Application Name: Lostine Wetland and Side Channel Complex_CLONE

By: Nez Perce Tribe

Offering Type: Open Solicitation

Application Type: Restoration

OWEB Region: Eastern Oregon
County: Wallowa
Coordinates: 45.551468,-117.493612

Applicant:
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Budget Summary:
OWEB Amount Requested: $410,033
Total Project Amount: $464,828

Administrative Information

Abstract

Provide an abstract statement for the project. Include the following information: 1) Identify the project location; 2) Briefly state the project need; 3) Describe the proposed work; 4) Identify project partners.

The Lostine River is a tributary to the Wallowa River entering at River Mile (RM) 26. The project site is located just less than 2 miles southeast of Wallowa, Oregon on a private ranch that encompasses approximately 6,000 feet of the Lostine River and an estimated 1,500 feet of the Wallowa River and the associated left bank floodplain of both rivers.

Like many rivers in the region, the Lostine River has been channelized and leveed to accommodate agricultural and residential infrastructure. At this site, past modifications and land use management activities have included levee construction, floodplain grading, cattle grazing, irrigation development and riparian clearing. Consequently, this has resulted in ecosystem-scale degradation, which includes a simplified river channel, disconnected floodplain, narrowed riparian extent, reduction of off-channel rearing areas and reduced wetland area and function.

This project seeks to promote natural river and floodplain conditions by removing levees; reconnecting floodplain channels; and enhancing floodplain wetlands. Key site features will improve habitat and water quality including increased pool abundance; increased low-velocity off-channel alcoves and side channels; increased Large Woody Material (LWM) for mainstem habitat complexity; and a diverse mosaic of floodplain wetlands. These proposed enhancements will benefit existing populations of ESA listed Chinook, Steelhead, and Bull Trout, as well as reintroduced Coho Salmon, Pacific Lamprey, and a variety of other aquatic and terrestrial species.

Project partners include the Grande Ronde Model Watershed, Wallowa Land Trust and BPA.

Location Information

What is the ownership of the project site(s)?

❑*Public land (any lands owned by the Federal government, the State of Oregon, a city, county, district or municipal or public corporation in Oregon)*

✓*Private (land owned by non-governmental entities)*

Please select one of the following Landowner Contact Certification statements:

● I certify that I have informed all participating private landowners involved in the project of the existence of the application, and I have advised all of them that all monitoring information obtained on their property is public record.

❍ I certify that contact with all participating private landowners was not possible at the time of application for the following reasons: Furthermore, I understand that should this project be awarded, I will be required by the terms of the OWEB grant agreement to secure cooperative landowner agreements with all participating private landowners prior to expending Board funds on a property.

Please include a complete list of participating private landowners

Woody and Meghan Wolfe

❑*This grant will take place in more than one county.*

Permits

Other than the land-use form, do you need a permit, license or other regulatory approval of any of the proposed project activities?

● Yes

❍ No

For Details Go to Permit Page

I acknowledge that I am responsible for verifying applicable permits, licenses, and General Authorizations required for the project, and can update information at grant agreement execution.

✓*Yes*

Racial and Ethnic Impact Statement

Racial and Ethnic Impact Statement

❍ The proposed grant project policies or programs could have a disproportionate or unique POSITIVE impact on the following minority persons. (indicate all that apply)

❍ The proposed grant project policies or programs could have a disproportionate or unique NEGATIVE impact on the following minority persons. (indicate all that apply)

● The proposed grant project policies or programs WILL HAVE NO disproportionate or unique impact on minority persons.

Insurance Information

❑*Working with hazardous materials (not including materials used in the normal operation of equipment such as hydraulic fluid)*

❑*Earth moving work around the footprint of a drinking water well*

✓*Removal or alteration of structures that hold back water on land or instream including dams, levees, dikes, tidegates and other water control devices (this does not include temporary diversion dams used solely to divert water for irrigation)*

❑*Applicant's staff or volunteers are working with kids related to this project (DAS Risk assessment tool not required, additional insurance is required)*

❑*Applicant's staff are applying herbicides or pesticides (DAS Risk assessment tool not required, additional insurance is required)*

Additional Information

❑*This project affects Sage-Grouse.*

Problem Statement

Describe the watershed problem(s) that this restoration project seeks to address.

This proposed project is located on a private ranch adjacent to the Lostine River, Wallowa County, Oregon. The property is a family run Century farm. The current parcel was purchased in 2004 and within just over a decade's time has been enrolled in two separate permanent easements with the Wallowa Land Trust measuring 188 and 266 acres respectively. Since that time all irrigation practices have been converted from flood to sprinkler utilizing some of the first pivot systems in the lower Wallowa valley. The landowner has also agreed to a long-term late season lease and began incorporating cover crop rotations and fallow methodologies leaving more water in-stream during crucial summer months. The majority of work in this proposed project location will occur within the footprint of the second easement, due west of the Lostine river. The landowner, Land Trust, and project partners share a long term vision involving the restoration of fisheries, terrestrial, and wetland habitats. The partnership seeks to achieve this through the utilization of less agriculturally productive ground. We seek to restore or create habitat where it can be beneficial to a host of species including ESA listed Chinook salmon, steelhead, Bull trout, coho salmon, lamprey, Columbia spotted frog, Long-billed Curlew, and others. In line with the above mentioned easements, the landowner has taken land not irrigated by a new upgraded pivot system out of production and begun working with ODFW to create an intact wildlife migration corridor and peripheral habitat.

The ESA Recovery Plan for Northeast Oregon Snake River Spring and Summer Chinook Salmon and Snake Basin Steelhead Populations (NEOR Recovery Plan), the Grande Ronde Subbasin Plan (GRSBP), the Wallowa Atlas restoration prioritization process (Wallowa Atlas), and the Wallowa County Salmon Habitat Recovery Plan (WCSHRP), all identify this reach of the Lostine River as deficient for habitat quantity and quality; impaired for water quality; and lacking in stream complexity, and floodplain connectivity. The NEOR Recovery Plan suggests that improving access to habitat and restoring degraded habitat will benefit Northeast Oregon Snake River spring/summer Chinook salmon and steelhead during spawning and rearing life stages. Achieving population viability, habitat restoration focusing on increasing habitat complexity, reconnecting floodplains, improving riparian vegetation, increasing summer flows, and decreasing sediment input are essential. The lower Lostine River corridor, where this project is located, is listed as a priority area for these restoration actions.

Additionally, the project area hosts known Columbia Spotted frog breeding sites. Habitat degradation and fragmentation through past and current influences of livestock grazing and agricultural production are major contributors to their decline. A 1997 survey conducted in Wallowa County revealed twelve known breeding sites county wide. Since the inception of the first easement in 2011 a few breeding sites were identified in the project area and are known to be increasing, with the property currently hosting nine breeding sites (see attached map). These sites are monitored annually by ODFW and Wallowa Land Trust staff and will be avoided during construction to minimize impact or injury. The creation of new breeding and rearing sites in emergent wetland and adjacent side channel areas will further protect and allow for the proliferation of this crucial indicator species.

