

Lower Crooked River Riparian, Floodplain, and Habitat Restoration Project

Crook County, Oregon

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WaterSMART Environmental Water Resources Projects for Fiscal Year 2023

Funding Opportunity No. R23AS00089

U.S. Bureau of Reclamation
Department of the Interior

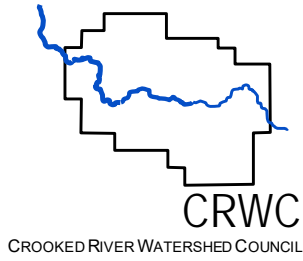


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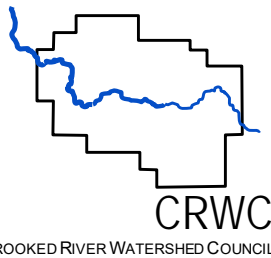
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Executive Summary

March 28, 2023

Chris Gannon; Director, Crooked River Watershed Council (Category B applicant)

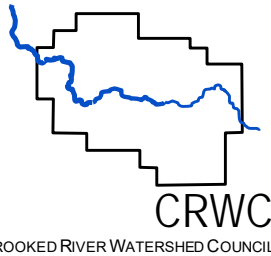
Prineville, Crook County, Oregon

This proposed project is located in Central Oregon within six miles downstream of the City of Prineville on the Crooked River. The project focuses habitat restoration and ecological enhancement actions on two project sites that are part of a larger, landscape-scale approach for the lower Prineville Valley. To improve fish habitat and water quality in the river, 132 large wood structures will be strategically placed to promote habitat complexity, cover, and lower-velocity resting zones, and stabilize over steepened and eroding riverbanks. Side channel habitat will be expanded and improved. Wetland habitat will be created to add diversity and address water quality. Seeding and planting will increase vegetative cover and long-term expression of tree canopy. Partners involved in the project include USDA- NRCS, Ochoco Irrigation District, Crook County Soil & Water Conservation District, Oregon Watershed Enhancement Board, Crook County, and the City of Prineville. The project objectives are informed by resource concerns described in state and federal conservation and recovery plans for steelhead that identify habitat limiting factors such as lack of floodplain connectivity, water quality, lack of cover and deep pools, sediment levels from eroded banks and agricultural activities, and lack of diverse habitats. Project elements will address these factors applying proven methods and techniques of restoration in a landscape approach maximizing similar investments and actions planned for the Prineville Valley. Restoration actions will also promote ecological and functional resiliency from changes in the climate over time. Project designs stem from the Lower Crooked Action Plan developed by the council and partners in 2012. The project will occur over a 32-month period starting 1/1/2024, with completion scheduled for 8/31/2026, if not sooner. No federal projects or federal land is included in this project.

Project Location

The Lower Crooked River Riparian, Floodplain, and Habitat Restoration Project is located in Crook County, Oregon, adjacent to the Crooked River approximately three miles west/northwest of Prineville, Oregon (see Figure 1. Locator Map), for the Silva Ranch element and six miles west/northwest of Prineville, and for the King Ranch element. It is located in the Lower Crooked River watershed, an area containing the population center of Crook County and much of its development. All project elements occur on private land.

The Crooked River watershed is a working lands watershed where agriculture remains the primary economic driver. While the county's economy is shifting, adding more activity in eco-tourism, data centers, and retirement community developments, agricultural products and



downstream economics associated with this sector provide the foundation for the primary economy. Project sites mid-point project coordinates: Silva Ranch: 44° 19' N, 120° 54' W, and King Ranch: 44° 20' N, 120° 57' W.

Project Description

Background

The Crooked River watershed encompasses approximately 4,530 square miles of central Oregon. It flows west from headwaters situated in the Ochoco Mountains down to the confluence with the Deschutes River at Lake Billy Chinook. Elevations range from a high of 6,926 feet at Lookout Mountain to a low of approximately 1,900 feet at Lake Billy Chinook. The Crooked River Basin is semi-arid, high desert prairie with moist, forested headwater areas. Average annual precipitation is between 8 and 10 inches at lower elevations and 30 to 40 inches at higher elevations; mainly as snow in the headwater areas. The watershed is subdivided into the Lower Crooked River (LCR), the Upper Crooked River and the Beaver South Fork Basins. The LCR encompasses the contributing area below Bowman Dam. The LCR watershed includes two major tributaries, McKay and Ochoco Creeks that drain directly into the Crooked River. Smaller tributaries, comprised primarily of irrigation return flows, include Lytle Creek and Dry River. The Prineville valley segment of the LCR is characterized by a wide, mainly perched floodplain with several terraces along the valley margins. The geology in this area consists of quaternary alluvium on the valley floors with erodible sedimentary material comprising the valley walls. The walls are capped by basalt flows and or tuffaceous rock.



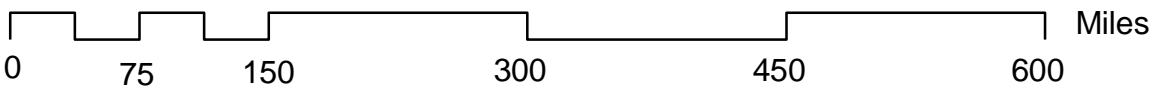
Prineville Valley looking west over King Ranch (right of river).

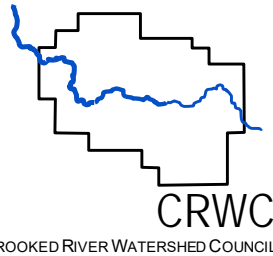
Figure 1. Locator Map



Legend

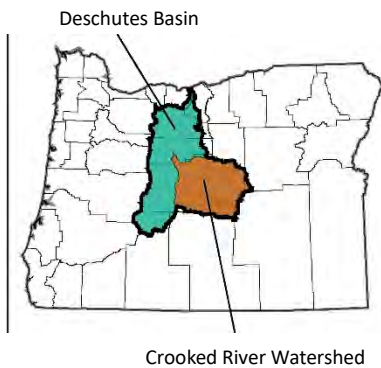
- Silva Property
- Huston_Property Crooked
- River Watershed

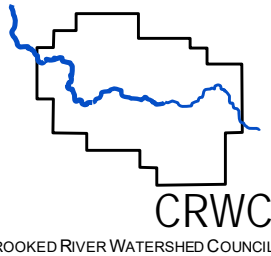




The hydrologic regime largely followed climatic patterns of the Blue Mountain physiographic province, a cluster of mountain ranges in north-central eastern Oregon, of various orientations and relief punctuated by several wide flat basins, with annual stream flow controlled by snowpack. Precipitation was highest in the winter months in the form of snowfall with a secondary maximum precipitation occurring in late spring and early summer. Beaver dams would retain water during high flows and slowly release it throughout the year decelerating the drop of the water table during the summer. Floodplain continuity allowed for regular flooding, which along with beaver dams, fed extensive riparian and wetland vegetation. Riparian vegetation consisted of tree groves and dense willow. Floodplains were dominated by bunch grasses and streams were mainly perennial. Groundwater was recharged as flood flows infiltrated floodplain soils during high flows. Groundwater would then be released back to the river during times of low flow replenishing water quantity and reducing instream temperatures. With Euro-American settlement, livestock grazing became the major land use between 1870s and 1930s. The intense grazing, loss of beaver due to trapping, and drought are believed to have caused major incision of streams in the watershed near the turn of the 20th century. Agriculture greatly expanded in the early 20th century and vast amounts of water was diverted from the LCR to irrigate crops. In response, the Ochoco Irrigation District was formed, and two dams and associated reservoirs were eventually constructed to provide irrigation water and flood control:

Figure 2. Watershed Map



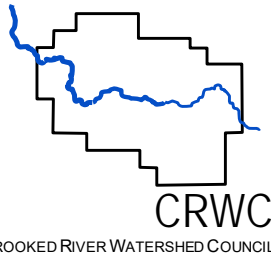


the Ochoco Dam and Reservoir built in 1921 and the Bowman Dam, built in 1961, which impounds the Prineville Reservoir.

Current geomorphic processes in the LCR are directly linked to the modified hydrologic and sediment regimes resulting from dam installation and operation. Bowman and Ochoco dams have disrupted natural hydrologic and sediment transport processes. Water released from the dams is managed primarily for flood control and irrigation. Thus, the frequency and magnitude of high flows has been greatly diminished, preventing flows from reaching the historical floodplain in most years. As coarser sediment is trapped behind the dams, the river becomes sediment “starved” downstream of the dam. The river works to replenish that sediment by entraining available material found within the bed and banks. Sediment transport dissipates energy within flow. Without a sediment load from upstream to carry, the river gains stream power, directing the excess energy at the bed and banks resulting in erosion. In contrast, an over-abundance of fine sediment whether from the dams, overland flow, or entrained from the bed or banks, is carried through the system, and deposited in the stream channel where velocities diminish. With the altered flow regime (diminished peak flows), the fine sediment overburden is not effectively flushed from the system. The extent of incision that may have occurred along the mainstem Crooked River prior to dam construction or prior to channelization after the 1964 floods is unclear. However, damming of the LCR has likely exacerbated incision of the channel that is now disconnected from its historical floodplain. Incision can cause a drop in the water table which isolates riparian areas and wetlands from their water source and subsequent dewatering of groundwater fed off-channel habitat. With a significant decline in beaver population within the LCR, fewer ponds exist that work to recharge groundwater and slow the drop in the water table during dry months.

Since 2008, significant and ongoing investment in habitat restoration has been directed into the Lower Crooked River; HUC8 17070305 (see Figure 3. LCR Map; page 7). During the past five years, this investment pattern has been directed to a series of landowner sites located in the Prineville valley. The restoration approach applied by the council for this area applies a large-scale perspective so that multiple individual projects that are implemented over an extended period can be tightly coordinated and designed for maximum complementary or additive impact.

The larger project focus stretches over 19 river miles of the LCR and takes in all of the floodplain acres situated between the toe slopes of the ridges that define this valley. Floodplain locations have been severely manipulated through time beginning in earnest during the 1940s and continuing through 1960’s. Many of the physical alterations to the Crooked River in this section of the watershed were for flood control and conveyance purposes. Dikes, levies, berms and other confining structures were put in place to limit flooding damage and protect farmlands

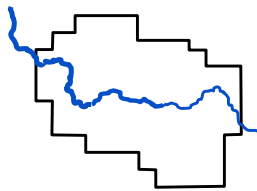


that had developed on these relatively flat and highly productive soils. Much of these legacy impacts remain today. They combine to result in a river system that is uniform, lacks natural diversity compared to historic conditions, disconnects the floodplain from the river, and contain an over-simplified range of habitat types for fish and wildlife. This project proposes to recreate key historic conditions at two site locations that have high probability of successful long-term habitat and functional outcomes.

The overall restoration focus on this section of the watershed is driven by a basin level anadromous fish reintroduction program led by Portland General Electric and the Confederated Tribes of Warm Springs. This ambitious and challenging program started in 2007. It was initially spurred by a FERC relicensing need at the hydropower complex on the Deschutes River below the Crooked-Deschutes confluence zone co-owned by the utility company and tribe. As a part of the license renewal mitigation list, reintroducing and establishing self-sustaining populations of Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) was one of the larger challenges requiring significant effort, a wide range of partners, and large sums of funding applied over an extended time frame. Middle Columbia steelhead are ESA-listed as Threatened.

