



Jefferson Soil and Water Conservation District

Annual Report of Accomplishments

July 1, 2020 – June 30, 2021

Prepared February 2022

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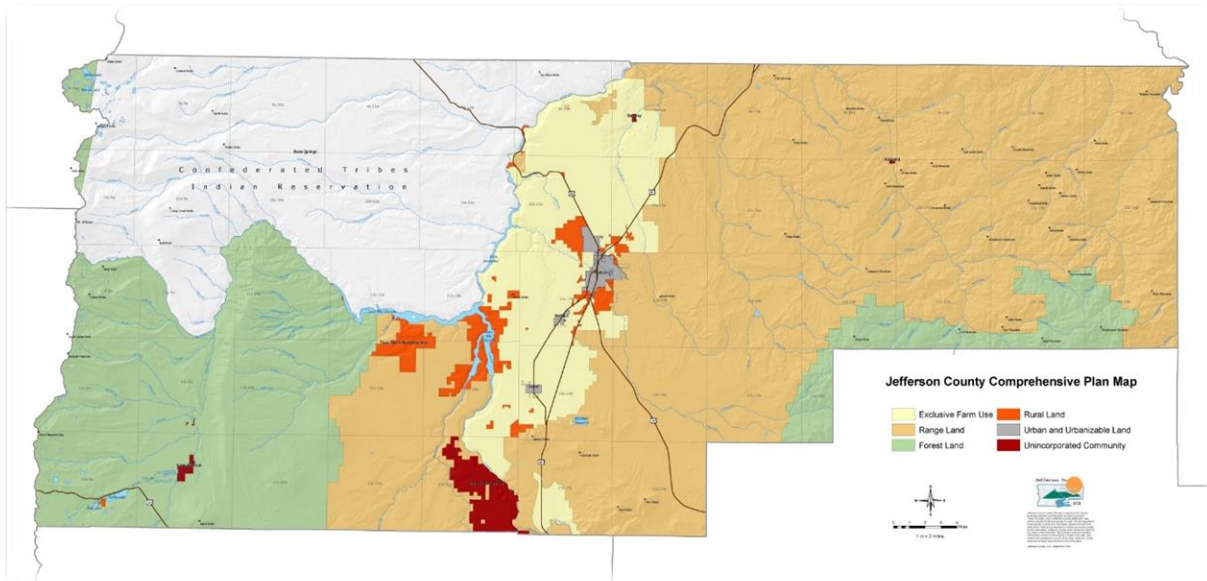
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Background

Overview

The Jefferson County Soil and Water Conservation District, hereafter, the “District”, consists of 4 staff members, 7 Board of Directors, and 4 Technical Advisors. The mission of the District is, *“To provide local leadership, education, motivation, and assistance to the citizens of Jefferson County for responsible, efficient stewardship of our soil and water resources.”* The District operates within Jefferson County in Central Oregon and has been helping landowners conserve natural resources since 1974. The District assists Jefferson County residents acquire technical assistance and financial support to install conservation practices to meet natural resource goals. We focus on local resource concerns. We strive to educate residents through technical assistance or information on how they can address problems on properties they own or manage.



Map of land use in Jefferson County, Oregon. Yellow = Exclusive Farm Use, Orange = Range Land, Green = Forest Land, Orange = Rural Land, Gray = Urban and Urbanizable Land, Red = Unincorporated Community.

History of Jefferson Soil and Water Conservation District

The 1930s brought an ecological disaster known as the “Dust Bowl”. Huge black dust storms blotted out the sun and swallowed the countryside. The U.S. Congress immediately declared soil and water conservation a national policy and priority. The idea for Soil and Water Conservation Districts (SWCD) was born. Today there are almost 3000 SWCD’s- one in almost every county (if you live in Jefferson County, the Jefferson County SWCD can help you). Each SWCD is designed to serve the conservation needs of that county, educate and help its local citizens conserve land, water, forests, wildlife and other natural resources.

A group of cooperators in the Trout Creek area applied to the State Soil Conservation Committee in 1957 to establish a Soil conservation District (SCD.) Application was for the benefit of local landowners and cooperators. There were approximately 82 farms and 49 cooperators. Thirty-six had farm plans. Over time, Trout Creek increased their District as six more landowner/cooperators signed on with the District.

Trout Creek Soil Conservation District continued with plans to establish a working Conservation District. Although geographically isolated, they worked closely with the Forest Service, Bureau of Land Management and North Unit Irrigation District to accomplish more for the area than could be accomplished as individuals.

In 1961 an application presented to the State for establishment of a West Jefferson County Soil Conservation District was successful. Thirty-nine cooperators signed the petition.

By 1974, conservation needs continued to increase county wide. A committee formed to study the feasibility of a single county Conservation District. The State granted a reorganization and combining of Trout Creek SCD and West Jefferson SCD into Jefferson County Soil and Water Conservation District. Jefferson Soil and Water Conservation District has been assisting local landowners with technical, financial, and advisory expertise ever since.

Jefferson County Soil and Water Conservation District Responsibilities

- Provide technical assistance to landowners to implement conservation measures to protect natural resources in the Willow and Trout Creek Watersheds, solve their individual problems, and meet their objectives.
- Provide technical assistance to county and city governments on problems involving erosion control, irrigation, manure management, invasive species, wildlife habitat, stream functioning, and other natural resource issues.
- Conduct research and assessments to identify problems and solutions. This will help to protect the environment, economy, and communities.
- Work with local agencies and groups to address watershed-wide natural resource concerns and opportunities.
- Educate residents through public speaking, workshops, printed material and public media.
- Bring federal, state, and private dollars to Jefferson County to assist landowners with implementation costs and technical assistance through the Oregon Department of Agriculture, the United States Department of Agriculture, Oregon Watershed Enhancement Program, and other funding sources.

District Staff

Staci Merkt

District Manager

Staci Merkt moved to Central Oregon from Virginia in April of 2019. She holds a B.S. from Radford University in Natural Resources Management. In Virginia, she worked for SWCDs for 12 years doing a combination of fieldwork and administrative duties. Prior to that, she traveled around the country working for the Bureau of Land Management, Farm Service Agency and National Park Service. She is ready to settle down here in Central Oregon!

Adam Haarberg

Trout Creek Project Manager

Adam Haarberg started with the District in March, 1998. He earned a Bachelor of Science in Rangeland Resources from Oregon State University in 1996. Adam manages the contract with Bonneville Power Administration (BPA) to implement habitat improvement projects in the Trout Creek Watershed to benefit the federally listed “threatened” Mid-Columbia summer steelhead population that utilizes Trout Creek and its tributaries.

Lisa Windom

Conservation Specialist/ Conservation Reserve Enhancement Program (CREP) Planner

Lisa Windom is the current CREP Planner and started her position in September of 2021. Lisa has worked in the natural resources field in Colorado and central Oregon for the past ten years. She received her B.S. in Chemistry in 2015 from Colorado State University and her M.S. in Water Resource Science and Soil Science in 2020 from Oregon State University.

Ally Steinmetz

Middle Deschutes Watershed Council (MDWC) Coordinator

Ally Steinmetz is the current Council Coordinator and has been with MDWC since October 2021. Ally earned a M.S. in Forest Resources and Environmental Conservation from Virginia Tech in 2018 and a B.A. in Liberal Studies with a Spanish minor from Oregon State University- Cascades in 2011.

Board of Directors

The SWCD is governed by a seven-member Board of Directors elected in the General Elections. Five are elected from each of the zones and two are at-large positions. Directors serve four-year terms.

Lloyd Forman	<i>Chair, Zone 4</i>
Sean Vibbert	<i>Vice Chair, Zone 3</i>
Curt Locke	<i>Treasurer, Zone 5</i>
Brad Klann	<i>Secretary, Zone 2</i>
Scott Samsel	<i>Director, At Large 1</i>
Rob Gaylen	<i>Director, At Large 2</i>
Vacant	<i>Confederated Tribes of Warm Springs Representative, Zone 1</i>

Technical Advisors

Theresa DeBardelaben	<i>Oregon Department of Agriculture, Watershed Specialist</i>
Lars Santana	<i>Natural Resource Conservation Service, District Conservationist</i>
Collin Cowsill	<i>North Unit Irrigation District, Water Operations Specialist</i>
Smita Mehta	<i>Oregon Department of Environmental Quality, TMDL Coordinator</i>

Annual Plan of Work

Jefferson County SWCD 2020-2021 Annual Plan of Work/ODA Scope of Work

Encompassing work beginning 7/1/2020 – 6/30/2021

Goal A: Improve Water Quality and Quantity Related to Irrigation Water Management

**Promote efficient irrigation water usage that prevents soil erosion, controls pesticide and nutrient leaching and irrigation runoff.*

1. Partner and collaborate with stakeholders, agencies and organizations including NUID, NRCS, Jefferson County, OWEB, FSA, MDWC, Wy-East RC&D; other area Watersheds etc. to coordinate and facilitate natural resource agreements, work group participation and round table discussions
2. Provided technical assistance to landowners including site visits, conservation planning, designing projects, grant writing, implementing conservation practices, compliance visits with ODA, and project management/inspection/verification
3. Continue to work with Landowners on the Rattlesnake Canyon and Campbell Creek on tailwater issues and the Agency Plains Runoff Areas including Campbell Creek etc. Use OWEB Agency Plains Grant to accomplish
4. Continue soil and water monitoring for nutrients in Mud Springs, Campbell Creek and Rattlesnake Canyon as needed based on data collected to reach goals identified in ODA Focus Area Action Plan
5. Carry out monitoring tasks for the DEQ Pesticide Stewardship Pilot for Gateway, Campbell Creek and Culver Drain
6. Work with Landowners on potential Juniper Cut projects in both the Trout and Willow Creek Watersheds
7. Continue to write Small Grants through the OWEB Small Grant Program

Goal B: Water Quality & Conservation Projects/Outreach/Technical Assistance

**Promote District Conservation Projects*

1. Assist landowners with soils info or GIS mapping etc. as needed. Assist landowners with EQIP applications and certified farm plans that result in funding for improved Water Quality/Quantity and assist landowners with OWEB small grant applications
2. Facilitate tours of conservation practices implemented and planned
3. Participate in Farm Fair, and other Natural Resource Committees/Groups
4. ODA Focus Project/Action:
 - a. Implement Projects in the Mud Springs Focus Area
 - b. Provide Quantitative results to ODA

