlighted in PB plan, built into presentation and proposal material. IWRS doesn't have metrics, but does have examples of how they could be implemented, Coordination of 2022 update is Breeze Potter. She is responsible for statewide IWRS and works in the Policy Section of the Director's office. POTTER Breeze K * WRD <Breeze.K.POTTER@oregon.gov>
- Are there plans for the department to have a greater presence in the field? The Department would like

to have more presence, funding dependent. Doing the best, they can with the resources they have.

Meeting #45 12/15/2020

- o Location: Conference Call “Go-To-Meeting”
- o Agenda:

§ Administrative and Budget Update

- The budget will be able to allocate approximately \$30,000 to \$33,000 for partner participation contracts. Feel free to start billing from September 30 to December 31 to the Step 5 contract.
- Steve- There is a current BOR WaterSmart program funding opportunity. Applications are due January 19 with several watershed planning funding options and possible implementation dollars. There is **no match requirement**, but any match shown will likely strengthen the application. OWRD could provide letters of support; please let Steve know if your organization or the LJDWG needs a letter of support.
- Lee reviewed the proposed Step 4 timeline and deadlines for comment and public distribution (December 10 internal draft to Anderson Perry for format support and editing. Out to the group the week of Christmas for internal work group review. January 8 all comments due from work group. Quick turnaround for possible January 15 agency and public distribution for 30 days.)
- Debbi- StoryGorge is a company that will provide training to Norie and Kristina to develop a 2 to 3 minute digital story on our work. Each of the PBP groups and OWRD have an opportunity to participate, so the training will culminate with a digital screening. The finished film could be used for outreach. Norie and Kristina will participate.

§ Follow up on Action items from October meeting

- WAB Prioritization: Shreejita is coordinating ranking criteria for Critical Issue 11 (Inadequate Diversion Data)- Brian, Ken, Shreejita, and ODFW weighing in. CI 9 (Data on groundwater aquifers)- Brian and Steve, CI 16 (Insufficient data on crops)-Shreejita will contact AgriMet/BOR. CI 20 (Rural domestic well data gaps)-Shreejita. CI 4 (Storage needs) Brian and Shreejita. Adding columns in spreadsheet based on feedback from the subcommittee. Ranking for storage would be very complicated and needs to be looked at on a case by case basis. Dave Moskowitz posed fish passage barrier question- do all of the streams have barriers? Are they ranked by importance of the barrier? Has ODFW shared fish presence on these streams? Steph confirmed-ODFW looked at each WAB, considered presence and reasonable fish numbers, they ranked accordingly. What was the amount of gain in the removal of the barrier. The subcommittee also discussed changing the ranking breakout from 4 classes to 5. The original scores are 1 to 5, but the ranking was 1 to 4, would better reflect the input.
- Other discussion- Herb- we are planning to work with Steph and ODFW to extend the knowledge of fish presence on Thirtymile and _____. Hopefully, this will happen in 2021. Craig- Will storage be built on streams with fish presence? Added expense. Shreejita responded that the group does not have enough information to rely on the OWRD WARS tool to suggest off-channel storage possibilities. It is very complicated and out of our scope.

- Instream storage is unlikely; off-channel is easier to permit.
- How does ODFW use professional judgment to address bias in a watershed like Bridge Creek? BC has a lot of data, Bologna Creek would not support the number of fish as in some other watersheds for example. Would be able to improve it-yes, but from what they have seen, it does not have the same potential. What are the criteria used for the professional opinion? Miles of potential habitat, riparian habitat, streamflow? yes, and water quality. Does land ownership matter? No. High public lands probably means more data. Butte Creek is a good example of a stream that does not look like a good fish stream, but there are data available that suggests otherwise. Need to realize there is likely some bias in ranking. Muddy Creek as an example, very private, multiple barriers, water use. Even using miles of habitat improved, Bologna will fall lower. Steelhead and redband distribution, survey data versus professional opinion, fish use, natural stream flow especially in summer, future stream temperature modeling were primary variable for ranking each WAB, also considered barriers, degraded riparian.
 - Dave would like to reserve a chance to touch on some of these issues in the next meeting.
 - Narrative of Step 4 report, describes critical issues, strategies and the top priority WABS. Section 5 added "Findings" Top 5 WABS in a spreadsheet where they have the most attention across the 20 Critical Issues.

Step 4 Group Discussion

- Review Crosswalk Table and Impact Analysis Spreadsheet-Debbi reviewed the Crosswalk table, which includes the approved Critical Issues and Strategies and six restoration categories. The Critical Issues and Strategies were approved by the group in September and October, but the group has not looked deeply at the categories. Debbi regrouped the Critical Issues and Strategies in a new spreadsheet called "Strategic Impact Analysis." This analysis is a way to look at which critical issues each strategy impacts. The information can be sorted to look at which strategies are listed for a critical issue without having to refer back to a separate critical issue. It was also used to help decide which strategies to use in the report for the critical issues with a high number of unique strategies like CI 19. As it stands, this was a simple rearrangement of the approved Critical Issue and Strategy list. Craig brought up several places where strategies should be reconsidered as having an impact on new Critical Issues. Debbi will convene a subcommittee with Herb, Craig, Jeffrey, Brian, and possibly Ryan to review both the Crosswalk Table and strategy impact table. That group can decide if the crosswalk table is still needed given the newer analysis.
- WAB prioritization table- Shreejita has a similar table to incorporate a ranking of all WABs for each Critical Issue - prioritizing with scores from 1 through 5 to identify top five. It was noted to be sure look out of the FIP geographies, OWEB Open Solicitation grants have a little less pressure. The group discussed prioritize more than five, especially in light of possible funding and restoration opportunities down the road. The five identified have had lots of work done already and are well known priorities. Consider ranking top 15 in three tiers.

4

Public Comment-

- Craig Lacy- There is a growing awareness of the importance of groundwater and aquifer recharge. Idaho, near Hazelton, 1.3 miles used irrigation canals to improve water flow to very porous areas. By using canals during high flow season, water is seeped into the water tables and

then returned to the stream later in the summer as cool water. There is an opportunity that we have not fully explored yet. Could fit a feasibility study grant from OWRD. Grant SWCD doing survey of upper basin for areas that would support groundwater recharge. Request they present to us in the future (February). Idaho effort resulted in 200,000 acre-feet of water in the aquifer, equivalent to Wickiup Reservoir. Has been successfully implemented in Oregon.

- Jeffrey requested a refresher of the group and this effort. Why are we doing this and how did we get here? Will send governance document out with meeting notes and agenda.
- Norie thanked Shreejita, Debbi, evaluation committee, Lee, and ODFW team. Thanks for how hard everyone is working to move forward.
- Brian asked if the June 30 deadline was a hard date. Steve responded at this point, the hard funding deadline is June 30, but we could wrap up loose ends, and present to OWRC past the end of June timeline.

§ Meeting # 47 03/16 /2021

- o Location: Conference Call “Go-To-Meeting”

- o Agenda

- § Administrative and Budget Update

Decisions

- o *The group reaffirmed the Crosswalk Table, including the Critical Issue ranking order.*
- o *The group agreed to pull Critical Issue 19 - Unmet Water Needs from the Critical Issue list and Step 4 narrative as long as it is captured that it is implied by the rest of the critical issues and strategies.*
- o *Add Excel spreadsheet of public comments to a Step 4 Appendix. Formally accounts for all comments received.*

Administrative and Budget Update

- Norie- Many Step 5 contracts are executed and in place. Please invoice this month if possible.
- Lee- Dana is helping put together Step 5 report as we finish up 4.
- Rita- her contacts appreciate that we are working on it. Believes we would have more participation when we start meeting face to face. Craig sent out to 30 to 40 folks in his circle that are interested in the John Day.
- Debbi- gave a high-level summary of the presentation to the OWRC. General support of HB 3105.
- Norie will send PowerPoint to the group. Steve noted the commission is supportive and appreciates hearing from the place-based planning groups.

Follow-up actions from the January meeting

- Outreach committee- Kristina gave an update on how we reached out to the public for comment on Step 4 Report. Felt successful in getting it out in the timeframe.
- Agency partners were provided opportunities to comment on both the workgroups internal and external processes. Formal OWRD agency review will be done when adopted by the group. Steve would be happy to go over what that process looks like at

the next meeting.

- DEQ-Roxie has little bandwidth at the moment. No comments from ODFW.
- Crosswalk table- finalized in the previous meeting. Some public comments on it. The table was created to list critical issues and strategies and categorize the strategies by restoration type or subject. Headings are not prioritized but an organization tool. Brian expressed concerns about how this helps with prioritization—introduced on page 5 of the draft report. Upland Management and Restoration (including irrigation). Categories do not represent prioritization, but the table does reflect the prioritization ranking of critical issues. Thumbs up on approving the Crosswalk table with “irrigation” addition to Upland Management.
- Strategy Impact Table- December version was first introduced to the group. The goal was to see how each strategy impacted each critical issue. The table was created to help prioritize strategies. Brian was concerned with prioritizing with this table; he did not think this table did that accurately. It does not necessarily take into account how a strategy addresses the highly ranked critical issue. Brian does not feel this is not a precise test to determine impact. Afraid lower “ranked” strategies would get forgotten. Need another way to prioritize.
- Do we keep this table? Change the way we prioritize? What do we want to do to prioritize? Use Critical Issue ranking, WAB ranking?

We need to consider the community, cultural support. Consider priorities of funders and practitioners as they will be doing a lot of the work. Lee suggested a new tool, maybe a survey to rank priorities.

NEXT STEPS-Shreejita and Lee to work on Survey Monkey tool to prioritize strategies. Brian will help. Send out before the April meeting. Present findings in April. Will design a survey, a strategy that addresses high-priority issues gets more weight than a strategy for a lower-ranked critical issue and see if there is a connection or similar results compared to the Strategy Impact table.

- Craig-frustrating exercise. It is a large table with lots of sections that you cannot see with all the others. It does not feel like he can contribute as fully as in-person meetings to talk out the issues—perspective on direct or indirect.

Step 4 Discussion

- Critical Issue 19. Unmet Water Demands - seems to capture the intent of the entire Step 4 report. Discussed moving to critical issue No. 1, or No. 20 and frame as an endnote summary – catch-all issue. Discussion with consensus that critical issue 19 is implied, and to pull it as a critical issue, but ensure the text captures unmet water demands is driving the place based water planning work.
- Agreed to leave Recommended Strategy 4.2 and the use of footnotes shown below.
Recommended Strategy 4.2: Develop off-channel storage projects as suggested by the feasibility study. (p. 27/127)
 - Term definition for *off-channel water storage* and intent (see pg. 26/127) “Oregon has moved away from locating dams on significant stream and river channels, in large part

because of effects on fish and aquatic life that must migrate through these streams.” (OWRD, 2017).

- See Section 2., Executive Summary (p. 5/127): Complete a feasibility study to assess potential off-channel water storage projects
- Agreed to leave Recommended Strategy 3.3: 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). (p 25/127)

Public Comments Received

- Review Excel spreadsheet summary of Public Comments.
 - Mike Ogle- comments already addressed in the report or will be considered in future steps
 - Nicole Lexson- accepted all recommendations.
 - Conservation Angler (Craig/Dave)- Discussion with agreement to capture the recommendations so they can be referenced as future opportunities might arise, show in a new appendix. CA raised concern about storage on streams with anadromous fish. Concerned DEQ not part of the WAB site selection process. Off-channel storage is designed correctly; it should not adversely impact aquatic animals. And if it were closely monitored, water stored in the winter could be released in the summer to increase flows and reduce temperatures. Can we engage DEQ during potential future feasibility studies for off-channel storage? DEQ and other agencies be a part of the feasibility evaluation process.
 - Further discussion on WAB prioritization: All the WABs important. Understand the need to prioritize, but need to be careful when describing that we have a caveat. WAB prioritization is important as we cannot do everything everywhere. Spend time reviewing WAB priority language as a group to see how we frame it with the “hedging” language. Need to be able to focus on work to be able to see the difference after several years. Could address by Phases?
 - Brian Posewitz/WaterWatch public comment – few points addressed that we need to stick with information found in Step 2 or 3. If new literature was providing greater clarity, it should be okay to include. Reservation. Repeating strategies for each critical issue? It makes the document longer but would be easier to track for a layman reader. Make consistent throughout.

Next draft with original and actual change. Individual comments can be tracked separately.

Public Comment: Steve-thanks to everyone for their work on this process and through difficult times. We are getting closer to a product that everyone likes.

§ Meeting # 48 04/20 /2021

- Location: Conference Call “Go-To-Meeting”
- Agenda

§ Administrative and Budget Update

Decisions

- Rework Crosswalk Table and vote/approve via email

- Rework Strategy ranking exercise based on finalized and approved Crosswalk table.

Administrative and Budget Update

- Norie- Our budget is stable. Some partners have submitted invoices and all partners have returned contracts for Step 5. Please submit invoices.
- Lee- We have 71 days until the end of the OWRD Place Based Planning project period end. Ideally, we would have draft Step 5 out in June, then aim for the November OWRC Agenda to present our full report.
- Herb- Gilliam SWCD Board voted to approve a request to Gilliam County Court to declare a drought. Earliest in the season the request has been made. Gilliam is in D2 (Severe) drought. Received less than 1.5 inches of rain at the office this year, and are 28 percent of normal and forecast does not look favorable. Sherman County is in D2, Wheeler half D1 and half D2. Klamath in D4 dire situation. Debbi- Wheeler County Court has drought declaration on their agenda for tomorrow.
- Lee- Damon Brosnan's (NRCS) last day is this Friday. He has been selected as [Team Leader for the agency's Deschutes and High Desert basins](#).

Follow up actions from March meeting

- Ranking Subcommittee- Lee, Norie, Shreejita, and Brian looked at a variety of methods (Survey Monkey, Lucid Chart, and Jam Board) to rank the list of strategy across subjects from the Crosswalk Table. In the end the group agreed to use an Excel spreadsheet.
- The March meeting attachments and approval from the Crosswalk Table was based on second to last version. We used this version on the strategy exercise. The Work Group decided to finalize and revote on Crosswalk Table and redo the strategy ranking exercise.

Step 4 Review Strategy Ranking Excel Spreadsheet Results

- Norie shared the Crosswalk Table spreadsheet with yellow and red boxes that indicate the differences between the two versions. (Yellow are missing from the ranking exercise and red are strategies that should not have been in the ranking exercise.)
- Norie shared the results of the ranking exercise as it stands now. (Older version, 13 responses) Each category shown separately and each strategy given a numerical score based on the ranking. Lowest score = highest priority.
- The group expressed concerns on the missing strategies that could make a significant difference in the strategy ranking results.
- The group also acknowledge the time constraints and pressures the Work Group is under to finish our report by OWRD's June deadline.
- Brian suggested deleting strategies that should not have been in the exercise, and members looking at the omitted strategies to see where they should have been included. Could transfer ranking from other categories.
- Would need to approval by the full group of the new version
- Options- 1) go with this table, but pull out red strategies, 2) send out new table, approve, redo strategy ranking with updated table, 3) go as is.
- Steve suggests trusting the subcommittee recommendation and redoing the ranking exercise.

- Funding column meant to show strategies that need higher level state/legislative funding. Older version has some but not all that could benefit from higher level work.
- Lee suggests reranking on Riparian and Upland and Funding categories. Norie feels that the removal categories need reranking, as well.
- Final plan on ranking process: Debbi will update the funding column and send to subcommittee for input. This April updated version will be sent to Norie by April 26. Lee and Shreejita will support Norie in her work on the ranking exercise and get it distributed to the group.
- Norie needs to step back for the SWCD budget process and can put in more time after their next board meeting.

Step 2-4 Findings/Step 5 Report- PowerPoint will be sent to the group

- Shreejita presented a process summary and high level findings on Steps 2 through 4 including slides on the core principles of place-based planning and the five-step process.
- Step 2 characterized water resources, water quality and ecological issues, and the purpose of the report. Slides summarized the data collection and analysis. There are 33 water availability basins (WABs). Slides also showed the water budget, where basin water comes from, and where it goes. Slides also summarized findings on later summer streamflow, water quality, and TMDLs, conclusions and data gaps.
- Step 3 portion of the PowerPoint reviewed instream and out of stream current and future needs and demands. Instream needs include aquatic life and recreation, focal species fish needs, recreational flows, agricultural needs and demands (irrigation water demand), municipal, domestic and industrial needs and demands, demand compared to natural streamflow, climate change, future stream projections, key findings and data gaps.
- Step 4 portion of the PowerPoint reviewed the critical issues and strategies developed from the Step 2 and Step 3 findings. Slides included an explanation of ranking critical issues and strategies as well as subcommittee evaluation and discussion. Also explained process for water availability basin prioritization and ranking, voting on report after incorporating comments. Summary of the 20 critical issues, problem statement and goal, recommended strategies for each critical issue, simplified/summarized a giant spreadsheet, Crosswalk Table, where to focus in the planning area. Off channel storage discussion, feasibility, ESA concerns. Summary of WAB ranking 15 out of 33 for prioritization.

Public Comment: Jeffrey Kee referred back to presentation and conversation with members of the [Yakima Basin Integrated Plan Workgroup \(see link\)](#). Main things that struck him was how long it took to work through. Value of the crops. How difficult it was to get local representatives on board. Jeffrey noted how important it was to keep elected officials up to date and asked how we were doing that outreach.

