
Implementation Plan-Working Draft

Joint Actions for Water Supply Resiliency

Prepared for
**North Santiam Watershed
Drought Contingency Plan Task Force**

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1. Introduction and Purpose

In May 2017, the North Santiam Watershed (NSW) Drought Contingency Plan (DCP) Task Force approved a DCP to “build long-term resiliency to drought in order to minimize impacts to the communities, local economies, and the critical natural resources within the watershed”. The DCP identified a drought monitoring framework, as well as mitigation and response actions to promote water supply resiliency before and during drought. Most of these actions will be implemented by individual DCP Task Force members; however, eight “new” joint actions will be implemented by the collective DCP Task Force. The purpose of this implementation plan is to provide steps to carry out these joint actions.

The eight new joint actions were identified by DCP stakeholders as important tools for managing water in the NSW that do not currently exist in a programmatic form specific to this basin. They are intended to be developed prior to drought, so that they can be implemented in response to specific, increasing stages of drought (as identified in the monitoring framework). For each joint action, this implementation plan identifies the purpose, process, steps needed to complete the action, potential funding sources, and a schedule to develop these new water supply management tools for the NSW.

2. Joint Actions

Joint Action 1: NSW DCP Education and Outreach

Purpose

The purpose of this joint action is to establish consistent NSW DCP education and outreach communication tools to provide to stakeholders before and during drought. Tools include messaging, press release templates for stages of drought, and a common “brand”. This joint action identifies to whom, what, how, and when drought status information will be disseminated. An established group and communications tools will ensure that relevant information is provided in a timely manner to officials, emergency managers, and the general public.

The desired outcomes of this joint action are:

- Awareness and understanding of the water supply challenges in the NSW
- Credibility and accountability for the DCP monitoring and actions
- Support for implementation of the DCP actions.

Process

NSW DCP education and outreach will be conducted under the Response Group, which is described in the DCP Operational and Administrative Framework. The DCP Administrative Team liaison, assisted by the DCP paid lead, will convene and facilitate a subcommittee and be responsible for its progress. The subcommittee will be composed of municipal, agricultural, natural resource managers, and recreation owners, as these sectors would be expected to benefit from this action. Marion County emergency public information officers and City emergency response managers already engage multiple sectors in natural hazard mitigation preparedness, response, and recovery and should participate in this effort to encourage information sharing and message consistency. Cities and counties with separate public health agencies should also involve representatives from these agencies.

The subcommittee will present draft tools to the DCP Administrative Team, which may consult with the DCP Task Force. Comments from the DCP Administrative Team will be incorporated into final tools. Once final, the DCP Response Group will be responsible for overseeing the dissemination of drought communications to the public.

Actions

The subcommittee will:

- (1) **Develop and use a common “brand” for consistency on all communications.** The brand should be recognizable and specific to the DCP and should be used on all

materials. The brand could be accompanied by a watershed map indicating where drought conditions are present.

- (2) **Identify the audience, key messages, outlets/contacts, and a schedule for outreach implementation.** An example is provided in Table 1 for Drought Stages 1 and 2. Review the example in Table 1, and use the following information to modify Table 1 (below) as needed and develop additional information for Drought Stages 3 and 4:
- a. **Communication Audience.** DCP stakeholders include anyone potentially affected by or interested in the DCP, including those actively engaged and those who have interest but may not wish to be actively engaged (e.g., the public, residents in the basin, and other interest groups). Stakeholders include municipalities, irrigation districts, Federal and state agencies, Tribes, business, industry, interest groups (including but not limited to the fishing community, kayakers, flatwater recreationists, and environmental groups), communities, and individuals. Individuals may include groups such as private well owners. At various stages, primary audiences (those that must be reached) may be distinguished from secondary audiences (those that are helpful to reach).
 - b. **Key messages.** Communicate the collaborative, voluntary, and watershed-wide basis for sharing water that is needed to reduce impacts to the health, safety, and welfare of communities, economies, and critical natural resources in the watershed, as identified in the DCP response actions vision (e.g. “it’s all one water,” and “shared pain”). Provide information about the human health and environmental health implications of drought and recommend clear actions to minimize risk/ impacts. Impacts should be characterized by both instream flow and drinking water supply. Messaging guidelines are provided in Appendix A. Develop targeted messages as necessary.
 - c. **Communication outlets and contacts.** Identify as many outlets as possible, including websites (example: <http://www.njdrought.org/>), newspapers, radio, television (e.g., public service announcements), social media, bulletin boards (offices, libraries), presentations to local businesses or group meetings (watershed council), educational programs/schools, cable access channels, and water bill inserts. Identify partners that are willing to include information in their publications and mailings. Document contact information for each.
 - d. **Schedule for disseminating drought communications.** At the request of the DCP Administrative Team, drought communications should be disseminated by the Response Group at each drought stage, and possibly when certain indicators reach identified thresholds. (Certain indicators are more relevant to target audiences.) Consider that certain groups need longer lead time or earlier warning, and incorporate more frequent and detailed updates for those groups if possible (e.g., farmers). Increase the frequency and scope of communication as drought develops.

Table 1: Audience, key messages, outlets/contacts, and outreach schedule, by drought stage

Stage 1/Heads Up	
Primary audience:	Irrigation districts, water-dependent recreation businesses
Key messages:	<ul style="list-style-type: none"> • We are not in a drought yet, but one may be coming. • Many people – residents, businesses, farmers and recreationists – depend on the N. Santiam River. • Here’s how others in the watershed are affected by drought.... • Practice using water wisely. Here’s how (provide examples of wise water use such as in WMCPs, and information about future response action opportunities such as water rights leasing).
Primary outlets:	Local newspaper, partner websites (e.g., NRCS), agriculture newsletters. Use common brand.
Frequency of communications:	Monthly
<i>Initiate Stage 2 communications when boat ramp elevation in Detroit Lake drops below x feet.</i>	
Stage 2/Moderate drought	
Primary audience:	Irrigation districts, water-dependent recreation businesses, municipalities above Detroit dam (officials, emergency response, and the general public).
Secondary audience:	Municipalities below Detroit dam (officials, emergency response, and the general public), state agencies, all business, industry, interest groups, and individuals, including private groundwater well owners, new residents, and non-English speakers.
Key messages:	<ul style="list-style-type: none"> • Some areas in the watershed are experiencing drought and drought impacts (provide examples). • Here’s how everyone is saving water (provide examples). • Please voluntarily reduce water by 5 percent. Here’s how you can do it (provide examples).
Primary outlets:	Local newspaper, partner websites (e.g., NRCS), agriculture newsletters, radio, bulletin boards (offices, libraries), presentations to local businesses or group meetings (watershed council), educational programs/schools. Use common brand.
Frequency of communications:	Bi-weekly to primary audience; monthly to secondary audience.

- (3) **Use stage-specific press release templates** for each stage of drought, to keep the public informed and to request or encourage behavior changes, such as voluntary conservation. Templates are provided in Appendix B.

Joint Action 2: Develop A Water Supply Option Agreement Pilot Project

Purpose

The purpose of this joint action is to evaluate the feasibility of including water supply Option Agreements in the NSW Water Rights Management Program toolbox (see Joint Action 3). The Oregon Water Resources Department (OWRD) has not processed an Option Agreement to date; however, the potential exists for this to be a water supply management tool during drought. If deemed feasible, a program will be developed as part of Joint Action 3. If drought has been declared in the county, an Option Agreement enables a water-right holder to enter into an agreement that authorizes the use of water at locations, from points of diversion, and for uses other than those described in the water right (established under ORS 536.077). The Agreement remains in place until terminated by the parties, and provides additional water-supply options in times of drought. This joint action identifies the steps to complete a pilot Options Agreement.