Goal C: Environmental Quality Incentives Program (EQIP)**Work with partners on existing contracts and future contracts*

1. Assist NUID and landowners with grant or program funding applications for implementation and on farm plans
2. Identify projects for Agency Plains projects. Provide technical field services and assist with funding assistance if requested
3. Write 3 Small Grants for improved water quality and water quantity in both Willow Creek and Trout Creek Watersheds

Goal D: NRCS Assistance**Work with NRCS on existing contracts and future contracts*

1. Assist landowners with soil or GIS mapping as needed. Assist landowners with NRCS EQIP applications and certified farm plans that may result in funding for improved water quality and quantity
2. Assist with conservation questions for natural resource concerns
3. NRCS Training as requested

Goal E: Trout Creek Watershed Enhancement**Improve Riparian Function and Watershed Health in the Trout Creek Basin*

1. Little Trout Creek Habitat Improvement Project
2. Trout Creek Vegetation Improvement
3. Trout Creek Noxious Weed Program
4. Future Project Design
5. Identify and Select Projects
6. Watershed Coordination

**Trout Creek Monitoring*

1. Yearly Redd Counts (with 5-year comparison)
2. Annual project site visits/evaluations and photo points
3. GPS survey all past stream restoration project sites
4. Spring Tour of Trout Creek Middle Trout Project

**CREP Program*

- 6 CREP Contracts
- 15 Events/Outreach Activities
- 6 Miles of Stream into CREP
- 75 Acres of Habitat to be Assessed

Goal F: Middle Deschutes Watershed Council Support

**Provide Middle Deschutes Watershed Council Technical and Administrative Support*

1. Provide technical assistance to on the ground projects
2. Provide admin support for Small Grant Projects
3. Manage Small Grant Team/Requirements/Functions
4. Assist with Education Natural Resource Programs in Jefferson County

Goal G: District Operations – Marketing Operations

**Effectively market Jefferson SWCD projects to targeted audiences to increase community support for our mission*

1. Maintain District web or blog site. Display information, news, create community, share alternatives to donating money, and showcase benefits of Jefferson SWCD programs.
2. Show and market the results and outcomes that Jefferson SWCD achieves thru Annual Report.
3. Flyers, Brochures and News Releases. Distribute Rural Living Handbooks as needed.
4. Participate Groups or Natural Resource Committees or Groups that align with the District Mission in Jefferson County.
5. News articles locally

Goal G: District Operations – Internal Operations

**Manage programs and projects to accomplish Jefferson County vision and mission by achieving measurable outcomes*

1. Working on new Strategic Area Plan 2022 - 2027
2. Annually update Annual Plan of Work based on Jefferson SWCD Strategic Area Plan.
3. Update as needed Board Policies and Procedures
4. Continue to manage Jefferson County SWCD financial affairs consistent with Accepted Accounting Principal and ODA Requirements
5. Continue to explore the steps to seeking a Jefferson County tax base
6. Conduct annual financial audit or review

Regional Update: Water Shortages

Overview

The farmers and ranchers within Jefferson County have faced unprecedented water shortages which have had regional impact on the watershed, community, and economy of the county. North Unit Irrigation District (NUID), the provider of irrigation water to 58,880 acres of cultivated land within Jefferson County, has faced water shortages due to drought and changed to headwater management in preservation of the Oregon spotted frog. Because most of the agriculture within Jefferson County is irrigated through the NUID water, and NUID canal management impacts the volume of water in natural drainages, the impact of their operations can be seen on-farm, in the drainage water quality, and in the types of conservation projects being explored by landowners. It cannot be understated the impact that NUID (and the impact of their challenges to sustain adequate water supply to their patrons) has on the types of conservation projects necessary and the ecological impact observed by the region. In recent years, the severity of water shortage has reached such extremes it necessitates inclusion in this report for its impact can be seen in the water quality data collected, and the demand for grant funding for conservation projects. In this section, the source and impact of water shortages will be captured.

Deschutes Basin Board of Control, Deschutes Basin Habitat Conservation Plan

Though outside of the jurisdiction of the SWCD, the impact of the Deschutes Basin Habitat Conservation Plan (HCP) must be acknowledged because its rippling impacts can be seen in ongoing water quality studies, regional land use/economic challenges, and the necessary designs for sustainable conservation projects. After over a decade of work, the HCP was finalized and put fully into effect in December 2020 which adjusted the management of Crane Prairie Reservoir, Crescent Reservoir, Wickiup Reservoir, and the Upper Deschutes River in preservation of the endangered Oregon spotted frog (OSF). This plan included eight irrigation districts of the Deschutes Basin (represented by the Deschutes Basin Board of Control, DBBC) and the City of Prineville. As the junior water right holder of the Upper Deschutes River and manager of Wickiup Dam, NUID is held responsible for many of the major changes outlined in the HCP. NUID stores over 80% of its water supply within Wickiup Reservoir and transports it through the Deschutes River from Wickiup Dam to its diversion in Bend. It is no coincidence for this overlap, sighting the purpose of the HCP being to counteract the ecological damage that has occurred due to irrigation water management between the storage reservoirs on the headwards to the diversions within city limits.

Without getting into the details of the HCP (please refer directly to the public document for further clarification), here are three of the most noticeable changes to the dam management whose impacts can be seen in Jefferson County:

1. Winter discharge from Wickiup Reservoir has increased to provide water for OSF overwintering- as a result Wickiup Reservoir does not fill at the same rate and requires more precipitation to match historic filling trends

2. March and April discharge from Wickiup Reservoir must be increased to 600 cfs (depending on USFWS guidance) to provide for OSF reproduction- as a result more water than what is necessary to meet irrigation demands is released, encouraging NUID to divert water and charge irrigation canals to excess to avoid waste
3. Allowable peak flows in May-August were reduced below historic demand- as a result NUID was required to lower water usage by regulating water users

Depending on the climate, timing of precipitation and heat waves, and historic groundwater storage, these changes in management have varying impact on the resource management within Jefferson County.

Drought meets Deschutes Basin Habitat Conservation Plan

The Deschutes Basin Watershed (and Jefferson County within) have been in Severe to Exceptional Drought (as per NOAA and the NIDIS referenced at [Drought.gov](https://www.drought.gov)) from 2019 to 2021. The drought has led to depleted groundwater supplies in the Cascades which equate to a reduction in water storage in the reservoirs and runoff in the summer and fall. And it led to an increase in on-farm demand due to depleted soil moisture. Compound this drought with irregular heatwave in May-August and the adjustments made by the HCP, Jefferson County found itself in a water shortage unseen in its history. The following are key events worth noting during 2021 which impacted the landowners within Jefferson County:

1. Growers were limited to 30-50% of their minimum water allotment, restrictions that increased and decreased suddenly throughout the irrigation season (0.30 acre-feet per acre for Crooked River Water Rights, and 0.50 acre-feet per acre for Deschutes River Water Rights)
2. NUID suddenly regulated the amount of water that could be ordered to levels far below what many growers needed to use their irrigation equipment
3. NUID suddenly shut off water in August, right before historic heatwaves
4. Growers left 36% of their fields fallow (either uncovered, covered but unharvested or non-irrigated), highest fallow field on record
5. NUID filled canals in April, drained canals in August, and rapidly filled again in early October to then shut off in late October
6. Wickiup Reservoir was drained by August 21, 2021, earliest on record

It is unsure if similar events will continue into 2022; however, the SWCD is working to prioritize disaster relief and community support in response to the challenges facing Jefferson County landowners.

Small Grant Program

Every Biennium, OWEB has allocated approximately \$100,000 for each SWCD statewide to implement natural resource conservation practices. The Small Grant Team develops priorities based on information received from landowners and agency personnel. Conservation practices and environmental benefits must meet the criteria set by OWEB. Small grants have a quick turnaround for funds and are limited to \$15,000.00 in total costs of the project per landowner per Biennium. A 25% landowner match (cash or in-kind) is also required. The Jefferson County SWCD District Manager manages this program and team provides technical support to develop conservation projects, submitting applications and managing the grant implementation. In 2021, the SWCD received overwhelming interest in this program. A waiting list quickly formed, and due to inflation and increased supply costs, the \$15,000 funding did not cover as much of the conservation projects as in the past.

Project Description	Funded Amount
Water Efficiency Pipeline	\$15,000.00
Water Efficiency Pipeline	\$15,000.00
Handline to Center Pivot	\$15,000.00
Wheel line to Center Pivot	\$15,000.00
Juniper Cut	\$15,000.00
Handline to Wheel line	\$15,000.00
Vegetative Wind Break	\$10,000.00
<i>Total Small Grants</i>	<i>\$100,000.00</i>

Water Quality Monitoring in Jefferson County

Overview

Since 2006, JSWCD has monitored water quality in Mud Springs, Trout Creek, Campbell Creek and/or Rattlesnake Canyon to track the impact of upstream land use and irrigation water management on natural drainages and to quantify the success of conservation efforts implemented by the SWCD and partners. Agricultural runoff into the natural drainages can originate from on-

farm runoff, storm drainage, or discharge from the NUID irrigation canals. JSWCD has been monitoring water quality of agricultural run-off and the filtration capacity of the natural drainages by collecting in-stream turbidity at the start of each drainage (at the edge of agricultural lands) and approximately 4 miles downstream at the drainage confluence to the Deschutes River. Samples were grabbed periodically between March and October each sampling year. The samples were analyzed for turbidity, which measures water clarity, and thus used to measure the amounts of agricultural runoff high in suspended soils. The frequency and coverage of monitoring has varied from year to year due to limited studies, changing priorities, and evolving interests. In this report, a multi-layered approach to analyzing the data will provide a brief glance back to historic data, an alternate perspective on recent (3 year) trends, and a close look at the results from July 1, 2020 to June 30, 2021.

Monitoring Locations and Scheme

The monitoring locations focused on natural drainages which drained off irrigated agricultural lands of Agency Plains, Culver, or Gateway. Campbell Creek and Rattlesnake Canyon drain from the agricultural lands of Agency Plains and provide intermittent flow to the Deschutes River. The Culver Drain accumulates agricultural and storm runoff from the agricultural region surrounding the City of Culver and runs it through a constructed and monitored wetland before draining into Lake Billy Chinook. Mud Springs drains from the agricultural region in Gateway and is a tributary to Trout Creek. Trout Creek is a major tributary to the Deschutes River and serves as a major spawning ground for summer steelhead. The years in which data was collected is not consistent across all sites; however, recent years has established a monitoring regime which tracks all sites equally, except for Rattlesnake Canyon. A combination of changes in SWCD personnel and the expiration of the landowner agreement to gain access to Upper Rattlesnake Canyon has challenged the frequency of sample collection- though plans to resolve this data gap can be expected in 2022.