Declines in beaver populations have also contributed to the loss of suitable habitat for spotted frogs and salmonids. Beaver play a major role in the creation of small pools with slow-moving water that function as habitat for frog reproduction, and juvenile salmonid rearing, as well as the creation of wet meadows that provide foraging habitat and protective vegetation cover for a host of sensitive species (St. John 1994). This project seeks to restore floodplain and side channel connectivity, hyporheic exchange and the creation of adjacent emergent wetland. If deemed appropriate by the stakeholder team, beaver reintroduction or structures promoting re-colonization may be utilized.

How have past or current land management practices contributed to the problem?

The channelization of the river to accommodate agricultural and residential infrastructure has resulted in a largely disconnected floodplain and associated historical side channel network. This disruption of natural riverine processes and function also reduced valuable juvenile salmonid rearing habitat which is already inadequate throughout the Wallowa-Lostine River corridor. As identified in several subbasin plans and assessments, emergent wetland and juvenile salmonid rearing are limited in the project reach. Agriculture in and adjacent to the floodplain leads to the conversion of natural wetland habitat to crop land reducing the hyporheic exchange throughout the

floodplain which is crucial to regulating stream temperatures and enhancing flow.

Based on aerial photographic interpretation, topographic surveys, LiDAR data and professional judgement, it is clear the Lostine River, at this location, is naturally transient through lateral migration. However, between 1994 and 2017, the channel migration has been restricted to a maximum lateral extent of approximately 80 feet despite an approximate floodplain width of 1,500 feet. In contrast, the segment of the Wallowa River owned and managed by Oregon Department of Fish and Wildlife (ODFW), immediately downstream of this site, has migrated up to 750 feet in the same time frame. Similarly, the Lostine River from the fish weir to the confluence has maintained a total channel length (including accessible side channels) of approximately 1.3 miles per mile of valley length compared to up to 3.4 miles of channel per mile of valley length in the river segment below the confluence. Additionally, the mature cottonwood overstory riparian area comprises approximately 25 percent of the accessible floodplain in the project reach compared to about 70 percent in the reach below the confluence.

Project History

Continuation - Are you requesting funds to continue work on a project previously funded by OWEB where that work did not result in a completed project?

● Yes
❍ No

Provide OWEB Grant #(s)

219-5018-16328

What was completed with previous OWEB grants?

Work completed to date includes longitudinal profile surveys, Basis of Design Report, 80% designs, engineered cost estimate, Section 106 Cultural Review, Joint Permit Application, and ESA Section 7 Consultation.

Why is additional OWEB funding needed?

We are requesting funds to complete project implementation, including all necessary materials, and equipment, and construction oversight.

Resubmit - Have you submitted, but were not awarded an OWEB application for this project before?

❍ Yes
● No

Phased - Is proposed work in this application a phase of a comprehensive watershed restoration plan or project?

❍ Yes
● No

Plans and Salmon

Is the proposed restoration activity(ies) identified in a local assessment or other plan?

● Yes
❍ No

Provide name of local plan, Watershed assessment or other locally relevant document.

The Wallowa Atlas restoration prioritization process (Wallowa Atlas), and The Wallowa County Salmon Habitat Recovery Plan.

Will this project benefit salmon or steelhead?

● Yes
❍ No

✓Snake River Basin - Steelhead
✓Lower Columbia River - Coho Salmon
✓Snake River Spring/Summer-run - Chinook Salmon

How will the resulting restoration project benefit salmon or steelhead or their habitat?

The ESA Recovery Plan for Northeast Oregon Snake River Spring and Summer Chinook Salmon and Snake Basin Steelhead Populations (NEOR Recovery Plan), the Grande Ronde Subbasin Plan (GRSBP), the Wallowa Atlas restoration prioritization process (Wallowa Atlas), and the Wallowa County Salmon Habitat Recovery Plan (WCSHRP), all identify this reach of the Lostine River as deficient for habitat quantity and quality; impaired for water quality; and lacking in stream complexity, and floodplain connectivity. The NEOR Recovery Plan suggests that improving access to habitat and restoring degraded habitat will benefit Northeast Oregon Snake River spring/summer Chinook salmon and steelhead during spawning and rearing life stages. Achieving population viability, habitat restoration focusing on increasing habitat complexity, reconnecting floodplains, improving riparian vegetation, increasing summer flows, and decreasing sediment input are essential. The lower Lostine River corridor, where this project is located, is listed as a priority area for these restoration actions.

Within the project reach there are some areas where high-flow channels, waterward of the confining levee, offer a template of what ideal habitat conditions could be. These template high-flow channels cut through the forested riparian area and have abundant overhead cover, shade, and LWM structures. The intent is to expand these template conditions, landward of the current levee, by allowing the river access to the broader floodplain and relic channels already within it. Further, by simply providing the river access to the floodplain, true floodplain restoration can be achieved at an ecosystem scale when riverine processes are reengaged. Once reestablished, those natural processes will shape and maintain the habitat, particularly benefiting juvenile salmon and steelhead.

The mainstem of the river also offers template conditions used in the design. Functional LWM is present in the channel and, in those locations, is creating a positive habitat response (e.g. pool formation and bar development). The major limitation is the confining levee is not allowing the river to respond laterally. While there are areas where multi- thread channels exist the proposed restoration actions would provide much more complexity and diversity. The combination of adding LWM and relaxing flows in the mainstem (through floodplain reconnection) will allow more naturally recruiting LWM to remain within the reach and continuously provide transient adjustments and habitat forming response.

Does the project address a restoration action identified in a regional assessment or recovery plan?

● Yes
❍ No

Regional Assessments or Recovery Plans
ESA Recovery Plan for Snake River Spring/Summer Chinook & Snake River Basin Steelhead
Northwest Power and Conservation Council Grande Ronde Subbasin Plan

For each plan chosen above, describe how your project is consistent with specific recovery/restoration actions cited in that plan.

The Grande Ronde Subbasin Plan (2004) prepared for the Northwest Power and Conservation Council includes an assessment of the condition of aquatic and terrestrial species and physical attributes, future conditions, and goals,
objectives and strategies to guide habitat recovery specific to the Grande Ronde. Section 5.2.4.2, Table 5-5 cites key habitat diversity, key habitat quantity, sediment, temperature, and flow as priority attributes for spring Chinook and steelhead for the Lower Lostine River. This table also lists the Wallowa - Lostine River as the highest priority watershed with the greatest potential for significant steelhead and spring Chinook population improvements (to both abundance and productivity) through restoration actions.