In terms of implementing restoration actions that support this reintroduction program and needs of the two target fish species, guidance is provided by state and federal conservation and recovery plans formulated for steelhead. These plans provide detailed information regarding habitat limiting factors assigned by river mile and potential restorative actions at these locations to address limiting factors. The council regularly and consistently applies the Oregon steelhead recovery plan to our work relative to priority areas and actions focused on fish habitat improvements (Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment; R.W. Carmichael & B.J. Taylor, 2010). The council produced an assessment of the lower Crooked River area that sharpened the focus of the state's conservation and recovery plan applicable landscape-scale level that can support development of landowner-supported projects that can be designed and implemented (Lower Crooked River Assessment; CRWC 2008). This proposal represents the fruit of those labors, where these two project locations are ready to be implemented and lack only funding resources. The list of issues from the Assessment include: Altered Hydrology, Lack of Instream Complexity for Fish Habitat, Degraded Riparian Conditions, Water Quality- Turbidity, High Temperature, Channel Widening, Floodplain Disconnection, and Lack of Off Channel Habitat.

This proposed project includes two private landowner sites that share many critical similarities. They both have the same set of conservation and restoration goals and objectives, they both address long term climate resiliency needs, they occur in the same valley reach below Prineville, and they have both been developed by the same contract engineer with review and oversight by USDA-NRCS engineers. Project designs and permitting for both sites are funded by the USDA-

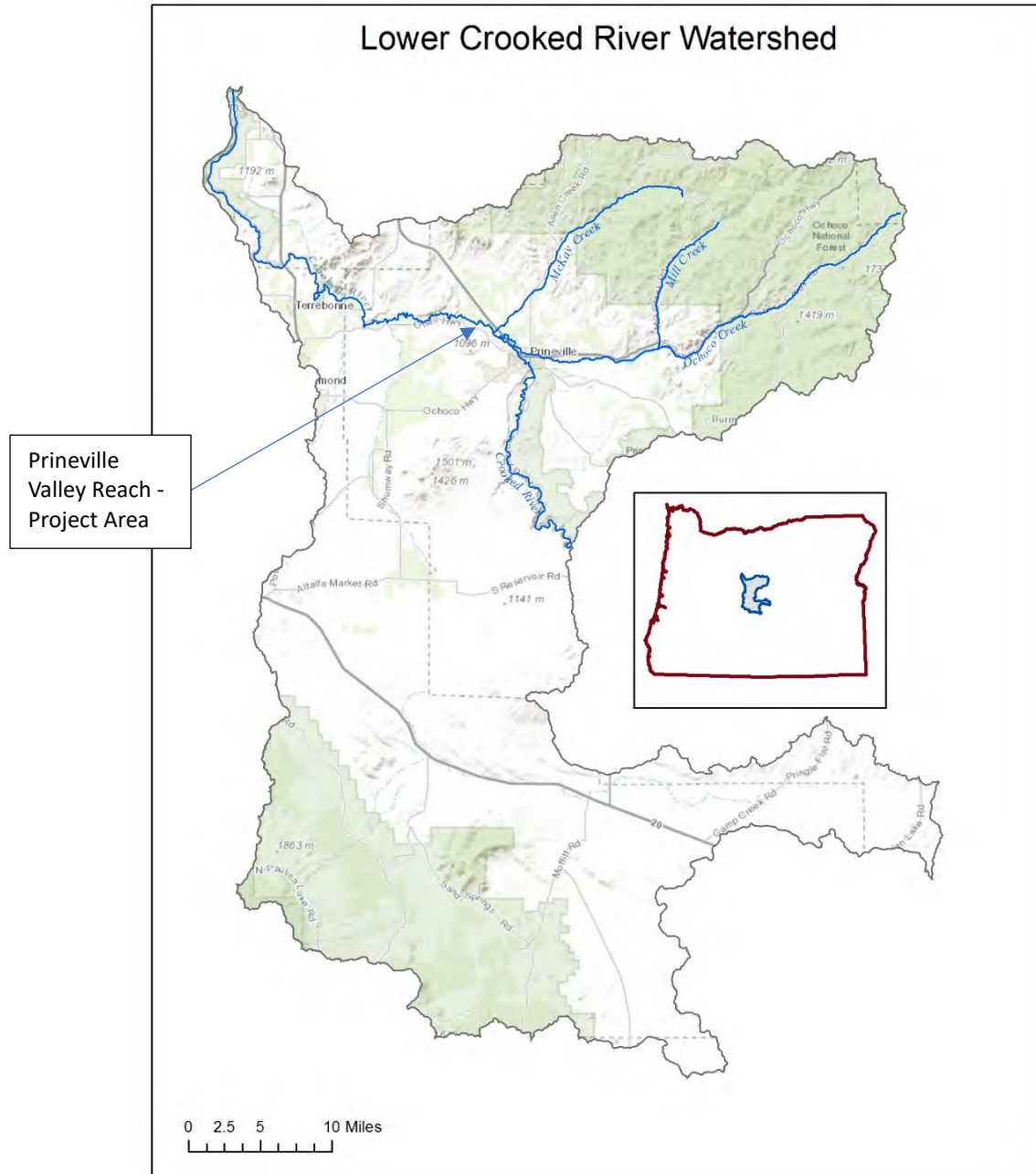


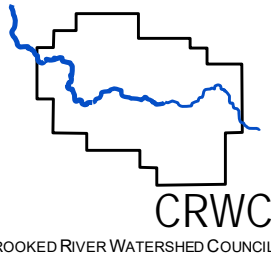
CRWC

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NRCS Regional Conservation Partnership Program (RCPP) grant awarded to the council in 2018. Project designs are still be refined and will be at the 90% design level prior to this application being funded.

Figure 3. LCR Map



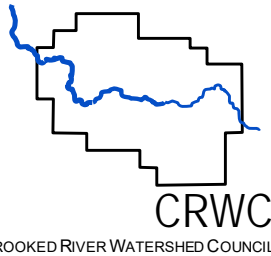


Project design directives focus on the primary issues that need to be addressed in this project and on both project sites. Five primary watershed issues in are being addressed in this project, described as:

Altered Hydrologic Regime - Release of water from the dams in the basin is mainly governed by agricultural need. Most of the basin's naturally flowing water is held behind Bowman Dam during winter and spring when flows are typically higher in order to fill the reservoir. The stored water is then released during times of typically lower flow during the summer to provide irrigation for agricultural consumption. This results in a reverse hydrograph where periods of typically low or high flow occur in reverse order than they would in an unregulated system. Approximately 75 percent of the average historical (pre-dam) springtime flows is currently released from the dam during spring. Less flow during the short growing season limits riparian growth and rejuvenation. A lack of riparian vegetation can also contribute to bank failure, which causes widening of the channel and raising the width to depth ratio. A larger width to depth ratio can result in fewer undercut banks that act as cover for fish, lower pool frequency and lower quality fish habitat. The magnitude and frequency of peak flows in the system have been reduced from historical levels. Peak flows still typically occur in winter and spring but only when the reservoirs are near target pool elevation levels and heavy upstream runoff is expected. Historical average peak discharges typically ranged from 3,000 to 7,000 cubic feet per second (cfs) before installation of the Bowman Dam. Comparison between two 15-year periods (one before and one after dam installation) shows a reduction in magnitude of the average peak flows on the order of nearly 44 percent.

Following completion of the Bowman dam in 1961, peak flows released from the dam have not exceeded 3,300 cfs. Channel forming flows that shaped the river prior to dam installation now only occur approximately every 50 years. The ability for the river to modify its bed depends in part upon the frequency of flows competent enough to move and re-arrange available coarse sediment. The maximum flow of 3,300 cfs released from Bowman Dam is contained within the current channel through much of the upper Prineville Valley (PV) segment. When flows cannot access or spread out over the floodplain, fine-grained sediment is retained within the channel filling interstitial spaces in the spawning gravel and affecting egg-to-parr survival. Instream summer flows have also been affected by irrigation practices. Irrigation diversions upstream of Prineville remove a majority of the water from the LCR during the summer leaving the PV segment with very low flows throughout the irrigation season. Low flows commonly impair adult fish passage, and many reaches have average depths below the 1-foot threshold set forth by ODFW.

Altered Sediment Regime - Sediment routing has been severely compromised with the installation of dams in the LCR system. Coarse-grained sediment is now trapped behind the dams. Without having to move the sediment coming from upstream, the river downstream of

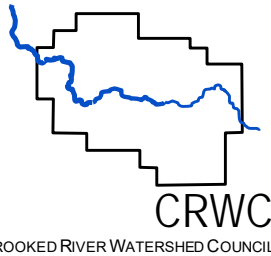


the dam gains the capacity to erode material from the bed and banks resulting in channel incision and widening. Fine-grained sediment is also trapped and stored behind the dams. However, significant fine sediment is suspended in the water column within the Prineville Reservoir and released downstream with the water. As a result, water in the PV segment is generally turbid and the fine sediments drop out when flows are too low to maintain suspension. Most reaches were observed to have an abundance of fine-grained sediment in the riffles.

Loss of Floodplain Continuity - With incision, reduced peak flows, and installation of berms often comes a subsequent loss of floodplain continuity where access to previously available off-channel habitat is lost. When the water table lowers, water available to wetlands and riparian areas is diminished. Riparian growth and subsequent wood recruitment declines along with production of food organisms and organic material. High flows are often contained in the channel and no longer access the floodplain, groundwater is not recharged in the floodplain and will not contribute to base flow in the summer thereby prohibiting the recharge of much needed cooler water during hot summer months.

Degraded Channel Structure and Complexity - Channelization, or straightening a channel steepens the slope and raises velocities and stream power causing channel incision. Straightening and incision can result in a loss of channel complexity and a rise in width-to-depth (W/D) ratio. All reaches have higher than desirable W/D ratios and four of the reaches are considered undesirable with very high ratio ratings. The entire PV segment is dominated by pools and glides with riffles often few and far between. If riffles are used as the indicator for riffle-pool sequencing, most reaches have a distinctly higher spacing sequence than the more typical 5 to 7 channel widths. Higher values might suggest channel adjustment is occurring. Riffles make up a small percentage of the total area of the river yet the faster water in a riffle is commonly preferable to steelhead over the slower moving waters in pools and glides. Very little large wood is found within the PV segment, which contributes to the lack of channel complexity. Large wood will often form deep, complex pool habitat that fish prefer. Currently, the average residual pool depth and the number of complex pools is rated significantly low throughout the PV segment.

Degraded Water Quality - Summer water temperature is high throughout the PV segment. With the numerous irrigation withdrawals upstream, relatively little water is left in the channel to flow through the PV segment during the irrigation season. The water that does flow through the PV segment, spreads out in the characteristically over-widened channel with a lack of riparian vegetation and is highly susceptible to warming through increased exposure to solar radiation. Additional irrigation withdrawals within the PV segment further exacerbates high temperatures as it is easier for the sun and ambient air temperature to warm less water. Although irrigation



infiltration contributes to groundwater recharge, the temperature of irrigation water is already high as it comes from the river and is further heated as it travels to its destination. Additionally, irrigation return flows contribute more warm water from ditches and fields to the mainstem which further increases water temperatures. Riparian vegetation, when it blocks solar radiation from hitting the stream, is known to improve instream water temperatures, but grazing of riparian areas and compacted soils from hoof traffic has contributed to a decline in the presence of riparian vegetation in large sections of the PV segment. Water quality is further impaired by the occurrence of high turbidity. Discharges of water from the deeper layers of the Prineville Reservoir frequently contain high levels of suspended sediments resulting in elevated turbidity levels downstream. In addition, bank failure due to a lack of riparian vegetation and increased stream power contributes to an overabundance of fine sediment in the river. Although temperature and turbidity are the only water quality elements addressed in this project, additional water quality parameters could improve with implementation of restoration actions.