Lee- More outreach work to be done with Step 5 and we will work to keep local and state level officials updated on our progress.

Lee acknowledged Damon's time and work with the group. It has been much appreciated and wished him luck in his new capacity at NRCS.

§ Meeting # 49 05/18/2021

- o Location: Conference Call “Go-To-Meeting”
- o Agenda
 - § Administrative and Budget Update

Administrative and Budget Update

- Norie- Hard deadline to spend funds of June 30. Will have some additional funds available. Please reach out to Norie if you could use some extra funding to work through June 30.
- Lee- Timeline check: Thanks for returning strategy ranking exercise. Now working to finalize step 4, working with Anderson Perry to work through formatting. Look for updated Step 4 by June 2nd. Put to group on June 15th for vote to approve. Ambitious goal to have a draft of Step 5 for internal review.
- June meeting will be hybrid in person and remote for those who cannot attend.
- Meeting schedule- monthly until Step 5 is complete. Maybe until September. Reevaluate after Step 5 is approved. Suggest to schedule on a monthly basis and can shorten meetings or cancel if the agenda is not full.

Follow up actions from April meeting

- Crosswalk Table was finalized and approved via email vote.
- Strategy ranking exercise was completed. Norie has the summary.

Step 4 Review Strategy Ranking Excel Spreadsheet Results

- Norie presented the results and summary table. Will be sent to the group after the meeting and data will be used to update Step 4 summary and included as an appendix. Will help inform strategic action plan to prioritize strategies over the next several years.

Step 5 Implementation Strategy Results & Findings

- Norie- Template for tiered approach to prioritize who, where, when, what, and why. Using previous group exercises, tiered by priority WABs then top critical issues then strategies and broken out by category (riparian, upland, etc.) and laid out on a timeline. Should form action plan subcommittee
- Herb gave a high-level overview of the John Day Basin Partnership’s Strategic Action Plan. In its current form, it is highly geared toward native fish and aquatic habitat in response to OWEB’s FIP program.
- Herb will share with Norie’s subcommittee. Restoration opportunities georeferenced throughout basin. We might use that information to set goals and timelines.
- Mainstem versus tributary focus. Where is the higher level of impact? Streamflow impact on the mainstem.

Presentation: Don Butcher, Oregon DEQ-John Day River TMDL

LJDWG had questions for Don: Clean Water Act implementation delegated to Oregon DEQ by EPA. EPA reviews for approval: WQ standards, WQ impairments (303d listings and integrated report), TMDL, 319 grant program. Trickle down impacts: if standards change, does the

impairment change? Standards review every three years. Review pollutants where standards are lacking entirely or where new information emerges. 2021 is a triennial review year. Looking to update temp, DO, bacteria, and aluminum, possibly others. Integrated Report- assess Oregon WQ every two years, overall condition and water quality impaired. Submitted to EPA in even numbered years. Foundation for other WQ regulatory programs. Stream segments-pre 2012 vs. now. New in John Day-Methyl mercury, sedimentation, iron. Schedule for revision and update for new listings and addressing revised temperature standard as early as 2027. Existing TMDL for JD, basin wide-temperature, bacteria. Dwindling grant funds. Updated PowerPoint will be sent to the group.

Public Comment: Craig Lacy- Off-channel storage facility location- DEQ review on soils, impacts, etc. Don-Would be a request of this group to DEQ. Generally not something they do. OWRD more geared toward to that. Interesting question, some improve water temperature, some increase temperature usually help with bacteria.

APPENDIX D

Water Availability Basin Prioritization

Critical Issues		
Critical Issue No.	Critical Issue Description	Bridge Creek (above West Branch)
1	Poor riparian habitat	1
2	Elevated summer stream temperatures/ low instream oxygen	1
3	Insufficient instream flow	1
4	Storage needs	2
5	Degraded native plant communities	1
6	Insufficient irrigation infrastructure	2
7	Inadequate gauge data	1
8	Outdated and insufficient municipal water and wastewater infrastructure	2
9	Lack of data on condition of groundwater aquifers and interactions between groundwater and surface water	3
10	Fish passage barriers	1
11	Inadequate diversion data	1
12	Poor soil health in many of the WABs	3
13	Simplified stream morphology	1
14	Adequate surface water for wildlife	1
15	Risk of intense or catastrophic wildfire that impacts water quality and quantity	3
16	Insufficient data on crops, climate, and datasets to support analyses	3
17	Degraded forest health	3
18	Erosion and sediment transport/control	2
19	Rural and domestic well data gaps	3

Tier 1 WAB's				Tier 2 WAB's		
Bridge Creek (mouth)	Butte Creek	West Branch Bridge Creek	Thirtymile Creek	Bear Creek	Rock Creek (above Wallace Canyon)	Rock Creek (mouth)
1	2	1	2	1	3	3
1	1	1	1	1	3	2
1	2	1	2	2	2	1
5	4	1	1	5	5	3
2	1	1	1	1	1	1
2	2	1	3	4	5	1
1	1	1	1	1	2	1
NR	1	NR	2	NR	NR	NR
4	2	4	2	5	1	1
1	1	1	3	1	2	2
3	2	1	2	1	3	2
4	2	3	1	3	1	1
1	1	1	1	1	2	2
2	1	1	1	1	1	1
3	1	1	1	3	2	1
1	2	1	4	3	3	3
1	NR	NR	NR	2	NR	NR
2	1	2	1	2	5	5
4	2	3	3	5	1	4

		Tier 3 WAB's				
Grass Valley Canyon	Alder Creek	Parrish Creek	Pine Hollow	Pine Creek	Kahler Creek	Service Creek
3	4	3	4	2	4	4
3	3	3	3	3	3	3
4	4	2	2	2	2	4
4	5	2	2	5	5	3
3	2	2	2	2	2	1
4	1	5	5	4	1	5
2	2	2	2	1	2	2
1	NR	NR	NR	NR	3	NR
1	4	5	4	5	4	5
3	1	2	4	4	3	4
3	2	4	4	5	2	4
1	3	2	3	4	2	3
2	2	2	4	2	2	3
3	2	2	2	2	2	2
2	2	4	2	2	2	2
5	4	1	5	5	5	2
NR	3	2	NR	NR	2	NR
3	3	3	5	4	3	4
1	3	4	5	3	2	4

WABS (WAB prioritization 1 (highest) to 5 (lowest); other scales converted to this scale as noted; 0 = not rated.)	(highest), 2 (middle) or 3 (lowest). We left 2 as 2 (medium high) and converted 3 (lowest) to 5 (medium low).	CTWS John Day Basin Report	Mid-C Conservation and Recovery Plan	(STRATEGY RANKS: 1=Low 2=Moderate 3=High 4=Very High (see p. 249, http://www.wheelerswc.org/sites/default/files/	ONDA Rank	Craig Lacy	GSWCD (1=highest; 5=lowest)	Average Score	calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.	Rank	Final Rank
									calculated by classes		
Alder Creek	5.00	3.00	2.00	3.00	5.00	2.00	3.00	3.29	3.00	4.00	4.00
Bear Creek	2.00	1.00	1.00	3.00	5.00	0.00	1.00	2.17	2.00	1.00	1.00
Bologna Canyon	5.00	3.00	2.00	3.00	0.00	0.00	3.00	3.20	3.00	4.00	4.00
Bridge Creek (above West Branch)	2.00	1.00	1.00	3.00	1.00	0.00	2.00	1.67	1.00	1.00	1.00
Bridge Creek (mouth)	2.00	1.00	1.00	3.00	3.00	1.00	1.00	1.71	1.00	1.00	1.00
Butte Creek	5.00	2.00	1.00	3.00	3.00	1.00	1.00	2.29	2.00	2.00	2.00
Cherry Creek	5.00	3.00	3.00	3.00	1.00	0.00	1.00	2.67	2.00	2.00	2.00
Esau Canyon	5.00	3.00	2.00	3.00	5.00	0.00	5.00	3.83	3.00	5.00	5.00
Ferry Canyon	2.00	4.00	2.00	3.00	3.00	1.00	2.00	2.43	2.00	2.00	2.00
Girds Creek	2.00	4.00	4.00	1.00	5.00	0.00	3.00	3.17	3.00	3.00	3.00
Grass Valley Canyon	5.00	5.00	5.00	1.00	1.00	1.00	2.00	2.86	2.00	3.00	3.00
Hay Creek	5.00	3.00	4.00	3.00	1.00	0.00	2.00	3.00	3.00	3.00	3.00
Haystack Creek	5.00	3.00	2.00	3.00	0.00	0.00	4.00	3.40	3.00	4.00	4.00
Heidtman Canyon	5.00	4.00	3.00	1.00	0.00	0.00	5.00	3.60	3.00	4.00	4.00
Horseshoe Creek	5.00	4.00	3.00	3.00	1.00	0.00	4.00	3.33	3.00	4.00	4.00
Jackknife Canyon	5.00	4.00	4.00	3.00	5.00	0.00	5.00	4.33	4.00	5.00	5.00
John Day Mainstem - Heidtmann Canyon to N. Fork	5.00	3.00	3.00	3.00	0.00	0.00	3.00	3.40	3.00	4.00	4.00
John Day Mainstem - Mouth to Heidtmann Canyon	5.00	5.00	4.00	3.00	0.00	0.00	3.00	4.00	4.00	5.00	5.00
Kahler Creek	5.00	3.00	2.00	3.00	3.00	0.00	4.00	3.33	3.00	4.00	4.00
Muddy Creek	5.00	3.00	3.00	3.00	1.00	0.00	4.00	3.17	3.00	3.00	3.00
Parrish Creek	5.00	3.00	2.00	3.00	1.00	0.00	3.00	2.83	2.00	3.00	3.00
Pine Creek	5.00	3.00	3.00	3.00	1.00	1.00	2.00	2.57	2.00	2.00	2.00
Pine Hollow	5.00	5.00	2.00	1.00	5.00	0.00	2.00	3.33	3.00	4.00	4.00
Rhodes Canyon	5.00	3.00	2.00	3.00	3.00	2.00	5.00	3.29	3.00	4.00	4.00
Rock Creek (above Wallace Canyon)	2.00	4.00	2.00	3.00	5.00	2.00	2.00	2.86	2.00	3.00	3.00
Rock Creek (mouth)	5.00	4.00	3.00	3.00	1.00	0.00	1.00	2.83	2.00	3.00	3.00
Rowe Creek	5.00	4.00	4.00	1.00	3.00	0.00	4.00	3.50	3.00	4.00	4.00
Scott Canyon	5.00	3.00	4.00	3.00	5.00	0.00	5.00	4.17	4.00	5.00	5.00
Service Creek	5.00	4.00	3.00	1.00	5.00	2.00	4.00	3.43	3.00	4.00	4.00
Shoofly Creek	5.00	4.00	4.00	1.00	1.00	0.00	4.00	3.17	3.00	3.00	3.00
Sorefoot Creek	5.00	5.00	2.00	1.00	3.00	0.00	5.00	3.50	3.00	4.00	4.00
Thirtymile Creek	5.00	2.00	1.00	3.00	3.00	1.00	1.00	2.29	2.00	2.00	2.00
West Branch Bridge Creek	2.00	1.00	1.00	3.00	3.00	0.00	2.00	2.00	2.00	1.00	1.00

WAB (WAB prioritization 1 (highest) to 5 (lowest); other scales converted to this scale as noted; 0 = not rated.	ODFW (able 2-12 in Step 2 Report. Top 5=1, next 5=2, etc. (25 and below = 5)	Atlas (Atlas scale ranks 1 (highest), 2 (middle) or 3 (lowest). We left 2 as 2 (medium high) and converted 3 (lowest) to 5 (medium low).)	Mid-C Implementation
Alder Creek	2.00	5.00	2.00
Bear Creek	3.00	2.00	1.00
Bologna Canyon	5.00	5.00	2.00
Bridge Creek (above West Branch)	1.00	2.00	1.00
Bridge Creek (mouth)	1.00	2.00	1.00
Butte Creek	1.00	5.00	1.00
Cherry Creek	3.00	5.00	3.00
Esau Canyon	5.00	5.00	0.00
Ferry Canyon	4.00	5.00	4.00
Girds Creek	5.00	2.00	4.00
Grass Valley Canyon	3.00	5.00	5.00
Hay Creek	2.00	5.00	4.00
Haystack Creek	5.00	5.00	0.00
Heidtmann Canyon	6.00	5.00	0.00
Horseshoe Creek	5.00	5.00	2.00
Jackknife Canyon	5.00	5.00	4.00
John Day Mainstem - Heidtmann Canyon to N. Fork	5.00	5.00	2.00
John Day Mainstem - Mouth to Heidtmann Canyon	5.00	5.00	4.00
Kahler Creek	2.00	5.00	2.00
Muddy Creek	4.00	5.00	3.00
Parrish Creek	3.00	5.00	2.00
Pine Creek	2.00	5.00	3.00
Pine Hollow	4.00	5.00	2.00
Rhodes Canyon	5.00	5.00	0.00
Rock Creek (above Wallace Canyon)	1.00	2.00	2.00
Rock Creek (mouth)	1.00	5.00	3.00
Rowe Creek	4.00	5.00	4.00
Scott Canyon	5.00	5.00	4.00
Service Creek	4.00	5.00	4.00
Shoofly Creek	5.00	5.00	4.00
Sorefoot Creek	5.00	5.00	3.00
Thirtymile Creek	2.00	5.00	1.00
West Branch Bridge Creek	3.00	2.00	1.00

(STRATEGY RANKS: 1=Low
2=Moderate 3=High 4=Very High
(see p. 249,

<http://www.wheelerswcd.org/sites/default/files/PlanRevised.pdf>
f). We reversed such that 4=1

Craig Lacy		GSWCD (1=highest; 5=lowest)	OWRD (1=high;3=medium; 5=lowest)	Average Score	calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.)	Rank calculated by classes	Final Rank
1.00	2.00	3.00	5.00	2.57	2.00	4.00	4.00
1.00	0.00	1.00	5.00	1.67	1.00	2.00	2.00
1.00	0.00	3.00	5.00	2.67	2.00	4.00	4.00
1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
1.00	1.00	1.00	3.00	1.29	1.00	1.00	1.00
1.00	1.00	1.00	5.00	2.00	2.00	2.00	2.00
1.00	0.00	1.00	5.00	2.50	2.00	2.00	2.00
2.00	0.00	5.00	5.00	3.40	3.00	4.00	4.00
2.00	2.00	2.00	5.00	2.86	2.00	2.00	2.00
2.00	0.00	3.00	5.00	2.67	2.00	2.00	2.00
3.00	1.00	2.00	5.00	3.00	3.00	4.00	4.00
2.00	0.00	2.00	5.00	3.00	3.00	4.00	4.00
1.00	0.00	4.00	5.00	3.00	3.00	4.00	4.00
2.00	0.00	5.00	5.00	3.40	3.00	4.00	4.00
1.00	0.00	4.00	5.00	2.83	2.00	2.00	2.00
2.00	0.00	5.00	5.00	3.50	3.00	4.00	4.00
1.00	0.00	3.00	5.00	2.67	2.00	2.00	2.00
2.00	0.00	3.00	5.00	3.17	3.00	4.00	4.00
1.00	0.00	2.00	5.00	2.50	2.00	2.00	2.00
1.00	0.00	4.00	5.00	3.00	3.00	4.00	4.00
1.00	0.00	3.00	5.00	2.67	2.00	2.00	2.00
1.00	1.00	2.00	3.00	2.14	2.00	2.00	2.00
1.00	0.00	2.00	5.00	2.50	2.00	2.00	2.00
1.00	0.00	5.00	5.00	2.67	2.00	2.00	2.00
2.00	2.00	2.00	5.00	2.14	2.00	2.00	2.00
1.00	2.00	1.00	1.00	1.86	1.00	1.00	1.00
2.00	0.00	3.00	5.00	3.17	3.00	4.00	4.00
2.00	0.00	5.00	5.00	3.50	3.00	4.00	4.00
2.00	2.00	3.00	5.00	3.00	3.00	4.00	4.00
2.00	0.00	4.00	5.00	3.33	3.00	4.00	4.00
2.00	0.00	5.00	5.00	3.33	3.00	4.00	4.00
1.00	1.00	1.00	5.00	2.00	2.00	2.00	2.00
1.00	0.00	2.00	5.00	1.83	1.00	1.00	1.00

WAB	ODFW	CTWS	GSWCD (1=highest; 5=lowest)	Average Score
Alder Creek	2.00	4.00	3.00	3.00
Bear Creek	1.00	1.00	1.00	1.00
Bologna Canyon	4.00	3.00	3.00	3.33
Bridge Creek (above West Branch)	1.00	1.00	1.00	1.00
Bridge Creek (mouth)	1.00	1.00	1.00	1.00
Butte Creek	1.00	3.00	1.00	1.67
Cherry Creek	3.00	3.00	1.00	2.33
Esau Canyon	5.00	4.00	5.00	4.67
Ferry Canyon	3.00	4.00	2.00	3.00
Girds Creek	5.00	3.00	3.00	3.67
Grass Valley Canyon	2.00	4.00	2.00	2.67
Hay Creek	2.00	3.00	2.00	2.33
Haystack Creek	5.00	4.00	4.00	4.33
Heidtmann Canyon	5.00	5.00	5.00	5.00
Horseshoe Creek	3.00	4.00	4.00	3.67
Jackknife Canyon	4.00	4.00	5.00	4.33
John Day Mainstem - Heidtmann Canyon to N. Fork	1.00	5.00	3.00	3.00
John Day Mainstem - Mouth to Heidtmann Canyon	1.00	4.00	3.00	2.67
Kahler Creek	2.00	4.00	3.00	3.00
Muddy Creek	4.00	3.00	4.00	3.67
Parrish Creek	3.00	4.00	3.00	3.33
Pine Creek	2.00	4.00	2.00	2.67
Pine Hollow	3.00	5.00	2.00	3.33
Rhodes Canyon	5.00	3.00	5.00	4.33
Rock Creek (above Wallace Canyon)	2.00	4.00	2.00	2.67