The ESA Recovery Plan for Northeast Oregon Snake River Spring and Summer Chinook Salmon and Snake Basin Steelhead Populations (2017) provides strategic guidance for the protection and restoration of Snake River spring/summer Chinook salmon and steelhead populations that occupy reaches of Oregon's northeast corner. Section 5.2.1.4, Table 5-11 and Section 5.3.1.3, Table 5-23 show the limiting factors for spring Chinook salmon and steelhead in the Lostine and Wallowa River systems. Of those factors listed, this project aims to benefit habitat quantity/diversity, water habitat quantity and quality, excess fine sediment (spring Chinook and steelhead) and habitat connectivity (steelhead). Section 6.2.1.3, Recovery Strategies states: In addition to instream flows, it is imperative to target restoration efforts on areas to increase habitat complexity, reconnect floodplains, and improve riparian conditions. These restorative efforts will improve spawning and juvenile rearing habitats. Priority areas include the lower Lostine River.

Does this project address one or both of the following:

✓ *Habitat needs for one or more Endangered Species Act-listed species and/or species of concern*
✓ *Concerns identified on 303(d) listed streams*
❑ *No*

Proposed Solution

Goal, Objectives, and Activities

State your project goal. A goal statement should articulate desired outcomes (the vision for desired future conditions) and the watershed benefit.

The primary goal of this project is to promote natural river and floodplain function by removing levees; reconnecting floodplain channels; and enhancing floodplain wetlands. When complete, key site features that will improve habitat and water quality will include increased pool abundance; increased low-velocity off-channel alcoves and side channels; increased Large Woody Material (LWM) for mainstem habitat complexity; and a diverse mosaic of floodplain wetlands. The project seeks to minimize disturbance through “light-touch” construction methods to maintain existing mature on-site vegetation.

List specific and measurable objectives. Objectives support and refine the goal by breaking it down into steps for achieving the goal. (NOTE: If you quantify your objectives, ensure all numbers match the metrics listed in your selected habitat types.) Provide up to 7 objectives.

Objective #1

Objective

1) Increase mainstem habitat complexity through large wood placement.
2) Increase off-channel habitat through alcove creation and side channel wood placement.
3) Construct preferential flow paths to encourage floodplain interaction and connection.
4) Breach levees in key locations at pilot channel inlets and outlets.
5) Create and enhance wetlands in the floodplain through floodplain inundation using vertical post arrays.
6) Improve riparian vegetation species composition and distribution.

Describe the project activities. Activities explain how the objective will be implemented.

Activities 1-4 will all utilize an appropriate sized excavator conducive to completing the activity while minimizing impact.

1) The contractor will place a total of 72 pieces of wood between 30 and 40 feet long, with a DBH of 18 to 24 inches. 5 large apex jams pinned with piles at 10 foot minimum embedment and 9 small apex jams pinned with piles at 5 foot minimum embedment and 2 flow deflection jams pinned with piles at 10 foot minimum embedment will be installed in the mainstem.
2) The contractor will excavate 3 alcoves (527 CY).
3) The contractor will construct preferential flow paths to encourage floodplain interaction and connection through activation of 5 pilot channels, increasing flow entering the floodplain from 4 to 82 cfs, and floodplain inundation by 24% at the 1- year recurrence discharge.
4) The contractor will selectively breach the levees in key locations, at all inlets and outlets of the 5 pilot channels, to allow main channel flows above 1-year flow events to enter pilot channel for a total of 576 CY of levee excavation/removal.
5) Existing wetlands will be created and enhanced by the contractor through a combination of actions, including levee breaching, installation of 29 vertical post arrays driven a minimum of 4 feet deep and 14 pieces of habitat wood surface placed throughout side channels and floodplain, resulting in a subsequent floodplain inundation from 41 to 51 acres at the 1-year recurrence discharge.
6) Once Reed Canary Grass (RCG) sod is scalped and removed, seeding and planting of native herbaceous species capable of competing with RGG along with dense planting of native shrubs and trees. Riparian vegetation species composition and distribution will be enhanced by the contractor planting 530 drummond willow [Salix exigua] cuttings and 325 Nebraska sedge [Carex nebrascensis] plugs within the wetland zone, 530 coyote willow

[Salix drummandiana] cuttings within the lower riparian transition zone and 100 black cottonwood [Polulus trichocarpa] cuttings within the upper riparian transition zone, in addition to seed, fertilizer and mulch being applied to 1.6 acres of wetland and 2.4 acres of upland within the project area during plant dormancy in the fall of 2021. All stake plantings will be installed to depths such that the bottom of the stem intercepts shallow groundwater. Additionally, stakes will be between ¾- and 3-inch-diameter and be of sufficient length to extend at least 3 feet above the ground surface. Cuttings planted immediately after or during the construction period will be soaked for at least 24 hours prior to installation. Browse pressure is likely at this site so cuttings should be installed relatively densely. Owing to the anticipated flows throughout the revegetated areas, browse fencing is not practical and not likely to be effective.

List the major project activities and time schedule for each, including post project implementation.

Element	Description	Start Date	End Date
Large Wood Placement	Large apex wood jams will be strategically placed in the mainstem and small apex wood jams will be placed at the inlets of each pilot channel and an alcove. Flow deflection jams will be installed in association with 2 of the 3 alcoves.	7/2021	8/2021
Alcove Creation and Habitat Wood Placement	3 alcoves will be excavated along the margin of the mainstem. Single log habitat wood will also be placed throughout the side channels.	7/2021	8/2021
Side Channel Enhancement	A minimal amount of excavation will be conducted to connect the mainchannel to existing historic side channels activating preferential flow paths at the 1-year recurrence discharge and above.	7/2021	8/2021
Levee Breaching	The levee will be breached at the inlets and outlets of 5 pilot channels in locations select locations that will minimize disturbance to existing mature riparian vegetation.	7/2021	8/2021
Riparian and Wetland Seeding and Planting	A combination of seeding/planting of sedge and tree species will be planted in all disturbed areas throughout both the wetland and riparian areas of the project site. This revegetation will aim to replace and enhance existing vegetation.	8/2021	11/2021
Vertical Post Array Installment	Vertical post arrays will be driven in throughout both the side channels and one of the alcoves to increase floodplain inundation and hyporheic exchange.	7/2021	8/2021

Element	Q3 2021	Q4 2021
Large Wood Placement		
Alcove Creation and Habitat Wood Placement		
Side Channel Enhancement		
Levee Breaching		
Riparian and Wetland Seeding and Planting		
Vertical Post Array Installment		

Habitat Types

In which habitat type(s) are you proposing to work?