The desired outcome of a water supply Option Agreements Pilot Project are:

- To introduce a state water supply resiliency tool to help mitigate the effects of drought in the NSW.
- To leave water in-stream to provide ecological benefits and to temporarily reallocate water to local governments with vulnerable water rights during drought.

https://www.oregon.gov/owrd/pages/wr/drought_overview.aspx

Option Agreements are intended to have an expedited review process, reduced fee schedule, and to be short-term emergency authorizations, not permanent solutions to deal with water supply challenges. Option agreements must be approved by, and are subject to, the OWRD Director or Commission. The Director must find that the use of water under the proposed option agreement will not cause injury to existing water rights and will not impair or be detrimental to the public interest. Affected parties may file a protest and a hearing may be held.

Though OWRD has not processed any Option Agreement applications, it has identified a review timeline. The Director will provide notice of an application for at least three successive weeks in a newspaper and shall not take action on an application until at least 20 days after the last date the notice appeared in the newspaper. Therefore, processing of Option Agreements begins 6 weeks after OWRD receives an application. Once the Agreement is approved, use of water under the Option Agreement terms may begin only after the declaration of severe, continuing drought has been made by the Governor and lasts until the drought declaration has ended.

Table 2: Option Agreement Basics and Examples

Basics of Option Agreements
<ul style="list-style-type: none"> • Private water agreements formally authorize potential change in use (i.e., locations, points of diversion, or for other beneficial uses) during drought • May not exceed use authorized under the rights involved • Remains in place until terminated by parties • Must provide notice to OWRD • Must be approved by Director or Commission • Cannot cause injury to existing users • Cannot harm public interest
Examples of Potential Option Agreements
<ul style="list-style-type: none"> • One irrigator curtails water use and sells excess to another irrigator to avoid forbearance¹ and crop damage • One municipality allows another to use an established portion of its water right during the drought period when certain needs conditions are triggered • A water right holder temporarily switches points of diversion from a tributary to main stem to improve instream flow • A water right holder temporarily changes the place of use of his/her water right to “instream” to promote instream flows during drought

Since Option Agreements have not yet been implemented, this action focuses on investigating the feasibility of potential Option Agreements and identifying opportunities to improve the application and review process.

Process

Review of this joint action will be under the Mitigation Group, which is described in the DCP Operational and Administrative Framework. A subcommittee will evaluate the feasibility of using this water rights management tool in the NSW.

The DCP Administrative Team liaison, assisted by the DCP paid lead, will convene and facilitate the subcommittee and be responsible for its progress. The subcommittee will be composed of municipal, agricultural, and natural resource managers, as these sectors would be expected to benefit from this action.

The subcommittee will present its findings to the DCP Administrative Team, which may consult with the DCP Task Force. The DCP Administrative Team will make the final determination regarding development of a program for the NSW as part of Joint Action 3.

Actions

The DCP Mitigation Group will:

¹ A forbearance agreement is a contract between private parties where one water user agrees not to exercise his/her right to use water.

- (1) **Conduct a feasibility study.** Determine a viable pilot project for implementing one Option Agreement in the NSW.
- (2) **Conduct research to determine opportunities and constraints** within the rules (690-019-0080). This may involve coordination with OWRD Staff and legal experts.
- (3) **Identify parties.** Determine municipalities and/or irrigators who may be well-suited for and interested in developing an Option Agreement. When approaching potential parties, communication should focus on how an agreement could benefit them individually, rather than benefits to the other party and/or fish and wildlife.
- (4) **Develop and submit the pilot Agreement,** acting as an agent (rather than as a party to the Agreement).
- (5) **Monitor and assess** the efficacy and efficiency of the pilot Agreement, including water right holder satisfaction, clarity of OWRD review process, and analyzing goals and outcomes of the Agreement. (Monitoring should be completed before Agreement is triggered by drought conditions, when the Agreement goes into effect, and after the Agreement period has concluded).
- (6) **Present summary report** of pilot Option Agreement and program evaluation to the DCP Administrative Team.
- (7) **Facilitate integration of Option Agreements** information into education materials and outreach events for water rights management tools (see Joint Action 3).

Joint Action 3: Water Rights Management Program

Purpose

The purpose of this joint action is to establish a framework for managing water rights to promote resiliency to drought and to “share the pain” among use sectors and instream needs. These water rights management tools can be used before and during drought. The key is to have a framework in place and water right holders educated about the options. Moreover, having a fund to facilitate the transactions and potentially compensate water users for foregoing the use of water will likely be a key to successful implementation. Establishing a water rights management program in the NSW will take time, thus these implementation tasks are focused on establishing the groundwork for building trust, educating water users, and identifying the best framework for a program.

The desired outcomes of this joint action are:

- Education of water users about water management tools
- Complete a Pilot “pooled instream lease.”
- Establish a framework and “clearing house” for facilitating certain water management actions that provide water supply (instream and out-of-stream) before or during a drought.
- Establish a fund to compensate water right holders that forego use of water and protect that water instream for ecological purposes.

A suite of water management tools was described in the DCP Response Chapter and are summarized in Table 3. To date, water right holders on the N. Santiam have little

experience with these tools and there is no framework/organization in the basin that promotes activities such as leasing of water rights instream.

Table 3: Water Rights Management Tools

Forebear use	Water rights owners currently have the ability to forbear use of any portion of their water at any time. That is, they can voluntarily stop or reduce their water use during the season to leave more water instream during critical periods to protect vulnerable instream natural resources. Forbearance agreements can outline specific times of year when the water user voluntarily agrees to forego using water and identify any compensation. These agreements do not provide legal instream protection of water from junior users (unlike an instream lease or instream transfer).
Diversion reduction	Water rights owners can sign an agreement to reduce their water use at the point of diversion by a certain amount (cfs) or percentage. Diversion reduction agreements can outline specific time of year or conditions that trigger the diversion reduction agreement, including any compensation. These agreements also do not provide legal instream protection of water from junior users.
Switch to an alternate water source	A separate, or complimentary, option that is currently available is to leave water instream and switch to an alternate water source, such as groundwater or stored water. This response action provides the same benefits as forbearing use, though in certain areas groundwater withdrawals could also impact water levels in neighboring wells or reduce groundwater contributions to instream flow.
Lease water rights (full or split-season leases)	An option that is currently available but rarely used in the N. Santiam is leasing certificated water rights instream. Instream leasing provides water right holders with a voluntary opportunity to leave water instream to protect natural resources when needed, but still protect rights for future beneficial out-of-stream use. (Leasing a water right instream is considered a beneficial use and protects the water right from forfeiture due to non-use). The water is protected instream with the same priority date as the certificate being leased. There are two different types of water rights leases: full and split-season. As part of the <u>full lease</u> , a water rights owner would indicate a specific number of acres that they voluntarily elect not to irrigate for the full season. A <u>split-season lease</u> requires an owner to measure the amount of water used so that the amount of water remaining for instream use can be quantified.
Allocation of Conserved Water	When a water right holder improves their irrigation system efficiency, he/she can apply for an Allocation of Conserved Water. The amount of water “conserved” as a result of upgrades is calculated and divided. A minimum of 25% of the “conserved water” is dedicated instream, while the remaining portion of “conserved water” can be protected instream or used with less restrictions than a standard water right (e.g. no rate limitation, can be “layered” on top of existing water rights, can be moved

	more easily). The original water right is given a reduced duty and rate to reflect new system efficiencies.
Option Agreements	For instream and out of stream. (See Joint Action 2).

Process

The water rights management program will be developed under the Mitigation Group, which is described in the DCP Operational and Administrative Framework.

The DCP Administrative Team liaison, assisted by the DCP paid lead, will convene and facilitate the subcommittee and be responsible for its progress. A subcommittee will be composed of municipal, agricultural, natural resource managers, and recreation owners, as these sectors would be expected to benefit from this action.

The subcommittee will present draft materials to the DCP Administrative Team, which may consult with the DCP Task Force. Comments from the DCP Administrative Team will be incorporated into the materials. Once final, the DCP Mitigation Group will be responsible for overseeing the implementation of the water rights management program.

