BEAVER SLOUGH DRAINAGE DISTRICT

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Bryan Gillooly
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Oregon Department of State Lands
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RE: Winter Lake Phase III System Restoration and Maintenance Permit Application

Dear, Tyler and Bryan,

The Beaver Slough Drainage District (BSDD) is pleased to submit the Winter Lake Phase III system restoration and maintenance permit application on behalf of our landowners. This project is designed to substantively enhance hydrologic/ecologic function for wetlands, fish and wildlife, as well as improve working lands opportunities for our agricultural operations in the Winter Lake area into the future. Project design and development has been a collaborative effort between BSDD, Coos Soil & Water Conservation District Manager (CoosSWCD), and Oregon Department of Fish and Wildlife (ODFW).

The project objective is to balance landowner's desires for ecological uplift, habitat enhancement, and agricultural production in a mutually beneficial framework. We will create an interior channel network with appropriate water control structures that mimic a natural channel network to the fullest extent possible which will maximize connectivity and the necessary volumes of water that can be moved across the landscape. Expanded system reservoir capacity is needed to take full advantage of the BSDD main tide gates at the Coquille River, maximize fish passage opportunities, enhance fish/wildlife habitat, improve water quality, and provide drainage/irrigation for agricultural enterprises. Project implementation will allow the entire system to function at its full design capability.

Proposed changes to the channel networks will include:

> *1). Installing new/reconstructed channels with bank sloping rather than vertical wall banks, which reduces cattle hoof action effects, resulting in sedimentation of channels and allows greater vegetative recovery.*
> *2). Reconstructed/new channels will be constructed on grade. This provides a direct gravity driven pathway for sediments to export properly.*

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3). Culvert pipes will be replaced with sufficiently sized pipes to facilitate water movement that can accommodate tidal and flood pulse water volumes.
4). Culverts will be placed at appropriate elevations in order to accommodate channel invert grade sloping, fish use, and water/sediment transport.

The Coos SWCD and ODFW have completed the bulk of permit preparation and layout design planning for the project (in alignment with Oregon DSL wetlands rules, NMFS Tidal Area Restoration Programmatic, and USACE environmental criteria). The BSDD is confident that proposed design/layout as noted in the permit will exceed protective and ecological minimums for permitting of the project.

This is a complex system with various interrelated components and objectives which require a balance of active system management to achieve stakeholder goals to the greatest extent possible. Ongoing management of the completed project will be included in the adaptive management plan (AMP) that will both monitor performance with regard to the District Water Management Plan, as well as provide for necessary system adjustments over time. A key component for the AMP is to allow for maintenance as needed to ensure the system functions at full design capability. As designed, the system is expected to be self-maintaining. However, berm slumps, nutria damage, unexpected sediment accumulation, and vegetation issues need to be addressed in a timely manner in order to maintain habitat values, maximize system efficiency, and control operating costs.

The effectiveness of the entire system to achieve stakeholder (Landowner, Regulatory Agencies, Funders, and the Public Interest) goals and objectives is dependent on having consistent and ongoing capacity and operational capability to move water across the landscape throughout the entire year.

BSDD suggests the following framework for system operation and maintenance:

Channel Excavation & Maintenance Framework

1) The adaptive management process in concert with the District Water Management Plan provide the structure and oversight to operate and maintain the system perpetually.
2) Maintenance excavation is allowable to keep the channel network and capacity to design specifications and to maintain water quality and fish passage.
3) Excavated material would be thin spread (< 3.0 inches) as a component of an agricultural practice or removed to an upland location.
4) BSDD would be responsible for direct operational oversight of system maintenance activities within the following parameters.

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a. Individual landowner maintenance plans would be included in and support the BSDD annual maintenance plan.
b. Maintenance plans will include a location map, activity description, and a volume estimate.
c. The BSDD annual maintenance plan would be submitted to USACE and DSL no later than June 15 of the current year for review.
d. All work will be performed in the July 1 to September 15 work window.
e. All work will be performed within USACE/DSL/Tarp BMPs
f. In water work will be performed in a manner to minimize water flow and turbidity.
g. Emergency work will be carefully performed within existing parameters.
h. A qualified fisheries biologist will review the annual plan and provide necessary oversight.
i. BSDD will provide a post season maintenance activity report by the end of each calendar year.