✓*Instream Habitat: below the ordinary high water mark (includes in-channel habitat restoration, bank stabilization, flow, fish screening, and fish passage) -- Details will follow.*

✓*Riparian Habitat: above the ordinary high-water mark of the stream and within the stream's floodplain. -- Details will follow.*

❑*Upland Habitat: above the floodplain and improves native habitat and watershed function.*

✓*Wetland Habitat: land or areas covered, often intermittently, with shallow water or have soil saturated with moisture. -- Details will follow.*

❑*Estuarine Habitat: tidally influenced areas.*

Instream Habitat

Select all applicable Instream categories.

❑**Bank stabilization**

❑**Fish passage improvement**

❑**Fish screening project**

❑**Instream Flow**

✓**Instream habitat restoration**

Select all the actions you propose to implement to address the problem.

✓*Placement of materials in channel*

Does the proposed project follow:

❑*ODFW Guidelines*

✓*NOAA Guidelines*

❑*Other*

What types of instream habitat materials are you proposing to install? (select all that apply)

✓*Large wood*

Number of structures.
7

Average number of logs per structure.
4

Average length of logs per structure (feet)
34

Average diameter of logs per structure (feet)
2

❑*Boulders*

✓*Combination log/boulder*

Number of structures
9

Average number of logs per structure.
3

Average length of logs per structure (feet)

38

Average diameter of logs per structure (feet)
2

Average number of boulders per structure.
6

Average size of boulders per structure (feet)
2

❑*Other materials: Materials that stabilize the streambed*

✓*Channel reconfiguration and connectivity, including alcoves and side channel reconnection*

What type(s) of change are you proposing to the channel configuration and connectivity?

Large wood placement –
Large apex jams will be installed with pilings within the main channel at five locations with the intent to split flow and help divert water into the pilot channels during high-flow events. These wood structures will include an excavated scour hole, forming a pool type feature upstream of the jam, while creating a mid-channel gravel bar downstream of the structure. These large jams will create diverse habitat and gravel conditions in the main stem, and promote and maintain side channel formation.

Small apex jams will incorporate both logs and ballast boulders and will be placed in the banks downstream of the pilot channel inlets, providing stability to the inlet while providing habitat complexity during high-flow events. These jams will help create mid-stream gravel bars, and promote side channel development and maintenance. As the primary mechanism for forming anastomosing channel systems, they will also create diverse habitat and gravel conditions for fish. It is expected that these structures will increase water surface elevation under a range of discharges and help aggrade bed material by expanding existing lateral bars.

Flow deflection jams will be pinned with pilings and located specifically at the alcove locations. These structures are designed to stabilize the alcoves while providing diverse aquatic habitat and complexity.
Habitat wood will be placed as individual pieces throughout the proposed pilot channels. This wood mimics what is already observed in the system, while providing complex habitat during high-flow events.

Alcove creation –
Three alcoves will be installed on the mainstem margins to increase low-velocity off-channel habitat. The downstream most alcove will be designed with an inlet and outlet that will flush and maintain the alcove at higher flows. All alcoves will be excavated and will function in concert with wood structures to create and maintain the proper depth and conditions needed for zero-velocity refugia.

Levee breaching –
The existing levee will be opened up at select locations where there are breaks in the mature riparian vegetation, so as to minimize impacts. These breaches will enable the river, above 1-year flows, to enter and exit the pilot channels, enabling floodplain reconnection to the river.

Side channel enhancement –
At the location of the levee breaches, five pilot channels will be excavated to the minimal extent possible to allow historic channel scars on the floodplain to be inundated with water. Along with abundant existing woody debris these preferential flow paths will create off-channel high-flow refugia for fish and allow for floodplain inundation and hyporheic exchange.

Vertical post array installation –
A total of 29 vertical post arrays will be driven in throughout the floodplain channels and one alcove. These structures will mimic functionality of floodplain woody vegetation, creating backwater conditions and further increasing floodplain inundation and exchange of groundwater.

Acres off-channel or floodplain habitat connected
28

Number of pools created/added
14

❑*Spawning gravel placement*
❑*Beaver reintroduction*
❑*Non-native plant control*
❑*Nutrient enrichment*
❑*Animal species removal*

Is the primary purpose of the instream habitat restoration treatment(s) to address water quality limiting factors?
❍ Yes
● No

Total miles of stream to be treated with all instream habitat restoration treatments
0.85

❑**Stockpiling logs**

Riparian Habitat

Select all applicable Riparian categories.

❑**Riparian road activities**
❑**Fencing and other materials for habitat protection**

✓**Vegetation establishment or management**

Select all the actions you propose to implement to address the problem.

✓*Planting*

For Details Go to Plant Page

✓*Non-native plant control*

Specify species

Reed Canary Grass and others if identified.

Treatment(s) to be applied

✓*Mechanical (cutting, mowing, girdling, etc.)*

❑*Chemical (pesticides, fungicides, etc.)*

❑*Biological (predators, herbivores, pathogens, etc.)*

Acres to be treated

4

❑*Prescribed burnings, stand thinning, stand conversions, silviculture*

❑*Juniper treatment*

❑**Livestock management**

❑**Debris and Structure Removal**

Is an objective of the riparian treatment(s) to address water quality limiting factors?

❍ Yes

● No

Total linear stream miles to be treated.

0.34

Total riparian acres to be treated.

0.78

Left streambank miles to be treated.

0.32

Right streambank miles to be treated.

0.02

Wetland Habitat

Are you working in artificial or historic wetland habitat? (select one or both)

❑*Artificial wetland*

✓*Historic wetland*

Select all applicable Wetland categories.

❑**Wetland road activities**

✓Channel modification including creation

Type of modification to channel

Currently throughout the project reach, there is a considerable amount of high-quality and diverse side channel habitat inside the levee that provides exceptional juvenile rearing conditions between approximately 150 cfs and the 1.01 recurrence flow of 785 cfs. To allow for juvenile high flow refuge, floodplain inundation, and groundwater recharge, the existing levee along river left will be breached in select locations through excavating and grading the pilot channel inlets from approximately RS 43+00 to RS 20+00. By allowing mainstem water to access historical channel scars above the 1-year discharge, floodplain inundation will increase by 24% while flows entering the floodplain via pilot channels will increase from 4 to 82 cfs. at 1-year discharge and from 53 to 400 cfs. at 2-year discharge levels.

Small apex jams and flow deflection jams installed at the downstream side of each pilot channel inlet and alcove will assist in directing flows onto the floodplain during high-flow events along with providing inlet and alcove stability and habitat complexity. Once on the floodplain, the water will be intercepted by vertical post arrays which will cause the above ground water and hyporheic water to mix, likely cooling water temperatures in the side channels.