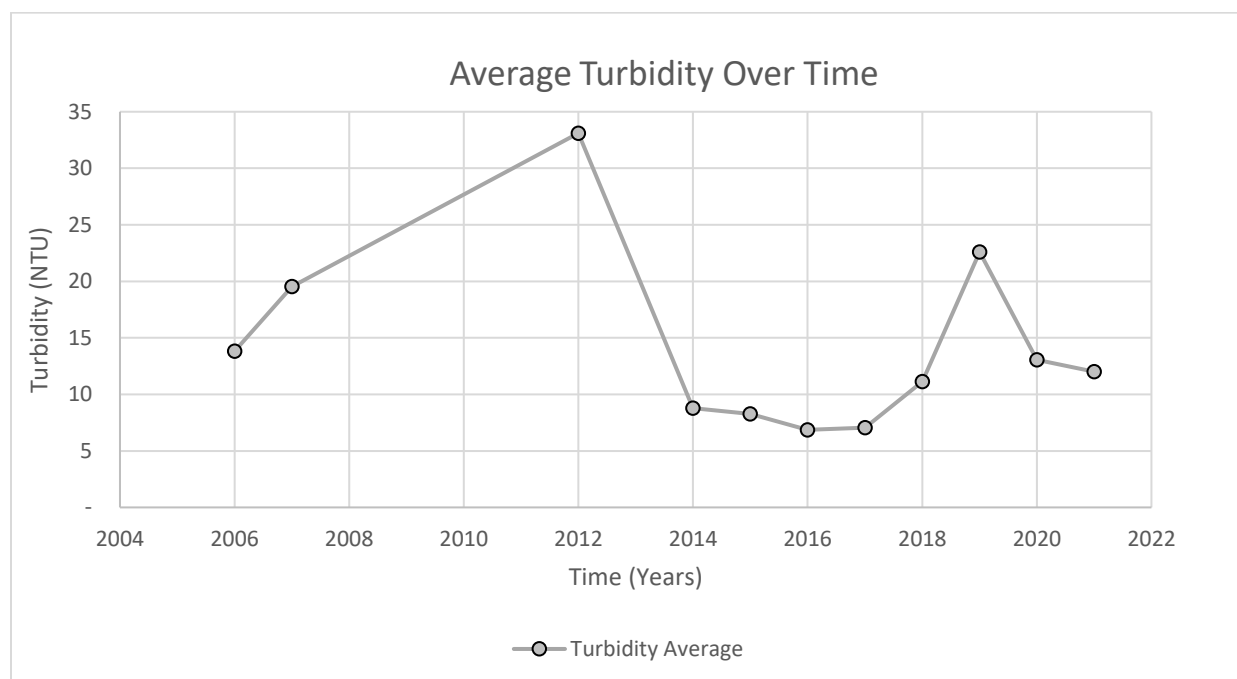
Monitoring locations and frequency of turbidity data

Agricultural Region	Drainage Canyon/Creek	Years with Monitoring Data
Agency Plains	Campbell Creek	2006, 2007, 2015, 2016, 2017, 2018, 2019, 2020, 2021
Agency Plains	Rattlesnake Canyon	2007, 2012, 2015, 2016, 2017, 2018, 2019
Culver Region	Culver Drain	2020, 2021
Gateway Region	Mud Springs Creek	2006, 2007, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021

Brief Historic Review

When averaging the available turbidity data across all sites, the trend is variable with time necessitating the need to break up the data by timeframe. The average turbidity, since the start of monitoring, has shown an increasing trend from 2006-2012, then a decreasing trend from 2013-2016, an increasing trend from 2017-2019, then a decreasing trend from 2020-2021. Exploring the climate and weather, major changes to watershed and dam management, and the involvement of technical support, an attempt at explaining these trends is made. Overall, the following breakdown attempts to recount significant events over the past decade which may explain the irregular trend of the average turbidity over time.

For the purposed of this report, three timeframes will be discussed: the first from 2006-2016, the second from 2017-2019, and the third from 2020-2021. Overall, the number of fields converted from farrow irrigation to sprinkler or center pivot increase over time, and years of technical support and grant funds have increased on-farm efficiency. Any changes to on-farm management were made in response to irrigation water supply, soil moisture, temperature, and precipitation and not due to any change in technical assistance or a removal in efficient irrigation equipment. These timeframes align with key changes in watershed management: before the OSF lawsuit (2006-2016), during the lawsuit and trialing of the HCP (2016-2019), the official implementation of the HCP (2020-2021). The purpose of this delineation being to explore any possible correlations between changes in watershed management, climate, and subsequent on-farm operations and water quality within natural drainages.



Average Turbidity over Time. All sites averaged by year between 2006 and 2021

Before the OSF Lawsuit (2006-2016)

Before the OSF Lawsuit, the irrigated acres within Jefferson County were not restricted to an allotment and could use above and beyond their minimum water right. Water usage of about 2.25 acre-feet per acre of irrigatable acres for Deschutes River water rights, 1.25 acre-feet per acre for Crooked River water rights, was common. On-farm management had become such a concern that in 2013, the SWCD, the Confederated Tribes of Warm Springs, landowners, and stakeholders prioritized addressing resource concerns associated with irrigation runoff in the North Agency Plains portion of Jefferson County. Shortly after, the annual NRCS Local Working Group added irrigation water conservation as an important concern and organized these efforts into two goals for the Agency Plains CIS to (1) improve irrigation water efficiency on croplands northwest of Madras, and (2) reduce irrigation tailwater runoff to the Deschutes River below Pelton Dam. From 2013-2016 water quality in key drainages improved significantly as a result of these efforts.

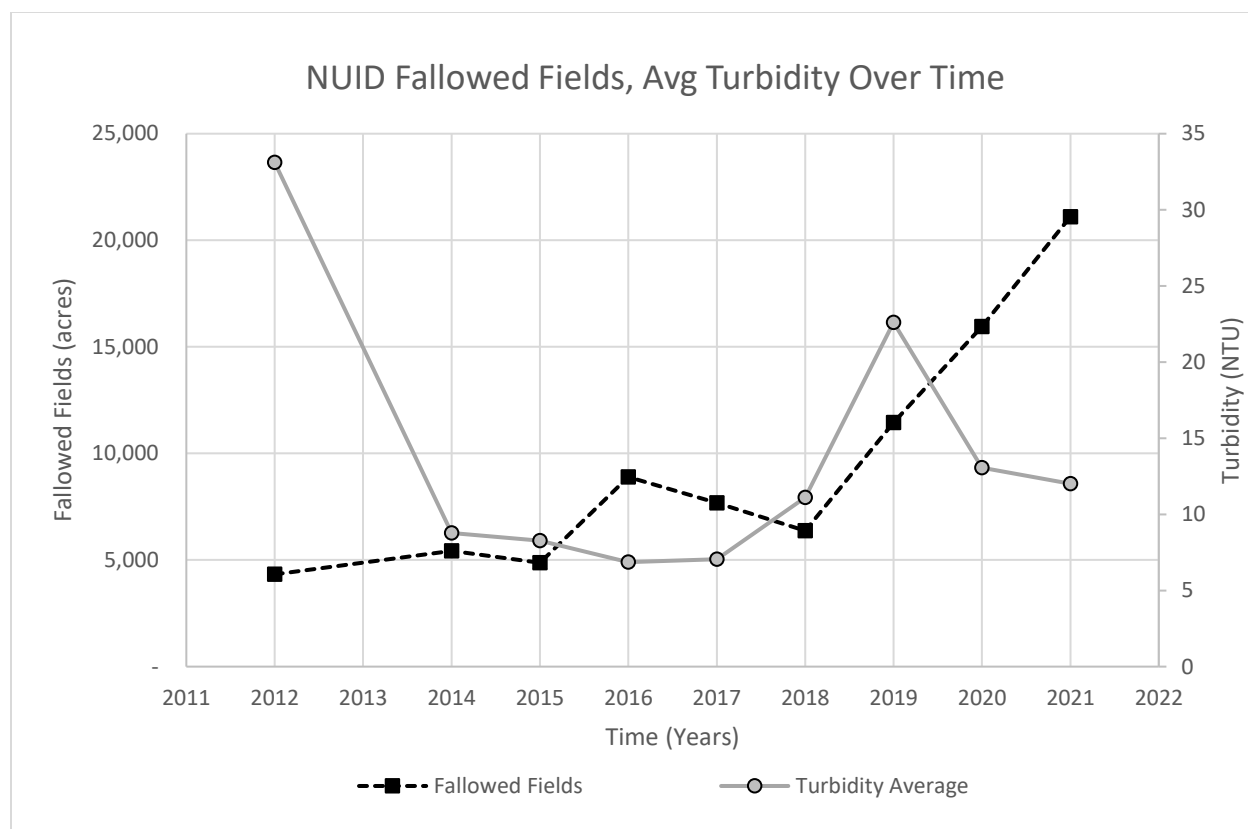
Trialing the HCP (2016-2019)

A lawsuit was filed against the City of Prineville, and the eight irrigation districts represented by the Deschutes Basin Board of Control which pull off the Deschutes and Crooked Rivers regarding the endangerment of the ESA-protected, threatened Oregon spotted frog (OSF). The winter of 2016/2017 brought historic snowstorms, bringing snowpack so grand it collapsed roofs, shut down roads, and brought Central Oregon into a state of emergency. The products of that winter brought a prosperous irrigation season and marked the start of a five-year drought to follow. As a result of a healthy winter and a peace-offering from the lawsuit, NUID began releasing more winter storage to provide for the OSF and start a slow transition into potential dam management proposed in the HCP. This period brought trial and error to resource management at Wickiup and within the Deschutes River and caused a ripple effect to operations within the irrigation district and on-farm. Changes to dam management would change the amount of stored/available water for the season and at a specific point in time and the source of available water across time and space. These changes could have led to the increase in turbidity observed from 2017-2019.