Technical Project Description

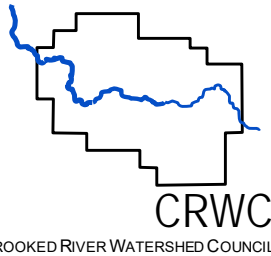
The proposed project occurs on two private landowner properties that are in the larger NRCS-Regional Conservation Partnership Program (RCPP) LCR project reach covering almost 19-river miles in the Prineville valley reach below Prineville, Oregon. The most current project design information for both sites is attached to this application under 'Other Supporting Forms and Documents'. The designs are advancing to the 90% level and will reach this milestone prior to the project start date of January 1, 2024. Ecological and habitat restoration actions are presented for each site (see Figure 4. Map of Project Sites; page 14).

Design funding was obtained from a USDA-NRCS Regional Conservation Partnership Program grant to the council. Project permitting is also funded by this grant. Implementation funding requested from WaterSMART would be matched with a variety of other state funding, singularly or in combination. State funding could come from the Oregon Watershed Enhancement Board, Oregon Water Resources Department, Oregon Department of Agriculture, or the Department of Environmental Quality.

Letters of Support have been received from several partners in the watershed or larger Deschutes Basin, primarily from working partners participating in this project or others that address the same resource issues. Letters are presented in near the end of this document under the 'Other Supporting Forms and Documents' section.

Silva Ranch Site:

For the Silva Ranch project, several priority habitat issues are emphasized to address current conditions and improve fish habitat values and ecological function. The Silva Ranch project seeks to improve stream and riparian habitat and associated ecological values on the lower



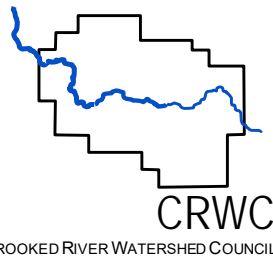
Crooked River as part of the lower Crooked River Strategic Restoration Project. The design includes stream bank restoration, riparian buffer restoration, side channel and alcove creation and enhancement, river bar habitat enhancement, and wetland creation (see Figure 4. Map of Project Sites & Figure 5. Silva Ranch Site Map; pages 14 & 15). An added restoration value for this site is its proximity to the Ochoco Preserve property which is adjacent to and immediately upstream from the Silva site. The Preserve is owned by the Deschutes Land Trust and is currently undergoing active restoration work that is similar to, and matches up with, proposed actions on the Silva property. This complementary relationship means the habitat and water quality benefits from both provide a synergistic, larger-scale impact than they would alone or disconnected geographically. The Silva site project designs were informed and incorporated the objectives and ecological outcomes of the upstream project on the Preserve.

Restoration Elements to be addressed on the Silva Ranch site include:

Upstream Bank Restoration - Bank erosion throughout the LCR increases the load of fine sediment in the river, impacting water quality and fish habitat. Vertical cut banks preclude the establishment of riparian vegetation that can contribute to healthy habitat and water quality, particularly by shading the water surface and limiting solar gain. At this site, the river is eroding a 15-foot-tall vertical bank, encroaching on an agricultural field. The bank will be graded to a more stable slope and revegetated to provide roughness and stability. Large wood structures will provide energy dissipation by breaking up flow patterns and deflecting flow and energy away from the bank while providing beneficial fish habitat.

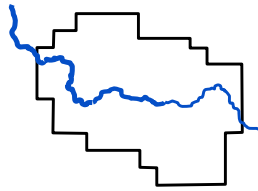
Upstream Side Channel - The LCR is primarily single-threaded and lacks sufficient off-channel habitat. Side channels provide beneficial habitat to juvenile and adult fish, creating cool-water refugia by increasing surface water-groundwater interactions. An existing side channel is fully connected during high flow events and functions as an alcove under base flow conditions but lacks significant depth when the flows are lowered. The proposed side channel is intended to provide fish habitat at all flows. The channel will be fully connected at base flows. Large wood structures along the channel will provide additional habitat by creating and maintaining scour pools, providing cover and promoting sediment sorting and gravel storage.

Bar Habitat Enhancement – The project reach lacks large woody debris, which provides important habitat benefits for fish and other aquatic species. Large wood structures will be constructed around an existing vegetated bar located in the reservoir above a dam. Structures will be placed such that they provide habitat when the dam crest is raised and lowered. These structures will provide cover for fish in an area that is otherwise homogenous and lacking in habitat features and cover.



Oblique aerial view looking downstream at steep 14-foot vertical bank is eroding and contributing fine sediment to the river, while providing little habitat value. Silva Ranch project is located on the right bank looking downstream.

Downstream Side Channel with Secondary Side Channel - The LCR lacks sufficient and effective off-channel habitat. Side channels provide beneficial habitat to juvenile and adult fish, creating cool-water refugia by increasing surface-groundwater interactions and mixing. A proposed side channel along the alignment of an existing high flow channel will provide alcove habitat at base flows and be fully connected at the ordinary high-water mark. A secondary channel is proposed along the alignment of an existing irrigation return ditch, providing additional alcove habitat at baseflow. Large wood structures along the channels will provide additional habitat by creating and maintaining scour pools, providing cover, and promoting sediment sorting and gravel storage.



CRWC

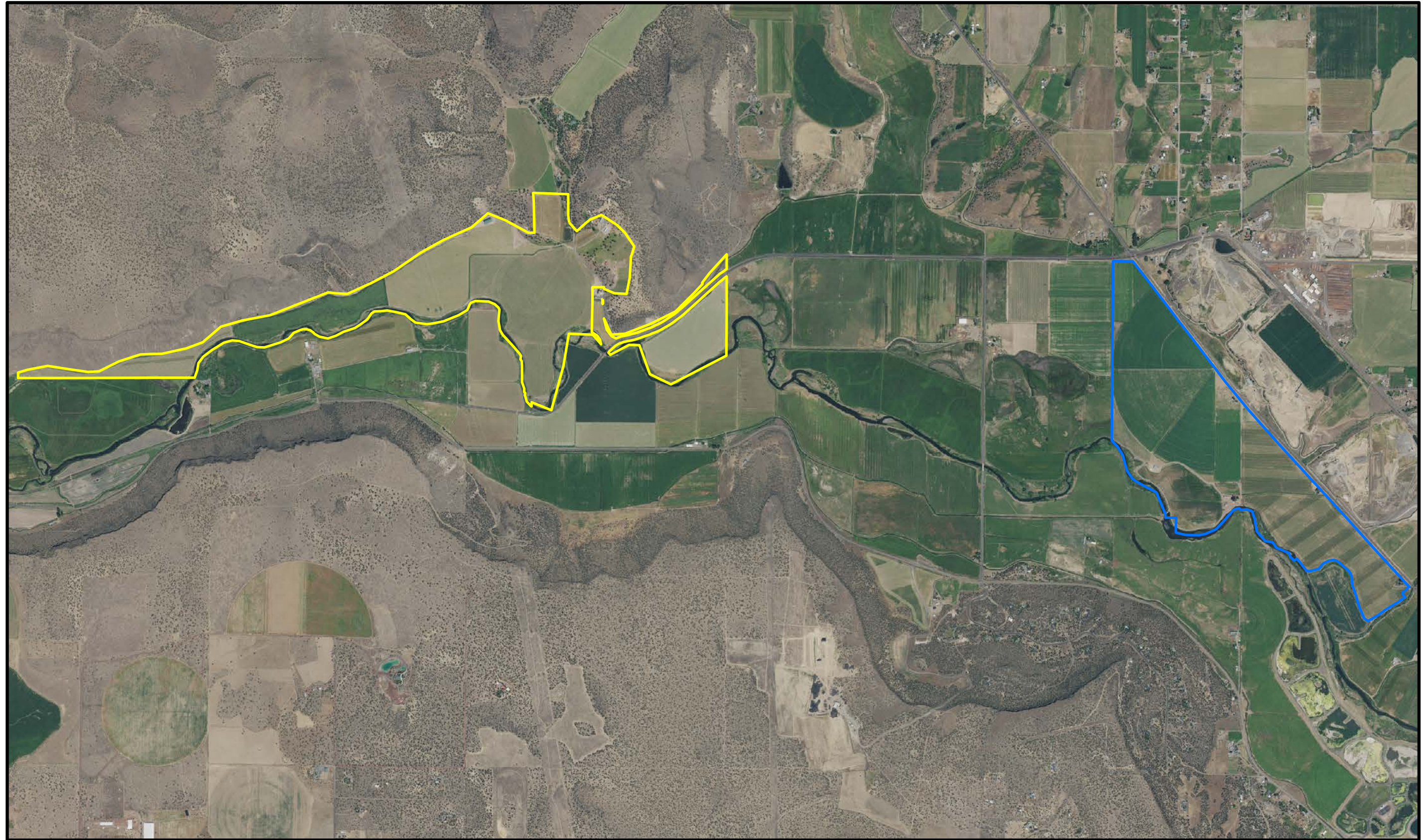
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Oblique aerial view looking downstream showing existing upstream side channel at Silva Ranch at low stage when dam bladders were not inflated. The existing side channel will be improved with increased depths and large wood structures. Photo taken February 1, 2022.

Constructed Wetland – An existing irrigation return ditch contributes fine sediment and contributes to excessive nutrient loading, especially nitrogen and phosphorus, to the Crooked River. An emergent constructed treatment wetland is proposed to treat irrigation return water and remove nutrients, pesticides, and other contaminants prior to discharge into a proposed Crooked River side channel. The wetland will also provide ecological uplift for a variety of wetland and upland species. Approximately 80% of the wetland area will contain herbaceous wetland vegetation, including Bulrush species and broadleaf cattail. Inlet and outlet pools account for the remaining 20% of the wetland area and are intended to promote sediment deposition. Emergent wetland species will treat irrigation water by uptake and will improve water quality prior to discharge. Margins of the treatment wetland will be planted with shrubs and trees to provide shading and reduce thermal loading. The outlet channel will be perched to ensure adequate depths and retention time in the treatment wetland prior to discharge.