Rock Creek (mouth)	2.00	3.00	1.00	2.00
Rowe Creek	3.00	4.00	3.00	3.33
Scott Canyon	4.00	4.00	5.00	4.33
Service Creek	3.00	4.00	3.00	3.33
Shoofly Creek	4.00	5.00	4.00	4.33
Sorefoot Creek	5.00	4.00	5.00	4.67
Thirtymile Creek	1.00	2.00	1.00	1.33
West Branch Bridge Creek	1.00	1.00	2.00	1.33

Notes	calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2,	Rank calculated by classes	Final Rank
	3.00	3.00	3.00
Temp, Cat 2, Upper Bear Cr Temp Cat	1.00	1.00	1.00
Bacteria, Cat 5	3.00	3.00	3.00
	1.00	1.00	1.00
	1.00	1.00	1.00
Sediment, Cat 5	1.00	1.00	1.00
	2.00	2.00	2.00
	4.00	5.00	5.00
	3.00	3.00	3.00
	3.00	4.00	4.00
	2.00	3.00	3.00
	2.00	2.00	2.00
	4.00	5.00	5.00
	5.00	5.00	5.00
Sediment, Cat 5	3.00	4.00	4.00
	4.00	5.00	5.00
	3.00	3.00	3.00
	2.00	3.00	3.00
DO, Cat 5	3.00	3.00	3.00
	3.00	4.00	4.00
	3.00	3.00	3.00
	2.00	3.00	3.00
	3.00	3.00	3.00
	4.00	5.00	5.00
Sediment, Cat 5	2.00	3.00	3.00

Impaired Pollutants=1	2.00	2.00	2.00
Sediment, Cat 5	3.00	3.00	3.00
	4.00	5.00	5.00
	3.00	3.00	3.00
	4.00	5.00	5.00
Temp, Cat 5	4.00	5.00	5.00
	1.00	1.00	1.00
	1.00	1.00	1.00

WAB	Rank	Watermaster Comments	Rank	Average Score	Net Water Available (Step 2 and 3 Report)
Alder Creek	5.00		5.00	5.00	-4471.29
Bear Creek	5.00		5.00	5.00	-6991.14
Bologna Canyon	4.00		3.00	3.50	242.37
Bridge Creek (above West Branch)	1.00		5.00	3.00	-7452.08
Bridge Creek (mouth)	5.00		5.00	5.00	-23453.91
Butte Creek	3.00		5.00	4.00	-1127.26
Cherry Creek	3.00	upland storage	5.00	4.00	-296.82
Esau Canyon	5.00		4.00	4.50	79.37
Ferry Canyon	5.00		3.00	4.00	260.26
Girds Creek	4.00		4.00	4.00	182.29
Grass Valley Canyon	4.00		4.00	4.00	203.72
Hay Creek	3.00		5.00	4.00	-1182.1
Haystack Creek	5.00		5.00	5.00	-423.65
Heidtmann Canyon	5.00		3.00	4.00	140.28
Horseshoe Creek	5.00		2.00	3.50	510.63
Jackknife Canyon	5.00		3.00	4.00	188.11
John Day Mainstem - Heidtmann Canyon to N. Fork	5.00		5.00	5.00	NA
John Day Mainstem - Mouth to Heidtmann Canyon	5.00		5.00	5.00	NA
Kahler Creek	5.00		5.00	5.00	-4159.17
Muddy Creek	5.00		5.00	5.00	-1948.27
Parrish Creek	5.00		1.00	3.00	1166.27
Pine Creek	5.00		5.00	5.00	-111.23
Pine Hollow	3.00		1.00	2.00	3021.67
Rhodes Canyon	5.00		5.00	5.00	-8.39
Rock Creek (above Wallace Canyon)	5.00		5.00	5.00	-6855.43
Rock Creek (mouth)	2.00	small individual reservoirs from reservation	5.00	3.50	-2523.34
Rowe Creek	5.00		5.00	5.00	-1215.11
Scott Canyon	5.00		4.00	4.50	139.86
Service Creek	5.00		2.00	3.50	500.53
Shoofly Creek	4.00		2.00	3.00	380.08
Sorefoot Creek	2.00		2.00	2.00	258.17
Thirtymile Creek	3.00		1.00	2.00	845.1
West Branch Bridge Creek	4.00		1.00	2.50	2066.27

Rank (Rank calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.)	Rank calculated by classes	Final Rank	Other comments
5.00	5.00	5.00	
5.00	5.00	5.00	
3.00	3.00	3.00	
3.00	2.00	2.00	
5.00	5.00	5.00	
4.00	4.00	4.00	
4.00	4.00	4.00	
4.00	5.00	5.00	
4.00	4.00	4.00	
4.00	4.00	4.00	
4.00	4.00	4.00	
4.00	4.00	4.00	
4.00	4.00	4.00	
5.00	5.00	5.00	
4.00	4.00	4.00	
3.00	3.00	3.00	
4.00	4.00	4.00	
5.00	5.00	5.00	Approved reservation (4,180 AF, 1/30/87, Parrish Cr to Cherry Cr).
5.00	5.00	5.00	Approved reservation (4,180 AF, 1/30/87, Parrish Cr to Cherry Cr).
5.00	5.00	5.00	
5.00	5.00	5.00	
3.00	2.00	2.00	
5.00	5.00	5.00	
2.00	1.00	1.00	
5.00	5.00	5.00	
5.00	5.00	5.00	
3.00	3.00	3.00	Approved reservation (5,700 AF, 1/30/87).
5.00	5.00	5.00	
4.00	5.00	5.00	
3.00	3.00	3.00	
3.00	2.00	2.00	
2.00	1.00	1.00	
2.00	1.00	1.00	
2.00	1.00	1.00	

WAB	Rank (NRCS)	Rank (ODFW)	Average Score	Rank (Rank calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.)	Rank calculated by classes	Final Rank
Alder Creek	0.00	2.00	2.00	2.00	2.00	2.00
Bear Creek	0.00	1.00	1.00	1.00	1.00	1.00
Bologna Canyon	4.00	4.00	4.00	4.00	4.00	4.00
Bridge Creek (above West Branch)	0.00	1.00	1.00	1.00	1.00	1.00
Bridge Creek (mouth)	0.00	2.00	2.00	2.00	2.00	2.00
Butte Creek	0.00	1.00	1.00	1.00	1.00	1.00
Cherry Creek	0.00	3.00	3.00	3.00	4.00	4.00
Esau Canyon	0.00	5.00	5.00	5.00	5.00	5.00
Ferry Canyon	0.00	2.00	2.00	2.00	2.00	2.00
Girds Creek	0.00	5.00	5.00	5.00	5.00	5.00
Grass Valley Canyon	0.00	3.00	3.00	3.00	3.00	3.00
Hay Creek	0.00	3.00	3.00	3.00	3.00	3.00
Haystack Creek	0.00	5.00	5.00	5.00	5.00	5.00
Heidtmann Canyon	0.00	5.00	5.00	5.00	5.00	5.00
Horseshoe Creek	0.00	5.00	5.00	5.00	5.00	5.00
Jackknife Canyon	0.00	3.00	3.00	3.00	3.00	3.00
John Day Mainstem - Heidtmann Canyon to N. Fork	2.00	4.00	3.00	3.00	3.00	3.00
John Day Mainstem - Mouth to Heidtmann Canyon	2.00	4.00	3.00	3.00	3.00	3.00
Kahler Creek	0.00	2.00	2.00	2.00	2.00	2.00
Muddy Creek	0.00	4.00	4.00	4.00	4.00	4.00
Parrish Creek	3.00	2.00	2.50	2.00	2.00	2.00
Pine Creek	0.00	2.00	2.00	2.00	2.00	2.00
Pine Hollow	0.00	2.00	2.00	2.00	2.00	2.00
Rhodes Canyon	0.00	5.00	5.00	5.00	5.00	5.00
Rock Creek (above Wallace Canyon)	0.00	1.00	1.00	1.00	1.00	1.00
Rock Creek (mouth)	0.00	1.00	1.00	1.00	1.00	1.00
Rowe Creek	5.00	3.00	4.00	4.00	4.00	4.00
Scott Canyon	0.00	4.00	4.00	4.00	4.00	4.00
Service Creek	1.00	2.00	1.50	1.00	1.00	1.00
Shoofly Creek	0.00	4.00	4.00	4.00	4.00	4.00
Sorefoot Creek	0.00	5.00	5.00	5.00	5.00	5.00
Thirtymile Creek	0.00	1.00	1.00	1.00	1.00	1.00
West Branch Bridge Creek	0.00	1.00	1.00	1.00	1.00	1.00

WAB	Final Rank	Work Done	Irrigation Systems
Alder Creek	1.00	none	Flood
Bear Creek	4.00	open ditch to pipe, wheel line, most work completed or in process	wheel line
Bologna Canyon	5.00	none	none
Bridge Creek (above West Branch)	2.00	Ditch to pipe, flood to sprinkler or pivot, some ditch flood to riser flood	all
Bridge Creek (mouth)	2.00	ditch to pipe, flood to sprinkler	open ditch, flood and piped to wheel lines or pivot
Butte Creek	2.00	diversion, some pipeline	flood, sprinkler
Cherry Creek	4.00	none	none
Esau Canyon	5.00	none	none
Ferry Canyon	5.00	No work done	none
Girds Creek	5.00	open ditch to pipe, riser flood	flood, sprinkler
Grass Valley Canyon	4.00	none	Wells, Sprinkler
Hay Creek	5.00	No Irrigation work	Condon Municipal main water system
Haystack Creek	3.00	none	Flood
Heidtmann Canyon	5.00	none	none
Horseshoe Creek	4.00	none	none
Jackknife Canyon	5.00	none	none
John Day Mainstem - Heidtmann Canyon to N. Fork	1.00	Unknown	
John Day Mainstem - Mouth to Heidtmann Canyon	1.00	Unknown	
Kahler Creek	1.00	none	Flood
Muddy Creek	3.00	none	none
Parrish Creek	5.00	none	open ditch, flood
Pine Creek	4.00	unknown	open ditch, flood
Pine Hollow	5.00	none	none
Rhodes Canyon	5.00	none	none
Rock Creek (above Wallace Canyon)	5.00	none	none
Rock Creek (mouth)	1.00	Diversion removed, open ditch to close pipe, pump replacements with	Flood, Sprinkler, Open ditch to close pipeline,
Rowe Creek	3.00	none	flood, sprinkler
Scott Canyon	5.00	none	none
Service Creek	5.00	open ditch to pipe	sprinkler
Shoofly Creek	3.00	none	none
Sorefoot Creek	5.00	none	none
Thirtymile Creek	3.00	none	flood (1 landowner)
West Branch Bridge Creek	1.00	open ditch to pipe and handline	open ditch and flooding, gated pipe, handline, wheelline

WAB	Rank (SB based on spatial data)	Rank (ODFW)	Average Score	Final Rank	Notes
Alder Creek	NR	2.00	2.00	2.00	
Bear Creek	1.00	1.00	1.00	1.00	
Bologna Canyon	NR	2.00	2.00	2.00	
Bridge Creek (above West Branch)	1.00	1.00	1.00	1.00	
Bridge Creek (mouth)	1.00	1.00	1.00	1.00	Has gage
Butte Creek	1.00	1.00	1.00	1.00	Has gage
Cherry Creek	NR	2.00	2.00	2.00	
Esau Canyon	NR	5.00	5.00	5.00	
Ferry Canyon	NR	2.00	2.00	2.00	
Girds Creek	NR	5.00	5.00	5.00	
Grass Valley Canyon	NR	2.00	2.00	2.00	
Hay Creek	NR	2.00	2.00	2.00	
Haystack Creek	NR	5.00	5.00	5.00	
Heidtmann Canyon	NR	5.00	5.00	5.00	
Horseshoe Creek	NR	2.00	2.00	2.00	
Jackknife Canyon	NR	5.00	5.00	5.00	
John Day Mainstem - Heidtmann Canyon to N. Fork	1.00	1.00	1.00	1.00	Has gage
John Day Mainstem - Mouth to Heidtmann Canyon	1.00	1.00	1.00	1.00	Has gage
Kahler Creek	NR	2.00	2.00	2.00	
Muddy Creek	NR	2.00	2.00	2.00	
Parrish Creek	NR	2.00	2.00	2.00	
Pine Creek	1.00	1.00	1.00	1.00	Has gage
Pine Hollow	NR	2.00	2.00	2.00	
Rhodes Canyon	NR	5.00	5.00	5.00	
Rock Creek (above Wallace Canyon)	2.00	2.00	2.00	2.00	
Rock Creek (mouth)	1.00	1.00	1.00	1.00	
Rowe Creek	NR	2.00	2.00	2.00	
Scott Canyon	NR	5.00	5.00	5.00	
Service Creek	2.00	2.00	2.00	2.00	
Shoofly Creek	NR	2.00	2.00	2.00	
Sorefoot Creek	NR	5.00	5.00	5.00	
Thirtymile Creek	NR	1.00	1.00	1.00	
West Branch Bridge Creek	1.00	1.00	1.00	1.00	

WAB	Rank	Final Rank	Dom/Muni AF
Alder Creek	NR		
Bear Creek	NR		
Bologna Canyon	NR		
Bridge Creek (above West Branch)	5.00	2.00	127.7
Bridge Creek (mouth)	NR		
Butte Creek	1.00	1.00	184.32
Cherry Creek	NR		
Esau Canyon	NR		
Ferry Canyon	NR		
Girds Creek	NR		
Grass Valley Canyon	3.00	1.00	174.95
Hay Creek	7.00	3.00	107.28
Haystack Creek	NR		
Heidtman Canyon	NR		
Horseshoe Creek	NR		
Jackknife Canyon	NR		
John Day Mainstem - Heidtmann Canyon to N. Fork	4.00	2.00	174.28
John Day Mainstem - Mouth to Heidtmann Canyon	2.00	1.00	178.65
Kahler Creek	7.00	3.00	68.89
Muddy Creek	NR		
Parrish Creek	NR		
Pine Creek	NR		
Pine Hollow	NR		
Rhodes Canyon	NR		
Rock Creek (above Wallace Canyon)	NR		
Rock Creek (mouth)	NR		
Rowe Creek	NR		
Scott Canyon	NR		
Service Creek	NR		
Shoofly Creek	NR		
Sorefoot Creek	NR		
Thirtymile Creek	6.00	2.00	124.46
West Branch Bridge Creek	NR		

WAB	Rank (OWRD, Phil Marcy)	Rank (Step 2 and 3)	Notes
Alder Creek	4.00	3.00	Light use, moderate summer flows, no observation wells.
Bear Creek	5.00	5.00	Light use, moderate summer flows, no observation wells.
Bologna Canyon	5.00	5.00	Very light use, very low summer flows, no observation wells.
Bridge Creek (above West Branch)	3.00	3.00	City of Mitchell, moderate use, no current observation wells.
Bridge Creek (mouth)	4.00	4.00	Fairly high use, relatively high summer flows, no observation wells.
Butte Creek	2.00	2.00	Moderate GW use, one current obs well displays declines in John Day Formation. Moderate summer flows.
Cherry Creek	4.00	5.00	Fairly low water use, moderate summer flows, no obs wells.
Esau Canyon	5.00	5.00	Little to no use, summer flow goes to zero. No obs wells.
Ferry Canyon	4.00	5.00	No groundwater rights exist in this WAB. Low summertime flows.
Girds Creek	4.00	4.00	Light water use, moderate summertime flows, no obs wells.
Grass Valley Canyon	2.00	1.00	One State Observation well in CRB, no other observation wells with light use and low streamflow.
Hay Creek	2.00	2.00	Moderate GW use, no current observation wells.
Haystack Creek	2.00	3.00	Moderate use, very low summertime flows. No obs wells.
Horseshoe Creek	4.00	5.00	No groundwater rights exist in this WAB. Vulnerable summer flows.
Jackknife Canyon	1.00	2.00	Multiple GW Rights, one current CRB measured under permit condition. Very low summer flows.
John Day Mainstem - Heidtmann Canyon to N. Fork	3.00	4.00	City of Spray. Light use, no current obs wells. Low vulnerability due to proximity with mainstem John Day.
John Day Mainstem - Mouth to Heidtmann Canyon	3.00	2.00	Large area encompassed, with variety of geologic regimes. Develop network in different aquifer units (CRB, Miocene volcanics, alluvium).
Kahler Creek	4.00	3.00	Moderate water use, fairly low summer flows, no obs wells.
Muddy Creek	2.00	2.00	Data through 2012 show stable elevations, however data collection discontinued. Vulnerable summer flows.
Parrish Creek	5.00	5.00	No groundwater rights exist in this WAB.
Pine Creek	5.00	4.00	Minimal use, moderate summer flows. No Obs wells.
Pine Hollow	5.00	3.00	Light use, no observation wells. Vulnerable summer flows.
Rhodes Canyon	5.00	5.00	Minimal water use, very low summer flows. No obs wells.
Rock Creek (above Wallace Canyon)	1.00	1.00	Multiple GW Rights, no current obs wells, relatively small summer flows for basin size.
Rock Creek (mouth)	1.00	1.00	Fairly high use, low summer flows, declines observed. OWRD has recent obs wells in Olex area, expand CRB and alluvial network.
Rowe Creek	3.00	4.00	Moderate water use, low summer flows, no obs wells.
Scott Canyon	2.00	2.00	Moderate GW use, no current observation wells. Streamflow zero in September.
Service Creek	5.00	4.00	No groundwater rights exist in this WAB. Low summertime flows.
Shoofly Creek	5.00	4.00	Light water use. Moderate summer flows. No obs wells.
Sorefoot Creek	4.00	5.00	No groundwater rights exist in this WAB, lightly populated. High vulnerability flows.
Thirtymile Creek	3.00	2.00	Moderate use and population, moderate summertime flows. No current obs wells.
West Branch Bridge Creek	4.00	3.00	Moderate use, moderate summer flows, no obs wells.