Implementation of the HCP (2020-2021)

As explained in the section *Drought meets Deschutes Basin Habitat Conservation Plan*, the HCP was officially implemented December 2020 setting in stone the requirements for Wickiup dam operations, Deschutes River flow requirements and general changes to Deschutes Basin operations. For water quality in Jefferson County, this led to water shortages, sudden start-ups and shutoffs of irrigation water, and widespread fallowed fields. The percentage of fields left fallow have increase from 11% in 2018 to 19% in 2019, 27% in 2020, and a historic high of 36% in 2021. Historically, an average of 6,000 acres (10%) were left fallow each year, but in 2021, the among of fields left fallow reached historic highs with 21,000 acres (36%) left fallow and/or uncovered. The impact of these the fallowed fields is expected to overshadow any on-farm conservation projects completed. Though the number of fields fallowed increased, there were fewer precipitation events and dryer conditions throughout 2020-2021 which reduced the average

turbidity with time. The event which usually caused the outlier spikes in turbidity were less frequent.



Fields fallowed within NUID irrigated acres over time, and average turbidity of all sites over time.

Re-Exploring the Last 3 years

In the 2020 JSWCD Annual Report, it was theorized that the spike in 2019 and 2020 was believed to be a temporary result from ground disturbance in piping implementation on Lateral 58-11 as well as from new irrigation systems on-farm. This could explain the increase in turbidity at the top of Mud Springs, but that theory does not sufficiently explain similar spikes in other drainages such as Rattlesnake Canyon and Campbell Creek drainage outside of the reach of the 58-11 piping project. Such an event would have impacted the entire region equally and have long lasting effect to cause an increase in turbidity for years to come.

Upon further exploration, it was found that in 2019, 2020, and 2021, a few clustered, outlier samples were collected, suggesting the occurrence of finite events as the source of the high turbidity. In 2019, three events occurred between March 20 and April 15 which caused three high turbidity readings at the top of Rattlesnake Canyon and the top of Mud Springs. In October 2020, one sample read 328 NTU at the top of Campbell Creek Canyon (a reading 2 times the historic max turbidity recorded across all sites). And in 2021, over five samples collected across April, May, and June for the top of Campbell Creek Canyon and Mud Springs were between 47-91 NTU, raising the overall average turbidity for that year.

It is possible that a combination of on-farm management, precipitation events, and irrigation district operations are the cause for these outlier samples. However, excluding these outlier samples, the average turbidity and the variance has still increased since 2016, suggesting an additional cause impacting water quality across space and time, uniformly.

July 1, 2020 through June 30, 2021

Overall, the recorded turbidity of the water draining into Campbell Creek, Mud Springs Creek and the Culver Drain predominantly stays below 50 NTU (the EPA max load), except for a few events. On October 5, 2020, the Upper Campbell Creek site had a turbidity of 368 NTU. At this time, NUID had quickly recharged its canal network after being shut off for the month of September. This process can be fast and often provides an excess of water at the tail end of irrigation canals before patrons can irrigate their fields and can lead to excess drainage. Similarly, in early April of 2021, Mud Springs at Trout Creek exceeded the 50 NTU threshold with a turbidity of 67 NTU which also correlates to irrigation canal start-up operations from PL58-11 or on-farm operations. In May and June of 2021, rain and windstorms passed through Agency Plains causing excessive drainage but is also a period of heavy on-farm irrigation. Let it be noted that though these events correlate with irrigation canal operations, the landowners in these drainages share the responsibility of buffering and preventing agricultural runoff from leaving their fields. These turbidity measurements are representative of the buffering capacity of each drainage, which is a nexus of irrigation operations, on-farm practices, and physical path/hampering of draining water.

Pesticide Stewardship Partnership Program

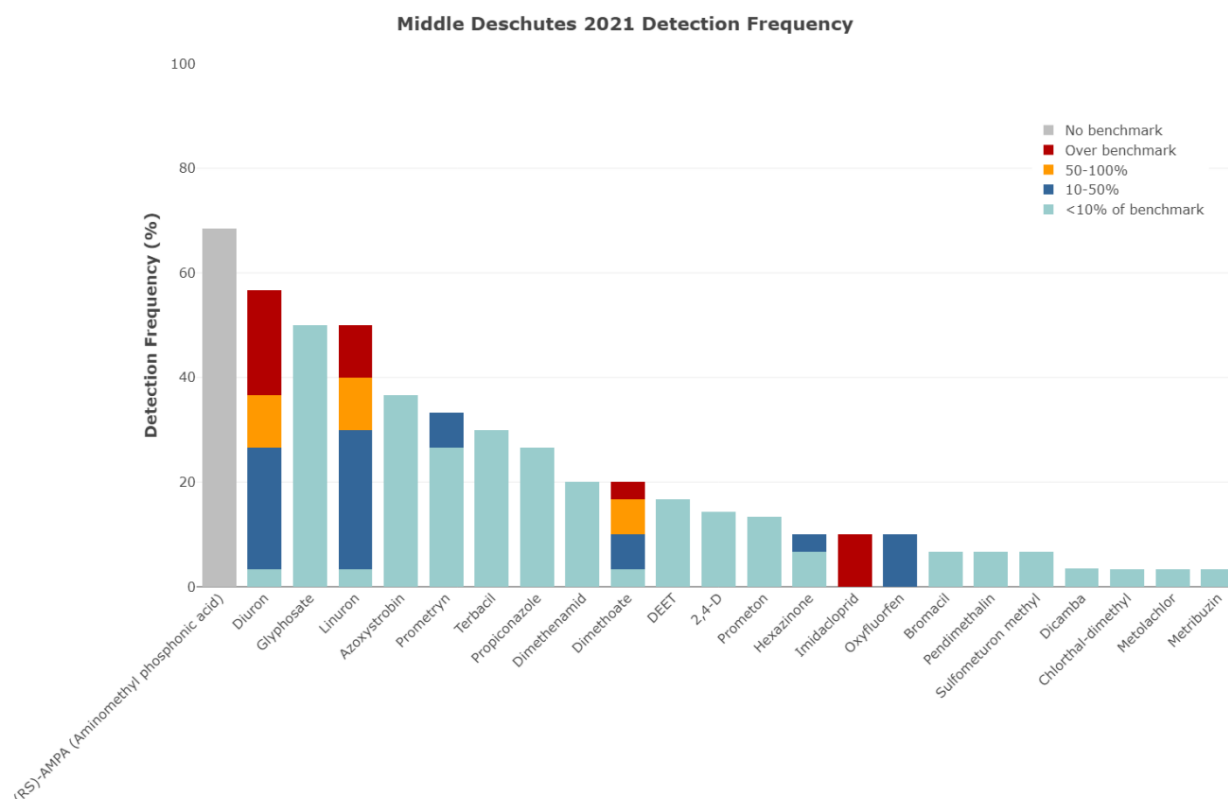
The Jefferson SWCD in partnership with the Middle Deschutes Watershed Council collected water samples from three designated drainages (five location sites total) in the Middle Deschutes Watershed. Samples were collected on a prescribed schedule that the SWCD and Oregon DEQ decided upon based off of agricultural practices during the grow season. Each of the five locations were scheduled and sampled to most accurately capture agricultural runoff during the irrigation season of March through October. All samples were collected in accordance with protocols established by the Oregon DEQ and ODA. The Conservation Technician for the SWCD completed the following to ensure success:

- Collected water samples and flow data throughout the spring and fall
- Attended informational webinars and trainings to comply with collection protocols
- Coordinated sampling schedule changes with DEQ staff
- Traveled from site to site
- Trained field staff with the Middle Deschutes Watershed Council in the proper collection of water samples and flow data
- Organized and maintained field equipment to ensure successful sampling events

- Collected total suspended solids with every sample event

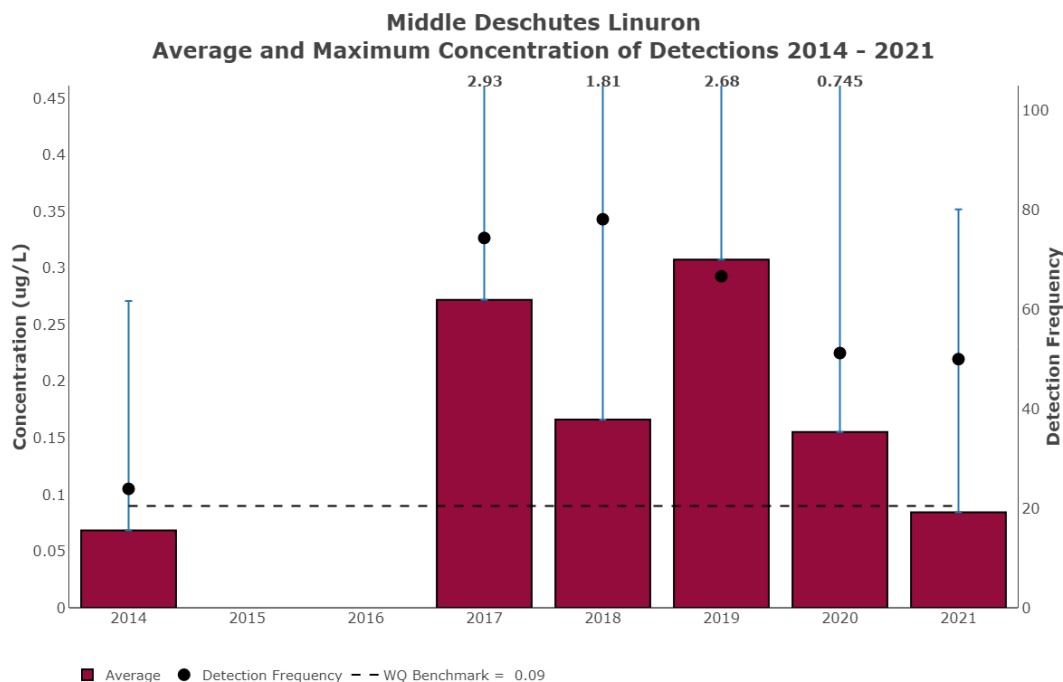
In 2021, the Jefferson SWCD continued the fully established PSP Program, which transitioned from a pilot to a full program in 2020. JSWCD continued to collect water samples at the same 5 monitoring points from the same three irrigation drainages throughout Jefferson County. The pesticide results that we received from the Oregon Department of Environmental Quality (DEQ) showed that in many locations, especially within the Campbell Creek watershed, that pesticide levels were exceeding Aquatic Life Benchmarks*. SWCD staff values working with ODA and DEQ under the partnership to identify harmful pesticides in surface waters of the Middle Deschutes watershed. The SWCD will continue to work with their partners to collect and share water quality findings in order to address environmental concerns in the middle Deschutes watershed.