Figure 4. Map of Project Sites



Legend

- Huston_Property_
- Silva Property

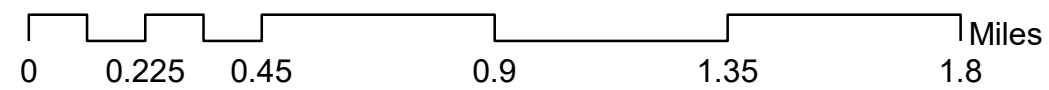
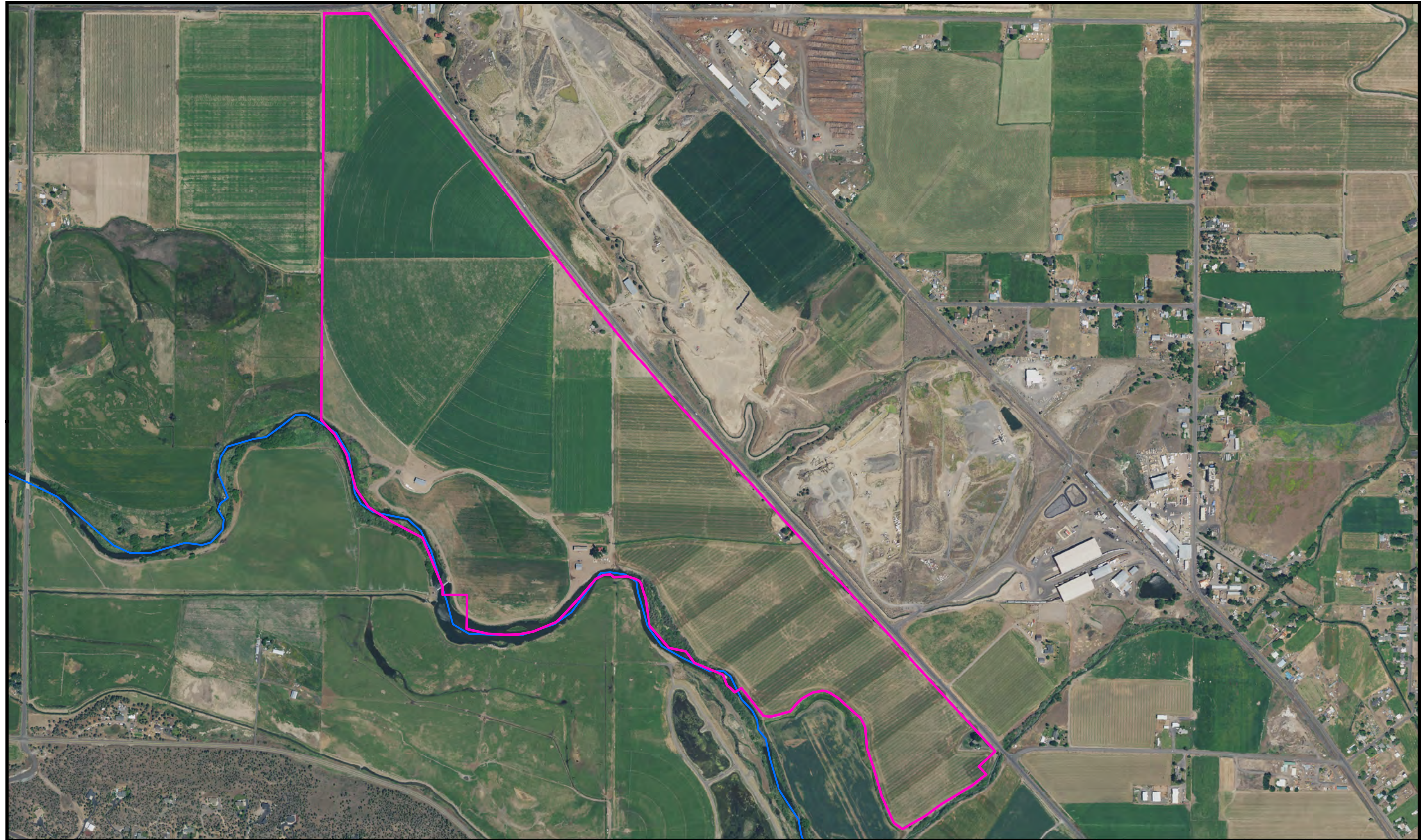


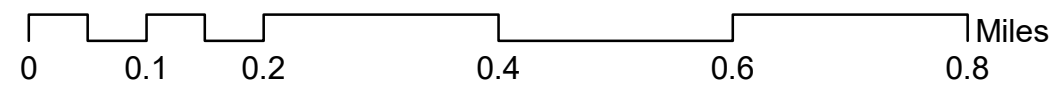


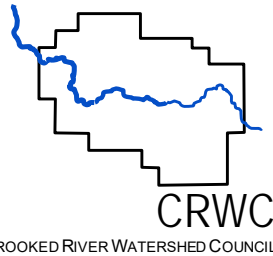
Figure 5. Silva Ranch Site Map



Legend

-  Silva Property
-  Crooked River





Silva Ranch project element quantities:

<i>Activity & Structural Feature</i>	<i>Quantity</i>
Bank Restoration - Large Wood Structure/Type B	12 structures
Side Channel - Large Wood Structure/Type A	13 structures
Side Channel - Large Wood Structure/Type Apex	4 structures
Bar Habitat - Large Wood Structure/Type A	4 structures
Bar Habitat - Large Wood Structure/Type Apex	1 structure
Bank Restoration – Linear feet of treatment	830 LF
Restoration Area – Number of acres treated (total)	6.06 acres
Wetland creation – Number of acres created	0.42 acres

Planting Design for Silva Ranch Site

Willow Trenches

Vegetated brush trenches will be constructed to promote revegetation of riparian areas. Construction of vegetated brush trenches will occur after September 15th and before the end of construction season. Planting locations and trenches will be marked on the ground for contractor. Trenches will be constructed approximately 5 feet deep and extend the length of the staked treatment location. Live willow cuttings and category 3 wood will be placed in the trench such that they are intermixed and oriented at a near vertical angle. The trench will be backfilled with the same material removed to create the trench and will match elevation of the surrounding floodplain grade.

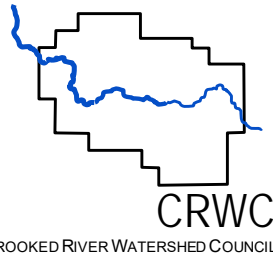
Willow Clumps-

Willow clumps will be salvaged from the project area, from within the construction extents. Holes created from harvesting clumps will be filled to grade. Willow clump plantings will follow the NRCS plant materials Technical Note 42 (2003). Clumps for harvesting and use on the project will be limited to young and vigorous plants 8 to 20 feet tall with at least 75% of the root mass intact. Clumps will be planted soon after harvest to reduce drying time of the roots (less than one hour). Planting hole depths for clumps will be just above standing water and not into the water. After planting each clump the tops left above ground will be trimmed to reduce 33-50% of the top growth. Spacing requirements for both trench and clump planting are specified in the design plans.

Seeding of bare ground and disturbed areas will occur on 3.5 acres of floodplain and 1.2 acres of upland staging area and temporary access routes. Floodplain seed mix will include slender wheatgrass, alkali cordgrass, western wheatgrass, meadow barley, and creeping spikerush. Upland Seed Mix to be used on this site includes the following: Western Wheatgrass, Prairie Junegrass, Idaho Fescue, and Bluebunch Wheatgrass.

King Ranch Site:

For the King Ranch project, several priority habitat issues are emphasized to address current conditions and improve fish habitat values and ecological function (see Figure 2. King Ranch



Project Map). The King Ranch improvements project seeks to improve stream and riparian habitat and associated ecological values on the lower Crooked River as part of the lower Crooked River Strategic Restoration Project. The design includes riparian buffer restoration, side channel and alcove creation and enhancement, engineered log jams, and bank restoration (see Figure 4. Map of Project Sites & Figure 6. King Ranch Site Map, pages 14 & 18).

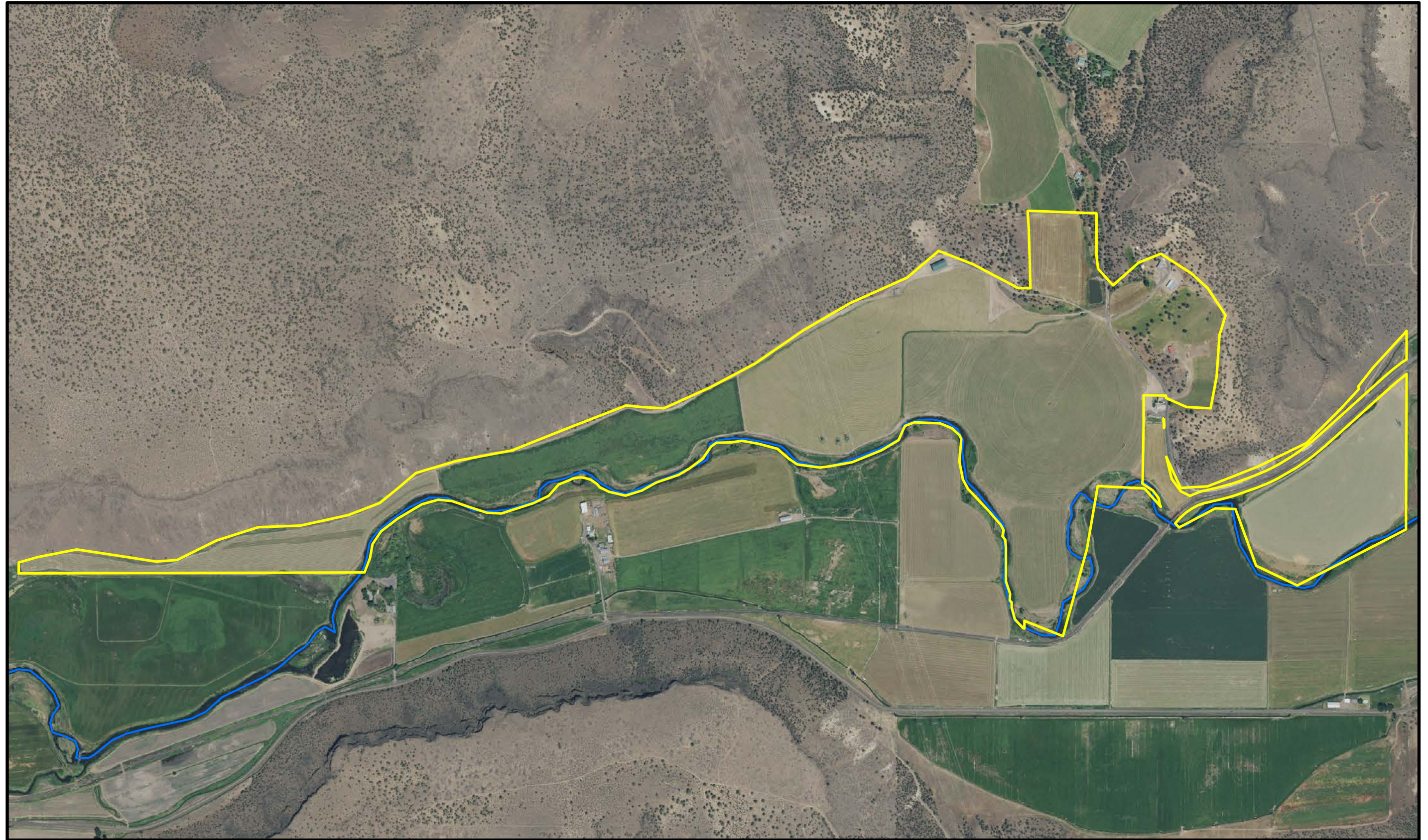


King Ranch during high flow periods in the LCR; note homogenous habitat along the riparian area and lack of large trees.

From the design parameters and project objectives, the primary actions included for the King Ranch site (project element) are summarized as follows:

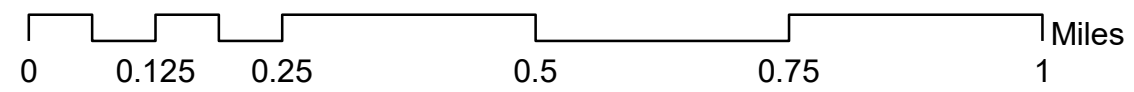
Off-channel habitat improvements - Side channel and alcove habitat feature development is proposed in 5 locations throughout the King Ranch project area. Additional habitat enhancement is proposed at an existing alcove in the reach. These features will provide a range of habitats for the various life stages of native fish and may provide thermal refugia by reconnecting and providing for surface-ground water interactions during periods of extreme temperature.

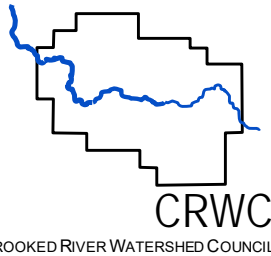
Figure 6. King Ranch Site Map



Legend

- Huston_Property
- Main_Rivers_Crooked



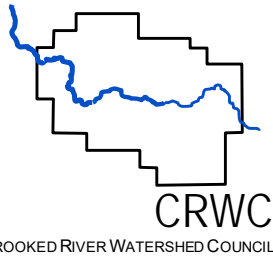


Large wood structures will be installed to create and maintain scour pools, provide cover, and promote sediment sorting and gravel storage.