Actions

The subcommittee will:

- (1) Work in cooperation with OWRD to provide information about water rights management tools to N. Santiam basin water users. Forbearing use and switching to an alternate source are tools that involve individual water users. Water leasing and option agreements may involve multiple water users, therefore, program development is needed to coordinate among users. The “Water Leasing Program” subsection that follows outlines a suggested plan for coordinating use of these water rights management tools.
- (2) Identify any water rights holders in the NSW who have leased their water right instream and contact them to discuss successes and challenges. Incorporate success stories in education materials.
- (3) Conduct targeted outreach meetings with NSW water users and partners (ODA, NRCS) to gather information and promote voluntary use of instream flow restoration tools. Refer to Joint Action 1 for messaging and NSW DCP branding in communications.
 - a. Make efforts to include all use sectors (especially the fishing community, recreation community, and ODFW).
 - b. Include any seasoned instream lessors in outreach meetings to build trust and share successes and challenges.
 - c. When available, include relevant findings of pilot Option Agreement (Joint Action 2) in education materials and fact sheets.

Water Leasing Program:

- (1) Identify a water bank-type framework appropriate for the N. Santiam basin that would facilitate instream leasing and seek funding to establish and (if necessary) incentivize the action by compensating water rights holders. (A water bank is an institution or organization used to facilitate the legal temporary transfer of existing water rights between different water users, typically within the same watershed. A form of water banking already exists in the Deschutes and Klamath Basins. In 2002, irrigation “sellers” in the Upper Klamath Basin were paid \$175 per acre to cease diverting water plus \$125 per acre for the estimated reduction in crop consumptive use, for a total of \$300 per acre. Currently, in the Deschutes Basin, the Deschutes River Conservancy pays approximately \$7 to \$15 per acre-foot of water leased instream, depending on the location). The development of a water bank-type framework may include the following tasks:
 - a. Coordinate with experts (e.g. with the Monitoring Group, the WC, ODFW, and NMFS) to identify specific stream reaches where water aquatic species needs are not being met during periods of drought in the NSW.
 - b. Identify potential implementation of water rights management tools in vulnerable reaches of stream and determine existing relationships and potential gains to water right holders in those areas.
 - c. Assist interested water rights holders in identifying the most beneficial water management tools for benefitting their needs as well as instream needs.
- (2) Work with Santiam Water Control District to implement a pilot-project “pooled instream lease.”
- (3) Develop a contact list of likely/potential instream leasing participants and ensure they are receiving information from the Response Group about water conditions and impending drought.
- (4) Develop a fact sheet to convey details of the water rights management program (e.g. who to contact, pricing, timing) and send to list of likely leasing participants. Messaging should focus on benefits to water right holders, while promoting the message “share the pain.” Include in partner newsletters.

Joint Action 4: WMCPs for Small Communities and Large Water Users

Purpose

Individual water users (such as the city of Salem and the Santiam Water Control District) have water planning documents (such as Water Management and Conservation Plans; WMCP) that contain “curtailment plans” that identify their own response actions for curtailment of water use based on supply shortages. Actions may be for the entity itself and/or its customers. However, individual water user curtailment stages may not align with the watershed-wide defined DCP drought stages. One suggested mitigation action is to align stages in existing curtailment plans with the DCP monitoring framework stages. A related action is to help small communities develop WMCPs that align with the NSW DCP.

The purpose of this joint action is to align all North Santiam water planning documents, to the extent possible, with the actions in the NSW DCP. The desired outcome is improved coordinated response among water users at each drought stage.

Process

This action will be conducted by individual water users in the basin, with assistance and coordination provided by the DCP paid lead. To align existing North Santiam water planning documents, each water user will identify and review its own documents and align response actions with those in the NSW DCP at each drought stage. This may involve developing a schedule and plan for aligning actions over time. For new water planning documents, the DCP paid lead will provide coordination to small communities in terms of identifying funding sources and alignment of curtailment actions. The paid lead will update the NSW DCP Administrative Team as needed.

Actions

For all North Santiam Water users:

- (1) Identify all planning and regulatory documents (e.g., water conservation and management plans, water system master plans, ordinances, curtailment plans, etc.) within their own jurisdiction.

For North Santiam water users with existing planning documents, each water user will:

- (2) Review and compare drought stages in existing planning documents to NSW DCP drought stages. Be sure to understand the monitoring indicators and triggers of each drought stage, rather than the drought stage number, to ensure the appropriate drought conditions are compared.
- (3) Outline triggers for response actions under existing plans and compare these to NSW DCP response action triggers.
- (4) Outline curtailment actions under existing plans and compare these to NSW DCP curtailment actions. Identify curtailment actions that are unique to each plan.
- (5) Evaluate drought stage triggers in existing plans that can be streamlined to match NSW DCP triggers.
- (6) Evaluate whether response actions in existing plans can be “moved” to another drought stage to align with the NSW DCP, and create a schedule for doing so (e.g., with next WMCP update, at July city council meeting, etc.).
- (7) Add new actions from the NSW DCP to existing planning documents. Inform the DCP paid lead of successful actions in existing plans that should be added during the DCP update process.

For North Santiam water users that do not have WMCPs, paid lead will:

- (2) Convene small communities in the basin to discuss existing drought response actions and curtailment plans.
- (3) Develop a curtailment plan template that aligns with the NSW DCP.
- (4) Work with small communities to identify funding to develop a comprehensive WMCP.

Joint Action 5: Critical Infrastructure for Small Cities

Purpose

The purpose of this joint action is to work with small communities to identify and implement water system infrastructure improvement projects that improve drought resiliency. Small cities in the watershed may not have the staff capacity to identify opportunities, seek funding, and design projects. Critical infrastructure may include projects that: reduce the need for water, reuse water, reduce system water losses, provide redundant water sources (e.g., through interconnections), and store water during periods of abundance for use during drought. Marion County is already working with some of the small communities in the canyon area to assist them with this action during Natural Hazard Mitigation Planning process. Other communities outside of Marion County should be included in this action.

The desired outcomes of this joint action are:

- Awareness of funding opportunities for technical assistance and implementation of resilient water supply infrastructure.
- Successful completion of water system infrastructure improvements that create more drought resilient communities.

Process

The critical infrastructure action will be conducted under the Mitigation Group, which is described in the DCP Operational and Administrative Framework.

Marion County, assisted by the DCP paid lead and the Mitigation Group, will be responsible for the progress of this action. County staff may communicate with Linn County staff about leading progress for cities in that county (e.g., Lyons-Mehama).

Actions

- (1) **Educate communities about drought risk, potential water supply resiliency projects, and funding opportunities.** Identify local city contacts, or when available, provide information to the steering committees identified for the region-specific Santiam Canyon Regional Hazard Mitigation Plan (RHMP)².
- (2) **Assist with funding.** For high priority system improvements, assist small communities with identifying enough information (e.g., pre-designs, work scopes and budgets) to seek funding. Assist with identifying potential funding sources (grants, loans, etc.) and completing applications if necessary. The Governor's Drought Task Force has recommended that the Legislature develop a drought emergency fund that may be a source, as well as identify existing infrastructure funding programs and barriers to accessing them. Funding sources may be specific to conducting feasibility studies, project implementation, or both.

² These steering committees include city staff, county representatives, members of the public, and emergency service management. City recorders are the designated conveners of the NHMP and lead in implementing, maintaining, and updating the addendum to the Marion NHMP in collaboration with Marion County Emergency Management.

(3) **Assist with feasibility studies, design, and implementation.** Assist communities with completing the technical analyses, engineering specifications, permits, refined budgets and schedules needed for project construction. Communicate with local and state agencies to obtain permits, approvals, etc. If needed, assist small communities with additional funding requests for implementation, developing requests for proposals for contractors, and with overseeing project construction.

Joint Action 6: NSW Water Budget Study

Purpose

Water budget studies help understand where, when, and how much water is flowing into and out of a watershed, and are useful tools to understand how much is available at any given time. The U.S. Geological Survey³ explains that “Water budgets account for the inputs, outputs, and changes in the amount of water by breaking the water cycle down into components. They provide scientific measurements and estimates of the amount of water in each component and calculate the movement of water among the different components – the flux or flow of water. The result is a budget that is a hydrologic record comparable to deposits, withdrawals, and changes in the balance of a checking account.”