Functional LWM is present in the channel and, in those locations, is creating a positive habitat response (e.g. pool formation and bar development). The limitation is the confining levee is not allowing the river to respond laterally so, while there are areas where the channel splits, more is possible and would provide much more complexity and diversity. The combination of adding LWM and relaxing flows in the mainstem (through floodplain reconnection) will allow more naturally recruiting LWM to remain within the reach and continuously provide transient adjustments and habitat forming response. Through the installation of large apex jams there will be more channel and habitat diversity through the creation of split flows, and creation of scour/pools as well as gravel sorting in the main channel.

Length of channel created or modified

0.27

Miles of wetland habitat treated

0.49

Acres of wetland habitat connected

7.53

✓Vegetation establishment or management

Select all the actions you propose to implement to address the problem.

✓*Planting*

For Details Go to Plant Page

❑*Non-native plant control*

❑Fencing and other materials for habitat protection
❑Structure removal/modification/installation
❑Nonstructural removal and placement protection

Total wetland acres to be treated:
0.72

Wrap-Up

Watershed Benefit

Describe the watershed or ecosystem function(s) that the project will address through the proposed restoration actions and the resulting benefits to water quality, native fish and wildlife habitat, and/or watershed health. Explain why the project is a priority for investment at this time.

Like many rivers throughout the region, the Lostine River has been channelized and leveed to accommodate agricultural and residential infrastructure. At this site, past modifications and land use management activities have included levee construction, floodplain grading, cattle grazing, irrigation development and riparian clearing. Consequently, this has resulted in ecosystem-scale degradation, which includes a simplified river channel, disconnected floodplain, narrowed riparian extent, reduction of off-channel rearing areas, and reduced wetland area and function.

The design engineer used aerial photography and LiDAR data to compare the project reach to the segment of river managed by the Oregon Department of Fish and Wildlife immediately downstream of the confluence of the Lostine and Wallowa Rivers. This analysis revealed that between 1994 and 2017 the less confined area below the confluence has laterally migrated up to 750 feet, while the upper reach remained largely locked in place between the levees. Similarly, the Lostine River from the fish weir to the confluence has maintained a total channel length (including accessible side channels) of approximately 1.3 miles per mile of valley length compared to up to 3.4 miles of channel per mile of valley length in the river segment below the confluence. Additionally, the mature cottonwood overstory riparian area comprises approximately 25 percent of the accessible floodplain in the project reach compared to about 70 percent in the reach below the confluence.

Despite the impacts that have occurred, the site still has considerable potential for reestablishing natural riverine/floodplain processes and associated habitats those processes create and maintain. Physical attributes of the site that make it a high priority for restoration include:

A relatively robust forested riparian area dominated by large cottonwoods along the mainstem corridor (left bank) at widths up to 350 feet.

Relic side channels still exist within the floodplain that can be incorporated into the design and—in some of those channels—habitat structures such as fallen logs, are already present.

Floodplain wetlands are present, albeit in somewhat of a degraded state.

Agriculture use (grazing and crop production) have ceased throughout he project area and easements are in place to protect the restoration investment.

It is contiguous with the ODFW highly functioning river/floodplain property downstream.

Public Awareness

Does this proposed project include public awareness activities?

❍ Yes
● No

Design

Were design alternatives considered?

● Yes
❍ No

Describe the design alternatives that were considered and why the preferred alternative was selected.

Since its inception, this design has been guided by an overarching desire to achieve a "light touch" with minimal disturbance while maximizing natural riverine processes and floodplain connection. As a result of the 30% design review with project partners including members of the Atlas Implementation Team and BPA RRT, several modifications were made. Initially the project included several additional side channels and LWM structures up to 2,700 ft upstream of the weir on both the left and right side of the river. Due to feedback from the landowner, who expressed a desire to exclude work on river right, and the potential complications with doing work upstream of the fish weir infrastructure, these features were removed prior to the 80% iteration.

At 30% design an irrigation return flow channel that enters the Wallowa River just the confluence on river left was incorporated with the intent to further expand the wetlands, and increase the quantity and quality of fish habitat. However, due to complexities involving the potential for fish entrapment, changes in the return flow channel alignment by the upstream landowner and a disproportionate cost/benefit to the project, this feature was also removed.

The design engineer also made some minor alterations to LWM quantities and placement to several mainstem structures, as well as modifications to one of the alcove features based on review team input and consensus.

Select the appropriate level of design for your project.

❍ No design is required.
❍ 10-30%: Conceptual design (evaluation of alternatives, concept-level plans, design criteria for project elements, rough cost estimates).
❍ 30-85%: Preliminary design (selection of the preferred alternative, draft plans, draft design report, preliminary cost estimates).
● 85-100%: Final design (final design report, plans, and specifications, contracting and bidding documents, monitoring plan, final cost estimate).

If work remains on the project's design, describe the work that remains to be done and when you expect to have it completed. If no design is required put "N/A"

Being that the project is currently at the 100% design stage and has successfully gone through BPA RRT review, few, if any changes remain prior to final design.

Describe the steps you will take to minimize adverse impacts to the site and adjacent lands during and after project implementation.

This project will adhere to all HIP conservation measures and guidelines coordinated through the BPA restoration review team (see plan set/specification for details), in which all required permits will be vetted through the regulatory agencies (NMFS, USFWS, SHPO/THPO, USACE, ODSL and ODEQ).

Construction will occur during the appropriate in water work window determined for this site by Oregon guidelines. This time frame will be designated to protect all ESA listed species for all life stages.

All temporary access roads and stream crossings will be installed in locations to achieve the least impact to existing mature riparian vegetation and will be removed/obliterated and reseeded following construction.

Prior to entering the site, all equipment will be cleaned according to permit requirements and conservation measures to reduce the potential spread of invasive/noxious weeds on site.

All main channel LWM structures have been designed to prevent impact to the adjacent property on river right.

Following construction the site will be restored and re-vegetated according to the planting plan (see planting plan for details.

Project Management

List the key individuals, their roles, and qualifications relevant to project and post project implementation. At a minimum include the following: project management, project design, project implementation, and project inspection.

Role	Name	Affiliation	Qualifications	Email	Phone
Sponsor/Project Manager	Kathryn Frenyea	Nez Perce Tribe DFRM	Kathryn has a B.S. in Fisheries Management and has worked extensively in eastern Oregon for fisheries agencies for nearly 20 years. She has 9 years or restoration implementation and project management experience.	kathrynf@nezperce.org	(541) 432-2506
Sponsor/Project sponsor	Montana Pagano	Nez Perce Tribe DFRM	Montana has a B.S in Fishery Resources. She has over ten years of experience working on various research and habitat projects in Oregon, Idaho, and Washington.	montanap@nezperce.org	(541) 432-2507
Project partner/Coordinator	Ian Wilson	Grande Ronde Model Watershed	Ian has been the Wallowa County Project Coordinator for the GRMW since August 2019. He has a B.S. in Fisheries and Wildlife with a fisheries concentration. He has 20 years of fisheries experience in eastern Oregon.	ianw@grmw.org	(541) 426-0389 Ext.54142

Project engineer	Jason Scott	Geoengineers	Jason has over 24 years of experience and completed over 60 habitat projects and nearly 15 stream and watershed assessments. He has advanced education in fluvial geomorphology , hydrology, sediment transport and fish population modeling.	jscott@geoengineers.com	(509) 953-4462

Optional Monitoring

OPTIONAL: Restoration Project Monitoring

✓ *Salmonid Monitoring*
✓ *Non-salmonid biological monitoring*
❑ *Water (quantity) flow monitoring*
❑ *Water quality monitoring*
❑ *Rangeland monitoring*
✓ *Onsite*
❑ *Downstream*
❑ *Upstream*
❑ *Upslope*

Will effectiveness monitoring be conducted for this project?