Average Score	Rank (Rank calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.)	Rank calculated by classes	Comments/Explanation (from Step 2)	Final Rank
3.50	3.00	4.00	Step 2 shows low (5) use by volume. Step 3 shows elevated (2) domestic wells.	4.00
5.00	5.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows low (5) domestic wells.	5.00
5.00	5.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows low (5) domestic wells.	5.00
3.00	3.00	3.00	Step 2 shows low (5) use by volume. Step 3 shows high (1) for domestic wells.	3.00
4.00	4.00	4.00	Step 2 shows moderate (4) use by volume. Step 3 shows moderate (4) domestic wells.	4.00
2.00	2.00	2.00	Step 2 shows elevated (2) use by volume. Step 3 shows high (1) for domestic wells. City of Fossil well (WHEE 50304) has water level recordings (down 150 ft 2005-10).	2.00
4.50	4.00	5.00	Step 2 shows low (5) use by volume. Not in domestic well table.	5.00
5.00	5.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows low (5) for domestic wells.	5.00
4.50	4.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows low (5) for domestic wells.	5.00
4.00	4.00	4.00	Step 2 shows low (5) use by volume. Step 3 shows moderate (4) for domestic wells.	4.00
1.50	1.00	1.00	Step 2 shows high (1) for use by volume; likely to exceed production. Step 3 shows high (1) for domestic wells. One of two official observation wells (Sher 340).	1.00
2.00	2.00	2.00	Step 2 shows high (1) use by volume. Step 3 shows moderate (4) for domestic wells.	2.00
2.50	2.00	2.00	Step 2 shows middle (3) use by volume. Step 3 shows moderate (4) for domestic wells.	2.00
4.50	4.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows low (5) for domestic wells.	5.00
1.50	1.00	1.00	Step 2 shows moderate (4) use by volume. Step 3 shows low (5) domestic wells. But increased based on OWRD analysis.	1.00
3.50	3.00	4.00	Includes other WABs; not color coded on Step 2 volume use map. Higher in basin so groundwater use likely lower.	4.00
2.50	2.00	2.00	Groundwater use higher in lower part of basin as surface flows diminish (Step 2 Report, p. 69).	2.00
3.50	3.00	4.00	Step 2 shows low (5) use by volume. Step 3 shows high (1) for domestic wells.	4.00
2.00	2.00	2.00	Step 2 shows middle (3) use by volume. Step 3 shows elevated (2) for domestic wells.	2.00
5.00	5.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows low (5) for domestic wells.	5.00
4.50	4.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows moderate (4) for domestic wells.	5.00
4.00	4.00	4.00	Step 2 shows medium (3) use by volume. Step 3 shows moderate (4) for domestic wells.	4.00
5.00	5.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows low (5) for domestic wells.	5.00
1.00	1.00	1.00	Step 2 shows elevated (2) use by volume. Step 3 shows high (1) for domestic wells.	1.00
1.00	1.00	1.00	Step 2 shows high (1) use by volume; likely to exceed production. Step 3 shows high (1) for domestic wells. One of two observation wells (Gill 60).	1.00
3.50	3.00	4.00	Step 2 shows low (5) use by volume. Step 3 shows middle (3) for domestic wells.	4.00
2.00	2.00	2.00	Step 2 shows high (1) use by volume; likely to exceed production. Step 3 shows moderate (4) for domestic wells. One of two observation wells (Gill 60).	2.00
4.50	4.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows moderate (4) for domestic wells.	5.00
4.50	4.00	5.00	Step 2 shows low (5) use by volume. Step 3 shows moderate (4) for domestic wells.	5.00
4.50	4.00	5.00	Step 2 shows low (5) use by volume. Step 3 has no data for domestic wells.	5.00
2.50	2.00	2.00	Step 2 shows elevated (2) use by volume. Step 3 shows middle (3) for domestic wells.	2.00
3.50	3.00	4.00	Step 2 shows low (5) use by volume. Step 3 shows elevated (2) for domestic wells.	4.00

WAB	CTWS	ODFW	Average Score	Rank (Rank calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.)	Rank (Rank calculated by classes)	Final Rank
Alder Creek	2.00	1.00	1.50	1.00	1.00	1.00
Bear Creek	1.00	1.00	1.00	1.00	1.00	1.00
Bologna Canyon	3.00	4.00	3.50	3.00	4.00	4.00
Bridge Creek (above West Branch)	1.00	1.00	1.00	1.00	1.00	1.00
Bridge Creek (mouth)	1.00	1.00	1.00	1.00	1.00	1.00
Butte Creek	2.00	1.00	1.50	1.00	1.00	1.00
Cherry Creek	4.00	3.00	3.50	3.00	4.00	4.00
Esau Canyon	4.00	5.00	4.50	4.00	5.00	5.00
Ferry Canyon	5.00	4.00	4.50	4.00	5.00	5.00
Girds Creek	3.00	4.00	3.50	3.00	4.00	4.00
Grass Valley Canyon	2.00	4.00	3.00	3.00	3.00	3.00
Hay Creek	3.00	5.00	4.00	4.00	4.00	4.00
Haystack Creek	3.00	5.00	4.00	4.00	4.00	4.00
Heidtmann Canyon	4.00	5.00	4.50	4.00	5.00	5.00
Horseshoe Creek	3.00	5.00	4.00	4.00	4.00	4.00
Jackknife Canyon	4.00	5.00	4.50	4.00	5.00	5.00
John Day Mainstem - Heidtmann Canyon to N. Fork	4.00	5.00	4.50	4.00	5.00	5.00
John Day Mainstem - Mouth to Heidtmann Canyon	4.00	5.00	4.50	4.00	5.00	5.00
Kahler Creek	3.00	3.00	3.00	3.00	3.00	3.00
Muddy Creek	4.00	1.00	2.50	2.00	2.00	2.00
Parrish Creek	3.00	2.00	2.50	2.00	2.00	2.00
Pine Creek	5.00	2.00	3.50	3.00	4.00	4.00
Pine Hollow	5.00	2.00	3.50	3.00	4.00	4.00
Rhodes Canyon	4.00	5.00	4.50	4.00	5.00	5.00
Rock Creek (above Wallace Canyon)	3.00	1.00	2.00	2.00	2.00	2.00
Rock Creek (mouth)	2.00	3.00	2.50	2.00	2.00	2.00
Rowe Creek	4.00	2.00	3.00	3.00	3.00	3.00
Scott Canyon	4.00	5.00	4.50	4.00	5.00	5.00
Service Creek	4.00	3.00	3.50	3.00	4.00	4.00
Shoofly Creek	3.00	4.00	3.50	3.00	4.00	4.00
Sorefoot Creek	5.00	5.00	5.00	5.00	5.00	5.00
Thirtymile Creek	4.00	2.00	3.00	3.00	3.00	3.00
West Branch Bridge Creek	1.00	1.00	1.00	1.00	1.00	1.00

WAB	Rank (WM)	Rank (OWRD Spatial Data)	Average Score	Rank (Rank calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.)	Rank calculated by classes	Final Rank	WM Comments
Alder Creek	4.00	1.00	2.50	2.00	2.00	2.00	
Bear Creek	1.00	2.00	1.50	1.00	1.00	1.00	
Bologna Canyon	5.00	4.00	4.50	4.00	4.00	4.00	
Bridge Creek (above West Branch)	1.00	1.00	1.00	1.00	1.00	1.00	
Bridge Creek (mouth)	4.00	2.00	3.00	3.00	3.00	3.00	most have fm
Butte Creek	3.00	1.00	2.00	2.00	2.00	2.00	
Cherry Creek	2.00	4.00	3.00	3.00	3.00	3.00	
Esau Canyon	5.00	5.00	5.00	5.00	5.00	5.00	
Ferry Canyon	5.00	5.00	5.00	5.00	5.00	5.00	
Girds Creek	4.00	3.00	3.50	3.00	3.00	3.00	
Grass Valley Canyon	3.00	3.00	3.00	3.00	3.00	3.00	
Hay Creek	5.00	4.00	4.50	4.00	4.00	4.00	
Haystack Creek	5.00	3.00	4.00	4.00	4.00	4.00	
Heidtmann Canyon	5.00	5.00	5.00	5.00	5.00	5.00	
Horseshoe Creek	5.00	4.00	4.50	4.00	4.00	4.00	
Jackknife Canyon	5.00	5.00	5.00	5.00	5.00	5.00	
John Day Mainstem - Heidtmann Canyon to N. Fork	2.00	2.00	2.00	2.00	2.00	2.00	
John Day Mainstem - Mouth to Heidtmann Canyon	2.00	2.00	2.00	2.00	2.00	2.00	
Kahler Creek	3.00	2.00	2.50	2.00	2.00	2.00	
Muddy Creek	3.00	4.00	3.50	3.00	3.00	3.00	
Parrish Creek	5.00	4.00	4.50	4.00	4.00	4.00	
Pine Creek	5.00	5.00	5.00	5.00	5.00	5.00	
Pine Hollow	4.00	4.00	4.00	4.00	4.00	4.00	
Rhodes Canyon	5.00	5.00	5.00	5.00	5.00	5.00	
Rock Creek (above Wallace Canyon)	5.00	1.00	3.00	3.00	3.00	3.00	
Rock Creek (mouth)	3.00	1.00	2.00	2.00	2.00	2.00	
Rowe Creek	5.00	3.00	4.00	4.00	4.00	4.00	most have fm
Scott Canyon	5.00	5.00	5.00	5.00	5.00	5.00	
Service Creek	5.00	3.00	4.00	4.00	4.00	4.00	
Shoofly Creek	4.00	2.00	3.00	3.00	3.00	3.00	
Sorefoot Creek	4.00	5.00	4.50	4.00	4.00	4.00	
Thirtymile Creek	3.00	1.00	2.00	2.00	2.00	2.00	
West Branch Bridge Creek	1.00	1.00	1.00	1.00	1.00	1.00	

WAB	Rank (Spatial Data)	Final Rank
Alder Creek	3.00	3.00
Bear Creek	3.00	3.00
Bologna Canyon	2.00	2.00
Bridge Creek (above West Branch)	3.00	3.00
Bridge Creek (mouth)	4.00	4.00
Butte Creek	2.00	2.00
Cherry Creek	3.00	3.00
Esau Canyon	1.00	1.00
Ferry Canyon	3.00	3.00
Girds Creek	3.00	3.00
Grass Valley Canyon	1.00	1.00
Hay Creek	2.00	2.00
Haystack Creek	2.00	2.00
Heidtmann Canyon	3.00	3.00
Horseshoe Creek	2.00	2.00
Jackknife Canyon	3.00	3.00
John Day Mainstem - Heidtmann Canyon to N. Fork	1.00	1.00
John Day Mainstem - Mouth to Heidtmann Canyon	2.00	2.00
Kahler Creek	2.00	2.00
Muddy Creek	3.00	3.00
Parrish Creek	2.00	2.00
Pine Creek	4.00	4.00
Pine Hollow	3.00	3.00
Rhodes Canyon	5.00	5.00
Rock Creek (above Wallace Canyon)	1.00	1.00
Rock Creek (mouth)	1.00	1.00
Rowe Creek	4.00	4.00
Scott Canyon	1.00	1.00
Service Creek	3.00	3.00
Shoofly Creek	3.00	3.00
Sorefoot Creek	4.00	4.00
Thirtymile Creek	1.00	1.00
West Branch Bridge Creek	3.00	3.00

WAB	Rank (CTWS)	Rank (ODFW)	Average Score	Rank (Rank calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.)	Rank calculated by classes	Final Rank
Alder Creek	3.00	2.00	2.50	2.00	2.00	2.00
Bear Creek	1.00	1.00	1.00	1.00	1.00	1.00
Bologna Canyon	3.00	4.00	3.50	3.00	4.00	4.00
Bridge Creek (above West Branch)	1.00	1.00	1.00	1.00	1.00	1.00
Bridge Creek (mouth)	1.00	2.00	1.50	1.00	1.00	1.00
Butte Creek	2.00	1.00	1.50	1.00	1.00	1.00
Cherry Creek	3.00	3.00	3.00	3.00	3.00	3.00
Esau Canyon	4.00	5.00	4.50	4.00	5.00	5.00
Ferry Canyon	5.00	2.00	3.50	3.00	4.00	4.00
Girds Creek	4.00	5.00	4.50	4.00	5.00	5.00
Grass Valley Canyon	2.00	3.00	2.50	2.00	2.00	2.00
Hay Creek	4.00	3.00	3.50	3.00	4.00	4.00
Haystack Creek	3.00	5.00	4.00	4.00	4.00	4.00
Heidtman Canyon	4.00	5.00	4.50	4.00	5.00	5.00
Horseshoe Creek	3.00	5.00	4.00	4.00	4.00	4.00
Jackknife Canyon	5.00	3.00	4.00	4.00	4.00	4.00
John Day Mainstem - Heidtmann Canyon to N. Fork	4.00	5.00	4.50	4.00	5.00	5.00
John Day Mainstem - Mouth to Heidtmann Canyon	4.00	5.00	4.50	4.00	5.00	5.00
Kahler Creek	3.00	2.00	2.50	2.00	2.00	2.00
Muddy Creek	3.00	4.00	3.50	3.00	4.00	4.00
Parrish Creek	3.00	2.00	2.50	2.00	2.00	2.00
Pine Creek	3.00	2.00	2.50	2.00	2.00	2.00
Pine Hollow	5.00	2.00	3.50	3.00	4.00	4.00
Rhodes Canyon	3.00	5.00	4.00	4.00	4.00	4.00
Rock Creek (above Wallace Canyon)	4.00	1.00	2.50	2.00	2.00	2.00
Rock Creek (mouth)	4.00	1.00	2.50	2.00	2.00	2.00
Rowe Creek	3.00	5.00	4.00	4.00	4.00	4.00
Scott Canyon	4.00	4.00	4.00	4.00	4.00	4.00
Service Creek	4.00	2.00	3.00	3.00	3.00	3.00
Shoofly Creek	4.00	4.00	4.00	4.00	4.00	4.00
Sorefoot Creek	5.00	5.00	5.00	5.00	5.00	5.00
Thirtymile Creek	2.00	1.00	1.50	1.00	1.00	1.00
West Branch Bridge Creek	1.00	1.00	1.00	1.00	1.00	1.00

WAB	Rank (ODFW)	Final Rank
Alder Creek	2.00	2.00
Bear Creek	1.00	1.00
Bologna Canyon	4.00	4.00
Bridge Creek (above West Branch)	1.00	1.00
Bridge Creek (mouth)	2.00	2.00
Butte Creek	1.00	1.00
Cherry Creek	3.00	3.00
Esau Canyon	5.00	5.00
Ferry Canyon	1.00	1.00
Girds Creek	5.00	5.00
Grass Valley Canyon	3.00	3.00
Hay Creek	3.00	3.00
Haystack Creek	5.00	5.00
Heidtmann Canyon	5.00	5.00
Horseshoe Creek	5.00	5.00
Jackknife Canyon	3.00	3.00
John Day Mainstem - Heidtmann Canyon to N. Fork	1.00	1.00
John Day Mainstem - Mouth to Heidtmann Canyon	1.00	1.00
Kahler Creek	2.00	2.00
Muddy Creek	4.00	4.00
Parrish Creek	2.00	2.00
Pine Creek	2.00	2.00
Pine Hollow	2.00	2.00
Rhodes Canyon	5.00	5.00
Rock Creek (above Wallace Canyon)	1.00	1.00
Rock Creek (mouth)	1.00	1.00
Rowe Creek	3.00	3.00
Scott Canyon	4.00	4.00
Service Creek	2.00	2.00
Shoofly Creek	4.00	4.00
Sorefoot Creek	5.00	5.00
Thirtymile Creek	1.00	1.00
West Branch Bridge Creek	1.00	1.00