The desired outcomes of this joint action are to:

- Understand how much water is available to meet needs in the NSW.
- Understand stresses to the water system to identify opportunities for resiliency projects.

Process

As noted above, the water budget is a useful tool for understanding the amount of water available at any given time. The Mitigation Group DCP Administrative Team liaison, assisted by the DCP paid lead, will identify volunteers or potential funding opportunities to develop a NSW water budget. Municipal, agricultural, natural resource managers, and recreation owners, as these sectors would be expected to benefit from this action. Results would be presented to the DCP Administrative Team, which may consult with the DCP Task Force. Comments from the DCP Administrative Team would be incorporated into the final water budget.

Actions

- (1) **Review existing studies** for references to water budget.
- (2) **Identify the conceptual water model for the NSW and the water budget equation.** An accounting of the inflow, outflow, and changes in storage is called a water budget. Typically, the equation is:

$$\text{Inflow} = \text{Outflow} \pm \text{change in Storage}$$

³ <https://water.usgs.gov/watercensus/water-budgets.html>

The complexity of a water budget increases with increasing watershed urbanization and interbasin transfer of water.

- (3) **Identify the time frame for data.** Water budgets are typically calculated for cover a period of time and a range of conditions to represent wet and dry years.
- (4) **Identify data sources.** Data can be obtained from long-term meteorological and hydrological data collection stations and from water-use data collected by regulatory agencies. Potential sources include:

- a. Precipitation, evapotranspiration, and streamflow. The USGS Water Budget Program provides annual, monthly and daily data at the N. Santiam basin level (8-HUC). <https://cida.usgs.gov/nwc/#!/waterbudget/huc/17090005>

Precipitation data are also available from National Oceanic and Atmospheric Administration (NOAA) precipitation stations in or near each watershed. If multiple stations are available, using GIS, Thiessen polygons may be used to extrapolate the data over the entire watershed (Sloto & Buxton, USGS 2005).

It may be useful to look specifically at the May-Sep rainfall to determine what years to analyze.

- b. Evaporation. If evaporation is a significant issue, weather stations collect evaporation pan data, which should be multiplied by a coefficient to obtain an estimated value. Evaporation data are tabulated for each month, or the growing season of May-October, then the higher value is used in the water budget.
- c. Groundwater flow (ft³/day) can be estimated using Darcy's Law. Data needed for this calculation includes hydraulic conductivity of the soil, the width and saturated thickness of the aquifer, and the slope of the groundwater head contours. Net groundwater loss from unconfined to confined aquifers may be determined by using groundwater flow-model simulations.
- d. Change in surface water and groundwater storage. Annual change in groundwater storage may be estimated from water-level records from USGS observation wells. If monthly groundwater levels are available, the annual change in water level can be calculated by subtracting the December water level from the previous year's December water level, converting the difference to inches, and multiplying by the result by the specific yield of the aquifer (Sloto & Buxton, USGS 2005).
- e. Change in snow and ice storage may be available from NRCS. <https://www.nrcs.usda.gov/wps/portal/nrcs/main/or/snow/>
- f. Compile water rights information to determine withdrawals and interbasin transfers. If relevant, and not accounted for elsewhere, these data should be quantified and added to the water budget equation.

- (5) **Compile all data and links to source information in a spreadsheet.** An example is provided in the inset Table 2 from Sloto & Buxton (USGS 2005).

Table 2. Basin water budget for the East Branch Brandywine Creek watershed, Chester County, Pennsylvania, 1977-2001.

[All units are given in inches]

Year	Precipitation (P)	Imported water (IMP)	Streamflow (SF)	Change in ground-water storage (Δ GWS)	Change in surface-water storage (Δ SWS)	Ground-water exports (GWEXP)	Consumptive use (CON)	Evapotranspiration (ET) and errors
1977	49.86	0.31	20.50	1.76	0.08	0.00	0.16	27.67
1978	51.61	.44	29.64	-.55	-.36	.00	.16	23.16
1979	59.50	.50	34.26	.13	-.06	.00	.19	25.48
1980	35.41	.39	15.52	-3.31	.18	.00	.17	23.24
1981	39.03	.43	9.74	-.18	.00	.00	.17	29.73
1982	45.27	.51	20.56	1.80	-.35	.00	.17	23.60
1983	57.01	.68	30.95	3.30	.56	.00	.19	22.69
1984	53.66	.82	33.31	-2.83	-.42	.00	.18	24.24
1985	44.11	.58	15.10	.98	.09	.00	.21	28.31

- (6) **Identify data gaps and uncertainties.** Errors in water budget terms can be caused by missing data, poor or incomplete measurements, overestimated or underestimated quantities, measurement or reporting errors, and the use of point measurements, such as precipitation and water levels, to estimate an areal quantity, particularly if the watershed is hydrologically or geologically complex or the data-collection station is outside the watershed (Sloto & Buxton, USGS 2005).
- (7) **Summarize in a technical memo.**

Joint Action 7: Incorporate NSW DCP into Willamette Basin Project Review

Purpose

The USACE owns and operates thirteen reservoirs in the Willamette Basin, 42 miles of revetments, and five fish hatcheries, collectively called the “Willamette Project.” Also involved in the Willamette Project are Bonneville Power Administration (BPA) and the U.S. Bureau of Reclamation (BOR), which issues contracts for stored water for the purpose of irrigation. Together, the USACE, BPA, and BOR are the “Action Agencies.” In 2008, National Marine Fisheries Service (NMFS) issued a Biological Opinion (Bi-Op), which outlines actions (referred to as “reasonable and prudent alternatives” or RPAs) that these three “Action Agencies” must take to avoid harm to thirteen aquatic species listed under the Endangered Species Act, including the two most affected species, the Upper Willamette River Chinook salmon and the Upper Willamette River steelhead and their critical habitat.

One of the steps the Action Agencies must take includes conducting research on the effects of the project, monitoring those effects, and evaluating options. Research will be conducted by two main teams: the WATER committee (federal and state agencies, Tribes, and local interests), which will review research and make recommendations to the USACE, and the

Willamette System Review Study, which will synthesize information regarding the feasibility and benefits of various mitigation measures. Concerns on the North Santiam include dams that block fish migration, habitat and water quality, floodplain connectivity, and “the irrigation water contract program [that] would reduce streamflow,” (Willamette Project Bi-Op, 2008). Actions required by the Bi-Op include implementing improved water temperature control downstream of Detroit/Big Cliff Dam through operational changes and possible structural modifications by 2018, possible amendments to flow requirements, protection of water released for fish conservation purposes, irrigation diversion screens, and reduction of new water contracts.

The success of these actions and the health of the listed species and critical habitat will be reassessed in 2023. The goal of this action is to communicate NSW DCP mitigation success and monitoring efforts to the Action Agencies so that mitigation efforts are incorporated into ongoing research and reassessment of the Willamette Project’s impact on the listed species.

Process

Joint Action 7 includes incorporating the NSW DCP into ongoing research that informs the Action Agencies and NMFS and will be conducted by the DCP paid lead. The DCP paid lead will communicate with the Action Agencies to remain updated on Bi-Op studies and revision of RPAs. The DCP lead will also communicate NSW DCP’s mission, framework, and accomplishments to the Action Agencies and update the DCP Administrative Team on Bi-Op developments that impact NSW DCP stakeholders.