**Aquatic life benchmarks are estimates of the concentrations below which pesticides are not expected to represent a risk of concern for aquatic life. Comparing a measured concentration of a pesticide in water to an aquatic life benchmark can be helpful in interpreting monitoring data and in identifying and prioritizing sites and pesticides that may require further investigation.*

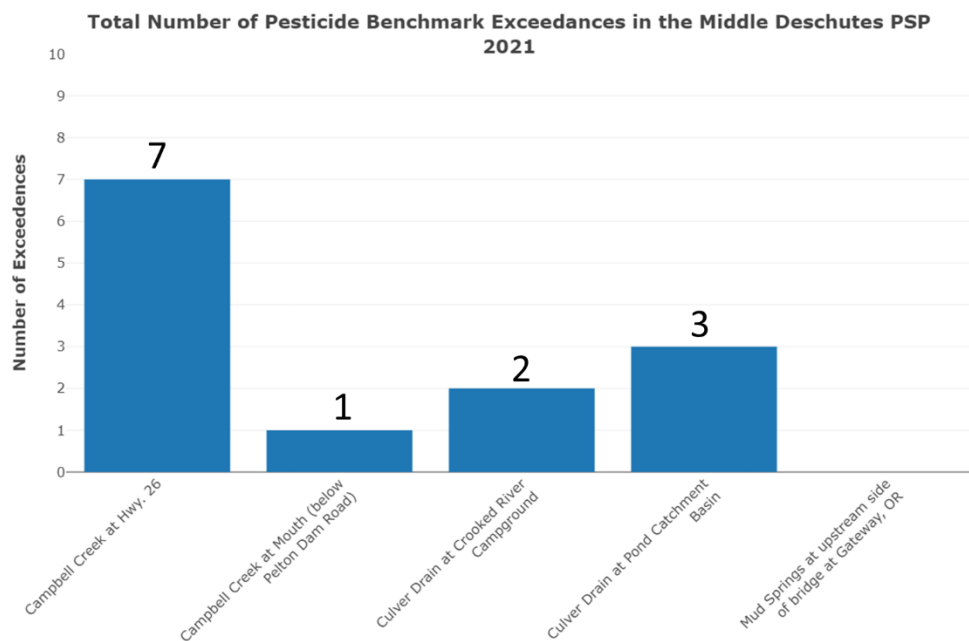


This figure displays the frequency at which certain chemicals were detected in the Middle Deschutes PSP samplings and at what concentration they were detected. For Example, Linuron was detected 50% of the

time we sampled for it, with roughly 20% of those detections exceeding the Aquatic Life Benchmark (red), a small percentage were detected at a concentration of within 50-100% of exceedance levels (yellow), etc.



This figure displays on the left y-axis the average concentration of Linuron detected per year. And on the right y-axis the frequency at which that concentration was detected, for example 2021 Linuron was detected at an average concentration of 0.20 ug/l.



This chart displays the total of Aquatic Life Benchmark Exceedances in 2021. There were 13 exceedances in 2021.

Trout Creek Watershed Improvement Project

Led by Adam Haarberg

Project No. 1998-028-00

Project History

The Trout Creek Watershed Restoration Project's primary goal is to increase the abundance of ESA listed Middle Columbia River DPS Summer Steelhead. Following the goals and objectives of the numerous plans and documents will ensure the viability of the summer steelhead that utilizes the Trout Creek Watershed. Continued work in this area will promote healthy populations of numerous species of fish and wildlife, while simultaneously promoting the use of sustainable agricultural practices on private land. Successful agriculture and extraordinary habitat can and does coexist in the Trout Creek Watershed and needs to continue well into the future for all parties involved if there is to be true "restoration."

We plan to accomplish these goals with the implementation of demonstration projects located throughout the Trout Creek Watershed on private lands. Priority areas have been identified in previous studies and assessments. We give preference to these areas when selecting projects to implement, but it should be noted that all of our work hinges on the permission and desire of the landowner. Some landowners are more willing than others. Since the inception of this project in 1998, there have been massive gains in trust and willingness throughout the watershed and we have recently gained access to numerous acres that were previously off limits to us and our work. This gain in trust is a huge benefit for all when it comes to the restoration of our habitat. The demonstration projects we plan to implement include Habitat Improvement Projects that include in-stream work, riparian and floodplain enhancements, fish passage improvements, upland vegetation management, spring developments and conservation easements such as the Conservation Reserve Enhancement Program (CREP). We have been very successful in the improvement of irrigation practices throughout the watershed, and there are still more opportunities that exist in Trout Creek. Improving efficiencies of irrigation systems is critical to the overall reduction of water withdrawals. Also, improving individual points of diversion, not only aid the irrigator, but hugely benefit the species of concern, juvenile summer steelhead.

Legend

- FY2020 Project Sites**
 - Foley Creek Habitat Improvement (Orange circle)
 - Little Trout Creek Habit Improvement (Pink circle)
 - Opal/Trout Fish Passage Improvement (Green circle)
 - FY20 Noxious Weed Program (Red line)
 - Weather Station (Green star)
- Stenersen Project Boundary** (Orange hatched area)
- Beaver Creek Watershed Restoration** (Pink hatched area)
- Trout Creek Watershed** (Black outline)
- Counties** (Black dashed line)
- Summer Steelhead Distribution** (Blue line)
- Streams** (Blue line)

The map displays the Steptoe Watershed, a large area in southeastern Idaho. The watershed boundary is marked by a thick black line. Major towns shown include Antelope, Ashwood, Gateway, and Madras. The map is divided into Jefferson County to the west and Blaine County to the east. Numerous creeks and canyons are labeled, including Wolf Creek, Pole Creek, Chain Canyon, Deep Canyon, Indian Creek, Grub Hollow Creek, Cold Camp Creek, Eagle Creek, Gallagher Canyon, Vanderhoof Canyon, Fir Tree Canyon, Current Creek, Peg Gulch, Little Muddy Creek, Hawley Creek, Muddy Creek, Amity Creek, Poison Hollow, Slough Creek, Opal Creek, Barber Creek, Fort Creek, Appley Creek, Calivan Creek, Little Willow Creek, Elder Creek, Jim Creek, Big Wheelstone Creek, Tin Canyon Draw, Clover Creek, Board Hollow, Beaver Creek, Gossberry Creek, Thompson Creek, Fools Hollow, Long Hollow, Post Hollow, Little Trout Creek, Sheep Hollow, Allied Canyon, Dry Creek, Little Devils Canyon, Ryegrass Hollow, Salmon Creek, Pine Creek, Sand Hollow, Turkey Springs Canyon, Antelope Creek, and Bull Canyon. The map also shows the distribution of summer steelhead (blue lines) and various project sites (colored circles and hatched areas). A scale bar at the bottom indicates distances from 0 to 10 miles. A north arrow is located in the top right corner.

Completed Work

Little Trout Creek Habitat Improvement Project

The Little Trout Creek Habitat Improvement Project is a comprehensive stream/riparian restoration project located in the Little Trout Creek drainage. See Project Location Map, page 4, for the project location within the Trout Creek Watershed. The primary funding sources for this project were PGE - \$195,683 (secured in 2013), OWEB - \$130,967, and BPA. PGE funds were used to rent equipment and hire a dozer operator. The OWEB funds were used to revegetate the project site and complete fencing to ensure the project area will remain excluded from livestock to protect and enhance the riparian plantings and fish habitat. Stream channel and floodplain construction occurred from July-October 2020. The tree planting and grass seeding occurred in March 2021, and the fencing was completed in May 2021.

Project components include:

- Channel Reconstruction – 1.14 miles
- Protruding Interlaced Stability Structures – 39 each
- Floodplain Enhancement/Connection – 25 acres
- Large Rooted Trees and Shrubs Planted – 7500 each
- Native seeding – 30 acres