Main channel habitat improvements - Large wood structures are proposed in the main channel adjacent to an existing bar. Structures will be placed such that they provide habitat during all flow conditions. These structures will provide cover for fish in an area that is otherwise homogenous and lacking in habitat features and cover.

Bank Erosion - Bank restoration treatments are proposed in seven locations in the Project reach where eroding banks are contributing fine sediment to the river, which can impact water quality and fish habitat. The banks will be graded to more gradual slopes. Grading is intended to reduce boundary shear stresses along the banks at high flows by increasing the cross-sectional area, thereby reducing velocities and/or water surface elevations. Large wood structures incorporated into the bank will provide toe protection and roughness and hydraulic energy dissipation, further hindering bank erosion while providing favorable habitat conditions. Banks will be seeded with an erosion control seed mix to provide additional shear stress dissipation.

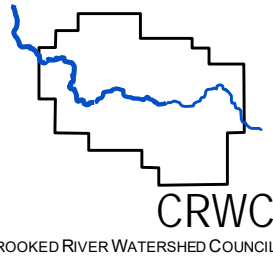
Vegetation - Reestablishing mature vegetation along the project reach is critical to recreating historic conditions whereby trees and large shrubs contributed bank and soil stability, continuous contributions of detritus to the stream ecosystem, and stream shading. Willow clump and trench plantings will be planted in designated riparian revegetation areas, around proposed bank and side channel features. Seeding of bare ground and disturbed areas will occur on 8.0 acres of floodplain and 3.3 acres of upland staging area and temporary access routes. Floodplain seed mix will include slender wheatgrass, alkali cordgrass, western wheatgrass, meadow barley, and creeping spikerush. Upland Seed Mix to be used on this site includes the following: Western Wheatgrass, Prairie Junegrass, Idaho Fescue, and Bluebunch Wheatgrass.



Bank erosion along the Crooked River on King Ranch; bank wasting can add significant amounts of soil and sediment to the river at unnatural levels.

King Ranch project element quantities:

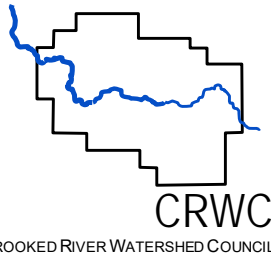
<i>Activity & Structural Feature</i>	<i>Quantity</i>
Bank Restoration - Large Wood Structure/Type B	42 structures
Side Channel - Large Wood Structure/Type A	27 structures
Side Channel - Large Wood Structure/Type B	11 structures
Side Channel - Large Wood Structure/Type Apex	7 structures
Alcove - Large Wood Structure/Type A	7 structures
Bar Habitat - Large Wood Structure/Type A	4 structures
Bank Restoration – Linear feet of treatment	2,455 LF
Restoration Area – Number of acres treated (total)	12.25 acres
Alcove Habitat – Area improved (sq. ft.)	0.22 acres



King Ranch; eroding, unstable river banks on the LCR add sediment, diminish agricultural acres, disallow stream shade, and homogenize deleterious habitat expression via lack of cover and structure (large wood).

Applicant Category and Eligibility of Applicant

The Crooked River Watershed Council (applicant) is a 501(c)(3) non-profit conservation organization and is qualified for this funding opportunity as a Category B applicant sponsored by and working with a Category A applicant (Ochoco Irrigation District, Prineville, Oregon; Letter attached). The council is acting in partnership with OID to implement these two projects and several more in the same larger project area. Because much of our restoration work occurs on irrigated lands in Lower Crooked River area, OID is a critical partner and key link to landowners who are patrons of the district. The council partners with OID on two other projects in the watershed- implementation of the district's habitat conservation plan and our collaborative work with several other partners to address water quality specifically.



Performance Measures

This section is addressed over two timelines. The first are proposed performance measures for the period that ends within six months of the project completion date, defined as the date when the last on-the-ground restoration action was completed within the overall time frame of the grant period (prior to August 31, 2026). Some of these post-project measures will be proposed for funding support, while others are either already funded or are expected to be funded from other sources. The second period extends for a five-year period beyond the close date of the grant. These measures are not proposed for funding from this grant. They are either already funded or are expected to be funded from other sources or developed in partnership with others that could be providing the data and evaluation.

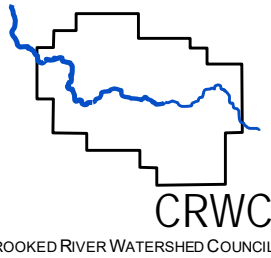
First Period Performance Measures:

- 1- Water quality sampling for nutrients at 10 sites, four in the Prineville Valley (project) reach; lab analyses at USBR laboratory in Boise, Idaho, for total nitrogen, nitrate-nitrite nitrogen, and total phosphorus. Continuous temperature monitoring for the same sites will be collected with loggers.
- 2- Quality control assessment and report by project engineer after one run-off season passes. Project engineer will evaluate large wood structures to determine their effectiveness, durability, and any significant changes or alterations for structures due to higher flow regimes. Field examination of all structures placed under this project with results presented in a report.
- 3- Bank restoration project elements will be evaluated by the project engineer following the first high flow run-off period. The engineer will determine stability of banks after they have been tested by high flows and will provide a report with results.

Items #2 & 3, above will be proposed for WaterSMART funding while item #1, is already funded by the Oregon Watershed Enhancement Board (OWEB).

Second Period Performance Measures

- A- Water quality sampling for nutrients at 10 sites will continue for a period of four three years following project completion. Continuous temperature monitoring for the same sites will be collected with loggers. Annual summary reports will be developed and available.
- B- The council is developing a fish-focused habitat evaluation tool with Cramer Fish Sciences. This tool is expected to be completed and useful in 2025, meaning it would be applicable to this project for a period of approximately six years. It will be able to evaluate restoration project benefits to fish habitat. Neither item A) or B) are proposed for WaterSMART funding. Both activities are, or are expected, to be funded by OWEB.



Responses to Evaluation Criteria

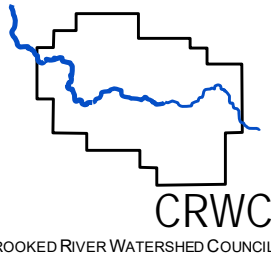
Project Benefits

Existing conditions in the LCR are largely determined by past land management activities and two dams that regulate flows and shift flow regimes compared to the natural hydrograph. Flow releases from the dams shape river banks, promote or suppress mature tree species expression, reduce habitat complexity, particularly for fish, and can indirectly influence water quality status. Riparian areas and floodplains have been simplified over time due to manipulations of land for agricultural purposes and flood control. This project proposes to address these impacts by adding habitat complexity associated with large wood structures and their impacts on channel shape, dimension, and depth. Bank stability improvements will reduce erosion, including mass wasting, increasing water quality. Riparian improvements and increased floodplain interaction will reduce overland erosion delivered to the river improving water quality by reducing and retaining nutrients in vegetative filter strips. Shading will be increased as new vegetation matures. Proposed restoration actions address current needs associated with healthy, functional, and interactive floodplain areas, riparian zones, and stable riverbanks. The results of the project support more diverse ecological habitats in treated areas broadening the range of aquatic and floodplain species that can effectively complete their life histories in these areas. The values generated are intertwined with water management, particularly flow timing and amounts associated with the two dams upstream of the project sites.

The project will not affect water supply. It focuses on improving habitat and water quality. It increases effective, diverse habitat types for fish and increases vegetative values in the riparian zones increasing utility of these areas and stabilizing riverbanks. Water quality is expected to increase, especially due to reduced nutrient loading and decreased summer stream temperature peaks. This project will improve watershed conditions in the areas treated and downstream of restoration actions. The LCR is impacted by Reclamation projects (Ochoco and Prineville dams) attributed to flow regimes and the effects of water releases (timing and amount). This project proposes to address these impacts in a comprehensive and landscape-scale approach that will require more work on other sites to maximize benefits.

There are no federal or state mandates or environmental mitigation needs associated with this project. All proposed restoration actions will occur on private lands and are strictly voluntary and intended to improve habitat conditions for fish and increase water quality.

Project benefits are expected to cascade from high to low based on proximity to active restoration results. The further downstream from project sites, the less the benefit in overall terms. Water quality improvements are expected to contribute to overall quality in the river as supported by council nutrient data collected between 2020 and 2022. We expect nutrient



reductions of 10% as measured at the mouth of the Crooked River as it joins the Deschutes River. This estimate is based on total loading by site in the LCR. Habitat biodiversity and ecological uplift is expected to improve by 20% for restoration sites based on current conditions and a percentage of land treated compared to untreated acres on the two sites. Overall habitat improvements to the LCR from the project are expected to be diluted by the large number of acres in the overall focus area (Prineville valley).

The project benefits two anadromous fish species and multiple native species. Notables are Spring Chinook salmon and steelhead. Steelhead are ESA-listed at Threatened in our watershed but are currently designated as an experimental population (10(J) status). Native fish include redband trout, sculpins, dace, suckers, various trout, and other aquatic species. Key habitat types improved include riparian zones, floodplains, and instream. The geographic extent is larger for aquatic species extending up and downstream of the project sites as they have higher inherent mobility, while terrestrial species such as deer, fox, badger, and avian species benefits are constrained more tightly to restoration sites.

The project benefits the Middle Columbia steelhead fish species currently ESA-listed as Threatened.

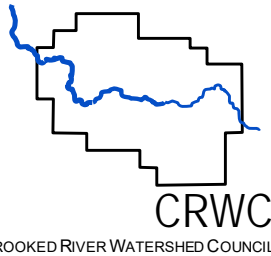
This species is the subject of federal and state recovery plans. Steelhead need clean cool water at key time periods and adequate and accessible spawning areas. Water supplies and timing of water impact steelhead by limiting their movement, limiting their ability to out-migrate, and by impacting water temperature profiles. Sediment loading rates and timing can impact steelhead eggs and emergent fry life histories by smothering eggs which reduces oxygen levels and waste transfer, and by abrading gills of fry-sized individuals.

Section E: Application Review Information

The proposed project can help reduce the probability of durable listing status as more and more habitat and water quality improvements are gained over time. This project contributes to that need but does not address the larger geographic needs for additional restoration actions.

Middle Columbia steelhead are impacted by a Reclamation project which limits their access to over 400 miles of potential habitat in the upper Crooked River watershed. Physical barriers to passage exist at both Bowman and Ochoco dams. This project is intended to help improve habitat conditions where these fish have access as an offset to the reduction in river miles accessible.

The project will have no impact on drought conditions but will add resiliency to the treated sites and to some degree the entire river system in the LCR.



Water quality parameters are expected to improve from the actions in the project. The degree of improvement is difficult to quantify and is likely marginal due to the level of impact current conditions have created. Because of the broader needs required to significantly reduce water quality impacts are so great, the acres treated, and activities proposed can only contribute incremental improvements. Long term benefits to water quality will occur but will need to be increased and augmented by other actions in combination with the outcomes produced by this project.

Water Conservation and Efficiency Project Benefits

There are no water conservation objectives in this proposed project. Creating conserved water and dedicating in instream, for example, is not a project element.

Water Management and Infrastructure Improvements Benefits

This project does not propose improving water management or infrastructure.