WAB	Rank (Spatial Data)	Rank (ODFW)	Average Score	Rank (Rank calculated by removing numbers after decimals; e.g., 1.83 = 1, 2.71 = 2, etc.)	Rank calculated by classes	Final Rank
Alder Creek	3.00	2.00	2.50	2.00	2.00	2.00
Bear Creek	5.00	1.00	3.00	3.00	3.00	3.00
Bologna Canyon	5.00	4.00	4.50	4.00	5.00	5.00
Bridge Creek (above West Branch)	5.00	1.00	3.00	3.00	3.00	3.00
Bridge Creek (mouth)	4.00	2.00	3.00	3.00	3.00	3.00
Butte Creek	2.00	1.00	1.50	1.00	1.00	1.00
Cherry Creek	4.00	3.00	3.50	3.00	4.00	4.00
Esau Canyon	3.00	5.00	4.00	4.00	4.00	4.00
Ferry Canyon	3.00	2.00	2.50	2.00	2.00	2.00
Girds Creek	4.00	5.00	4.50	4.00	5.00	5.00
Grass Valley Canyon	2.00	3.00	2.50	2.00	2.00	2.00
Hay Creek	2.00	3.00	2.50	2.00	2.00	2.00
Haystack Creek	5.00	5.00	5.00	5.00	5.00	5.00
Heidtmann Canyon	5.00	5.00	5.00	5.00	5.00	5.00
Horseshoe Creek	5.00	5.00	5.00	5.00	5.00	5.00
Jackknife Canyon	3.00	3.00	3.00	3.00	3.00	3.00
John Day Mainstem - Heidtmann Canyon to N. Fork	4.00	4.00	4.00	4.00	4.00	4.00
John Day Mainstem - Mouth to Heidtmann Canyon	4.00	4.00	4.00	4.00	4.00	4.00
Kahler Creek	3.00	2.00	2.50	2.00	2.00	2.00
Muddy Creek	4.00	4.00	4.00	4.00	4.00	4.00
Parrish Creek	5.00	2.00	3.50	3.00	4.00	4.00
Pine Creek	2.00	2.00	2.00	2.00	2.00	2.00
Pine Hollow	3.00	2.00	2.50	2.00	2.00	2.00
Rhodes Canyon	3.00	5.00	4.00	4.00	4.00	4.00
Rock Creek (above Wallace Canyon)	3.00	1.00	2.00	2.00	2.00	2.00
Rock Creek (mouth)	1.00	1.00	1.00	1.00	1.00	1.00
Rowe Creek	3.00	3.00	3.00	3.00	3.00	3.00
Scott Canyon	3.00	4.00	3.50	3.00	4.00	4.00
Service Creek	3.00	2.00	2.50	2.00	2.00	2.00
Shoofly Creek	5.00	4.00	4.50	4.00	5.00	5.00
Sorefoot Creek	3.00	5.00	4.00	4.00	4.00	4.00
Thirtymile Creek	1.00	1.00	1.00	1.00	1.00	1.00
West Branch Bridge Creek	2.00	1.00	1.50	1.00	1.00	1.00

WAB	Rank	Final Rank
Alder Creek	4.00	4.00
Bear Creek	3.00	3.00
Bologna Canyon	5.00	5.00
Bridge Creek (above West Branch)	3.00	3.00
Bridge Creek (mouth)	1.00	1.00
Butte Creek	2.00	2.00
Cherry Creek	5.00	5.00
Esau Canyon	5.00	5.00
Ferry Canyon	5.00	5.00
Girds Creek	3.00	3.00
Grass Valley Canyon	5.00	5.00
Hay Creek	5.00	5.00
Haystack Creek	2.00	2.00
Heidtmann Canyon	5.00	5.00
Horseshoe Creek	5.00	5.00
Jackknife Canyon	5.00	5.00
John Day Mainstem - Heidtmann Canyon to N. Fork	1.00	1.00
John Day Mainstem - Mouth to Heidtmann Canyon	1.00	1.00
Kahler Creek	5.00	5.00
Muddy Creek	4.00	4.00
Parrish Creek	1.00	1.00
Pine Creek	5.00	5.00
Pine Hollow	5.00	5.00
Rhodes Canyon	5.00	5.00
Rock Creek (above Wallace Canyon)	3.00	3.00
Rock Creek (mouth)	2.00	2.00
Rowe Creek	2.00	2.00
Scott Canyon	5.00	5.00
Service Creek	2.00	2.00
Shoofly Creek	3.00	3.00
Sorefoot Creek	5.00	5.00
Thirtymile Creek	4.00	4.00
West Branch Bridge Creek	1.00	1.00

WAB	Rank (NRCS)	Rank	Final Rank
Alder Creek	7.00	7.00	3.00
Bear Creek	2.00	2.00	1.00
Bologna Canyon	NR	NR	
Bridge Creek (above West Branch)	3.00	3.00	1.00
Bridge Creek (mouth)	1.00	1.00	1.00
Butte Creek	NR	NR	
Cherry Creek	8.00	8.00	
Esau Canyon	NR	NR	
Ferry Canyon	NR	NR	
Girds Creek	NR	NR	
Grass Valley Canyon	NR	NR	
Hay Creek	NR	NR	
Haystack Creek	NR	NR	
Heidtmann Canyon	NR	NR	
Horseshoe Creek	NR	NR	
Jackknife Canyon	NR	NR	
John Day Mainstem - Heidtmann Canyon to N. Fork	NR	NR	
John Day Mainstem - Mouth to Heidtmann Canyon	NR	NR	
Kahler Creek	6.00	6.00	2.00
Muddy Creek	NR	NR	
Parrish Creek	5.00	5.00	2.00
Pine Creek	NR	NR	
Pine Hollow	NR	NR	
Rhodes Canyon	NR	NR	
Rock Creek (above Wallace Canyon)	NR	NR	
Rock Creek (mouth)	NR	NR	
Rowe Creek	NR	NR	
Scott Canyon	NR	NR	
Service Creek	NR	NR	
Shoofly Creek	4.00	4.00	2.00
Sorefoot Creek	NR	NR	
Thirtymile Creek	NR	NR	
West Branch Bridge Creek	NR	NR	

WAB	Rank (CTWS)	Final Rank
Alder Creek	3.00	3.00
Bear Creek	2.00	2.00
Bologna Canyon	3.00	3.00
Bridge Creek (above West Branch)	2.00	2.00
Bridge Creek (mouth)	2.00	2.00
Butte Creek	1.00	1.00
Cherry Creek	3.00	3.00
Esau Canyon	3.00	3.00
Ferry Canyon	4.00	4.00
Girds Creek	3.00	3.00
Grass Valley Canyon	3.00	3.00
Hay Creek	3.00	3.00
Haystack Creek	3.00	3.00
Heidtmann Canyon	4.00	4.00
Horseshoe Creek	3.00	3.00
Jackknife Canyon	5.00	5.00
John Day Mainstem - Heidtmann Canyon to N. Fork	5.00	5.00
John Day Mainstem - Mouth to Heidtmann Canyon	5.00	5.00
Kahler Creek	3.00	3.00
Muddy Creek	4.00	4.00
Parrish Creek	3.00	3.00
Pine Creek	4.00	4.00
Pine Hollow	5.00	5.00
Rhodes Canyon	3.00	3.00
Rock Creek (above Wallace Canyon)	5.00	5.00
Rock Creek (mouth)	5.00	5.00
Rowe Creek	3.00	3.00
Scott Canyon	3.00	3.00
Service Creek	4.00	4.00
Shoofly Creek	4.00	4.00
Sorefoot Creek	4.00	4.00
Thirtymile Creek	1.00	1.00
West Branch Bridge Creek	2.00	2.00

WAB	Rank	Final Rank
Alder Creek	3.00	3.00
Bear Creek	5.00	5.00
Bologna Canyon	5.00	5.00
Bridge Creek (above West Branch)	3.00	3.00
Bridge Creek (mouth)	4.00	4.00
Butte Creek	2.00	2.00
Cherry Creek	5.00	5.00
Esau Canyon	5.00	5.00
Ferry Canyon	5.00	5.00
Girds Creek	4.00	4.00
Grass Valley Canyon	1.00	1.00
Hay Creek	2.00	2.00
Haystack Creek	3.00	3.00
Heidtmann Canyon	5.00	5.00
Horseshoe Creek	2.00	2.00
Jackknife Canyon	4.00	4.00
John Day Mainstem - Heidtmann Canyon to N. Fork	2.00	2.00
John Day Mainstem - Mouth to Heidtmann Canyon	3.00	3.00
Kahler Creek	2.00	2.00
Muddy Creek	5.00	5.00
Parrish Creek	4.00	4.00
Pine Creek	3.00	3.00
Pine Hollow	5.00	5.00
Rhodes Canyon	1.00	1.00
Rock Creek (above Wallace Canyon)	1.00	1.00
Rock Creek (mouth)	4.00	4.00
Rowe Creek	2.00	2.00
Scott Canyon	4.00	4.00
Service Creek	4.00	4.00
Shoofly Creek	5.00	5.00
Sorefoot Creek	2.00	2.00
Thirtymile Creek	3.00	3.00
West Branch Bridge Creek	3.00	3.00

APPENDIX E

Strategy Ranking Table

	Strategies-Please rank Strategies by double clicking inside of ranking box located next to strategy and selecting priority by clicking grey drop-down arrow that appears and selecting a number. Ranking 1-16 of Riparian, Instream and Aquatic Restoration. 1 being the highest priority and 16 being the lowest.	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW
		1
	Maintain and increase streambanks	1
	Protect, enhance, and/or restore native riparian vegetation	2
	Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	3
	Protect riparian areas from livestock using fencing and off-stream stock watering systems	4
	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	5
	Provide full fish passage (removal, repair and/or replacement) at priority artificial obstructions including culverts and dams	6
	Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	7
	Identify, protect, and restore seeps and springs supplying cool water	8
	Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	9
	Encourage voluntary leases and transfers of existing water rights to instream use	10
	Promote utility, state and federal incentive programs for improving irrigation efficiency	11
	Pipe open ditches	12
	Encourage and assist state agencies in creating additional instream water rights	13
	Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	14
	Complete a feasibility study to assess potential off-channel water-storage projects, including (a) potential locations for storage projects; (b) water availability, including	15
	Support maintenance of existing gauges	16
	Analyze existing groundwater data, and conduct a groundwater study in the basin	17
	Develop off-channel storage projects as suggested by feasibility studies	18
	Support installation and maintenance of additional gauges at discontinued and recommended new sites	19
	Conduct additional monitoring for temperature and dissolved oxygen	20
	Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change	21
	Assist ODFW with updating list of priority fish-passage barriers if necessary	22
	Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	23
	Support additional personnel for flow and diversion monitoring and management	24
	Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	25
	Promote existing incentives for measurement of diversions	26

Strategies- Please rank Strategies by double clicking inside of ranking box located next to strategy and selecting priority by clicking grey drop-down arrow that appears and selecting a number. Ranking 1-30 of Upland. 1 being the highest priority and 30 being the lowest.	Upland Management and Restoration (including irrigation)
Restore upland function by improving plant communities with juniper removal, and planting of appropriate perennial bunchgrasses, shrubs, and forbs.	1
Identify, protect, and restore seeps and springs supplying cool water	2
Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	3
Promote mulch tillage, ridge tillage, zone tillage, no till, chow fallow, and CRP as ways to improve soil health, etc.)	4
Promote good vegetative cover/cover crops.	5
Control noxious weeds	6
Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	7
Increase pace and scale of forest restoration, including prescribed burning and thinning	8
Implement prescribed burn and thinning for forest management	9
Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions	10
Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	11
Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	12
Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	13
Pipe open ditches	14
Support community wildlife response plans	15
Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings	16
Analyze existing groundwater data, and conduct a groundwater study in the basin	17
Support maintenance of existing gauges	18
Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change	19
Promote utility, state and federal incentive programs for improving irrigation efficiency	20
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	21
Support installation and maintenance of additional gauges at discontinued and recommended new sites	22
Analyze existing data on crop and climate	23
Promote existing incentives for measurement of diversions	24
Support Agri Met station in basin	25
Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	26
Support additional personnel for flow and diversion monitoring and management	27
Support collection of additional Laker data	28
Complete a feasibility study to assess potential off-channel water-storage projects, including (a) potential locations for storage projects; (b) water availability, including	29
Develop off-channel storage projects as suggested by feasibility studies	30

Strategies-Please rank Strategies by double clicking inside of ranking box located next to strategy and selecting priority by clicking grey drop-down arrow that appears and selecting a number. Ranking 1-3 of Storage. 1 being the highest priority and 3 being the lowest.		Off-channel Storage
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		1
Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)		2
Develop off-channel storage projects as suggested by feasibility studies		3

Strategies-Strategies-Please rank Strategies by double clicking inside of ranking box located next to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-8 of Municipal and Domestic Water			Municipal and Domestic Water
	Assist cities in creating and/or improving Water System Management Plan and/or Water Management and Conservation Plan that identify necessary system	1	
	Analyze existing groundwater data, and conduct a groundwater study in the basin	2	
	Assist entities with public water and wastewater systems in finding and implementing infrastructure improvement projects	3	
	Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	4	
	Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	5	
	Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	6	
	Provide assistance or technical expertise through OWRD support on installing well level monitors	7	
	Provide information on where to get well water testing kits and technical support for water quality issues	8	

Strategies-Strategies-Strategies-Please rank Strategies by double clicking inside of ranking box located next to strategy and selecting priority by clicking grey drop-down arrow that appears and selecting a number. Ranking 1-10 of Data. 1 being the highest priority and 10 being the lowest.	Data Collection Monitoring and Feasibility
Support maintenance of existing gauges	1
Complete a feasibility study to assess potential off-channel water-storage projects, including (a) potential locations for storage projects; (b) water availability, including	2
Analyze existing groundwater data, and conduct a groundwater study in the basin	3
Support installation and maintenance of additional gauges at discontinued and recommended new sites	4
Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change	5
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	6
Develop off-channel storage projects as suggested by feasibility studies	7
Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	8
Conduct study regarding changes in prevalence and function of springs and causes of changes	9
Conduct additional monitoring for temperature and dissolved oxygen	10
Assist ODFW with updating list of priority fish-passage barriers if necessary	11
Promote existing incentives for measurement of diversions	12
Support Agri Met station in Basin	13
Support collection of additional Laker data	14
Analyze existing data on crop and climate	15
Support additional personnel for flow and diversion monitoring and management	16
Conduct voluntary survey for nonmunicipal well users to capture issues associated with domestic water availability and quality	17
Provide assistance or technical expertise through OWRD support on installing well level monitors	18
Provide information on where to get water testing kits and technical support for water quality issues	19

Strategies-Please rank Strategies by double clicking inside of ranking box located next to strategy and selecting priority by clicking grey drop-down arrow that appears and selecting a number. Ranking 1-16 of Outreach and Education		Outreach and Education
	Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	1
	Encourage improved irrigation efficiency projects and use of Conserved Water Act (to reduce out-of-stream demand through efficiency	2
	Promote utility, state and federal incentive programs for improving irrigation efficiency	3
	Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	4
	Encourage voluntary leases and transfers of existing water rights to instream use	5
	Promote good vegetative cover/cover crops.	6
	Promote mulch tillage, ridge tillage, zone tillage, no till, chow fallow, and CRP as ways to improve soil health, etc.)	7
	Support community wildlife response plans	8
	Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	9
	Promote existing incentives for measurement of diversions	10
	Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure	11
	Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions	12
	Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings	13
	Encourage voluntary leases and transfers of existing water rights to instream use	14
	Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	15
	Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	16
	Provide assistance or technical expertise through OWRD support on installing well level monitors	17
	Provide information on where to get well water testing kits and technical support for water quality issues	18

	Strategies-Please rank Strategies by double clicking inside of ranking box located next to strategy and selecting priority by clicking grey drop-down arrow that appears and selecting a number. Ranking 1-16 of Funding. 1 being the highest priority and 16 being the lowest.	Funding/ Policy Options
	Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	1
	Protect, enhance, and/or restore native riparian vegetation	2
	Maintain and increase streambanks	3
	Protect riparian areas from livestock using fencing and off-stream stock watering systems	4
	Restore upland function by improving plant communities with juniper removal, and planting of appropriate perennial bunchgrasses, shrubs, and	5
	Control noxious weeds	6
	Support maintenance of existing gauges	7
	Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	8
	Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	9
	Encourage improved irrigation efficiency projects and use of Conserved Water Act (to reduce out-of-stream demand through efficiency	10
	Support installation and maintenance of additional gauges at discontinued and recommended new sites	11
	Provide full fish passage (removal, repair and/or replacement) at priority artificial obstructions including culverts and dams	12
	Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	13
	Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	14
	Analyze existing groundwater data, and conduct a groundwater study in the basin	15
	Promote mulch tillage, ridge tillage, zone tillage, no till, chow fallow, and CRP as ways to improve soil health, etc.)	16
	Promote utility, state and federal incentive programs for improving irrigation efficiency	17
	Identify, protect, and restore seeps and springs supplying cool water	18
	Support Agri Met station in Basin	19
	Pipe open ditches	20
	Promote existing incentives for measurement of diversions	21
	Develop off-channel storage projects as suggested by feasibility studies	22
	Complete a feasibility study to assess potential off-channel water-storage projects, including (a) potential locations for storage projects; (b) water	23
	Assist cities in creating and/or improving Water System Management Plan and/or Water Management and Conservation Plan that identify	24
	Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change	25
	Increase pace and scale of forest restoration, including prescribed burning and thinning	26
	Support community wildlife response plans	27
	Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas	28
	Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	29
	Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	30
	Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings	31
	Assist ODFW with updating list of priority fish-passage barriers if necessary	32
	Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	33
	Promote good vegetative cover/cover crops.	34
	Assist entities with public water and wastewater systems in finding and implementing infrastructure improvement projects	35
	Conduct additional monitoring for temperature and dissolved oxygen	36
	Encourage and assist state agencies in creating additional instream water rights	37
	Conduct study regarding changes in prevalence and function of springs and causes of changes	38
	Implement prescribed burn and thinning for forest management	39
	Support additional personnel for flow and diversion monitoring and management	40
	Support collection of additional Laker data	41
	Analyze existing data on crop and climate	42
	Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	43
	Provide assistance or technical expertise through OWRD support on installing well level monitors	44
	Provide information on where to get well water testing kits and technical support for water quality issues	45
		46