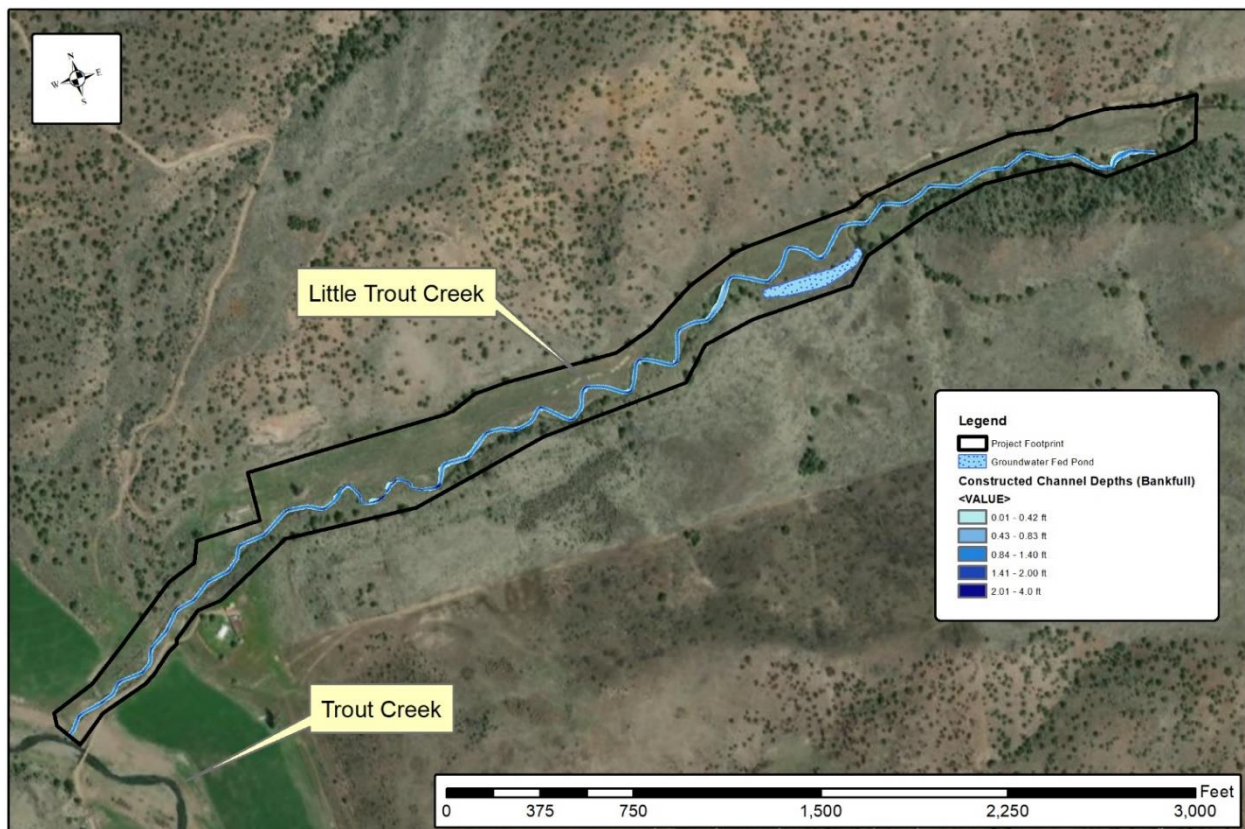




Photo Point #6 - Little Trout Creek **Before** Construction – June 18, 2020



Photo Point #6 - Little Trout Creek **After** Construction – June 10, 2021

Trout Creek Vegetation Improvement Project

This fiscal year, we focused our vegetative planting on the Little Trout Creek Habitat Improvement Project. A contractor was hired with OWEB funding to plant 7,500 large rooted native trees and shrubs throughout the project site. In addition, SWCD and ODFW staff seeded approximately 30 acres of disturbed ground in and adjacent the project site with 600 pounds of native grass and forb seed. The seeding occurred just prior to planting in February 2021, followed by the expandable stinger planting of the trees in March 2021. Photos below show the equipment used to plant the large, rooted stock, the site immediately following the planting with dormant trees whips that are hard to see, and finally the site in June 2021, showing the emergence of the seed and the leafing of the trees. It should be noted that it was a very dry year leading up to and following the planting. The hydrologic effects of the floodplain connection and raising of the water table from the project work allowed these plants to do extremely well considering the environmental conditions they are facing.



Little Trout Creek Project – Stinger Planting – March 2021



Little Trout Creek Project – Planted Riparian Rooted Stock (Various Species) – March 2021



Little Trout Creek Project – Planted Riparian Rooted Stock (Various Species) and Seeded Native Grasses and Forbs (Various Species)– June 10, 2021

Trout Creek Noxious Weed Program

The Jefferson SWCD along with ODFW – Trout Creek Project, has been treating known patches of yellow starthistle and Scotch thistle in the watershed for the past 11 years. This year, we focused our efforts on early spring weeds such as Scotch Thistle, Whitetop and diffuse Knapweed, as well as summer annuals such as Yellow starthistle and Russian thistle. Locations that were treated were areas that we have treated the past 10 years, which include past restoration sites as well as important steelhead production corridors. These include remote, rugged areas with little access, the primary one being Degner Canyon along Trout Creek. In total, 63.1 acres of “A” and “B” listed weeds were treated with the help of the Trout Creek Noxious Weed Program.

We continue to see benefits of annual herbicide applications, as the native vegetation is starting to take a foothold in some of these areas that were mostly noxious weeds when we started this in 2010.



Scotch Thistle located in Degner Canyon (Trout Creek) being hand pulled in areas too steep for ATV access – June 2020

Identify and Select Projects

This fiscal year, a huge effort was put forth to acquire funding from outside sources for the purpose of implementing large scale habitat improvement projects in the Trout Creek Watershed in future years (2020-2024). The projects include the Beaver Creek Watershed Restoration, Stenersen Upland Habitat Improvement, and the Little Trout Creek Habitat Improvement Project. The primary funding sources were the Oregon Watershed Enhancement Board (OWEB) and Portland General Electric (PGE). In total, during fiscal year 2019, the Jefferson Co. SWCD was able to secure \$663,409 from OWEB and \$51,000 from PGE.

Beaver Creek Watershed Restoration:

The Beaver Creek Watershed Restoration Project is a comprehensive upland, riparian, and fish passage project that encompasses the entire Beaver Creek watershed, which includes three different landowners. See Project Location Map, page 4, for Beaver Creek's location within the Trout Creek Watershed. Funding sources for this project include OWEB, PGE, and FSA (USDA) for CREP portion, and Jefferson Co. Public Works (Culvert Replacement). Funding secured for this project includes OWEB - \$278,833, PGE - \$51,000, and FSA & Jefferson Co. – TBD.

The project will be implemented in the years 2020-2024. Project components include:

- Juniper Cutting/Removal - 758 acres
- Noxious Weed Control (Primarily Medusahead rye) – 720 acres
- Rangeland Seeding – 711 acres
- Prescribed Burning – 234 acres
- Spring Developments – 6 each
- Culvert Replacement – 1 each
- Channel Reconstruction/Relocation – 0.15 miles
- CREP Enrollment – 7.7 acres

In 2020, 263 acres of junipers were removed and piled. Some burning of the piles occurred, the rest to be completed in 2021.



Beaver Creek Watershed – November 2019 (Before)



Beaver Creek Watershed – May 2021 (After)

Calf Gulch Habitat Improvement Project:

The Calf Gulch Habitat Improvement Project is a comprehensive upland restoration project located in the Calf Gulch drainage. See Project Location Map, page 4, for the project location within the Trout Creek Watershed. The primary funding sources for this project are OWEB and the Ashwood-Antelope Rural Fire Protection Association (AARFPA). Funding secured for this project includes OWEB - \$253,609 (Cash), and AARFPA - \$73,068 (In-Kind).

The project will be implemented in the years 2020-2023. Project components include:

- Juniper Cutting/Removal - 1143 acres
- Noxious Weed Control (Primarily Medusahead rye) – 93.1 acres
- Rangeland Seeding – 175.2 acres
- Prescribed Burning – 1207.6 acres

In 2020, approximately 300 acres of junipers removed from the ground.



Calf Gulch Drainage – November 2019 (Before)



Calf Gulch Drainage – November 2020 (After)

Watershed Coordination

In 2020, the Jefferson SWCD assisted ODFW in their normal operations when possible, as we have done for many years. The winter of 2020/21 had some of the lowest flows on record for that time of year. This is the time of year when the steelhead are in the creek making their spawning run. These conditions, combined with the previous year's extremely low flow and dry summer, there was not much to monitor. The creek never rose to a sustained level to operate the smolt trap. The SWCD assisted with Redd surveys on the lower end of Trout Creek. This season, an adult summer steelhead on a redd was observed in Trout Creek, just upstream from the confluence with Antelope Creek in Willowdale.

Project Updates

Oregon Department of Agriculture Capacity Funds

Funds to support Soil and Water Conservation District capacity have been appropriated by the Oregon Legislature to the Oregon Watershed Enhancement Board. The funds appropriated for this purpose are from constitutionally dedicated State Lottery Funds (Article XV, Section 4b). Oregon Lottery Funds are dedicated under Ballot Measure 76 and awarded by OWEB to fund Oregon's Soil and Water Conservation Districts. The Oregon Department of Agriculture has established an agreement with the Oregon Watershed Enhancement Board (hereinafter "OWEB") for the distribution of funds to Soil and Water Conservation Districts.

The Intergovernmental Agreement (hereinafter "IGA") is made and entered into by and between OWSEB, the Jefferson County SWCD (hereinafter "District") and the Oregon Department of Agriculture (hereinafter "ODA".) This IGA defines the roles and responsibilities of the District, ODA, and OWEB in the implementation of agricultural water quality management area plans utilizing the capacity funds appropriated by the Oregon Legislature. Oregon law encourages plan implementation through soil and water conservation districts (SWCD) as Local Management Agencies to the fullest extent practical. The purpose of the financing is also to provide technical assistance and outreach that implements the Oregon Plan for Salmon and Watersheds, and the restoration and protection of native fish and wildlife, watersheds and water quality.

Campbell Creek Strategic Implementation Area

Funded in the springs of 2021, the Campbell Creek Strategic Improvement Area (SIA) focused on 17,949.9 acres of Agency Plains which drain into Campbell Creek. Campbell Creek then flows directly into the Deschutes River downstream of Pelton Dam. Past and current land management practices within this SIA boundary area have contributed to water quality concerns which include

high stream water temperatures, extremes in water pH and levels of dissolved oxygen, pesticide runoff that exceeds aquatic life benchmarks, high turbidity from soil erosion, and high prevalence of invasive aquatic weeds and algae. These conditions do not provide adequate habitat conditions for aquatic life, exasperate on-farm field erosion, and provide a pathway for pesticides, sediment, and excess nutrients to enter the Deschutes River. Since its funding, the Jefferson SWCD has coordinated with Oregon Department of Agriculture to identify opportunities for technical assistance, communicate with landowners about improving water quality, and monitor potential improvements in watershed health as a result of restoration or mitigation project implementation. Key project partners include Oregon Department of Agriculture, Oregon Watershed Enhancement Board, Oregon Department of Environmental Quality, and Oregon Department of Fish and Wildlife. Other partners include Middle Deschutes Watershed Council and Natural Resources Conservation Service.

NRCS Conservation Implementation Strategy

The NRCS uses Conservation Implementation Strategies to organize and target technical and financial support to regions in pursuit of improved resource managements. The SWCD works alongside the NRCS within regional CIS boundaries to administer technical support, funding, and to collect water quality data to track the ecological/environmental impact of completed projects. Within Jefferson County, the North Agency Plains CIS was developed in 2013 after Jefferson Soil and Water Conservation District (JSWCD), the Confederated Tribes of Warm Springs, landowners, and stakeholders prioritized addressing resource concerns associated with irrigation runoff in the North Agency Plains portion of Jefferson County. Shortly after, the annual NRCS Local Working Group added irrigation water conservation as an important concern and organized these efforts into two goals for the Agency Plains CIS:

- 1) Improve irrigation water efficiency on croplands northwest of Madras
- 2) Reduce irrigation tailwater runoff to the Deschutes River below Pelton Dam

First only focusing on the Rattlesnake Canyon sub-watershed, the CIS soon grew to include three major sub-watersheds impacted by agricultural runoff from the North Agency Plains region before entering the Deschutes River: Campbell Creek, Rattlesnake Canyon, and Mud Springs Creek. Within these drainages, water samples were collected throughout the year to track turbidity, as an indicator of agricultural run-off. The water quality monitoring performed to track the NRCS CIS overlaps on-going water quality monitoring efforts. For results, please refer to the *Water Quality Monitoring in Jefferson County* section presented earlier in this report.