Restoration Project Benefits

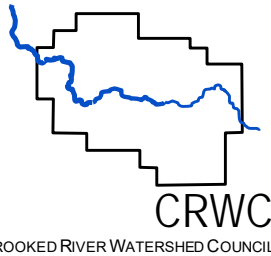
Multiple Benefits

The project will marginally address downstream river uses associated with water recreation and tribal resource utilization. River recreation below the project sites can be impacted and reduced due to sediment and nutrient loading. The first impacts river aesthetics while the second can promote harmful algal blooms that reduce recreational opportunities and uses. Lake Billy Chinook (receiving water) algal advisories are occurring year after year. Over time, reductions in nutrient loading from the Crooked River will reduce these occurrences. The project provides habitat biodiversity for fish species and improved water quality. The project will not reduce water conflicts in the Deschutes basin.

Collaborative Planning

The proposed project is supported by the Lower Crooked River Action Plan generated in a collaborative process completed in 2012. This plan is informed by the State of Oregon's Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment (2010; 'Oregon Mid-C Steelhead Recovery Plan'). The Action plan applies recommendations from the State's plan to actionable project-level actions that address the limiting habitat factors listed in the recovery plan specific to the Crooked River (refer to Section 8, Limiting Factors and Threats from the Oregon Mid-C Steelhead Recovery Plan, pp. 203 - 208).

The conservation and recovery plan and action plan both address a range of limiting factors including physical habitat, water quality, land management activities, flow regimes, floodplain connectivity, watershed functions, and lack of mature vegetation, to name the primaries. One of



these plans recommendations includes increasing the reliability and amount of water dedicated to instream flow, especially during critical life history periods for steelhead and general ecological values. The LCR Action Plan was developed with multiple stakeholders and interests. An open, coordinated process was applied to ensure all opportunities and constraints were reasonably addressed. Local government, irrigation district, other conservation NGOs, and federal land management agencies were involved with developing and reviewing the plan. The LCR Action Plan was utilized to guide project goals, objectives, and designs. It was developed to be site specific matching up conservation needs identified at a higher level with the most suitable project locations.

Stakeholder Support for Proposed Project

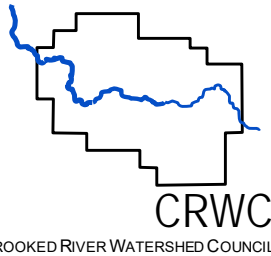
As documented by attached letters of support and our partnership with USDA-NRCS to develop, design, and permit this project, there is wide support for the outcomes this project can achieve for fish, water quality, and ecological resources. Project supporters include Ochoco Irrigation District, Crook County, City of Prineville, the Deschutes River Conservancy, The Deschutes Land Trust, U.S. Forest Service, and the Crook County Soil & Water Conservation District. The project is fully consistent with the policies, mission, and contemporary goals of participating partners and supporters. There is no known opposition to this proposed project.

Readiness to Proceed

The implementation plan for this project sequences as follows:

- 1) Complete project designs to 90% level for both Silva and King sites before July 1, 2023,
- 2) Secure funding to implement project – ongoing until funds are in place; OWEB application May 2, 2023, and USBR WaterSMART application June 1, 2023 (#R23AS00106). OWEB funds provide match while USBR funds would overlap requiring notice and award adjustment,
- 3) Project permitting will commence by May 1, 2023, and is expected to be complete by October 1, 2023, including environmental and cultural resources compliance,
- 4) Contract bidding process will start once funding is secure, likely in late fall of 2023,
- 5) Construction is scheduled to start in the first quarter of 2024, and be completed by the end of 2024, and
- 6) Post-Project evaluation will start in 2025 and end five years post-completion.

Project costs and proposed budget is supported by referencing recent projects in the LCR and actual contract bid proposals that provide a reality check for expenditures. Inflationary pressure will be accommodated in the budget to ensure cost increases over the next two years do not jeopardize the project. Project permits will be required for the primary ground-disturbing restoration activities. Included on this list of activities is installation of large wood structures, excavation of riverbanks to decrease slope angles, and some of the actions to improve side channel benefits. Permits will be required from the U.S. Army Corps of Engineers (Nationwide General, wetland delineation),



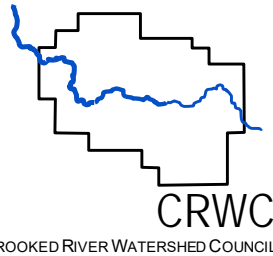
Oregon Division of State Lands (cut/fill and cultural resource clearances), local Crook County land use compatibility statement (zoning and FEMA), and the Oregon State historic Preservation Office (cultural resource inventory and clearance).

Project designs are currently at the 60% level for both sites and are attached to this application. They will be advanced to the 90% level in the next 60 days, or less. Project designs are funded by an USDA-NRCS grant. The council has secured landowner agreements for both sites (attached). No easements or land acquisitions are required to implement this project. The council has not contacted our local Reclamation office at this time but will be making this contact in the next 60 days. No compliance needs are proposed to be funded from this grant because all permitting needs are funded by the USDA-NRCS grant. The project does not occur completely or partially on federal land.

Presidential and DOI Priorities

The actions proposed build long-term resiliency by addressing and offsetting impacts from current and past management activities associated with land use (irrigated agriculture and localized seasonal grazing). Improving ecological conditions at the project sites adds riverbank stability improving both fish habitat (cover and stream velocity refugia) and protecting production agriculture lands for future use. Reductions in flood damage, soil erosion, riverbank wasting, lateral channel migration, and homogeneity in habitat types are long term benefits expected to be durable over a 50–75-year period. We do not expect any threat from wildfire at these locations, but future flooding impacts will be reduced at some level due to large wood structures, side channel flow relief, and mature vegetation that will establish and more expressive over time.

No renewable energy sources are created by this project; however, the project will sequester carbon from new seeding and planting actions. As planted trees and shrubs mature over time, their ability to capture and store carbon increases. Compared to current conditions where riverbank vegetation is transitory and precluded from reaching maturity, this change will be a net positive for carbon sequestration. No green infrastructure elements or features are included in this project. The project will contribute to an overall reduction in water pollution by establishing and maintaining vegetative strips and intact riparian areas that can filter overland water contributions to the river, and will promote healthy landscapes, lands, soil resources, and water quality. Generally, the restoration actions proposed for both sites in the project will contribute to climate change resiliency when compared to current conditions. Primarily this takes the form of increasing natural watershed functions and processes that create river and riparian conditions adapted to long term fluctuations in climate-derived impacts.



Disadvantaged or Underserved Communities

No disadvantaged or historically underserved community will be impacted to any significant level. Downstream of project sites, tribal resources may benefit and be protected to a higher level, increasing through time. Tribal fisheries resources are expected to gain the largest benefit as habitat and water quality improvements increase fish production for tribal use. The tribal community of the Warm Springs Indian Reservation is challenged by a combination of variables: geographic isolation, suffering from persistent and higher poverty levels than the national average, having fewer health care options, and having limited transportation options.

Tribal Benefits

The project does not directly serve a local tribe, although the marginal water quality benefits will support the tribes use of resources, traditional lifeways, and begin the long-term process of returning parts of the LCR to its historical, more vibrant, and sustainable status, especially for steelhead and Chinook salmon production. Reclamations Tribal Trust obligations are supported and enhanced by the outcomes of this project relative to fisheries resources, water quality, and perhaps harvest of traditional foods and medicinal plant resources exclusive to healthy riparian areas (chokecherry, for example). The project will assist and contribute to meeting tribal resource needs associated primarily with traditional cultural foods, including steelhead and Chinook salmon, and medicine plants. As the project matures over time, these tribal benefits are expected to increase.

Project Budget

Funding Plan and Letters of Commitment

The non-Federal cost share of 25% of project total costs will be obtained by funding from the Oregon Watershed Enhancement Board, Oregon Water Resources Department, and Oregon Department of Agriculture, although the first two are more likely funders. Either singly or in some combination, these funds are planned to be secured through grants in 2023. The next application date for OWEB is May 2, 2023. There are no commitment letters associated with these funds. Landowner in-kind contributions are secured, identified, and presented in the budget.

Budget Proposal

Table 1. Summary of Non-Federal and Federal funding sources

Funding Sources	Amount
Non-Federal Entities	
1. King Ranch landowner	\$125,000 in-kind
2. Oregon Watershed Enhancement Board	\$425,000
Non-Federal Subtotal	\$550,000
REQUESTED Reclamation funding	\$1,400,000

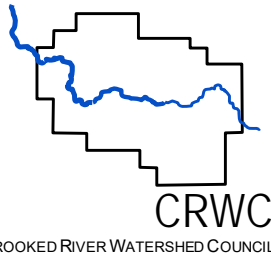


Table 2. Total Project Cost Table

Source	Amount
Costs to be reimbursed with the requested Federal funding	\$1,400,000
Costs to be paid by the applicant	\$25,000
Value of Third-party contributions	\$550,000
TOTAL Project Cost	\$1,975,000

Budget Narrative

The proposed budget does not include any project costs incurred prior to the potential award. All such pre-project costs are borne by the council (applicant) and are not proposed to be recovered in this budget, nor are they included in the applicant cost-share figure of \$25,000. This section summarizes budget highlights. More detailed information is presented in the complete Budget Narrative found at the beginning of the appended Supporting Documents section.

Personnel - Council staff involved in project management, grant administration, reporting, contracting, and project evaluation. Project Manager and Council Director; total is \$48,000, with \$21,882 contributed as cost-share. Fringe benefits are included in salary rates.

Travel - All travel and mileage are covered by the applicant cost-share amount as is based on current federal mileage rates of \$0.655/mile. Miles to complete the project are estimated at 180, totaling \$118.

Equipment - To be supplied by the construction contractor and landowner of King Ranch.

Supplies - To be supplied by the construction contractor.

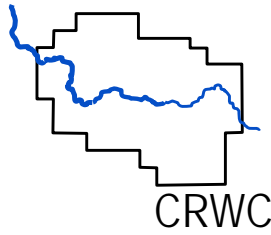
Contractual - Estimate of total construction contract is \$405,000 excluding materials. Professional engineer’s contract is estimated at \$47,000 and includes wetland delineation.

Construction -

Equipment Use: King Ranch will provide in-kind use of heavy equipment and construction materials valued at \$125,000 when compared to open market rates for the same.

Contractual Services: Estimate of construction bid total for both sites, plus time for project engineer to oversee construction, provide completion report, and post-project evaluation at six months after completion (total is \$452,000).

Materials: Itemized in table below, described as those materials that are necessary to complete the project. They will likely be incorporated as a cost for the contract bids.



CROOKED RIVER WATERSHED COUNCIL

Material	Unit cost	Quantity	Cost
Temporary erosion control BMPs	\$6,300/job	2 jobs	\$12,600
Bulk bags	\$300/site	18 sites	\$5,400
Large wood structure Type A materials	\$4,105/structure	51 structures	\$209,400
Large wood structure Type Apex/B materials	\$13,600/structure	77 structures	\$1,048,000
Erosion control and riparian seed	\$4,000/acre	15.65 acres	\$62,600
Wetland plants	\$6,000/acre	0.42 acres	\$2,500
TOTAL Materials Cost			\$1,340,500

All materials and supplies needed for the project are listed above. Supplies are itemized by major category, unit price, quantity, and purpose.