Strategies -Please rank Strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-26 of Riparian, Instream and Aquatic Restoration. 1 being the highest priority and 26 being the lowest	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW	Riparian, Instream and Aquatic Restoration RANKING BOXES ARE BELOW
Protect riparian areas from livestock using fencing and off-stream stock watering systems	4	8	4	3	4	4	3	12	1	2	4	1	2	52	
Protect, enhance, and/or restore native riparian vegetation	2	2	2	2	5	3	2	13	2	1	2	3	4		
Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	3	1	3	1	1	1	1	21	3	4	3	2	3	47	
Identify, protect, and restore seeps and springs supplying cool water	19	3	19	15	3	5	15	11	7	6	19	9	11	142	
Maintain and increase streamflows	1	4	1	4	2	2	4	1	4	3	1	4	1	32	
Conduct additional monitoring for temperature and dissolved oxygen	24	11	24	26	10	14	26	20	8	12	24	10	13	222	
Encourage and assist state agencies in creating additional instream water rights	25	9	25	14	6	6	14	2	25	15	25	11	12	189	
Encourage voluntary leases and transfers of existing water rights to instream use	13	21	13	7	7	7	7	17	24	23	13	5	6	163	
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)	5	10	5	6	11	10	6	18	15	8	5	17	7	123	
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	10	12	10	17	15	22	17	22	16	13	10	25	25	214	
Develop off-channel storage projects as suggested by feasibility studies	11	13	11	18	16	23	18	23	17	5	11	26	26	218	
Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	12	23	12	16	17	20	16	10	5	17	12	16	22	198	
Promote utility, state and federal incentive programs for improving irrigation efficiency	18	14	18	5	20	21	5	9	10	7	18	6	14	165	
Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	8	15	8	8	21	15	8	16	9	10	8	12	15	153	
Pipe open ditches	7	16	7	10	22	16	10	19	21	14	7	7	21	177	
Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	9	17	9	9	18	11	9	3	12	9	9	19	5	139	
Support maintenance of existing gauges	20	19	20	21	19		21	14	11	20	20	21	8	214	
Support installation and maintenance of additional gauges at discontinued and recommended new sites	14	20	14	22	9	17	22	15	22	21	14	22	9	221	
Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	15	24	15	19	8		19	26	23	24	15	20	16	224	

Analyze existing groundwater data, and conduct a groundwater study in the basin	22	22	22	20	12		20	4	18	11	22	23	19	215
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	23	26	23	23	13	13	23	24	26	16	23	24	23	280
Provide full fish passage (removal, repair and/or replacement) at priority artificial obstructions including culverts and dams.	6	6	6	11	14	8	11	5	6	19	6	8	18	124
Assist ODFW with updating list of priority fish-passage barriers if necessary	16	5	16	24	23	12	24	25	13	22	16	13	17	226
Support additional personnel for flow and diversion monitoring and management	26	25	26	25	24	9	25	6	14	18	26	18	10	252
Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	21	7	21	12	25	18	12	8	19	26	21	15	24	229
Promote existing incentives for measurement of diversions	17	18	17	13	26	19	13	7	20	25	17	14	20	226
	GSWCD	SCSWCD	GEJDWC	MJDBC	SNW	ONDA	WCSWCD	WW	SCWC	GCCA	NRCS	OWRD	TCA	

Strategies- Please rank <u>Strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-30 of Upland. 1 being the highest priority and 30 being the lowest.</u>	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)	Upland Management and Restoration (including irrigation)
Reconnect floodplains (beaver dam analogos, beaver restoration, floodplain restoration, etc.)	3	15	3	15	5	1	15	14	17	5	3	25	1
Identify, protect, and restore seeps and springs supplying cool water	4	6	4	14	10	2	14	5	18	1	4	8	2
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	19	16	19	29	21	29	29	26	28	6	19	26	29
Develop off-channel storage projects as suggested by feasibility studies	20	17	20	30	22	30	30	27	29	3	20	27	30
Control noxious weeds	13	5	13	3	20	4	3	19	20	2	13	2	4
Restore upland function by improving plant communities with juniper removal, and planting of appropriate perennial bunchgrasses, shrubs, and forbs.	2	1	2	2	1	3	2	28	1	4	2	1	3
Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	15	25	15	17	13	6	17	9	21	13	15	14	5
Promote utility, state and federal incentive programs for improving irrigation efficiency	29	8	29	21	14	7	21	8	22	14	29	19	19
Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	14	24	14	18	15	5	18	6	23	10	14	20	6
Pipe open ditches	10	9	10	19	16	9	19	13	30	17	10	9	27
Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	16	7	16	20	17	8	20	2	24	9	16	21	7
Support maintenance of existing gauges	17	23	17	22	18	10	22	3	25	19	17	28	8
Support installation and maintenance of additional gauges at discontinued and recommended new sites	18	22	18	23	19	11	23	7	26	22	18	29	9
Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	21	21	21	11	2	12	11	25	27	24	21	22	16

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<u>Strategies-Please rank Strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-3 of Storage. 1 being the highest priority and 3 being the lowest.</u>	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage
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	2	1	2	2	2	3	1	1	2	2
Develop off-channel storage projects as suggested by feasibility studies	2	2	2	3	2	3	3	3	2	2	2	3	3
Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	3	3	3	1	3	1	1	1	1	3	3	1	1
	3	3	3	3	3	3	3	3	3	3	3	3	

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<u>Strategies-Strategies-Please rank Strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-8 of Municipal. 1 being the highest priority and 8 being the lowest.</u>	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water	Municipal and Domestic Water
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.	2	2	2	1	4	3	1	8	2	1	2	1	6
Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects	3	3	3	2	5	5	2	5	1	8	3	2	8
Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	1	1	1	3	6	6	3	6	3	7	1	8	4
Analyze existing groundwater data, and conduct a groundwater study in the basin	4	8	4	1	1	2	1	1	5	2	4	6	1
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	5	7	5	4	2	1	4	2	6	6	5	4	2
Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	6	5	6	6	3	7	6	3	8	5	6	3	5
Provide assistance or technical expertise through OWRD support on installing well level monitors.	8	6	8	5	7	4	5	4	7	4	8	5	3
Provide information on where to get well water testing kits and technical support for water quality issues	7	4	7	8	8	8	8	7	4	3	7	7	7
	8	8	8	8	8	8	8	8	8	8	8	8	

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<u>Strategies-Strategies-Strategies-Please rank Strategies by double clicking inside of ranking box, located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-19 of Data. 1 being the highest priority and 19 being the lowest.</u>	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility
Conduct additional monitoring for temperature and dissolved oxygen	11	2	11	15	15	5	15	8	7	5	11	18	9
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	3	1	3	1	6	18	1	17	1	1	3	11	8
Develop off-channel storage projects as suggested by feasibility studies	12	6	12	2	7	19	2	19	8	2	12	12	13
Support maintenance of existing gauges	1	8	1	5	2	2	5	1	18	15	1	1	10
Support installation and maintenance of additional gauges at discontinued and recommended new sites	2	7	2	6	1	3	6	6	17	19	2	4	2
Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	6	18	6	3	8	1	3	16	2	11	6	15	1
Analyze existing groundwater data, and conduct a groundwater study in the basin	4	14	4	4	9	6	4	2	9	4	4	5	7
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	5	19	5	7	10	12	7	7	10	8	5	2	3
Assist ODFW with updating list of priority fish-passage barriers if necessary	13	3	13	17	11	7	17	9	3	9	13	19	4
Support additional personnel for flow and diversion monitoring and management	16	9	16	16	12	10	16	3	4	13	16	8	14
Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	14	4	14	8	14	9	8	5	16	7	14	7	6
Promote existing incentives for measurement of diversions	15	5	15	14	16	8	14	4	13	10	15	6	5
Conduct study regarding changes in prevalence and function of springs and causes of changes	7	15	7	13	13	11	13	10	11	3	7	9	11
Support Agri Met station in Basin	8	10	8	19	3	13	19	13	12	17	8	3	12
Support collection of additional Lidar data	9	11	9	18	4	4	18	12	5	18	9	16	17
Analyze existing data on crop and climate	10	12	10	11	5	14	11	11	6	16	10	17	18
Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	17	16	17	9	17	15	9	15	15	12	17	13	19
Provide assistance or technical expertise through OWRD support on installing well level monitors.	18	17	18	10	18	16	10	14	19	14	18	10	15
Provide information on where to get well water testing kits and technical support for water quality issues	19	13	19	12	19	17	12	18	14	6	19	14	16
	19	19	19	19	19	19	19	19	19	19	19	19	

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Strategies-Please rank Strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-18 of Outreach. 1 being the highest priority and 18 lowest	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education
Encourage voluntary leases and transfers of existing water rights to instream use	6	17	6	4	1	2	4	3	18	18	6	3	6	94	
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)	7	2	7	3	2	1	3	4	3	16	7	2	7	64	
Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	1	1	1	1	3	3	1	1	4	9	1	1	9	36	
Promote utility, state and federal incentive programs for improving irrigation efficiency	8	9	8	2	5	4	2	2	5	1	8	12	3	69	
Support installation and maintenance of additional gauges at discontinued and recommended new sites	9	11	9	18	18	5	18	5	17	14	9	16	2	151	
Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	10	8	10	10	6	9	10	16	12	11	10	11	15	138	
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	11	18	11	17	10	6	17	8	16	15	11	10	4	154	
Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	12	7	12	12	9	8	12	6	11	13	12	15	5	134	
Promote existing incentives for measurement of diversions	13	10	13	16	11	7	16	7	9	12	13	9	1	137	
Promote good vegetative cover/cover crops.	2	3	2	6	12	14	6	11	10	8	2	8	10	94	
Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)	3	12	3	7	8	13	7	10	6	6	3	7	11	96	
Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions	14	13	14	8	4	10	8	17	7	17	14	6	16	148	
Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings.	15	5	15	9	13	11	9	15	8	3	15	18	14	150	
Support community wildfire response plans	4	4	4	11	14	12	11	14	1	4	4	17	17	117	
Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	5	6	5	5	7	15	5	9	2	2	5	5	12	83	
Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	16	15	16	13	15	16	13	12	15	5	16	4	8	164	
Provide assistance or technical expertise through OWRD support on installing well level monitors.	17	16	17	14	16	17	14	13	14	10	17	13	18	196	
Provide information on where to get well water testing kits and technical support for water quality issues	18	14	18	15	17	18	15	18	13	7	18	14	13	198	
	18	18	18	18	18	18	18	18	18	18	18	18		216	

<u>Strategies-Please rank Strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-46 of Funding. 1 being the highest priority and 46 being the lowest.</u>	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options	Funding/ Policy Options
Protect riparian areas from livestock using fencing and off-stream stock watering systems	3	43	3	24	1	3	24	7	3	1	3	23	9	147 95 80	
Protect, enhance, and/or restore native riparian vegetation	2	2	2	23	2	2	23	6	2	2	2	24	3		
Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	4	3	4	5	4	1	5	19	1	3	4	25	2		
Identify, protect, and restore seeps and springs supplying cool water	30	19	30	25	8	4	25	10	45	5	30	26	20	277	111 385 392 245
Maintain and increase streamflows	1	4	1	26	5	5	26	1	5	8	1	27	1		
Conduct additional monitoring for temperature and dissolved oxygen	41	20	41	43	9	9	43	25	31	13	41	40	29		
Encourage and assist state agencies in creating additional instream water rights	42	42	42	27	6	8	27	2	40	40	42	44	30	392	233 306 303 195 181 213 274 210 292 249 206 233
Encourage voluntary leases and transfers of existing water rights to instream use	10	41	10	6	7	7	6	14	43	46	10	41	4		
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)	31	21	31	7	10	6	7	20	30	25	31	9	5		
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	11	32	11	21	3	45	21	42	32	4	11	28	45	306	303 195 181 213 274 210 292 249 206 233
Develop off-channel storage projects as suggested by feasibility studies	12	33	12	22	11	44	22	43	11	6	12	29	46		
Control noxious weeds	5	34	5	20	23	16	20	35	9	7	5	10	6		
Restore upland function by improving plant communities with juniper removal, and planting of appropriate perennial bunchgrasses, shrubs, and forbs.	6	18	6	4	12	20	4	44	7	12	6	11	31	181	213 274 210 292 249 206 233
Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	13	17	13	19	13	15	19	15	8	16	13	45	7		
Promote utility, state and federal incentive programs for improving irrigation efficiency	14	36	14	18	24	42	18	16	10	24	14	12	32		
Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	15	37	15	17	25	12	17	13	6	17	15	13	8	210	292 249 206 233
Pipe open ditches	16	16	16	16	26	14	16	24	46	28	16	14	44		
Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	17	15	17	15	27	13	15	4	12	30	17	46	21		
Support maintenance of existing gauges	18	38	18	1	16	10	1	8	33	34	18	1	10	206	233
Support installation and maintenance of additional gauges at discontinued and recommended new sites	19	22	19	2	17	11	2	17	41	38	19	15	11		

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.	21	14	21	28	30	17	28	37	34	43	21	2	23	319
Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects	32	13	32	29	29	43	29	32	35	42	32	3	22	373
Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	22	12	22	30	28	19	30	40	36	35	22	30	19	345
Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	20	23	20	14	14	18	14	41	37	41	20	31	33	326
Analyze existing groundwater data, and conduct a groundwater study in the basin	23	35	23	13	22	27	13	3	14	11	23	32	24	263
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	24	44	24	42	15	25	42	18	42	22	24	16	25	363
Provide full fish passage (removal, repair and/or replacement) at priority artificial obstructions including culverts and dams.	8	11	8	31	31	26	31	5	29	18	8	17	12	235
Assist ODFW with updating list of priority fish-passage barriers if necessary	33	1	33	41	32	21	41	29	13	36	33	33	14	360
Support additional personnel for flow and diversion monitoring and management	43	39	43	40	34	22	40	9	28	32	43	34	13	420
Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	34	24	34	39	35	23	39	12	27	33	34	5	15	354
Promote existing incentives for measurement of diversions	35	25	35	12	36	24	12	11	26	27	35	4	16	298
Promote good vegetative cover/cover crops.	25	26	25	33	37	46	33	23	25	19	25	35	17	369
Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)	7	27	7	32	38	28	32	22	24	9	7	22	18	273
Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions	26	10	26	34	18	29	34	38	23	44	26	6	26	340
Conduct study regarding changes in prevalence and function of springs and causes of changes	36	28	36	35	39	30	35	28	21	20	36	36	28	408
Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings.	37	9	37	11	40	34	11	33	22	10	37	43	34	358
Increase pace and scale of forest restoration, including prescribed burning and thinning	27	29	27	8	41	31	8	45	20	21	27	21	27	332
Support community wildfire response plans	28	6	28	10	42	32	10	34	16	23	28	42	35	334
Support Agri Met station in Basin	29	5	29	9	19	33	9	31	17	31	29	7	39	287
Support collection of additional Lidar data	38	7	38	36	43	35	36	27	18	45	38	37	40	438
Analyze existing data on crop and climate	39	40	39	38	20	41	38	26	19	37	39	38	43	457
Implement prescribed burn and thinning for forest management	40	8	40	37	44	40	37	46	4	29	40	8	42	415
Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	9	30	9	3	21	36	3	30	15	15	9	19	36	235
Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	44	45	44	46	33	37	46	36	38	26	44	20	37	496
Provide assistance or technical expertise through OWRD support on installing well level monitors.	45	46	45	45	45	38	45	21	39	39	45	18	41	512
Provide information on where to get well water testing kits and technical support for water quality issues	46	31	46	44	46	39	44	39	44	14	46	39	38	516

Critical Issue #6 Solutions/Strategies	Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	1	1				1	1
	Promote utility, state and federal incentive programs for improving irrigation efficiency	1	1				1	1
	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
	Pipe open ditches	1	1					1
	Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	1	1					1
Critical Issue 7: Inadequate Gauge Data								
	Support maintenance of existing gauges	1	1			1		1
	Support installation and maintenance of additional gauges at discontinued and recommended new sites	1	1			1	1	1
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
	Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects				1			1
	Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs				1		1	1
Critical Issue 9: Lack of data on <i>condition of groundwater</i> aquifers and interactions <i>between groundwater and surface water</i>								
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
	Analyze existing groundwater data, and conduct a groundwater study in the basin	1	1		1	1		1
	Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	1	1		1	1	1	1
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
	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
	Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)		1				1	1
	Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions		1				1	1

3	
3	
2	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
2	OWEB-OS, OWEB-SG
2	OWEB-OS, OWEB-SG
3	
5	
1	
1	
2	
3	
5	
6	
1	OWEB-OS, OWEB-FIP for Butte and Thirtymile WS, OWEB-SG
2	
3	
5	
5	
2	OWEB-OS, OWEB-SG, NRCS-RCPP/EQIP
2	OWEB-OS, OWEB-SG, NRCS-RCPP/EQIP
2	