● Yes
❍ No

Please describe the monitoring activities and any additional sources of funding (amount and source) to support this effort.

Monitoring, to be conducted by the project sponsor unless otherwise stated, will include:
1) Snorkel surveys identifying species assemblages and age class estimates will be conducted pre-project in 2020 and approximately 1, 3, and 5 years post-construction.
2) As part of the snorkel surveys above, habitat data was collected pre-project in 2019 and will be collected again in 2020. Habitat surveys will be repeated approximately 1, 3, and 5 years after construction. In these assessments data collection includes: bankfull width, water conductivity, temperature and pH, channel geomorphic/habitat units, large woody debris, substrate, undercut banks, and photo points. Additionally, topographic and channel cross section data was collected during project design and will be taken again for the as-built survey post-construction.
3) Photo points will be taken in 2020 and then 1, 2 ,3, 6, 8, and 10 years post-implementation.
3) Aerial drone footage has been acquired by the GRMW pre-project in 2017, 2019, and 2020 and will be captured at a minimum 1 and 5 years following construction.
4) Chinook spawning ground surveys are and will continue to be conducted 3 times a year through the project reach for the foreseeable future.
5) Under the conservation easement agreement, Wallowa Land Trust (WLT) is obligated to monitor the project site annually, which is detailed in an annual report including 15 photo points.
6) WLT perform Columbia Spotted frog surveys every spring where they denote breeding sites and other anecdotal data.
7) WLT collaborates with the Wallowa County Vegetation Department in a multi-party annual weed treatment effort along the river corridor, including the project site.
8) In 2020, WLT cooperated with NRCS and the landowner to update a Rocky Mountain and Western Juniper management plan that will be ongoing.
9) A final report and post-implementation monitoring reports will be completed and submitted as per funding agency requirements.

Budget

Item	Unit Type	Unit Number	Unit Cost	BPA Funds	External Cash	External In-Kind	Total Costs
Salaries, Wages and Benefits							
Project Management (NPT Project leader) - Final Design, Construction	Match Lump Sum	100	$40.00	$0 *	$0	$4,000	$4,000
Project Management (NPT Bio II) - Final Design, Construction	Match Lump Sum	100	$35.00	$0 *	$0	$3,500	$3,500
Construction Observation (NPT Staff)	Hours	80	$40.00	$0	$0	$3,200	$3,200
Monitoring (Wallowa Land Trust staff) - Spotted frog, bird, and vegetation surveys; Photo points; Noxious weed surveys	Hours	240	$35.00	$0	$0	$8,400	$8,400
			Category Sub-total	$0	$0	$19,100	$19,100
Contracted Services							
Excavation (Pilot Channel 1)	Cubic yards	221	$20.00	$4,420 *	$0	$0	$4,420
Excavation (Pilot Channel 2)	Cubic yards	197	$20.00	$3,940 *	$0	$0	$3,940
Excavation (Pilot Channel 4)	Cubic yards	70	$20.00	$1,400 *	$0	$0	$1,400
Excavation (Pilot Channel 5)	Cubic yards	88	$20.00	$1,760 *	$0	$0	$1,760
Excavation (Alcove 1)	Cubic yards	375	$20.00	$0 *	$7,500	$0	$7,500
Excavation (Alcoves 2 and 3)	Cubic yards	152	$20.00	$0 *	$3,040	$0	$3,040
Haul Spoils off-site	Cubic yards	1103	$16.00	$17,648 *	$0	$0	$17,648
Mobilization and Demobilization - Lump Sum	Each	1	$45,000.00	$40,000 *	$5,000	$0	$45,000
Erosion and Sediment Control -Lump Sum	Each	1	$20,000.00	$15,000 *	$5,000	$0	$20,000
Environmental Protections - Lump Sum	Each	1	$7,640.00	$5,140 *	$2,500	$0	$7,640
Temporary Stream Diversion	Each	10	$3,000.00	$24,000 *	$6,000	$0	$30,000
Planting (Includes Cuttings and Sedge Mat Labor for Harvest and Installation)	Each	1575	$15.00	$23,625 *	$0	$0	$23,625
Clearing and Grubbing	Acres	1	$6,400.00	$3,900 *	$2,500	$0	$6,400
Seeding, Fertilizing and Mulching	Acres	6	$5,200.00	$31,200 *	$0	$0	$31,200
Construction Staking	Days	1	$4,000.00	$4,000 *	$0	$0	$4,000
Project Engineer Construction Observation	Days	10	$2,500.00	$25,000 *	$0	$0	$25,000
			Category Sub-total	$201,033	$31,540	$0	$232,573
Travel and Training							
			$0	$0	$0	$0	$0
			Category Sub-total	$0	$0	$0	$0
Materials and Supplies							
Large Wood Material (Type A - Large Apex Jam)	Each	5	$11,500.00	$57,500 *	$0	$0	$57,500
Large Wood Material (Type B - Small Apex Jam)	Each	9	$3,500.00	$31,500 *	$0	$0	$31,500
Large Wood Material (Type C - Vertical Post Array)	Each	29	$3,000.00	$87,000 *	$0	$0	$87,000
Large Wood Material (Type D - Flow Deflection Jam)	Each	2	$9,500.00	$19,000 *	$0	$0	$19,000
Large Wood Material (Type E - Floodplain Habitat Wood)	Each	14	$1,000.00	$14,000 *	$0	$0	$14,000

Riparian seed and plants (native seed mix, sedge plugs)	Each	1	$4,155.00	$0	$4,155	$0	$4,155
			Category Sub-total	$209,000	$4,155	$0	$213,155
Equipment							
			$0	$0	$0	$0	$0
			Category Sub-total	$0	$0	$0	$0
Other							
			$0	$0	$0	$0	$0
			Category Sub-total	$0	$0	$0	$0
			Modified Total Direct Cost Amounts	$410,033	$35,695	$19,100	$464,828
Indirect Costs							
OWEB Negotiated Indirect Cost Rate (greater than 10% but less than or equal to 15%)	0%			$0	$0		$0
			Total	$410,033	$35,695	$19,100	$464,828

* = OWEB funds excluded from indirect.