Partner Updates

Middle Deschutes Watershed Council

Administrative Activities

The Middle Deschutes Watershed Council (MDWC) ended the 2020-2021 biennium in July 2021 and expended nearly all funds. MDWC responded to the COVID-19 pandemic by working remotely and applying for a diversity of funding sources intending to diversify funding streams. MDWC was awarded full funding from the Oregon Watershed Enhancement Board for a Council Capacity grant for the 2021-2023 biennium which funds the coordinator position and council activities for two years. MDWC held board elections and voted on a new Council chair and a new Council co-chair. MDWC also updated guiding documents: Council By-Laws and Policies and Procedures. Additionally, MDWC contracted a local web-designer who updated the website to be easier to use by the public and easier for MDWC to update. Visit the new website here: www.middledeschuteswc.org. Jenna Keeton served as Council Coordinator from October 2019 through September 2021. Ally Steinmetz has served as Council Coordinator since October 2021.

Outreach

The MDWC participated in 6 avenues of outreach between July 2020 and June 2021. MDWC hosted local leaders at the fall Board Meeting including Vanessa Green, Executive Director of Network of Oregon Watershed Councils, and Heike Williams with Oregon State University's Central Oregon Agricultural Research Center. MDWC participated in a webinar for *Beavers in our Landscape* in partnership with BeaverWorks Oregon to explore how beaver habitat restoration can be implemented in Central Oregon. MDWC continued to support Coalition for the Deschutes, North Unit Irrigation District, and Central Oregon Agricultural Research Center with "Plotting for Pollinators", a project geared towards creating plots of farmland that can host native bees intended to supplement crop production. The group has coordinated multiple drone flight over blooming pollinator plots and have participated in an interview that was written up into a published newspaper article. 12-acres of pollinator habitat have been planted in 2020.

MDWC presented an update on the *Hydrologic Restoration for Steelhead in Jefferson County* at the NRCS Local Work Group and to Jefferson County Farm Fair attendees in February and March 2021. Additionally, MDWC presented preliminary results of the Lamprey eDNA study during the PGE Fisheries Workshop in spring 2021. Despite the ongoing COVID-19 pandemic, MDWC has been active with community outreach efforts. MDWC has made many more connections with

landowners in 2020-2021 in Upper Willow Creek in preparation of a landowner meeting to be held Fall 2021 to better understand conservation priorities of Upper Willow Creek landowners.

Education Program

MDWC continues to support Warm Springs K-8 Academy, Madras Elementary, Buff Elementary, and Culver High School with a mixture of virtual and in-person after-school lessons and field trips. MDWC participated in 7 education programming projects between July 2020 and June 2021. Trout Unlimited (TU) is a major education partner.

1) Virtual Lesson, *Stream Sampling 101 in Jefferson County*

MDWC, Jefferson SWCD and Trout Unlimited completed a virtual lesson for 3rd - 5th graders in late spring 2020.

<https://www.youtube.com/watch?v=tKqmjWIoJBQ&feature=youtu.be>

2) Virtual Field Trip, *Cove Palisades State Park*

MDWC and TU filmed a virtual field trip for 3rd-6th graders in Jefferson County at the Cove Palisades State Park. MDWC partnered with Trout Unlimited and the Park Ranger at the State Park to teach lessons on Habitat and Sharing Water.

3) Virtual Field Trip, *Mecca Flat Recreation Site*

MDWC and TU filmed a virtual field trip for 3rd-6th graders in Jefferson County at Mecca Flats Recreation Site. Lessons centered on Habitat and Sharing water in a river ecosystem.

4) Virtual after-school lessons with 21st Century Community Learning Center (CCLC)

MDWC participated as a guest lecturer with the Warm Springs Academy, Madras Elementary School and Buff Elementary School after-school program in fall 2020-spring 2021. Lessons included Nature through Art, and Water Quality/Stream Sampling 101. Students in attendance were between 3rd and 6th grade.

5) STREAM Girls

MDWC provided a virtual lesson on Watershed Ecology in spring 2021 to Girl Scouts troops across central and western Oregon.

6) In-person after-school + summer camp lessons with 21st CCLC

MDWC and TU continued weekly after-school lessons in spring 2021 maintaining safety precautions while leading lessons outdoors at the Warm Springs Academy. Lessons center on Watershed Ecology as part of our STREAM Connections curriculum. We also hosted two field trips to Shitike Creek near the Warm Spring Museum as part of this curriculum.

7) Crayfish in Lake Billy Chinook

MDWC developed relationships with teachers from Culver High School and partnered with Oregon State Parks and Upper Deschutes Watershed Council to hold 2 multi-day field trips in spring 2021. Lessons centered on Crayfish Ecology, Invasive Species, and Aquatic Conservation.

Effect of COVID-19

COVID-19 negatively affected the MDWC Watershed Education Program; the Cove Palisades in-person field trip was cancelled in spring 2020, the Warm Springs Academy in-person after-school lessons and summer camps were cancelled or made virtual in spring and summer 2020, and a major funding request to Bean Foundation was denied (the foundation focused on COVID relief instead of environmental education). Happily, MDWC is involved in the Children's Forest of Central Oregon response and planning teams to identify areas where virtual programming can be complimentary and helpful to local teachers.



Photo: Students learning about stream habitat along Shitike Creek, spring 2021.

Restoration Projects

The MDWC was involved in 13 restoration projects between June 2020 and July 2021. These projects are either in planning or execution stages including juniper removal, a habitat suitability assessment, beaver dam analog installations, conifer thinning, noxious weed mitigation, and riparian planting. The intent of these restoration projects is to help us accomplish our mission of enhancing and protecting the natural resources of the Middle Deschutes watershed.

1) Warm Springs Riparian Planting

This project proposes to plant riparian vegetation along the bank of the Deschutes River on the Warm Springs Reservation so that two distinct riparian areas can recover from past wildfires. We received \$4,500 from PGE in spring 2020. MDWC presented to the Warm Springs Small Project team which consists of natural resource specialists (fish, wildlife, geology, archaeology) and tribal council for project approval. Tribal Council denied the proposal so MDWC is working with CTWS fisheries biologists to find a more appropriate project to fit MDWC and CTWS needs.

2) National Water Quality Initiative – lower and upper Trout Creek Watershed Assessment

In spring 2020, MDWC with support from Jefferson SWCD, and DEQ submitted a proposal to NRCS to update a watershed assessment in Upper and Lower Trout Creek Watersheds over the course of two years. The Trout Creek Watershed Assessment was funded through NRCS' National Water Quality Initiative in spring 2021. Work will continue through 2022 including updating statistics on agricultural parameters, updating maps of land use, include restoration actions taken to date, and prioritizing future restoration projects.

3) Upper Trout Tributary Enhancement

This is an OWEB funded project in progress to increase large woody debris in small streams to create pools and cover for fish in Upper Trout tributaries. Jon Kochersberger is the USFS representative. In Auger Creek, Jon and his crew finished 1.0 mile of hand-felling large wood placement in the upper section of the system and they accomplished ~1.5 miles of mechanical large wood placement. In Potlid Creek, the crew finished 1.5 miles of hand-felling large wood placement in the upper and lower sections. In Cartwright Creek, the crew finished 0.5 miles of hand-felling large wood placement in the upper section of the system. USFS installed temperature loggers in these creeks to monitor stream temperature.

4) Campbell Creek Watershed Enhancement – Design

MDWC worked with Anabran Solutions to design and plan a future restoration project in Campbell Creek intended to reduce flow and filter nutrients running off of Agency Plains. Anabran Solutions flew a drone in winter 2021 to get topographic information for the BDA installation along Campbell Creek. We have held several landowner meetings to discuss the project. The final design document crafted by Anabran Solutions was used to create the implementation proposal.

5) Campbell Creek Watershed Enhancement – Implementation

MDWC submitted a written proposal to OWEB fall 2021. This proposal includes implementation details of the beaver dam analog design plan created by Anabran Solutions.

6) Campbell Creek Strategic Implementation Area

MDWC continues to support Jefferson SWCD in Stakeholder Engagement and Technical Assistance to landowners in the Campbell Creek area under a Strategic Implementation Area by ODA. MDWC and JSWCD are brainstorming a future monitoring plan to potentially address concerns of nitrate levels in groundwater. The team submitted the proposal to OWEB in winter 2021 and was funded. MDWC is gathering available water quality data in the area to use as the team prepares to submit a proposal to OWEB for targeting monitoring funds in the upcoming Campbell Creek SIA.

7) Grizzly Butte Forest Improvement

MDWC received funding from the OWEB Small Grant program in late 2020 to remove juniper and encroaching conifers from Grizzly Butte. This project focused on removing 36 acres of juniper and 7 acres of conifer thinning on Grizzly Butte.

8-10) Upper Willow Creek Juniper Removal

MDWC and JSWCD are working on three grants to target juniper removal in Upper Willow Creek. MDWC received funding from two OWEB Small Grants and 1 Bureau of Reclamation grant, using 50% match to cut ~ 460 acres of Juniper in Upper Willow Creek. MDWC intends to continue monitoring water temperature and stream flow in Upper Willow Creek to detect any return of in-stream flow related to Juniper removal once the BOR funds are in hand. The OWEB Small Grants are funded, and each project will focus on removing 40 acres of Juniper in each of two properties in Upper Willow Creek.

11) Hydrologic Restoration for Steelhead in Jefferson County Conservation Implementation Strategy, NRCS

MDWC is involved with the Hydrologic Restoration for Steelhead in Jefferson County Conservation Implementation Strategy with NRCS. MDWC prepared a Baseline Monitoring Report with support from Adam Haarberg with JSWCD and Lars Santana with NRCS to document piezometer data collected to date to understand in-stream and groundwater conditions in Little Trout Creek and Beaver Creek (tributaries to Trout Creek) before large scale juniper removal efforts occur nearby. The question we pose is: does water return in-stream following juniper-removal. MDWC presented an update on this effort to the NRCS Local Work Group and to Jefferson County Farm Fair attendees in February and March 2021.

12) Beaver Habitat suitability

MDWC supported BeaverWorks Oregon with a proposal submitted to PGE to create a habitat suitability assessment for beaver habitat restoration in Upper Willow Creek. MDWC and BWO are partners in this project and intend to visit Upper Willow Creek to assess habitat conditions.