Actions

- (1) **Establish communication with Action Agencies** to introduce NSW DCP planning and mitigation efforts. Identify an effective Action Agency liaison between Action Agencies and DCP paid lead, which may include a member(s) of the WATER study team or Willamette System Review Study Team.
- (2) Identify and **subscribe to list serves** that communicate Bi-Op updates and public meeting details.
- (3) **Communicate with Action Agencies** or identified point of contact monthly to track development of Bi-Op studies and developments. When possible, utilize update materials created by the DCP Update Group.
- (4) **Report relevant updates to DCP Administrative Team** during monthly meetings. If applicable, MT liaisons communicate to the Mitigation Group mitigation actions that may be preferred by NMFS.
- (5) **Share NSW DCP successes** to the Action Agency liaison.
 - a. Monthly- share monitoring reports.
 - b. Annually-share NSW DCP Update Group Report and summary of successful implementation of Mitigation Group efforts and Response Group efforts.
 - c. If needed, coordinate with Monitoring Group and Mitigation Group to ensure reports are compatible with Bi-Op study team data collection.
- (6) In the event of a drought declaration, establish a reasonable frequency of communication with Action Agency liaison to **understand how drought declaration impacts implementation of the Bi-Op**.
 - a. Report updates to Response Group.

- (7) If necessary, **attend meetings to follow Bi-Op** development.

Joint Action 8: Expand Emergency Drought Tool Usage

Purpose

The purpose of this joint action is to expand the implementation of drought emergency water rights tools (i.e., temporary transfers of water rights, emergency water use permits, and use of existing right option/agreement) and to expand the flexibility of drought tools available during a governor declared drought.

A Governor’s drought declaration enables counties to benefit from emergency streamlined water rights programs, groundwater usage, and other programs⁴. These programs include the ability to obtain: an emergency water use permit to replace water not available under an existing water right; temporary drought transfers to temporarily change water rights type of use, place of use and point of diversion; temporary drought instream leases; and temporary substitution of a supplemental groundwater right for a primary surface water right.

Process

Expanding emergency drought tool usage will be accomplished by the DCP paid lead and includes broad communication efforts with the Mitigation Group and the DCP Administrative Team. This also includes sharing successes of the DCP to federal agencies, state agencies, and water managers located outside of the North Santiam.

Actions

- (1) Work with OWRD and Governor’s Office to identify whether the Option Agreement Pilot could be implemented in the absence of a governor declared drought.
- (2) During drought declaration, coordinate with the Mitigation Group to maintain a record of drought tools that were implemented. Assist Mitigation Group with periodic review of the status and effectiveness of joint mitigation actions.
- (3) Report to OWRD and Governor’s Office a summary of periodic review of status and effectiveness of joint mitigation actions. At a minimum, during drought declaration and after declaration has ended, report to OWRD and Governor’s Office the results of drought tool implementation.
- (4) Annually: Analyze DCP Update Group report to determine the effectiveness of Mitigation Team actions, Response Team actions, and Joint Action Implementation Plan progress report.
 - a. Identify common barriers to using drought tools.
 - b. Identify success and challenges of using drought tools.
- (5) May-October: Determine when drought tool usage could expand. Analyze monthly monitoring reports and Mitigation Group updates to maintain a record of days or extended periods of time when drought tools would improve water management, but tools could not be implemented due to lack of a governor’s drought declaration).
 - a. Identify which tools that would have been useful and in what capacity.

⁴ https://www.oregon.gov/OMD/OEM/fin_rec/docs/drought/drought_procedures.pdf (2014)

- b. Report to OWRD and Governor's Office a summary of analysis.
- (6) Ongoing: Identify available funds that prioritize communities with established drought mitigation plans.
- (7) Showcase drought plan successes with OWRD, Governor, and other stakeholders in the region (appropriate venues include regional conferences and public meetings).

3. Potential Funding Sources

This chapter includes grant or loan programs from federal agencies, state agencies, and private entities, including EPA’s State Revolving Fund, Federal Emergency Management Agency’s (FEMA’s) Hazard Mitigation or Public Assistance Programs, and the U.S. Department of Agriculture’s Rural Development Loan & Grant Program. Check agency websites or with local officials for eligibility requirements and applications.

Funding Source	Funding Entity	Eligible projects
Acres for America	National Fish and Wildlife Foundation	Primarily intended to conserve acreage, but projects that "Provide a Range of Ecological Services: are a priority: Projects that can demonstrate or even quantify the ecological services provided or protected through land protection (i.e., protecting drinking water, increasing stream flow for aquatic resources, reducing carbon) are preferred.
Bring Back the Natives/More Fish	National Fish and Wildlife Foundation	Provides funding to projects that identify measureable conservation outcomes for native fish species of special concern, including those that address habitat alteration, lack of adequate in-stream flows, and invasive and/or non-native species.
Clean Water State Revolving Fund Program	OR Department of Environmental Quality (funded through US Environmental Protection Agency)	Loans and bond purchase agreements are available for planning, design, and construction projects. Eligible projects include: Wastewater facility plans and studies; Wastewater treatment facilities; Facilities related to solids treatment, disposal, resource recovery or management; Irrigation improvements; Infiltration and inflow correction; Replacement or repair of interceptor or collector sewers; Stormwater facilities, systems or projects; Onsite wastewater system repairs; Estuary management activities; Various nonpoint source projects (stream restorations, animal waste management, conservation easements); Wastewater reuse projects; Qualified brownfields projects.

Climate Resilient Mitigation Activities	FEMA	<p>Activities are: Aquifer Storage and Recovery, Floodplain and Stream Restoration, Flood Diversion and Storage, and Green Infrastructure Methods. These activities can mitigate any natural hazard; however, are focused on mitigating the impacts of flood and drought conditions:</p> <p>https://www.fema.gov/media-library/assets/documents/110202</p>
Columbia Basin Water Transactions Program	National Fish and Wildlife Foundation	To enhance stream flow, the Columbia Basin Water Transactions Program (CBWTP) works through locally based entities to acquire water rights voluntarily from willing landowners. Using temporary and permanent water rights acquisitions and other incentive-based approaches, the CBWTP supports program partners in Oregon, Washington, Idaho, and Montana to assist landowners who wish to voluntarily restore flows to key fish habitat.
Community Development Block Grant	Oregon Infrastructure Finance Authority	For "non-metropolitan cities and counties in rural Oregon". Funds preliminary engineering and planning - water master plans, wastewater facilities plans, water conservation and managements plans, inflow and infiltration studies. Final engineering - preliminary engineering reports, studies.
Community Facilities Direct Loan & Grant Program in Oregon	US Department of Agriculture - Rural Development	Provides affordable funding to develop essential community facilities in rural areas. Funds can be used to purchase, construct, and / or improve essential community facilities, purchase equipment and pay related project expenses.
Conservation Innovation Grants	US Department of Agriculture - National Resources Conservation Service	Projects support the development and adoption of innovative conservation approaches and technologies, while also aiding agricultural production. Proposed projects must occur within Oregon and may be county-based or statewide in scope. Must involve farmers who are Environmental Quality Incentives Program eligible.

Conservation Partners Program	National Fish and Wildlife Foundation	Eligible projects should improve the efficiency of on-farm irrigation practices and provide quantifiable benefits to instream flows through a state approved transfer or some other form of enforceable agreement. Projects should be located in priority anadromous salmonid streams in California, Oregon, Washington and Idaho and should benefit stream reaches where insufficient instream flows are identified as a key limiting factor for fish survival by a state or federal agency, Conservation practices that promote instream flows and water quality in freshwater systems, Conservation planning on agricultural lands that restore stream flows while maintaining or balancing crop yields, Conservation planning on agricultural lands that promote and facilitate conservation best practices including irrigation efficiencies and other conservation agricultural practices that benefit freshwater systems and promotes water conservation, Integrate Farm Bill funding into whole farm planning efforts aimed at producing better water quality.
Developing the Next Generation of Conservationists	National Fish and Wildlife Foundation	Funds paid internships and mentorship of underserved youth to perform hands-on implementation of habitat restoration, stewardship, monitoring, and other conservation-related activities.
Drinking Water Providers Partnership - Source Water Initiative	GEOS Institute - Working Waters Program	Restore and protect the health of watersheds which communities depend upon for drinking water while also benefiting aquatic and riparian ecosystems, including the native fish that inhabit them. Support local partnerships between drinking water providers, landowners, and restoration practitioners.
Emergency Community Water Assistance Grants	US Department of Agriculture - Rural Development	This program helps eligible communities prepare for, or recover from, an emergency that threatens the availability of safe, reliable drinking water for households and businesses.
Emergency Conservation Program	US Department of Agriculture	Helps farmers and ranchers to repair damage to farmlands caused by natural disasters and to help put in place methods for water conservation during severe drought by giving ranchers and farmers funding and assistance to repair the damaged farmland or to install methods for water conservation.
Emergency Watershed Protection Program	US Department of Agriculture - National Resources Conservation Service	Address debris-clogged streams, restore streambanks, flood storage and flow, erosion control. Private landowners participate through a sponsoring municipality.