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 quantity							
Critical Issue #15 Solutions/Strategies	Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings.		1				1
	Increase pace and scale of forest restoration, including prescribed burning and thinning		1				1
			1				1
	Support community wildfire response plans					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
			1			1	1
	Support collection of additional Lidar data						
	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
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
Critical Issue 19: Unmet water demands							
Critical Issue #19 Solutions/Strategies							
	Implement strategies for Critical Issues 3, 4, 6, 7, 11 and 14						
Critical Issue 20: 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
	Provide assistance or technical expertise through OWRD support on installing well level monitors.				1	1	1
	Provide information on where to get well water testing kits and technical support for water quality issues				1	1	1
		26	30	3	8	19	18
		46					

USDA RDI
BOR

NWPPC

United States Department of Agriculture-Rural Development Initiative
Bureau of Reclamation
Federal Appropriations
Northwest Power Planning Council

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Strategi es - Please rank Strategi es by double clicking inside of ranking box located nexted to strategy and selectin g priority by clicking grey drop down arrow that appears	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW	Riparian , Instrea m and Aquatic Restorat ion RANKI NG BOXES ARE BELOW
Maintain and increase streamflo ws	1	4	1	4	2	2	4	1	4	3	1	4	1	32	1

Strategi es- Please rank Strategi es by double clicking inside of ranking box located nexted to strategy and selectin g priority by clicking grey drop down arrow that appears	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)	Upland Manage ment and Restorat ion (includi ng irrigatio n)
Restore upland function by improvin g plant communit ies with juniper removal, and planting of appropria te perennial bunchgra sses, shrubs, and forbs.	2	1	2	2	1	3	2	28	1	4	2	1	3	52	1

Protect, enhance, and/or restore native riparian vegetation	2	2	2	2	5	3	2	13	2	1	2	3	4	43	2
Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	3	1	3	1	1	1	1	21	3	4	3	2	3	47	3
Protect riparian areas from livestock using fencing and off-stream stock watering systems	4	8	4	3	4	4	3	12	1	2	4	1	2	52	4

Identify, protect, and restore seeps and springs supplying cool water	4	6	4	14	10	2	14	5	18	1	4	8	2	92	2
Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	1	18	1	1	9	22	1	15	4	8	1	10	20	111	3
Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)	6	4	6	5	6	25	5	16	2	7	6	6	24	118	4

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)	5	10	5	6	11	10	6	18	15	8	5	17	7	123	5
Provide full fish passage (removal, repair and/or replacement) at priority artificial obstructions including culverts and dams.	6	6	6	11	14	8	11	5	6	19	6	8	18	124	6
Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	9	17	9	9	18	11	9	3	12	9	9	19	5	139	7

Promote good vegetative cover/cover crops.	5	12	5	4	7	18	4	17	11	16	5	3	13	120	5
Control noxious weeds	13	5	13	3	20	4	3	19	20	2	13	2	4	121	6
Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	3	15	3	15	5	1	15	14	17	5	3	25	1	122	7

Identify, protect, and restore seeps and springs supplying cool water	19	3	19	15	3	5	15	11	7	6	19	9	11	142	8
Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	8	15	8	8	21	15	8	16	9	10	8	12	15	153	9
Encourage voluntary leases and transfers of existing water rights to instream use	13	21	13	7	7	7	7	17	24	23	13	5	6	163	10

Increase pace and scale of forest restoration, including prescribed burning and thinning	7	2	7	9	3	19	9	29	3	23	7	4	12	134	8
Implement prescribed burn and thinning for forest management	9	3	9	8	8	24	8	30	5	15	9	5	28	161	9
Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions	11	14	11	6	4	26	6	23	10	20	11	7	25	174	10

Promote utility, state and federal incentive programs for improving irrigation efficiency	18	14	18	5	20	21	5	9	10	7	18	6	14	165	11
Pipe open ditches	7	16	7	10	22	16	10	19	21	14	7	7	21	177	12
Encourage and assist state agencies in creating additional instream water rights	25	9	25	14	6	6	14	2	25	15	25	11	12	189	13

Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	16	7	16	20	17	8	20	2	24	9	16	21	7	183	11
Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	15	25	15	17	13	6	17	9	21	13	15	14	5	185	12
Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	14	24	14	18	15	5	18	6	23	10	14	20	6	187	13

Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	12	23	12	16	17	20	16	10	5	17	12	16	22	198	14
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	10	12	10	17	15	22	17	22	16	13	10	25	25	214	15
Support maintenance of existing gauges	20	19	20	21	19		21	14	11	20	20	21	8	214	16

Pipe open ditches	10	9	10	19	16	9	19	13	30	17	10	9	27	198	14
Support community wildfire response plans	8	10	8	16	12	20	16	22	6	27	8	30	26	209	15
Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings.	26	19	26	7	11	23	7	24	9	18	26	12	10	218	16

Analyze existing groundwater data, and conduct a groundwater study in the basin	22	22	22	20	12		20	4	18	11	22	23	19	215	17
Develop off-channel storage projects as suggested by feasibility studies	11	13	11	18	16	23	18	23	17	5	11	26	26	218	18
Support installation and maintenance of additional gauges at discontinued and recommended new sites	14	20	14	22	9	17	22	15	22	21	14	22	9	221	19
Conduct additional monitoring for temperature and dissolved oxygen	24	11	24	26	10	14	26	20	8	12	24	10	13	222	20

Analyze existing groundwater data, and conduct a groundwater study in the basin	22	29	22	12	23	13	12	1	16	11	22	23	17	223	17
Support maintenance of existing gauges	17	23	17	22	18	10	22	3	25	19	17	28	8	229	18
Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	21	21	21	11	2	12	11	25	27	24	21	22	16	234	19
Promote utility, state and federal incentive programs for improving irrigation efficiency	29	8	29	21	14	7	21	8	22	14	29	19	19	240	20

Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	15	24	15	19	8		19	26	23	24	15	20	16	224	21
Assist ODFW with updating list of priority fish-passage barriers if necessary	16	5	16	24	23	12	24	25	13	22	16	13	17	226	22
Advocate for irrigator incentives for measurement of diversions , including installing measurement devices	21	7	21	12	25	18	12	8	19	26	21	15	24	229	23

Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	23	30	23	13	24	14	13	12	15	12	23	24	18	244	21
Support installation and maintenance of additional gauges at discontinued and recommended new sites	18	22	18	23	19	11	23	7	26	22	18	29	9	245	22
Analyze existing data on crop and climate	12	20	12	25	30	27	25	20	8	30	12	11	23	255	23

Support additional personnel for flow and diversion monitoring and management	26	25	26	25	24	9	25	6	14	18	26	18	10	252	24
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	23	26	23	23	13	13	23	24	26	16	23	24	23	280	25

Promote existing incentives for measurement of diversions	24	26	24	27	27	17	27	10	12	21	24	17	14	270	24
Support Agri Met station in Basin	27	11	27	10	28	28	10	21	19	29	27	15	21	273	25

Promote existing incentives for measurement of diversions	17	18	17	13	26	19	13	7	20	25	17	14	20		26
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Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	25	27	25	26	26	16	26	11	14	26	25	13	15	275	26
Support additional personnel for flow and diversion monitoring and management	30	28	30	28	25	15	28	4	13	25	30	18	11	285	27
Support collection of additional Lidar data	28	13	28	24	29	21	24	18	7	28	28	16	22	286	28
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	19	16	19	29	21	29	29	26	28	6	19	26	29	296	29

Develop off- channel storage projects as suggested by feasibility studies	20	17	20	30	22	30	30	27	29	3	20	27	30	305	30
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<div>Strategics-Please rank Strategics by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-3 of</div>	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage	Off-channel Storage
	1	1	1	2	1	2	2	2	3	1	1	2	2	21	1

<div>Strategics-Please rank Strategics by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number.</div>	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water	Municipa1 and Domestic Water
	2	2	2	1	4	3	1	8	2	1	2	1	6	35	1

Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	3	3	3	1	3	1	1	1	1	3	3	1	1	25	2
Develop off-channel storage projects as suggested by feasibility studies	2	2	2	3	2	3	3	3	2	2	2	3	3	32	3

Analyze existing groundwater data, and conduct a groundwater study in the basin	4	8	4	1	1	2	1	1	5	2	4	6	1	40	2
Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects	3	3	3	2	5	5	2	5	1	8	3	2	8	50	3
Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	1	1	1	3	6	6	3	6	3	7	1	8	4	50	4

Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	5	7	5	4	2	1	4	2	6	6	5	4	2	53	5
Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	6	5	6	6	3	7	6	3	8	5	6	3	5	69	6
Provide assistance or technical expertise through OWRD support on installing well level monitors.	8	6	8	5	7	4	5	4	7	4	8	5	3	74	7

Provide informati on on where to get well water testing kits and technical support for water quality issues	7	4	7	8	8	8	8	7	4	3	7	7	7	85	8
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<div>Strategies-Please rank strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting</div>	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility	Data Collection Monitoring and Feasibility
Support maintenance of existing gauges	1	8	1	5	2	2	5	1	18	15	1	1	10	70	1

<div>Strategies-Please rank strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-18 of</div>	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education	Outreach and Education
	1	1	1	1	3	3	1	1	4	9	1	1	9	36	1	

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	3	1	3	1	6	18	1	17	1	1	3	11	8	74	2
Analyze existing groundwater data, and conduct a groundwater study in the basin	4	14	4	4	9	6	4	2	9	4	4	5	7	76	3
Support installation and maintenance of additional gauges at discontinued and recommended new sites	2	7	2	6	1	3	6	6	17	19	2	4	2	77	4

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)	7	2	7	3	2	1	3	4	3	16	7	2	7	64	2
Promote utility, state and federal incentive programs for improving irrigation efficiency	8	9	8	2	5	4	2	2	5	1	8	12	3	69	3
Promote best management practices for the capture and safe release of water (Water and sediment control basins, etc.)	5	6	5	5	7	15	5	9	2	2	5	5	12	83	4

Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	6	18	6	3	8	1	3	16	2	11	6	15	1	96	5
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	5	19	5	7	10	12	7	7	10	8	5	2	3	100	6
Develop off-channel storage projects as suggested by feasibility studies	12	6	12	2	7	19	2	19	8	2	12	12	13	126	7

Encourage voluntary leases and transfers of existing water rights to instream use	6	17	6	4	1	2	4	3	18	18	6	3	6	94	5
Promote good vegetative cover/cover crops.	2	3	2	6	12	14	6	11	10	8	2	8	10	94	6
Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)	3	12	3	7	8	13	7	10	6	6	3	7	11	96	7

Advocate for irrigator incentives for measurement of diversions , including installing measurement devices	14	4	14	8	14	9	8	5	16	7	14	7	6	126	8
Conduct study regarding changes in prevalence and function of springs and causes of changes	7	15	7	13	13	11	13	10	11	3	7	9	11	130	9
Conduct additional monitoring for temperature and dissolved oxygen	11	2	11	15	15	5	15	8	7	5	11	18	9	132	10

Support community wildfire response plans	4	4	4	11	14	12	11	14	1	4	4	17	17	117	8
Advocate for irrigator incentives for measurement of diversions , including installing measurement devices	12	7	12	12	9	8	12	6	11	13	12	15	5	134	9
Promote existing incentives for measurement of diversions	13	10	13	16	11	7	16	7	9	12	13	9	1	137	10

Assist ODFW with updating list of priority fish-passage barriers if necessary	13	3	13	17	11	7	17	9	3	9	13	19	4	138	11
Promote existing incentives for measurement of diversions	15	5	15	14	16	8	14	4	13	10	15	6	5	140	12
Support Agri Met station in Basin	8	10	8	19	3	13	19	13	12	17	8	3	12	145	13

Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	10	8	10	10	6	9	10	16	12	11	10	11	15	138	11
Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions	14	13	14	8	4	10	8	17	7	17	14	6	16	148	12
Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings.	15	5	15	9	13	11	9	15	8	3	15	18	14	150	13

Support collection of additional Lidar data	9	11	9	18	4	4	18	12	5	18	9	16	17	150	14
Analyze existing data on crop and climate	10	12	10	11	5	14	11	11	6	16	10	17	18	151	15
Support additional personnel for flow and diversion monitoring and management	16	9	16	16	12	10	16	3	4	13	16	8	14	153	16

Support installation and maintenance of additional gauges at discontinued and recommended new sites	9	11	9	18	18	5	18	5	17	14	9	16	2	151	14
Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	11	18	11	17	10	6	17	8	16	15	11	10	4	154	15
Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	16	15	16	13	15	16	13	12	15	5	16	4	8	164	16

Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	17	16	17	9	17	15	9	15	15	12	17	13	19	191	17
Provide assistance or technical expertise through OWRD support on installing well level monitors.	18	17	18	10	18	16	10	14	19	14	18	10	15	197	18
Provide information on where to get well water testing kits and technical support for water quality issues	19	13	19	12	19	17	12	18	14	6	19	14	16	198	19

Provide assistance or technical expertise through OWRD support on installing well level monitors.	17	16	17	14	16	17	14	13	14	10	17	13	18	196	17
Provide information on where to get well water testing kits and technical support for water quality issues	18	14	18	15	17	18	15	18	13	7	18	14	13	198	18

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<div>Strategies-Please rank Strategies by double clicking inside of ranking box located nexted to strategy and selecting priority by clicking grey drop down arrow that appears and selecting a number. Ranking 1-46 of</div>	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options	Funding/Policy Options
Reconnect floodplains (beaver dam analogs, beaver restoration, floodplain restoration, etc.)	4	3	4	5	4	1	5	19	1	3	4	25	2	80	1

Protect, enhance, and/or restore native riparian vegetation	2	2	2	23	2	2	23	6	2	2	2	24	3	95	2
Maintain and increase streamflows	1	4	1	26	5	5	26	1	5	8	1	27	1	111	3
Protect riparian areas from livestock using fencing and off-stream stock watering systems	3	43	3	24	1	3	24	7	3	1	3	23	9	147	4

Restore upland function by improving plant communities with juniper removal, and planting of appropriate perennial bunchgrasses, shrubs, and forbs.	6	18	6	4	12	20	4	44	7	12	6	11	31	181	5
Control noxious weeds	5	34	5	20	23	16	20	35	9	7	5	10	6	195	6
Support maintenance of existing gauges	18	38	18	1	16	10	1	8	33	34	18	1	10	206	7

Replace inefficient and failing diversions and/or screens such as push up dams with new structures that maintain or improve native fish passage	15	37	15	17	25	12	17	13	6	17	15	13	8	210	8
Conduct outreach to irrigators about more efficient irrigation practices and systems and encourage adoption	13	17	13	19	13	15	19	15	8	16	13	45	7	213	9
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)	31	21	31	7	10	6	7	20	30	25	31	9	5	233	10

Support installatio n and maintena nce of additional gauges at discontin ued and recomme nded new sites	19	22	19	2	17	11	2	17	41	38	19	15	11	233	11
Provide full fish passage (removal, repair and/or replaceme nt) at priority artificial obstructio ns including culverts and dams.	8	11	8	31	31	26	31	5	29	18	8	17	12	235	12
Promote best managem ent practices for the capture and safe release of water (Water and sediment control basins, etc.)	9	30	9	3	21	36	3	30	15	15	9	19	36	235	13

Encourage voluntary leases and transfers of existing water rights to instream use	10	41	10	6	7	7	6	14	43	46	10	41	4	245	14
Replace inefficient irrigation systems with more efficient systems (e.g., replace flood irrigation with sprinklers)	17	15	17	15	27	13	15	4	12	30	17	46	21	249	15
Analyze existing groundwater data, and conduct a groundwater study in the basin	23	35	23	13	22	27	13	3	14	11	23	32	24	263	16

Promote mulch tillage, ridge tillage, zone tillage, no till, chem fallow, and CRP as ways to improve soil health, etc.)	7	27	7	32	38	28	32	22	24	9	7	22	18	273	17
Promote utility, state and federal incentive programs for improving irrigation efficiency	14	36	14	18	24	42	18	16	10	24	14	12	32	274	18
Identify, protect, and restore seeps and springs supplying cool water	30	19	30	25	8	4	25	10	45	5	30	26	20	277	19
Support Agri Met station in Basin	29	5	29	9	19	33	9	31	17	31	29	7	39	287	20

Pipe open ditches	16	16	16	16	26	14	16	24	46	28	16	14	44	292	21
Promote existing incentives for measurem ent of diversions	35	25	35	12	36	24	12	11	26	27	35	4	16	298	22
Develop off- channel storage projects as suggested by feasibility studies	12	33	12	22	11	44	22	43	11	6	12	29	46	303	23

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	11	32	11	21	3	45	21	42	32	4	11	28	45	306	24
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.	21	14	21	28	30	17	28	37	34	43	21	2	23	319	25

Conduct process based hydrologic study including how stream and groundwater flows change with land use and future climate change.	20	23	20	14	14	18	14	41	37	41	20	31	33	326	26
Increase pace and scale of forest restoration, including prescribed burning and thinning	27	29	27	8	41	31	8	45	20	21	27	21	27	332	27
Support community wildfire response plans	28	6	28	10	42	32	10	34	16	23	28	42	35	334	28
Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions	26	10	26	34	18	29	34	38	23	44	26	6	26	340	29

Support and advocate for increased communication for water conservation in public / municipal water systems and infrastructure needs	22	12	22	30	28	19	30	40	36	35	22	30	19	345	30
Advocate for irrigator incentives for measurement of diversions, including installing measurement devices	34	24	34	39	35	23	39	12	27	33	34	5	15	354	31
Create and promote wildland urban interface buffers, and defensible space around rural homes and buildings.	37	9	37	11	40	34	11	33	22	10	37	43	34	358	32
Assist ODFW with updating list of priority fish-passage barriers if necessary	33	1	33	41	32	21	41	29	13	36	33	33	14	360	33