13) Lower Trout Creek Weed Mitigation

In spring 2021, PGE funds were used by Jefferson County Weed group to mitigate weeds on Lower Trout Creek on Redband Ranch.

The MDWC is proud of the restoration projects and progress achieved 2020-2021 and looks forward to continuing progress and creating new projects in the near future.

Monitoring Program

MDWC participated in year-3 of a 20-year long-term stream temperature monitoring project at 5 locations in Upper Willow Creek. This project is part of a statewide effort to understand how management activities may improve stream temperatures. This project is funded by the Oregon Department of Agriculture and temperature loggers were installed in spring 2020. Loggers were taken out of the stream in fall 2020 and data was collected. Unfortunately, due to lack of funding from ODA, this project was terminated by MDWC. MDWC was also a partner in the Pesticide Stewardship Partnership, collecting water samples across agricultural areas in Madras to test for pesticides in waterways. ***Update on piezometers.*

Photo: Ally Steinmetz samples stream flow in Culver Drain near Cove Palisades.



Research

In fall 2020 and spring 2021, MDWC took water samples in the mainstem Deschutes River, Trout Creek, and supported sampling in Shitiike Creek. This project is intended to test whether Pacific Lamprey are present in the lower 3 miles of Trout Creek, Shitiike Creek below and above dam removal, and parts of the mainstem Deschutes River below Pelton Dam. This project is funded by PGE. Project partners include Cramer Fish Sciences, Confederated Tribes of Warm Springs, Jefferson SWCD and PGE. In summer 2020, we received \$180,550. MDWC, Confederated Tribes

of Warm Springs, Jefferson SWCD and Cramer Fish Sciences started fieldwork with the Pacific Lamprey eDNA study and conducted a test-float on the Deschutes River and sampled the mainstem Deschutes River and first 3 miles of Trout Creek in late fall. The team repeated the study to test for seasonal variation in lamprey behavior in spring 2021. MDWC provided an update on lamprey eDNA data collected from fall sampling twice to PGE and other fisheries audiences. The final report was written fall 2021.



MDWC and partners taking water samples on the Deschutes River. Spring 2021.

Conservation Reserve Enhancement Program

In Oregon, CREP partnerships have been successful in enrolling acres in the program with a cumulative total of 41,000 acres as of 2015. Similar to other counties in the state, certain historic and current land uses in Crook, Deschutes and Jefferson counties can lead to degraded riparian areas. CREP is an effective tool that addresses riparian degradation by planning conservation practices in targeted areas and, through CREP technical assistance and monitoring, ensure correct practice implementation.

Number of CREP Contracts currently (as of 2020-2021): 36 landowners enrolled

Goals of CREP:

The goal of this project is to work cooperatively with agricultural producers to voluntarily retire land along streams and other water bodies for the purpose of improving the health of watersheds within the John Day & Deschutes River Basins. Desired outcomes include reducing water temperature to natural levels, reducing sediment loads, reducing nutrient and chemical pollution from agricultural lands adjacent to streams, establishing riparian vegetation, stabilizing stream banks, and restoring stream channel conditions. Additionally, desired outcomes include landowner satisfaction with the programs, achieving desired outcomes of outreach strategy and positive growth with agency partnerships. These desired goals and outcomes are ultimately for the benefits of conserving water and enhancing fish & wildlife habitat throughout Jefferson, Deschutes, and Crook County.

2020 CREP Accomplishments:

During 2020, CREP continued to be successful in helping to restore and conserve riparian habitat in Jefferson County. In Jefferson County there are 5 active contracts. Two new CREP contracts were enrolled in 2020 and one new CREP contract is currently in development. In 2021, 328 acres were enrolled as protected riparian buffer along with approximately 11.7 miles of protected streams. The CREP Program of central Oregon encompasses the tri-counties of Deschutes, Crook and Jefferson County with 36 current and active contracts. Thank you to the efforts of the landowners participating in CREP, collaborators and partners in these projects without this support the program could not succeed.

Challenges faced during the 2020-2021 biennium:

During this current biennium several challenges arose that had an effect on landowner participation and CREP enrollment. Due to the COVID-19 global pandemic that occurred in 2020 and continues to occur in 2021, CREP enrollments were negatively impacted. Due to the current five extensions of Oregon's Executive Order 20-03 and COVID-19 State of Emergency Oregonian's have experienced a mandated lockdown since the issuing on March 8th, 2020 through March 3rd, 2021. The CREP Program is best promoted through in-person site visits, in-person outreach events and community-based events that were all cancelled, postponed or conducted via zoom had negative impacts on CREP enrollment this biennium.

Additional unforeseen events that occurred to do COVID-19 included a lack of staffing for the USDA Redmond Farm Service Agency office as well as for Jefferson County Soil & Water Conservation District. The lead Program Technician for CREP enrollment with the Redmond FSA office left on an extended leave of absence for health purposes for the second half of 2020 and currently remains on leave. Due to COVID-19 many producers in central Oregon suffered from immense financial hardship, resulting in FSA creating emergency COVID Relief Programs for agricultural producers. FSA staff at the Redmond Office were ordered to make all COVID-19 Relief Program enrollments their number one priority which further diminished CREP enrollments

as a priority. Due to Executive Order 20-03 and COVID-19 State of Emergency funding for many state agencies and special districts has been cut short leading to a lack of financial capacity to hire on new staff for the Jefferson SWCD.

Other challenges faced include that several landowners expressed hesitation of participating in a long-term financial contract with the federal government considering political uncertainties. The CREP Planner successfully built trust with many of these landowners, and several are currently in the planning stages. Another challenge faced was the inability to enroll new CREP contracts in the first half of 2020 due to the signing of the 2018 Farm bill and the ensuing program freeze (then later the incentive freeze for CP 29 (Marginal Pastureland Wildlife Habitat Buffer)). A large portion of potential CREP projects in Deschutes, Jefferson & Crook County are situated in areas where this CP 29 practice is most suitable. Due to employee turnover of the previous CREP Planners (Andrew Neary) the relationships that had been previously established with landowners required additional time and resources from the new CREP planner. This, along with COVID-19 restrictions and the program freeze affected the CREP Planner's ability to develop new contracts.

Goals for the Tri-County CREP 2020-2021 Biennium:

- 6 CREP Contracts*
- 15 Events/Outreach Activities*
- 6 Miles of Stream into CREP*
- 75 Acres of Riparian Habitat*

The Tri-County CREP program has achieved the goals listed above for the 2020-2021 Biennium, however, CREP efforts to work cooperatively with agricultural producers to voluntarily retire land along streams and other water bodies for the purpose of improving the health of watersheds within the John Day & Deschutes River Basins will be continued for the remainder of the biennium.

Example of CREP project in central Oregon.



CREP planting 8/17/2010



CREP follow up 8/5/2020

North Unit Irrigation District

As an active partner to the SWCD, projects performed by the NUID provide opportunity for conservation on-farm and improved water quality downstream. NUID was awarded two major grants to upgrade the infrastructure of the open earthen canals, both of which have the potential to improve water quality in key drainages. These projects are two in a long line of conservation projects supported by and completed in conjunction with the SWCD focused on improving water efficiency and integrating technology for better control to improve water quality within natural drainages. Through piping open earthen canals, and integrating automation to finetune water operations, water can be conserved and contained where needed.

North Unit Irrigation District, Lateral 41-9 and 58-3-2 Piping Project

From the Bureau of Reclamation WaterSMART Small-Scale Water Efficiency Grant, NUID was awarded \$74,691 to complete a \$149,383 project to install 4,450 ft of buried pipeline in laterals 41-9 and 58-3-2. Lateral 41-9 is located northwest of Culver and drains towards Lake Billy Chinook. It is wide, shallow, flat, and susceptible to heavy seepage; it requires an excessive amount of water to deliver to 10 growers. By piping this lateral, anywhere from 0.4-0.8 cfs could

be conserved (140-280 acre-feet per year). Lateral 58-3-2 is located northeast of Madras and drains into Mud Springs. It has a steep grade and is a source of heavy erosion. The private landowner at the end of this lateral requires regular maintenance to clear out the irrigation pond of sediment. Piping this lateral will remove a source of turbidity from the Mud Springs drainage.

North Unit Irrigation District, Optimize Conveyance Efficiency and Control in North Unit Irrigation District Main Canal

From the Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant, NUID was awarded \$244,871 to complete a \$511,611 project to install Supervisory Control and Data Acquisition (SCADA) and remote-control automation to manage ten major gates within the North Unit Main Canal (NUMC). Controlled releases from Haystack Reservoir are a primary conservation and control tool applied by NUID to provide precise delivery to farmers. This technology steadies the canal flow and limits the amount of water spilling out the ends of major laterals. This project will primarily benefit the Frog Springs Drainage and is estimated to conserve over 3,000 acre-feet of water per year. If successful, this automation network has the potential to grow to conserve water in other drainages such as Mud Springs, the Culver Drain and Campbell Creek, as well as into measurement site within the irrigation canals and natural drainages.

Partners

Thank you to our partners and funding organizations for continued support.

- Bonneville Power Administration
- Children’s Forest of Central Oregon
- Oregon Department of Fish and Wildlife
- Oregon State University Extension Service
- Jefferson County
- North Unit Irrigation District
- Middle Deschutes Watershed Council
- Natural Resources Conservation Service
- Oregon Watershed Enhancement Board
- Oregon Department of Agriculture
- Madras High School Forestry
- Confederated Tribes of Warm Springs
- US Fish and Wildlife Service
- Oregon Department of Forestry
- US Forest Service – Ochoco National Forest



Financial Summary

Statement of Revenues, Expenditures and Changes in Fund Balance Governmental Funds for the year ended June 30, 2021.

Revenues	
Grants	\$825,034
Total Revenues	\$832,773
Expenditures	
Current	
Soil and Water Conservation Programs	\$930,866
Total Expenditures	\$930,866
Net Change in Fund Balance	\$101,915
Fund Balance – Beginning of Year	\$178,743
Fund Balance – End of Year	\$76,828
Reconciliation of the Statement of Revenues, Expenditures, and Changes in Fund Balance to Governmental Funds Statement of Activities	
Net Changes in Fund Balance – Governmental Fund	\$98,113
Items to Reconcile to Changes in Net Position	
Expenditures	\$934,638
Capitalized assets reported as expenditures	\$10,171
Depreciation	(\$6,369)
Changes in Net Position – Government-Wide	\$98,113

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