If the budget includes unusually high costs and/or rates, provide justification for those costs and/or rates.

If the budget identifies a contingency amount for specific line item(s) within the Contracted Services and Materials and Supplies budget categories, explain the specific reasons a contingency is needed for each line item. Contingencies are line-item specific and cannot be used for other costs.

Funding and Match

Fund Sources and Amounts

Organization Type	Name	Source Note	Contribution Type	Amount	Description	Status
Tribe	Nez Perce Tribe	Staff time, Project Oversight, Monitoring	In-Kind - Labor	$19,626	Staff time for project management and monitoring	Secured
Private organization	Wallowa Land Trust	Project Monitoring and Easement Management	In-Kind - Labor	$8,400	Annual Surveys	Secured
Federal	Bonneville Power Administration	Construction Funding	Cash	$268,573	Construction Funding	Pending
Fund Source Cash Total			**$268,573**	**Fund Source In-Kind Total**		**$28,026**

Match

Contribution Source-Type: Description	Amount
Nez Perce Tribe-In-Kind - Labor: Staff time for project management and monitoring	$19,626
Wallowa Land Trust-In-Kind - Labor: Annual Surveys	$8,400
Bonneville Power Administration -Cash: Construction Funding	$268,573
Match Total	**$296,599**

Do match funding sources have any restrictions on how funds are used, timelines or other limitations that would impact the portion of the project proposed for OWEB funding?

❍ Yes
● No

Do you need state OWEB dollars (not Federal) to match the requirements of any other federal funding you will be using to complete this project?

❍ Yes
● No

Does the non-OWEB cash funding include Pacific Coast Salmon Recovery Funds?

❍ Yes
● No

Uploads

Photos: Lostine Wetland and Side Channel Complex Site Photos.pdf **- Existing conditions**

Map: Lostine_Wetland_Side_Channel_OWEB_20200722.pdf **- Project location**

Federally Negotiated Indirect Cost Rate Plan: Indirect Cost Agreement - Nez PerceTribe FY 2020.pdf -

Risk Assessment: r-RAform_OWEB_Wolfeapp_July_20204.pdf -

Secured Match Forms: Final Match_Lostine Side Channel and Wetland_NPT_July272020.pdf -

Plant Page

Planting Questions

Relationship to other conservation programs

❑ *This project will use OWEB funds to increase the planting density on CREP acres.*

Planting Activities

Describe the current condition of the site(s) to be planted.

Along much of the riparian corridor the cottonwood overstory community is robust and highly functional. These areas are providing habitat for a variety of species, contributing to improved water quality and providing a source for naturally recruiting LWM. Although much of the mature riparian vegetation has been protected and allowed to flourish within an approximately 350 feet buffer adjacent to the river for several decades, floodplain wetlands and riparian overstory communities have been impacted outside of the fenced river margin and warrant restoration. The project area is being managed through multiple conservation easements that will protect the restoration investment and allows freedom to harness natural riverine processes to shape and maintain it.

Describe how you will prepare the site(s) prior to planting and how those activities are appropriate considering the site conditions described in the previous question.

One of the objectives of the project is to minimize disturbance through light-touch construction methods. Consistent with that objective we have minimized and isolated disturbance areas so areas needing revegetation are reduced. Additionally, proposed construction disturbance areas (i.e. pilot channel inlets) were selected, in part, based on their current disturbed condition. This limits potential impacts to mature riparian vegetation. However, construction related disturbance will be necessary to accomplish the overall project vision, and revegetation efforts will be necessary. Primary disturbance areas will be access routes, pilot channel inlets/outlets, and LWM structure locations. Three planting zones (upland, riparian, wetland) have been identified throughout the disturbed areas and revegetation species, size, and quantities are specific to each zone.

Reed Canary Grass (RCG) is prevalent throughout the floodplain, particularly in areas where the overstory canopy is limited. Owing to the RCG density throughout portions of the project area, revegetation success in wetland and riparian planting zones could be complicated by RCG recolonization. Therefore, seeding and planting should occur in late fall months at the onset of dormancy. In areas where RCG is currently prevalent, sod will be scalped and hauled off site or to an upland area prior to seeding and planting.

Replacing dense RCG stands with native vegetation is difficult and will require maintenance to achieve. The project purpose of increasing floodplain inundation extent and duration will help with control especially considering considerable scour is anticipated in the floodplain area.
Revegetation efforts will focus on seeding/planting with herbaceous species capable of competing with RCG (e.g. Nebraska sedge [Carex nebrascensis] or water sedge [C. aquatilis]) along with dense planting of native shrubs and trees.

Fill out the table below. Identify the vegetation communities you plan on planting in, the acres each vegetation community encompasses, and the density of your planting.

Vegetation Community	Acres	Density

Wetland and Riparian Zones	1.6	15 lbs/acre
Upland Zone	2.4	12 lbs/acre

Fill out the table below for each vegetation community listed in the table above, provide the common and scientific names of up to five plants that will be planted, the form(tree, shrub, grass), type of plant (bare root, cutting, etc) and the planting timing.

Vegetation Community	Plants: Common Name	Plants: Scientific Name	Form	Type	Year	Month
Wetland and Riparian	Drummond Willow	Salix drummondiana	Tree	Cutting	2021	November
Wetland and Riparian	Coyote Willow	Salix exigua	Tree	Cutting	2021	November
Wetland and Riparian	Black Cottonwood	Populus trichocarpa	Tree	Cutting	2021	November
Wetland and Riparian	Nebraska Sedge	Carex nebrascensis	Grass	Plugs	2021	November
Wetland and Riparian	Nebraska Sedge	Carex nebrascensis	Grass	Seeds	2021	November
Wetland and Riparian	Tufted Hairgrass	Deschampsia cespitosa	Grass	Seeds	2021	November
Wetland and Riparian	American Sloughgrass	Beckmannia syzigachne	Grass	Seeds	2021	November
Wetland and Riparian	Basin Wildrye	Leymus cinereus	Grass	Seeds	2021	November
Upland	Orchardgrass	Dactylis glomerata	Grass	Seeds	2021	November
Upland	Tall Fescue	Festuca arundinacea	Grass	Seeds	2021	November
Upland	Perennial Ryegrass	Lolium perenne	Grass	Seeds	2021	November
Upland	Meadow Brome	Bromus biebersteinii	Grass	Seeds	2021	November
Upland	White Clover	Trifolium repens	Grass	Seeds	2021	November

Plant Stewardship

After the plantings are installed, will you conduct plant stewardship (“free to grow”)?

- ● Yes
- ❍ No

Are you requesting OWEB funds for plant stewardship activities?