Environmental Infrastructure Loans - Construction	Rural Community Assistance Corporation	Water, wastewater, solid waste and storm facilities that primarily serve low income rural communities. Includes predevelopment costs.
Environmental Infrastructure Loans - Feasibility and Predevelopment	Rural Community Assistance Corporation	Water and/or wastewater planning; environmental work; and other work to assist in developing an application for infrastructure improvements.
Environmental Infrastructure Loans - Intermediate Loans	Rural Community Assistance Corporation	Water, wastewater, solid waste and storm facilities that primarily serve low income rural communities. Includes predevelopment costs.
Environmental Quality Incentives Program	US Department of Agriculture - National Resources Conservation Service	Provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air and related natural resources on agricultural land and non-industrial private forestland. May also help producers meet Federal, State, Tribal, and local environmental regulations.
Environmental Sustainability Grants	National Science Foundation	The goal of the Environmental Sustainability program is to promote sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. Research efforts supported by the program typically consider long time horizons and may incorporate contributions from the social sciences and ethics. The program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions (includes innovations in management of storm water, recycling and reuse of drinking water).
Feasibility Study Grants	Oregon Water Resources Department	Fund qualifying costs of studies that evaluate the feasibility of a proposed conservation, reuse, or storage project: water needs analyses, hydrologic analyses, engineering and financial feasibility studies, geologic analyses, water exchange studies, analyses of by-pass, optimum peak, flushing and other ecological flows of the affected stream and impact on flows, environmental impacts and public benefits.

Five Star and Urban Waters Restoration Grant Program	National Fish and Wildlife Foundation	Funding priorities for this program include: On-the-ground wetland, riparian, in-stream and/or coastal habitat restoration (and others).
Focused Investment Partnerships	Oregon Watershed Enhancement Board	Capacity building funds to develop a strategic action plan for a partnership or implementation funds to address restoration; must be in a specific geography and address one of the ecological priorities (includes several wetlands habitats, aquatic habitat).
Land and Water Acquisitions	Oregon Watershed Enhancement Board	Grants for land and water acquisitions to protect and restore watersheds.
National Rural Water Association Revolving Loan Fund	National Rural Water Association - Oregon Association of Water Utilities	The Rural Water Revolving Loan Fund (RWRLF) is a funding program specifically designed to meet the unique needs of small water and wastewater utilities. The RWRLF provides low-cost loans for short-term repair costs, small capital projects, or pre-development costs associated with larger projects. Eligible Projects: Pre-development (planning) costs for infrastructure projects, Replacement equipment, system upgrades, maintenance and small capital projects; Energy efficiency projects to lower costs and improve system sustainability; Disaster recovery or other emergency loans are available.
Nonpoint Source Pollution 319 Grants	Oregon Department of Environmental Quality	Projects that will lead to the restoration of beneficial uses in impacted water bodies. Funds projects that address nonpoint source water quality and watershed enhancement. Address the short and long term NPS priorities. Long term priorities are included in the Oregon Water Quality Nonpoint Source Management Plan. Short term priorities are included in the annual request for proposals (RFP) document.
Open Solicitation Grants	Oregon Watershed Enhancement Board	Grants for watershed restoration, technical assistance (design, action planning, landowner recruitment), monitoring, and outreach associated with restoration.
Oregon Tribal Grant	Spirit Mountain Community Fund	Project areas include: environmental preservation (see announcement for further details), <\$150K, one grant per tribe per year.
Pollution Control Bonds	OR Department of Environmental Quality	Funds very large pollution control projects, including wastewater and solid waste facilities (see Clean Water State Revolving Fund Program, above).

Pre-disaster Mitigation Grants	US Federal Emergency Management Agency	Awards planning and project grants to address climate resilient mitigation activities, aquifer storage and recovery, floodplain and stream restoration, flood diversion and storage and stormwater management and flood control measures.
Public Works and Economic Adjustment Assistance Program	US Economic Development Administration	The Economic Development Administration's mission is to help economically distressed communities in ways that help them build long-term economic development capacity. Projects must foster the creation or retention of higher-skilled, higher-wage employment opportunities for local displaced workers and attract private-sector capital investment.
Rural Energy for America Program	US Department of Agriculture - Rural Development	Provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses to purchase or install renewable energy systems or make energy efficiency improvements (includes irrigation motors).
Safe Drinking Water Revolving Loan Fund (aka Drinking Water State Revolving Fund) Drinking Water Infrastructure Projects	Oregon Health Authority/Infrastructure Finance Authority (funded through US Environmental Protection Agency)	Drinking water system projects must resolve existing or future non-compliance with current or future state and federal drinking water standards, that addresses the most serious human health risks, or that is essential to create a new drinking water system improvement that will substantially benefit public health. <i>Eligible Activities:</i> Planning, engineering, design, water source construction, land or easement acquisition, treatment, storage, transmission/distribution, system purchase, system consolidation, system creation, system security, restructuring. <i>Ineligible Activities:</i> Dams or rehabilitation of dams, water rights, raw water reservoirs or rehab of raw water reservoirs, projects primarily needed to address fire protection, and projects primarily needed to serve future population growth.
Safe Drinking Water Revolving Loan Fund (aka Drinking Water State Revolving Fund)	Oregon Health Authority (OHA) / Infrastructure Finance Authority (funded through US Environmental Protection Agency)	Projects that lead to risk reduction within a delineated source water area or that would contribute to a reduction in contaminant concentration within the drinking water source.
Drinking Water Source Protection Fund		

Safe Drinking Water Revolving Loan Fund (aka Drinking Water State Revolving Fund)	Oregon Health Authority (OHA) / Infrastructure Finance Authority (funded through US Environmental Protection Agency)	Projects that include planning activities that promote sustainable water infrastructure. Priority will be given to those systems serving fewer than 300 service connections and/or are considered disadvantaged communities. Eligible Activities: feasibility studies, asset management plans, system partnership studies, resilience plans, water rate analysis, leak detection studies, and water system master plans for for systems with fewer than 300 connections.
Sustainable Infrastructure Planning Projects		
Secure Rural Schools and Community Self-Determination Act, 2015-2017 Projects, Oregon (SRS)	US Department of the Interior	The project must benefit Federal lands or resources. A resource advisory committee, made up of local citizens and responsible for a specific geographic area, reviews the project applications and recommends to the Secretary, or designee, which should be funded. Such projects shall enjoy broad-based support with objectives that may include, but are not limited to: Road, trail, and infrastructure maintenance or obliteration; Soil productivity improvement; Improvements in forest ecosystem health; Watershed restoration and maintenance; Restoration, maintenance and improvement of wildlife and fish habitat.
Special Evaluation Assistance for Rural Communities and Households Program	US Department of Agriculture - Rural Development	Water and/or wastewater planning; preliminary engineering reports, environmental reports, and other work to assist in developing a project that is expected to be funded by Rural Development in the next 12-18 months.
Special Public Works Fund	Oregon Infrastructure Finance Authority	The Special Public Works Fund provides funds (loans and grants) for publically owned facilities that support economic and community development in Oregon. Includes storm drainage, wastewater and water systems.
Technical Assistance Grants	Oregon Department of Land Conservation and Development	Has funded planning for water and/or wastewater public facilities planning in the past.
Water and Waste Disposal Predevelopment Planning Grant	US Department of Agriculture - Rural Development	Water and/or wastewater planning; preliminary engineering reports, environmental reports, and other work to assist in developing a project that is expected to be funded by Rural Development in the next 12-18 months.