Establish, support and help fund additional groundwater monitoring wells and support community groundwater monitoring networks	24	44	24	42	15	25	42	18	42	22	24	16	25	363	34
Promote good vegetative cover/cover crops.	25	26	25	33	37	46	33	23	25	19	25	35	17	369	35
Assist entities with public water and wastewater systems in funding and implementing infrastructure improvement projects	32	13	32	29	29	43	29	32	35	42	32	3	22	373	36
Conduct additional monitoring for temperature and dissolved oxygen	41	20	41	43	9	9	43	25	31	13	41	40	29	385	37
Encourage and assist state agencies in creating additional instream water rights	42	42	42	27	6	8	27	2	40	40	42	44	30	392	38

Conduct study regarding changes in prevalence and function of springs and causes of changes	36	28	36	35	39	30	35	28	21	20	36	36	28	408	39
Implement prescribed burn and thinning for forest management	40	8	40	37	44	40	37	46	4	29	40	8	42	415	40
Support additional personnel for flow and diversion monitoring and management	43	39	43	40	34	22	40	9	28	32	43	34	13	420	41
Support collection of additional Lidar data	38	7	38	36	43	35	36	27	18	45	38	37	40	438	42
Analyze existing data on crop and climate	39	40	39	38	20	41	38	26	19	37	39	38	43	457	43
Conduct voluntary survey for non-municipal well users to capture issues associated with domestic water availability and quality	44	45	44	46	33	37	46	36	38	26	44	20	37	496	44

Provide assistance or technical expertise through OWRD support on installing well level monitors.	45	46	45	45	45	38	45	21	39	39	45	18	41	512	45
Provide information on where to get well water testing kits and technical support for water quality issues	46	31	46	44	46	39	44	39	44	14	46	39	38	516	46

APPENDIX F

Step 4 Public Comments

Step 4 pPublic Comments Summary, March 2021					
Public Comment	Reference Section	Incorporated (Yes/No)	NOTES	MORE NOTES	THEMES
Mike Ogle					Themes to address: Prioritizing Strategies - how to list and use them to frame a action plan for Step 5.
Monitor & measure the water as it moves through the system.	Critical Issue 7; Section 3,		Addressed in report		Storage - impacts on flow, fish, and whether WABS are science based. Reminder that CI 4 Needs, related strategies is a feasibility study to further analyze scope.
River drying up in Picture Gorge in the summer	Critical Issue 3; Section		Ask norie to ask him for a picture and we can drop in to CI 3 section		
Fence Cattle keep Cattle out of the tributaries	Critical Issue 1; Strategy 1.1		Addressed in report		
Beaver reintroduction could prove very beneficial.	Critical Issue 1; Strategy 1.3		Addressed in report		
Off channel storage has been proposed, presumably drawing water from creeks in high water events which is when the smolts leave the system - ... lead to steelhead and salmon to extinction. The storage of offsite water with no water entering in the hot summer months will leave an algae covered stagnant pool that upon leaving storage will kill the downstream ecosystem.	Critical Issue 4		Considerations will be addressed through future feasibility studies		
Nicole Lexon, CTWSP DNR					
Add bank stability to goal statement (p. 21)	Critical Issue 1; Goal statement	Yes			
Change actual to existing (p. 24)	Critical Issue 3; Problem Statement	Yes			
Add Meet (p. 24)	Critical Issue 3; Goal statement	Yes			
Sounds alittle redundant with desired twice maybe coveted, proper, preferred suitable ect. would sound better? (p. 28)	Critical Issue 5; Problem statement	Yes			
Add "at various life stages" p. 36)	Critical Issue 10; Problem statement	Yes			
Add "and other aquatic organisms" p. 36	Critical Issue 10; Goal statement	Yes			
The Conservation Angler					
Poor Riparian Habitat: Suggest adding strategies 1) enclosures basin wide 2) voluntary grazing allotment retirement, https://eplanning.blm.gov/public_projects/lup/55483/79236/91499/John_Day_Basin_ROD-RMP.pdf 3) using carbon sequestering incentives (not seen in Step 4, but discussed in Step 3)	Critical Issue 1		Discuss at March 16 meeting adding add'l strategies	Recommended Strategy 18.4: Support payment programs for landowners adopting soil carbon improvement practices and management that mitigate for greenhouse gas emissions. P. 51	
Upland Restoration and Improvements in Native Plant Communities: Same suggestion from above - add strategies	Critical Issue 5 & 17		Discuss at March 16 meeting adding add'l strategies		
Storage Needs: The WAB’s selected as priority sites for storage, with the possible exception of Sorefoot Cr. , all have anadromous and resident wild fish. It is a mistake to prioritize these streams especially ones with endangered species in them.	Critical Issue 4		Discuss at March 16 meeting adding add'l strategies; Considerations will be addressed through future feasibility studies	Values were based on water quantity availability in seasonal flow, adding opportunity for feasibility study, requirements for feasibility study will take this into account - we are not suggesting storage in these WABS, but feasiblity could be done there or apply for there. SB - maybe we add something in Critical Issue 4 off channel storage that addresses we are not suggsitng WABS for storage but rather it is a criteria for feasibilty study grant application	

Streams are already water quality limited due to warm temperatures and it is likely the storage facilities will add to that problem. Warmwater species such as smallmouth bass will find their way into the reservoir and further impact the ecology of the area. The higher up in these systems the storage is proposed, the greater the threat.	Critical Issue 4		Discuss at March 16 meeting	Isn't storage being suggested to address or reduce warm water temps
Storage projects that rely on a dam or barrier create multiple problems for the watersheds in which they are constructed. These structures can interrupt critical ecological processes necessary for a healthy watershed. These include interruption of sediment, nutrient and water budgets of the sub-watershed. Blocking downstream sediment transport and nutrients results in “starvation” of these downstream. Furthermore, the creation of a water storage reservoir leads to heating and evaporation of the stored water and over time, loss of the capacity within the structure from sediment build-up, even the assumption that there are “excess” winter flows available for capture ignores the ecological and geological benefits from high winter and spring flows. There are safety issues to consider as well. OWRD and ODFW must provide professional guidance to this process. TCA recommends that DEQ be involved as well.	Critical Issue 4		Considerations will be addressed through future feasibility studies	
<u>Water Area Basin Prioritization Process:</u> We think the WAB Prioritization process is likely helpful but also not scientific - especially as related to anadromous fish. As much as I understand the prioritization effort - which may help us protect the best spawning streams, I cannot help think about how - back in the day - almost all of these little side-canyon streams supported wild steelhead when there was water and when there was some riparian cover.	Water Availability Basin Prioritization and Ranking for Each Critical Issue		Discuss at March 16 Meeting; WAB prioritization was conducted using four primary peer reviewed published scientific sources: 1) MidColumbia Recovery Plan; and 2) John Day Basin Subbasini Plan, 3) BPA Atlas ranks; 4) CTWS John Day Restoration Plan	
TCA believes that John Day wild steelhead resilience and productivity will be reduced incrementally by applying a prioritization scheme that does not value the historic presence of wild steelhead in streams now not supporting them. John Day summer steelhead population strength is due to the variety of ecosystem types as well as the variety of spawning strategies that these wild fish can use for success. It may very well be the wrong approach to only and always focus in on the streams where there may now be larger populations of spawning adults and hopefully large numbers of out-migrating juveniles. The impact of climate change is that we cannot make the same assumptions for the future based on the past. TCA is concerned that a prioritization process based on current strongholds does not adequately push forward actions that would be necessary to build future strongholds that will be necessary for John Day steelhead survival and recovery in the long term, as resources will be steered to only the streams already functioning fairly well.	Critical Issues 1,2 3: Water Availability Basin Prioritization impact on steelhead resilience; WAB prioritization protection and restoration		TCA participated in WAB prioritization for critical issues related to aquatic restoration. Prioritization is based on the above noted 4 science documents and TCA, ODFW, - prioritization was not based on a stronghold approach - but rather prioritized sources from literature and agency and partner recommendations. What actions/strategies does TCA suggest to add to Critical Issue 1, 2, 3, 10 to address their concerns?	
Off channel storage feasibility study. We see nothing similar for other “storage” efforts such as determining where the most promising sites are for beaver analog dams or enhancing aquifer storage.	Strategy 1.3, BDAs,		Discuss whether to add BDA's to Critical Issue 4, offchannel storage, Critical Issue 9. BDA a listed strategy for CR 13 (13.3)	

<p>Instream Flows: In the lower river only 24% of the consumptive use water rights are met late in the summer. It is my likely that of the 76% unsatisfied rights, that most of them are senior to the instream water rights. Measuring the consumptive use and monitoring stream flows is a definite problem in the basin. It is not clear how encouraging conservation, leasing or purchasing water rights and other methods of increasing instream flows will be of actual benefit without the ability to measure the results.</p>	<p>Monitor instream flow; Critical Issue 3 & 7</p>			
<p>One possible solution to this is to have the Water Resources Commission declare the lower basin to have a serious water management problem. (ORS 540.435). It could require anyone in a serious water management area to install a measuring device and submit an annual water use report. If we knew where the water was actually being used and how efficiently that use was we could begin true conservation efforts and help provide water to the 76% of users whose water needs are not being met, and improve stream flows as well. This would greatly improve the collection of data in the basin and help to resolve one of the main critical issues.</p>	<p>Monitor instream flow; Critical Issue 3 & 7</p>			
Brian Posewitz, Water Watch				
<p>I don't like how the strategies on p. 5 in Ex Summary are being ordered/prioritized, which seems to be separated from the ranking of the primary issues they are designed to address (among other things) and apparently are based on one of the crosswalk tables, which we still haven't finished vetting and which to me is just one of many ways of looking at the info and is a pretty rough measure at that – just looking at how many of the issues they arguably address. I'm not sure we need to prioritize these independent of the critical issues but, if we do, I think we need another process to do that.</p>	<p>Recommended 46 Strtegeis, p. 5, also addressed on p. 51</p>		<p>They are listed here from the Impact Analysis Table that still needs to be finalized and approved; impact table was a process to try to prioritze actions.</p>	
<p>I would say “ranking” v. “priority” since our ranking was just one way to do it and not necessarily scientific.</p>	<p>Section 3., p. 7</p>	<p>Yes</p>		
<p>To me this section is giving too much significance to the two “crosswalk” tables, which are just different ways of looking at the information and are pretty rough. For example, I don't really think it matters very much how many strategies might be grouped within a particular general category. I would say the ranking of critical issues should be most important in prioritizing strategies (i.e., we should implement the strategies that address that most important critical issues”) but that is getting lost here. I made a few suggestions but, in my opinion, this section needs to be reworked.</p>	<p>Section 4, Results & Findings, p. 8 also refered to on p. 51 & 57 of WW comments. Concerns related to prioritization</p>		<p>Discuss, groupings were made for future orgnanization - grant writing and feasiblity study grants</p>	

<p><u>Creating an Action Plan:</u> I don't agree with this sentence. I don't think the categories into which we can group the strategies, or how many strategies fall into which category, tell us much in terms of prioritization or that we should choose to prioritize one general category of actions over others. It seems to me like just one of many ways to look at/organize the strategies – interesting to see but I don't see how it helps decided which strategies are most important.</p>	Section 4, Results & Findings, p. 8		Discuss	
<p>These sentences are not consistent with my recollections. I don't recall agreeing that the principles were more than potentially helpful criteria to consider. I think I also voiced concerns about some of these as not leaving room for strategies that might have some negative impacts to some interests but that are outweighed by positive impacts to others. Also, I remember going through the strategies at one point in a subgroup and deciding how many of the principles were satisfied by each and determining that many strategies could not be said to satisfy all principles but are still strategies (and should be, in my opinion).</p>	Guiding principles Section, p 15	Yes	Rewrite to accommodate comment	
<p>Trying to distinguish between work group members (which are the agencies/organizations) and representatives of members.</p>		Yes, Add clarification	Clarify difference between work group participants (agencies, public) and signatories who are able to vote	
<p>This suggests a vote after the wording was revised/refined, which is not my recollection. If this refers to the dot voting, that was well before the issues/strategies list was refined.</p>	Development of Critical Issues, p 16		Will edit and alos link to meeting notes that further descripbes and verifies	
<p>The narrative on this should be based on the prior reports. This seems to me to introduce new concepts and authorities, which we haven't had a chance to vet, too late in the process. I would say the prior reports (Step 2 at p 30) really only established possible juniper impact on the hydrological cycle via increased ET. To me the juniper discussion should be limited to that at this point.</p>	Critical issue 5, p. 29		Discuss with group to keep text as is or no.	
<p>This sentence is confusing to me (how do the water savings depend on those things?) and also seems to be adding new concepts/assertions/authorities too late in the process.</p>	p. 30, clarify	Yes, clarified		
<p>The statues and regulations on fish passage refer to “native migratory fish,” which includes both fish that migrate within a stream system and fish that migrate to the ocean and back (anadromous). That's really the correct term to use here but I know many people think “migratory” means only anadromous so maybe clarify with parenthetical v. using terminology that doesn't line up with the fish passage laws.</p>	Critical Issue 10; p. 37	Yes, Incorporated, resolved		
<p>I would not repeat them. If we do it here we should do it everywhere, which in my view makes the report too long, redundant and tedious to read. People can refer back and, to me, it helps tie everything together if we just refer back.</p>	Recommended Strategy 13.0, 14.0, 17.0, 19.0 p. 43 & 44 & 51		Group discussion to list out strategies for reference for reader or no?	

<p>This seems to me to open a complex box that isn't covered in the prior reports. The overall narrative here is that fire is bad for ecosystem/water quality but it's probably pretty complex; e.g., juniper encroachment (considered bad) is attributed to reduction in wildlife, which would suggest wildfire, at least on some level, may be good, as reflected in strategies calling for prescribed burn. Overall it just seems too late to me to try to deal with this here (on this critical issue), which I think we so far have treated as being mostly about risk to communities/structures.</p>	<p>Critical Issues 15, p. 46</p>		<p>Group review and decide to keep or cut added language around forestoration and wildifre mgmt</p>	
<p>To me this is descriptive of someone's historic practice of site selection and doesn't really help explain how particular WABs are being prioritized. Also, I don't think creating more space for grazing is necessarily our priority. I would delete all this and just explain in the next sentence who is saying this as we have with other WAB prioritizations (e.g., ODFW, ONDA, etc.).</p>	<p>Section 17, WAB</p>	<p>No, keep text, but added citation from NRC</p>	<p>Txt provided by local NRCS</p>	
<p>Not sure it helps to cite statewide trends, especially on issues such as recharge, which is likely highly site specific. Also, next paragraph I think makes the general point – that things are likely to get worse with climate change. Also same reservation about bringing in new factual assertions not in prior reports this late in the process.</p>	<p>Section 19, p. 51</p>	<p>No, keep txt, cited, additive</p>		
<p>To me this section can be significantly simplified as suggested. Also, some of the narrative is going beyond a basic description of the issue into the rationale for solutions, etc.</p>	<p>Critical Issue 20, p. 53</p>		<p>Subcommittee or entire group to discuss or decide.</p>	

APPENDIX G

Public Anonymous Survey

Lower John Day Work Group PBP Water Strategies Survey

1. How do you use or benefit from water resources in the Lower John Day?

Irrigation Stock water Municipal, drinking water Personal recreation

Work related recreation Fishing, birding, swimming, boating Other (please specify)

2. Do you farm and or ranch?

Yes No If yes, please list crop type & acreage irrigated

3. If you farm, what trends are you seeing in crop type? How is this a result of water availability or existing conditions?

4. If you are an agricultural user, can you increase the water efficiency of your operation?

- ☐ Improved irrigation efficiency (gun to wheel line, or line to pivot, or drip)
- ☐ Scientific Irrigation Scheduling (monitor soil moisture & irrigation automated when needed)
- ☐ Improved operation and maintenance of existing infrastructure
- ☐ Move to dryland crop
- ☐ Other (please recommend)

5. When do you use the river? Is reduced stream flow limiting your use?

6. Do you have water quality concerns? If so, what are they? w

Flow

Temperature

Quality or sediment

Algae

Other (please specify)

7. What are your concerns over water allocation in the Lower John Day Basin?

8. Do you see benefits with the region's river recreation? Do you have concerns? Please explain.

9. Are there streams that you think would be candidates for additional instream flow? If so, what streams do you recommend?

10. What type of help do you need from utility company or local agency to support water efficiency infrastructure needs or improvements?

11. What are some solutions you would like to see in order to address water allocation issues and concerns?

☐ Irrigation efficiency, maintenance and replacement

☐ Municipal and Irrigation conservation

☐ Habitat improvements

☐ In-stream water leases or transfers

☐ Storage

☐ Monitoring and in-stream gauges

☐ Cistern and rain water harvest

☐ Other (please specify)

12. Do you have other suggestions or ideas you would like to share? We would also be interested in hearing about a historical anecdote about the John Day if you would like to share.

13. What field tours are most of interest to you as we seek solutions to meet current and long-term water needs?

	Very interested	Interested	Not interested
Forest restoration sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Irrigation efficiency practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Habitat restoration sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In-stream storage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fish passage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instream lease sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>