- ❍ Yes
- ● No

Explain how you plan to carry out activities to help the plantings survive and grow over time.

The project will be inspected each spring annually for a minimum of 5 years post-implementation. Photo points, aerial photography, and annual on-site observations by the project sponsor will be utilized to determine the success of the plantings. Additional seeding and planting will be conducted as early as the fall 3 years post-implementation and on an as needed annual basis to obtain optimal ground coverage with desirable species. Locally sourced willows will be used for the cuttings.

Measures of Planting Success

Use the table below to explain how you will document and determine success for the plantings.

Vegetation Community	Parameter	Percentages
Wetland and Riparian	Percent Survival	70

If, in the course of the 3-5 years following planting, the success rate falls below your standard, what is your plan?

As stated above, the project sponsor will replant and/or reseed in any deficient areas as early as the fall 3 years post-implementation (2024), as needed.

Permit Page

Project Activity Requiring a Permit or License	Name of Permit or License	Entity Issuing Permit or License	Status
Large Wood Placement	HIP 401 Certification Removal-Fill 404 Section 106	NMFS & USFWS ODEQ ODSL COE SHPO	In progress
Alcove Creation	HIP 401 Certification Removal-Fill 404 Section 106	NMFS & USFWS ODEQ ODSL COE SHPO	In progress
Side Channel Enhancement	HIP 401 Certification Removal-Fill 404 Section 106	NMFS & USFWS ODEQ ODSL COE SHPO	In progress
Levee Breaching	HIP 401 Certification Removal-Fill 404 Section 106	NMFS & USFWS ODEQ ODSL COE SHPO	In progress
Vertical Post Array Installation	HIP 401 Certification Removal-Fill 404 Section 106	NMFS & USFWS ODEQ ODSL COE SHPO	In progress

Lostine Wetland and Side Channel Complex Site Photos

Figure 1. Wetland area located northwest of the hay shed (shown in background) near the downstream-most extent of the project reach.

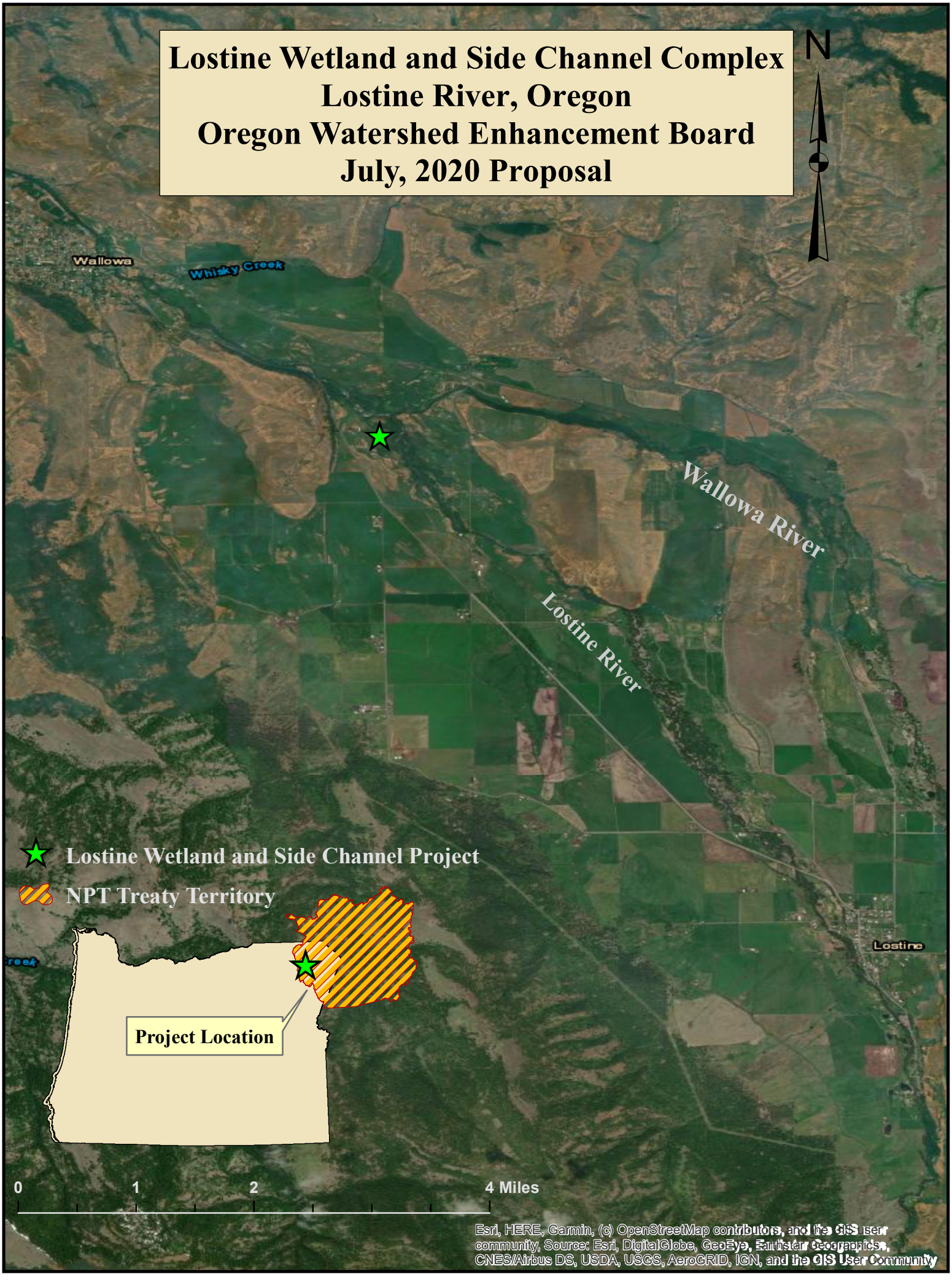
Figure 2. Wetland area located due east of the hay shed near the downstream-most extent of the project reach.

Figure 3. Photo of swales populated with wetland vegetation approximately mid-project reach. Lostine River riparian shown in background.

Figure 4. Naturally occurring side channel network feeding into the Lostine River located near the top end of the project reach.

Figure 5. Looking downstream at the Lostine River and riparian corridor from the upstream-most extent of the project reach. Person on left standing on existing levee.

Figure 6. Naturally occurring seasonal side-channel and large woody debris located near confluence at the downstream-most extent of the project reach.


Lostine Wetland and Side Channel Complex
Lostine River, Oregon
Oregon Watershed Enhancement Board
July, 2020 Proposal
N
Wallowa
Whisky Creek
Wallowa River
Lostine River
Lostine
Lostine Wetland and Side Channel Project
NPT Treaty Territory
Project Location
0
1
2
4 Miles
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community