Environmental and Cultural Resources Compliance

H.1

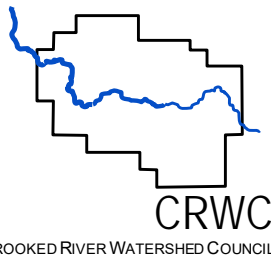
1- Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

Response - The project will disturb small areas of land to implement placement of large wood structures. Depending on soil moisture conditions at the time, some dust and fugitive soil could be moved off site and made airborne. Dust abatement measures could be required for drier periods where water trucks will wet working surfaces to keep fugitive dust to a minimum. The project location is remote, and the nearest houses are occupied by the landowner. Minimal animal habitat will be disturbed primarily associated with small mammals that reside underground and near riverbanks. Any discovery of active animal use during construction could limit or temporarily stop the project. Water quality impacts attributed to earth moving such as sediment release into the Crooked River is tightly regulated and known mitigation measures are in place to address this possibility.

2- Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

Response – The only ESA-listed species in the project areas is the Middle Columbia steelhead (*Oncorhynchus mykiss*). It is currently designated an experimental species in the lower Crooked River and thus the full weight of the Act is not applicable.

3- Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States”? If so, describe and estimate any



impacts the proposed project may have.

Response – The project contains wetlands, and they will be delineated prior to construction activities. There are no plans to work near any existing natural, jurisdictional wetlands, however the project proposes to create a small wetland to improve water quality.

4- When was the water delivery system constructed?

Response – The existing water delivery system for the Silva project site was renovated and upgraded in 2021, with new headgates and turnout features. For the King Ranch, the system is estimated to have been constructed in the 1960s.

5- Will the proposed project result in any modification of, or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

Response – No changes to irrigation systems are part of this project.

6- Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

Response – The only potential structure that could be eligible for such listing is well outside the project area. Ochoco Dam may be an irrigation district structure eligible due to its construction date, but this project will have no impact on this facility.

7- Are there any known archeological sites in the proposed project area?

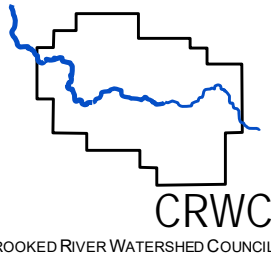
Response – There are no known or documented sites in the project area, but as part of project permitting, this survey need will be addressed. The Oregon State Historic Preservation Office has construction requirements that apply to this project based on inadvertent discovery protocols.

8- Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

Response – No, the project will not disproportionately impact low income or minority populations at any level. The project lands are remote, undeveloped farmland with no residential or commercial uses within several miles.

9- Will the proposed project limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on Tribal lands?

Response – No, the project will not limit any access or uses by Indian tribes and does not



impact tribal lands. The project sites are located in the ceded territory of the Confederated Tribes of Warm Springs, but access to exercise reserved treaty rights for these lands is not encumbered by the project.

10- Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

Response – This is an ongoing challenge for restoration work in our area when large acreages are made bare. This project does not propose large land disturbance in this regard. Grading large areas generating bare soil will encourage noxious weed colonization and invasion. This project does not have that element and all disturbed areas are going to be seeded and planted as appropriate. Any necessary weed control will be coordinated with the Crook County Weed Management area through their landowner cost-share program.

H.2

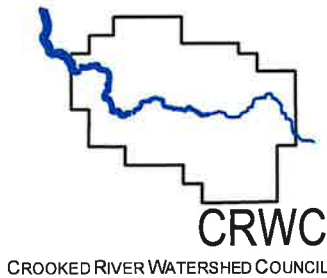
There are no questions for this section in the solicitation materials. However, the project has the potential to impact an ESA-listed fish species; the Middle Columbia steelhead are listed as Threatened but are currently designated as an experimental population under section 10(J) of the Act. The project goals and objective are to improve habitat conditions for all life history needs of this species. Any deleterious impacts are expected to be limited to active construction periods. Sediment generation during earthwork has a potential impact, however the project is regulated by Oregon Department of Environmental Quality's water quality standards and 401 certificate processes.

Required Permits or Approvals

Project permits will be required for the primary ground-disturbing restoration activities. Included on this list of activities is installation of large wood structures, excavation of riverbanks to decrease slope angles, and some of the actions to improve side channel benefits. Permits will be required from the U.S. Army Corps of Engineers (Nationwide General, wetland delineation), Oregon Division of State Lands (cut/fill and cultural resource clearances), local Crook County land use compatibility statement (zoning and FEMA), and the Oregon State historic Preservation Office (cultural resource inventory and clearance).

Official Resolution

The Official Resolution by the council Board of Directors is presented on the next page.



Crooked River Watershed Council
Board of Directors

Resolution 01-23

The Board of the Crooked River Watershed Council has discussed the Silva Farm-King Ranch project. The board approves and assigns staff to prepare and submit a complete application to the Department of Interior-U.S. Bureau of Reclamation WaterSMART program for funding consideration.

The board commits the council to this project, application, and appurtenant details supporting both, including, but not limited to following all the requirements and conditions set by the funder should the council be awarded funds. This support and authorization specifically includes meeting any and all established deadlines to enter into a grant agreement with the Bureau.

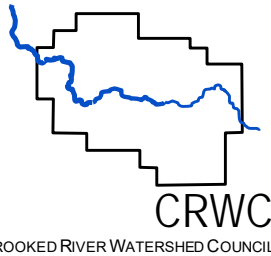
The Chairman of the Board of Directors is authorized to issue and sign this Resolution on behalf of the organization and has reviewed the application materials and draft application in coordination with council staff.

Be it Resolved, the Crooked River Watershed Council's Board of Directors fully supports the grant application to the Bureau of Reclamation for this project and authorizes staff to develop and submit a grant application by the due date of March 28th, 2023.

Authorized by:

Mike Kasberger, Board Chairman

Date: 03-16-23



Letter of Support and Letters of Partnership are compiled and presented at the end of this document, under 'Other Supporting Forms and Documents'.

Conflict of Interest Disclosure Statement

As prescribed and defined in 2 CFR Subsection 1402.112, the council and all members of this organization, including staff and board members, have no actual or potential conflict of interest associated with this proposed project and any USBR WaterSMART funds that might be awarded.

Uniform Audit Reporting

The applicant was not required to complete submit a Single Audit Report for our last fiscal year.

Overlap of Duplication of Effort Statement

The council will seek supporting funds to augment this project and meet the match requirements. The total project budget is higher than that requested by WaterSMART. The difference will be included in a grant application to the Oregon Watershed Enhancement Board (OWEB) on or before the next due date of May 2, 2023. The OWEB review and grant approval process for this cycle will be August 1, 2023. The council is considering a second application to USBR WaterSMART (NOFO #R23AS00106) by June 1, 2023, to increase the probability of securing funding. In the event funding would be awarded from any source that overlaps with proposed budget and request herein, the council will immediately notify USBR point of contact for this solicitation. Overlap is possible and is yet to be determined.

Other Supporting Forms and Documents

This section contains all supporting documents and forms that are not associated with specific sections in the body of the application.

They include:

- 1) Budget Narrative
- 2) Letter of Partnership with Category A eligible applicant
- 3) Design Report selections and Plans at 60% level for both project sites
- 4) Letters of Support for the Project



3/21/2023

WaterSMART Grant Program Staff,

This letter is issued on behalf of the Crooked River Watershed Council, a conservation non-profit operating in our service area that meets the definition of watershed group in the Cooperative Watershed Management Act, Section 6001. In the context of the current and applicable USBR WaterSMART program solicitation with the Funding Opportunity Number of R23AS00089, and the Catalog of Federal Domestic Assistance, number 5.507, 15.554, the council qualifies as a Category B applicant. This letter is intended to meet one of the key qualification criteria for eligibility for Category B applicants.

Ochoco Irrigation District, a category A organization, partners with the council and others to implement conservation projects primarily associated with fish and wildlife habitat, irrigation infrastructure improvements and on-farm operational improvements that conserve water. In fact, the district has a dedicated seat on the council's board of directors. At this time, the district is actively working with the council to fund and implement a fish screening cost-share project in the lower Crooked River geography and indirectly on several landowner projects addressing fish habitat and water quality improvement needs. These projects are in the same, targeted lower Crooked River reach of approximately 19 miles in total length. These projects are important to the district in the context of habitat conservation plan and mitigation of land use impacts.

The council has developed several projects that are ready to implement. Project designs are in place for these, and they only lack funding support to move them to completion. This first set of projects occurs on private farmland. They primarily address river and floodplain habitat needs associated with two anadromous fish species, one of which is listed as Threatened under the ESA. These projects are important in advancing our collective interests in the Crooked River watershed and will result in more sustainable irrigated agriculture into the future.

The district has reviewed project designs for the two landowner projects that are the subject of a pending application by the council and fully approves the technical aspects, design parameters, and conservation outcomes. The district agrees with goals and objectives of these particular projects and therefore agrees with the contents and approach in the grant application. The districts direct participation in these projects takes the form of technical assistance and review of designs, landowner outreach and coordination, and community interaction and feedback.

If any questions arise regarding our relationship with the council or these projects specifically, please contact me.

Sincerely,

Bruce Scanlon
Ochoco Irrigation District Manager

It is OID's mission to effectively and efficiently serve the current and future irrigation needs of our patrons by economically operating and maintaining the districts resources with honesty and integrity.



United States Department of Agriculture

March 21, 2023

Bureau of Reclamation
Water Resources and Planning Office
Mail Code: 84-51000
P.O. Box 25007 Denver, CO 80225

Dear Review Committee,

Please accept this letter regarding the Silva and Huston Ranch Improvement Projects grant submitted by the Crooked River Watershed Council.

Both projects are on the Lower Crooked River and will compliment an active NRCS Regional Conservation Partnership Program in the same area. The actions proposed by the council are consistent with NRCS priorities for the Lower Crooked River valley.

The outcomes achieved will complement work already undertaken and planned by NRCS on the same landscape.

This project aligns well with NRCS conservation objectives in Crook County.

This type of work in the Lower Crooked River is essential to meeting many of our shared goals for fish and wildlife habitat, improved water quality, and reduced soil erosion and bank instability. We look forward to the habitat and resource conservation improvements that can occur from implementing this project.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris Mundy". The signature is stylized and fluid.

Chris Mundy
USDA-NRCS
District Conservationist, Crook County



File Code: 1580; 2530

Date: MAR 14 2023

Bureau of Reclamation
Water Resources and Planning Office
Mail Code: 84-51000
P.O. Box 25007
Denver, CO 80225

Dear Review Committee:

I am writing this letter to express support from the Ochoco National Forest, Lookout Mountain Ranger District, and the Crooked River National Grassland for the Crooked River Watershed Council's (CRWC) application to the U.S. Bureau of Reclamation's (USBR) WaterSMART Environmental Water Resources Project. This funding would support two restoration projects in the lower Crooked River Watershed.

The Council has a long record of successful work and delivered outcomes to their service area. The CRWC, along with a variety of diverse partners are currently operating in the Regional Conservation Partnership Program by the Natural Resource Conservation Service (NRCS). The active RCPP 1808, titled the Lower Crooked River Strategic Restoration, offers 28 NRCS conservation practices and funds engineered instream habitat restoration design plans that are ready to move to implementation stages. The two projects proposed to USBR by the CRWC are part of this project. The USFS is interested in the important work that will be accomplished with funding support requested through this grant solicitation. Ochoco National Forest is undertaking a large meadow restoration on Williams Prairie in 2023, which is part of the headwaters of the North Fork of the Crooked River. This work along with a variety of other landscape restoration actions that will be implemented the next few years shows our commitment to partnerships and restoration in the Crooked River basin.

To reiterate, the Ochoco National Forest, Lookout Mountain Ranger District and the Crooked River National Grassland supports and endorses the Crooked River Watershed Council's application and use of funds consistent with their proposal to the Bureau of Reclamation's WaterSMART grant program. We believe the identified two projects within the Lower Crooked River Strategic Restoration Plan will benefit our shared goal of improving the basin's water quality and fishery resources for the long-term.