Water Environmental Programs Direct Loan & Grant Program	US Department of Agriculture - Rural Development	Pre-construction & construction associated with constructing, repairing, or improving water, sewer, solid waste or storm wastewater disposal facilities.
Water Infrastructure Finance and Innovation Act	US Environmental Protection Agency	Eligible projects: Wastewater conveyance and treatment projects that are eligible for the Clean Water State Revolving Fund (see below); Drinking water treatment and distribution projects that are eligible for the Drinking Water State Revolving Fund; Enhanced energy efficiency at drinking water and wastewater facilities; Brackish or seawater desalination, aquifer recharge, and water recycling projects; Acquisition of property if it is integral to the project or will mitigate the environmental impact of a project; Bundled State Revolving Fund projects submitted under one application by an State Revolving Fund program; A combination of projects secured by a common security pledge.
Water Project Grants and Loans	Oregon Water Resources Department	This account provides grants and loans to evaluate, plan, and implement instream and out-of-stream water projects that have economic, environmental and social/cultural benefits. Eligible projects include, but are not limited to conservation, reuse, above-ground storage, below-ground storage, streamflow protection or restoration, water distribution, conveyance or delivery systems, and other water resource development projects that result in economic, environmental, and social/cultural public benefits.
Water/Wastewater Agency Response Network (WARN)		A mutual aid program. Can provide in-kind services to help with repairs and resource loans for personnel or equipment. https://www.epa.gov/sites/production/files/2016-03/documents/epa_drought_response_and_recovery_guide.pdf
Water/Wastewater Financing Program	Oregon Infrastructure Finance Authority	The proposed project must be owned and operated by a public entity as listed above. Allowable funded project activities may include: reasonable costs for construction improvement or expansion of drinking water system, wastewater system or stormwater system; water source, treatment, storage and distribution; wastewater collection, treatment and disposal facilities; stormwater system; purchase of rights of way and easements necessary for construction; design and construction engineering; or planning/technical assistance for small communities.

Watershed and Flood Prevention Operations	US Department of Agriculture - National Resources Conservation Service	Funds planning and implementation of watershed projects for watershed protection; flood mitigation; water quality improvements; soil erosion reduction; rural, municipal, industrial water supply; irrigation; water management; sediment control; fish and wildlife enhancement; hydropower. Can also request funding for upgrades and operations.
WaterSMART Grants: Small-Scale Water Efficiency Projects	US Bureau of Reclamation	This Funding Opportunity Announcement supports specific small-scale water efficiency projects that have been prioritized through planning efforts led by the applicant.
WaterSMART Grants: Water and Energy Efficiency Grants	US Bureau of Reclamation	The objective of this Funding Opportunity Announcement is to invite eligible applicants to leverage their money and resources by cost sharing with Reclamation on projects that seek to conserve and use water more efficiently, increase the use of renewable energy and improve energy efficiency, benefit endangered and threatened species, otherwise support water sustainability benefits, or carry out other activities to address climate-related impacts on water or prevent any water-related crisis or conflict.
WaterSMART Grants: Water Marketing	US Bureau of Reclamation	Through this funding opportunity, Reclamation will provide grants to conduct planning activities in developing a water marketing strategy to establish or expand water markets or water marketing transactions.
Willamette River Initiative	Meyer Memorial Trust	Grants to watershed councils, land trusts and other groups to develop restoration plans, cultivate partnerships with public and private landowners, and implement on-the-ground projects.

4. Schedule

A schedule to complete the joint actions identified in this plan can be divided into two tiers: improving response tools, and improving integration and efficiency.

Tier 1 actions immediately expand drought response options and build resiliency, and include:

Action 1: NSW DCP Education and Outreach Partnership

By 12/17	Develop NSW DCP Brand, communication audience and key messages
By 3/18	Identify communication outlets and contacts; Determine schedule for disseminating drought communications
By 5/18	Begin disseminating education materials
Ongoing	Disseminate education materials and coordinate with monitoring team for drought stage updates

Action 2: Water Supply Option Pilot Agreement

By 12/17	Conduct feasibility study to determine a viable project
By 3/18	Identify parties to be involved in Pilot Agreement
By 6/18	Develop plan for Pilot Agreement
By 9/18	Submit Pilot Agreement to OWRD
Ongoing	Monitor and assess efficacy of Pilot Agreement.
By 9/19	Report results of Pilot Agreement to DCP Administrative Team

Action 3: Water Rights Management Program

By 12/17	Develop fact sheet about water right management tools and establish contact list for pilot leasing project
By 3/18	Establish framework for pilot pooled instream lease with SWCD
By 9/18	Implement and monitor success of pilot pooled instream lease
By 9/18	Conduct targeted outreach meetings with NSW water users and partners
By 12/19	Develop contact list of potential instream leasing participants

Action 4: WMCPs for Small Communities and Large Water Users

By 12/17	Request that all North Santiam Water managers identify planning and regulatory documents within their jurisdiction
By 2/18	Review and compare drought stages in existing planning documents
By 4/18	Convene water managers to coordinate response actions
By 6/18	Develop template curtailment plan for communities without existing plans
9/18-9/19	Provide assistance to small communities to develop curtailment plans

Action 5: Critical Infrastructure for Small Cities

By 12/17	Identify deadlines for funding opportunities
By 1/18	Educate communities about drought risk, potential water supply resiliency projects, and funding opportunities
By 3/18	Assist with identifying funding for high priority system improvements
9/18-9/19	Marion County to assist with feasibility studies, design, and implementation

Action 8: Expand Emergency Drought Tool Usage

By 12/18	Work with OWRD on Option Agreement
By 2/19	Share with OWRD and Governor's Office a summary of successful drought tool implementation and lessons learned
By 5/19	Determine when drought tool usage could expand
By 6/19	Showcase drought plan successes

Tier 2 actions improve integration and efficiency, and include:

Action 6: Water Budget Study

By 6/18	Identify a volunteer or funding opportunity that will complete the following water budget tasks:
By 9/18	Identify conceptual water model for NSW and water budget equation.
By 12/18	Identify the time frame for data, identify data sources, and compile into spreadsheet.
By 3/19	Identify data gaps and uncertainties.
By 6/19	Summarize in technical memo.

Action 7: Incorporate DCP into the 2023 Bi-Op Update

By 9/18	Establish communication with Action Agencies to introduce NSW DCP
Ongoing	Communicate with Action Agencies and report relevant updates to DCP Administrative Team. Subscribe to list serves and, if necessary, attend meetings to follow Bi-Op development.
By 6/19	Share NSW DCP successes with Action Agency communication partners.

Appendix A: Messaging Guidelines

Messages should:

- Be consistent, accurate/credible, straightforward, and timely
- Be easy to remember
- Convey updates and recommendations throughout all stages of drought
- Take into consideration culture, literacy and educational levels
https://www.cdc.gov/nceh/ehs/docs/when_every_drop_counts.pdf
- Use terms that people can relate to easily. For example, instead of using “millions of gallons per day”, use relative terms such as the equivalent in number of showers, or compare water use with that of previous years.
http://drought.unl.edu/portals/0/docs/DRC_Guide.pdf

Messages should help stakeholders understand:

- Who experiences drought first in the watershed
- What are the risks/impacts to each sector during drought conditions
- How their water use affects the watershed and other users
- What they can do and the resources available to help share water
- Where to get more information about whether drought is worsening
- How all residents within the watershed are conserving water (e.g., “shared sacrifice”)
- Why conservation is important

Appendix B: Press Release Templates

[Insert DCP Brand here]

****Press Release Template****

Drought Conditions in North Santiam Watershed Elevated to Stage 2.