Sincerely,

SLATER R. TURNER
District Ranger





Crook County Soil & Water Conservation District
498 SE Lynn Blvd.
Prineville, Oregon 97754

Phone: (541) 447-3548 Fax: (541) 418-2115

Andy.gallagher@oregonstate.edu

March 23, 2023

To whom it may concern,

Crook County SWCD would like to express our support for the Silva Ranch and King Ranch project application being submitted by the Crooked River Watershed Council to the USBR WaterSMART program.

This project will benefit riparian communities and increase overall habitat values in the project reach. The actions proposed by the council are consistent with regional and local plans and priorities for the lower Crooked River valley.

The outcomes achieved will complement previous work done by Crook SWCD using the OWEB small grant program to improve irrigation systems on the Silva Ranch. The landowners have shown a strong desire to make lasting changes to river and habitat conditions on their property. Work proposed in this application will address overall riparian function and health, adding to the drought resiliency of the system and ensuring benefits stand the test of time.

On behalf of Crook County SWCD we are pleased to offer our full support for this project and its outcomes. Increasing the amount and rate of this type of work in the lower Crooked River is essential to meeting many of our shared goals for fish and wildlife habitat, improved water quality, and reduced soil erosion and bank instability. We look forward to working with the Crooked River Watershed Council on this projects and others like it in the future.

Sincerely,

A handwritten signature in blue ink that reads "Andy Gallagher". The signature is fluid and cursive.

Andy Gallagher
District Manager



City of Prineville

387 NE THIRD STREET ♦ PRINEVILLE, OREGON 97754

DEPARTMENT OF PUBLIC WORKS ENGINEERING DEPARTMENT

Phone: (541)447-5627 ext. 124 FAX: (541) 447-5628

EMAIL: mkasberger@cityofprineville.com Website: www.cityofprineville.com

Bureau of Reclamation
Water Resources and Planning Office
Mail Code: 84-51000
P.O. Box 25007 Denver, CO 80225

March 13, 2023

Dear Review Committee,

The City of Prineville, based in Prineville, Oregon, strongly supports the Crooked River Watershed Council's application to the Bureau of Reclamation's WaterSMART Environmental Water Resources Project funding to support two restoration projects in the lower Crooked River Watershed.

The Council has a long record of successful work and delivered outcomes to their service area. The Crooked River Watershed Council (CRWC), acting as the lead partner with the Confederated Tribes of the Warm Springs, Crooked River Weed Management Area, Crooked River central Ditch company, Oregon Department of Fish and Wildlife, Oregon Watershed Enhancement Board, The City of Prineville, Portland General Electric, and the Crook County Soil and Water Conservation District, are currently operating in the Regional Conservation Partnership Program by the Natural Resource Conservation Service (NRCS). The active RCPP 1808, titled the Lower Crooked River Strategic Restoration, offers 28 NRCS conservation practices and funds engineered instream habitat restoration design plans that are ready to move to implementation stages. The two projects proposed to USBR by the council are part of this project.

The lower Crooked River is an important geography in the context of anadromous fish species reintroduction. Many millions of dollars have been expended to date supporting this effort to reestablish both Spring Chinook and middle Columbia steelhead (ESA-listed; Threatened). These two projects derive from state and federal recovery plans for the steelhead. They address degraded fish and wildlife habitat, water quality, and riparian plant communities in an area covering over 17 miles of the Crooked River in Central Oregon.

Proposed restoration activities include both instream and riparian restoration and are based on recommendations in numerous studies and planning documents published by partners including the Crooked River Watershed Council, Natural Resources Conservation Service (NRCS), and Oregon Department of Fish and Wildlife. Objectives of the project are to improve: (1) habitat for fish and wildlife, (2) water quality, and (3)

agricultural productivity. In addition, the project will (4) reduce the threat of regulatory enforcement associated with the Federal Endangered Species Act and compliance with non-point source impacts from agriculture under Sections 303 and 319 of the Federal Clean Water Act, managed with regulatory oversight in Oregon by the Oregon Department of Agriculture Water Quality Management Program.

The Silva Ranch project is located adjacent to a large restoration project currently being implemented that covers both McKay and Ochoco Creek confluence zones with the Crooked River. The Silva Ranch project seeks to improve stream and riparian habitat on the mainstem Crooked River as part of the lower Crooked River Strategic Action Plan which addresses the entire 19-mile valley river reach. The design includes riparian buffer and wetland, side channel creation and enhancement, large wood structures, and bank restoration to reduce fine sediment inputs.

The Huston Ranch Improvements project seeks to improve stream and riparian habitat on the lower Crooked River as well, and include such features as riparian buffer restoration, side channel and alcove creation and enhancement, engineered log jams, and bank restoration.

The City of Prineville supports and endorses the Crooked River Watershed Council's application and use of funds consistent with their proposal to the Bureau of Reclamation's WaterSMART grant program.

Sincerely,



Michael P. Kasberger
Assistant City Engineer
mkasberger@cityofprineville.com
387 NE 3rd Street
Prineville, OR 97754

Deschutes Land Trust

210 NW IRVING AVENUE, SUITE 102
BEND, OREGON 97703
OFFICE: (541) 330-0017
DESCHUTESLANDTRUST.ORG



CONSERVATION. COMMUNITY. CARING FOR THE LAND.

Bureau of Reclamation
Water Resources and Planning Office
Mail Code: 84-51000
P.O. Box 25007 Denver, CO 80225

March 17, 2023

Dear Review Committee,

The Deschutes Land Trust (Land Trust) based in Bend, OR strongly supports the Crooked River Watershed Council's application to the Bureau of Reclamation's WaterSMART Environmental Water Resources Project funding to support two restoration projects in the lower Crooked River Watershed.

The Council has a long record of successful work and delivered outcomes to their service area. The Crooked River Watershed Council (CRWC), acting as the lead partner with the Confederated Tribes of the Warm Springs, Crooked River Weed Management Area, Crooked River central Ditch company, Oregon Department of Fish and Wildlife, Oregon Watershed Enhancement Board, The City of Prineville, Portland General Electric, and the Crook County Soil and Water Conservation District, are currently operating in the Regional Conservation Partnership Program by the Natural Resource Conservation Service (NRCS). The active RCPP 1808, titled the Lower Crooked River Strategic Restoration, offers 28 NRCS conservation practices and funds engineered instream habitat restoration design plans that are ready to move to implementation stages. The two projects proposed to USBR by the council are part of this project.

The lower Crooked River is an important geography in the context of anadromous fish species reintroduction. Many millions of dollars have been expended to date supporting this effort to reestablish both Spring Chinook and middle Columbia steelhead (ESA-listed; Threatened). These two projects derive from state and federal recovery plans for the steelhead. They address degraded fish and wildlife habitat, water quality, and riparian plant communities in an area covering over 17 miles of the Crooked River in Central Oregon.

Proposed restoration activities include both instream and riparian restoration and are based on recommendations in numerous studies and planning documents published by partners including the Crooked River Watershed Council, Natural Resources Conservation Service (NRCS), and Oregon Department of Fish and Wildlife. Objectives of the project are to improve: (1) habitat for fish and wildlife, (2) water quality, and (3) agricultural productivity. In addition, the project will (4) reduce the threat of regulatory enforcement associated with the Federal Endangered Species Act and compliance with non-point source impacts from agriculture under Sections 303 and 319 of the Federal Clean Water Act, managed with regulatory oversight in Oregon by the Oregon Department of Agriculture Water Quality Management Program.

The Silva Ranch project is located adjacent to the Land Trust's Ochoco Preserve, where we are currently implementing a stream restoration project that involves both McKay and Ochoco Creek

Deschutes Land Trust

210 NW IRVING AVENUE, SUITE 102
BEND, OREGON 97703
OFFICE: (541) 330-0017
DESCHUTESLANDTRUST.ORG



CONSERVATION. COMMUNITY. CARING FOR THE LAND.

confluence zones with the Crooked River. The Silva Ranch project seeks to improve stream and riparian habitat on the mainstem Crooked River as part of the lower Crooked River Strategic Action Plan which addresses the entire 19-mile valley river reach. The design includes riparian buffer and wetland, side channel creation and enhancement, large wood structures, and bank restoration to reduce fine sediment inputs.

The Huston Ranch Improvements project seeks to improve stream and riparian habitat on the lower Crooked River as well, and include such features as riparian buffer restoration, side channel and alcove creation and enhancement, engineered log jams, and bank restoration.

The Land Trust supports the Crooked River Watershed Council's application and use of funds consistent with their proposal to the Bureau of Reclamation's WaterSMART grant program.

Sincerely,

Natasha Bellis
Conservation Director





Bureau of Reclamation
Water Resources and Planning Office
Mail Code: 84-51000
P.O. Box 25007 Denver, CO 80225

March 13, 2023

Dear Review Committee,

The Deschutes River Conservancy (DRC) is a non-profit conservation organization based in Bend, Oregon. The DRC's mission is to restore streamflow and water quality in the Deschutes Basin using collaboration and consensus.

The DRC supports the Crooked River Watershed Council's application to the Bureau of Reclamation's WaterSMART Environmental Water Resources Project funding to support two restoration projects in the lower Crooked River Watershed.

The lower Crooked River is an important geography in the context of anadromous fish species reintroduction. Many millions of dollars have been expended to date supporting this effort to reestablish both Spring Chinook and middle Columbia steelhead (ESA-listed; threatened). These two projects are supported by state and federal recovery plans for the steelhead. They address degraded fish and wildlife habitat, water quality, and riparian plant communities in an area covering over 17 miles of the Crooked River in Central Oregon. They are also included in a NRCS Regional Conservation Partnership Plan that CRWC is implementing with partners.

Proposed restoration activities include both instream and riparian restoration and are based on recommendations in numerous studies and planning documents published by partners including the Crooked River Watershed Council, Natural Resources Conservation Service (NRCS), and Oregon Department of Fish and Wildlife. Objectives of the project are to improve: (1) habitat for fish and wildlife, (2) water quality, and (3) agricultural productivity. In addition, the project will (4) reduce the threat of regulatory enforcement associated with the Federal Endangered Species Act and compliance with non-point source impacts from agriculture under Sections 303 and 319 of the Federal Clean Water Act, managed with regulatory oversight in Oregon by the Oregon Department of Agriculture Water Quality Management Program.

The Silva Ranch project is located adjacent to a large restoration project currently being implemented that covers both McKay and Ochoco Creek confluence zones with the Crooked River. The Silva Ranch project seeks to improve stream and riparian habitat on the mainstem Crooked River as part of the lower Crooked River Strategic Action Plan

which addresses the entire 19-mile valley river reach. The design includes riparian buffer and wetland, side channel creation and enhancement, large wood structures, and bank restoration to reduce fine sediment inputs.

The Huston Ranch Improvements project seeks to improve stream and riparian habitat on the lower Crooked River as well, and include such features as riparian buffer restoration, side channel and alcove creation and enhancement, engineered log jams, and bank restoration.

Both these projects provide much-needed habitat and water quality benefits to this reach of the Crooked River and strengthen work that the DRC and other partners are engaged in to improve conditions for fish and wildlife.

The DRC supports and endorses the Crooked River Watershed Council's application and use of funds consistent with their proposal to the Bureau of Reclamation's WaterSMART grant program.

Sincerely,



Kate Fitzpatrick
Executive Director

kate@deschutesriver.org
www.deschutesriver.org