[Date] – Based on local water conditions, the North Santiam Watershed Drought Contingency Planning Group advised today that drought conditions in the watershed have been elevated to Drought Stage 2. Information evaluated for this advisory looks at water supply for municipal water, irrigation, recreation, industry, and natural resources such as forests and fisheries. In Drought Stage 2, U.S. Geological Survey river flow measurements indicate moderate hydrologic drought at both the Mehama and Boulder Creek gages. Detroit Reservoir is at ## feet at the Mongold Boat Ramp. This information also indicates a worsening trend this year. [note: edit to reflect monitoring results.]

Watershed map

There are four drought stages. Drought Stage 2 means that some areas in the watershed are experiencing drought and drought impacts. *[Add 1 to 2 sentences to provide specific examples of current impacts here, eg., recreation is slow because reservoir levels are low. Add quotes if possible to illustrate.]*

Residents, businesses, farmers, recreationists and fish depend on the same source of water – the N. Santiam River. Some are already conserving water to help fish and support their neighbors in the watershed. *[Add 1 to 2 sentences to provide specific examples here. Add quotes if possible to illustrate.]*

You can help those that are already experiencing early drought conditions and help prevent future impacts if water levels continue to drop. Please voluntarily reduce your water use by 5 percent.

Here's some ways you can help:

- Install low-flow showerheads or take shorter showers
- Turn off the faucet while shaving and brushing teeth
- Only run washing machines and dishwashers when full
- Check for toilet and faucet leaks
- When replacing appliances, look for water efficient models
- Reduce the amount of water applied to crops and landscaping
- Consider enrolling in a water rights leasing program (for irrigators)
- *[Adjust examples depending upon timing of advisory. Try to have examples for each sector.]*

For more details on water conservation, visit:

- The North Santiam Watershed Council: <http://northsantiam.org/>
- Natural Resource Conservation District: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/manage/>

- EPA: <https://www3.epa.gov/watersense/products/index.html>
- Water bank contact: ...

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The North Santiam Watershed Drought Contingency Planning (DCP) Group is building long-term resiliency to drought in order to minimize impacts to the communities, local economies, and critical natural resources within the watershed. The DCP planning process enables local stakeholders to collaboratively develop a coordinated response to drought in the NSW by identifying drought conditions, critical water supply needs (i.e., vulnerabilities), and mitigation and response actions for implementation before and during drought conditions.

[Insert DCP Brand or all DCP Task Force Logos here]

****Press Release Template****

Drought Conditions in North Santiam Watershed Elevated to Stage 3.

[Date] – Based on local water conditions, County officials have elevated drought conditions in the watershed to Drought Stage 3. Officials were advised by the North Santiam Watershed Drought Contingency Planning Group, which has been following water supply data all year. Information evaluated for this advisory includes water supply for municipal water, irrigation, recreation, industry, and natural resources such as forests and fisheries. In Drought Stage 3, U.S. Geological Survey river flow measurements indicate severe hydrologic drought at both the Mehama and Boulder Creek gages. Stream water temperature is warmer than the maximum set by Oregon Department of Environmental Quality. Water intakes are at risk. Water level in Detroit Reservoir is below the Mongold East Boat Ramp. Wildfire danger is high. Information also indicates a worsening trend this year. **[note:** edit to reflect monitoring results.]

Watershed map

There are four drought stages. Drought Stage 3 means that all areas in the watershed are experiencing drought and drought impacts. *[Add 1 to 2 sentences to provide specific examples of current impacts here, eg., recreation is slow because reservoir levels are low. Add quotes if possible to illustrate.]*

Residents, businesses, farmers, recreationists and fish depend on the same source of water – the N. Santiam River. Conservation is important to help prevent emergency measures in Stage 4. Here is how everyone is conserving water to help fish and support their neighbors in the watershed. *[Add 1 to 2 sentences to provide specific examples here. Add quotes if possible to illustrate.]*

You can help prevent future impacts if water levels continue to drop. Please voluntarily reduce your water use by 10 percent. Here are some ways to do this:

- Allow lawns to go dormant.
- Don't wash vehicles.

- Only run washing machines and dishwashers when full.
- Reduce the amount of water applied to crops.
- Enroll in a water leasing program temporarily to leave part of your water rights in-stream.
- Enroll in a water options agreement temporarily to share your water with others that need it.
- Change your water source temporarily from surface water to groundwater.
- *[Adjust examples depending upon timing of advisory. Try to have examples for each sector.]*

For more details on water conservation, visit:

- The North Santiam Watershed Council: <http://northsantiam.org/>
- Natural Resource Conservation District: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/manage/>
- EPA: <https://www3.epa.gov/watersense/products/index.html>
- Water bank contact:

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- *The North Santiam Watershed Drought Contingency Planning (DCP) Group is building long-term resiliency to drought in order to minimize impacts to the communities, local economies, and critical natural resources within the watershed. The DCP planning process enables local stakeholders to collaboratively develop a coordinated response to drought in the NSW by identifying drought conditions, critical water supply needs (i.e., vulnerabilities), and mitigation and response actions for implementation before and during drought conditions.*

[Insert DCP Brand or all DCP Task Force Logos here]

****Press Release Template****

Drought Conditions in North Santiam Watershed Elevated to Stage 4: Extreme Drought

[Date] – Local water conditions continue to deteriorate. As a result, County officials have elevated drought conditions in the watershed to the highest of four drought stages, Extreme Drought. Officials were advised by the North Santiam Watershed Drought Contingency Planning Group, which has been following water supply data all year. Information evaluated for this advisory includes water supply for municipal water, irrigation, recreation, industry, and natural resources such as forests and fisheries. In Drought Stage 4, U.S. Geological Survey river flow measurements indicate extreme hydrologic drought at both the Mehama and Boulder Creek gages. Stream water temperature is at least 4 degrees warmer than the maximum set by Oregon Department of Environmental Quality. Water intakes are dry in the upper watershed [**note**: edit to reflect water supply conditions for all cities] and may not function properly for Salem; emergency measures are being considered to maintain municipal water supply to protect

Watershed map

public health and safety. Wildfire danger is extreme. Information also indicates a worsening trend this year [note: edit to reflect monitoring results].

All areas in the watershed are experiencing drought and drought impacts. *[Add 1 to 2 sentences to provide specific examples of current impacts here. Add quotes if possible to illustrate.]*

Residents, businesses, farmers, recreationists and fish depend on the same source of water – the N. Santiam River. Conservation is critical to help minimize the need for emergency measures. Here is how everyone is conserving water to help fish and support their neighbors in the watershed. *[Add 1 to 2 sentences to provide specific examples here. Add quotes if possible to illustrate.]*

The City of Salem has initiated Level 3: Severe Curtailment measures, indicating a critical water supply shortage. You may notice:

- Restricted watering at city parks and golf courses.
- Decorative water fountains and swimming pools are dry.

You can help prevent future impacts if water levels continue to drop. Water may only be used for essential purposes. These include:

- Drinking water.
- Personal hygiene. Please shorten showers and turn off water when brushing teeth.
- Emergency fire fighting.
- Essential crop watering. Please water in the evening to prevent evaporative loss.
- Essential business needs.

If you have additional water that you can spare:

- Enroll in a water leasing program temporarily to leave part of your water rights in-stream.
- Enroll in a water options agreement temporarily to share your water with others that need it.
- Change your water source temporarily from surface water to groundwater.

For more details on water conservation, visit:

- The North Santiam Watershed Council: <http://northsantiam.org/>
- Natural Resource Conservation District: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/manage/>
- EPA: <https://www3.epa.gov/watersense/products/index.html>
- Water bank contact:

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- *The North Santiam Watershed Drought Contingency Planning (DCP) Group is building long-term resiliency to drought in order to minimize impacts to the communities, local economies, and critical natural resources within the watershed. The DCP planning process enables local stakeholders to collaboratively develop a coordinated response to drought in the NSW by identifying drought conditions, critical water supply needs (i.e., vulnerabilities), and mitigation and response actions for implementation before and during drought conditions.*