We look forward to working with you to successfully complete the permitting process for this project.

Regards,

Fred R. Messerle

Beaver Slough Drainage District
District Manager
541.404.6105
bsdd.bos@gmail.com

Joint Permit Application

This is a joint application, and must be sent to all agencies (Corps, DSL, and DEQ). Alternative forms of permit applications may be acceptable; contact the Corps and DSL for more information.

Date Stamp

U.S. Army Corps of Engineers Portland District	Oregon Department of State Lands	Oregon Department of Environmental Quality
Action ID Number	Number	

(1) TYPE OF PERMIT(S) IF KNOWN (check all that apply)

Corps: ☐ Individual ☐ Nationwide No.: _____ ☐ Regional General Permit _____ ☐ Other (specify): _____

DSL: ☐ Individual ☐ GP Trans ☐ GP Min Wet ☐ GP Maint Dredge ☐ GP Ocean Energy ☐ No Permit ☐ Waiver

(2) APPLICANT AND LANDOWNER CONTACT INFORMATION

	Applicant	Property Owners (if different)	Authorized Agent (if applicable) ☑ Consultant ☐ Contractor
Name (Required)	Beaver Slough Drainage District Manager: Fred Messerle	Fred Messerle & Sons, Inc. Bridges Foundation (Luke Fitzpatrick	Fred Messerle
Business Name	Beaver Slough Drainage District	Everett-Ona Isenhart ranch, Inc. Laura Isenhart	Beaver Slough Drainage District
Mailing Address 1	60196 Old Wagon Rd.		60196 Old Wagon Rd.
City, State, Zip	Coos Bay, OR 97420		Coos Bay, OR 97420
Business Phone	541-404-6105		541-396-6879
Cell Phone			971-645-6634
Fax			541-824-0356
email	bsddbos@gmail.com		info@coosswcd.org

(3) PROJECT INFORMATION

A. Provide the project location.

Project Name
Winter Lake Phase III

Latitude & Longitude*
43.198183° -124.245289°

Project Address / Location	City (nearest) Coquille			County Coos
Township	Range	Section	Quarter / Quarter	Tax Lot
27	13W	20		1503
27	13W	27		400
27	13W	27		500
27	13W	28		400
27	13W	28		600
27	13W	28		700
27	13W	29		101
27	13W	29		103
27	13W	33		100
27	13W	33		200
27	13W	34		800

Brief Directions to the Site:

The Winter Lake Phase III project action area is located on private and state-owned floodplain pastures within the Beaver Slough Drainage District (BSDD and Coaledo Drainage Districts (CDD) wetlands to the South of North Bank Lane/Hwy 42 and west of Coquille, OR, on the historic China Camp and Beaver Creek floodplain (***Attachment A: Figures and Photos, Figures 1-4***).

B. What types of waterbodies or wetlands are present in your project area? (Check all that apply.)

☒ River / Stream	☐ Non-Tidal Wetland	☐ Lake / Reservoir / Pond
☒ Estuary or Tidal Wetland	☐ Other	☐ Pacific Ocean

Waterbody or Wetland Name**	River Mile	6th Field HUC Name	6th Field HUC (12 digits)
China Camp Creek and tributaries (Winter Lake)	21	Beaver Slough	171003050603

* In decimal format (e.g., 44.9399, -123.0283)
** If there is no official name for the wetland or waterbody, create a unique name (such as "Wetland 1" or "Tributary A").

C. Indicate the project category. (Check all that apply.)

☐ Commercial Development	☐ Industrial Development	☐ Residential Development
☐ Institutional Development	☑ Agricultural	☐ Recreational
☐ Transportation	☑ Restoration	☑ Bridge
☐ Dredging	☐ Utility lines	☐ Survey or Sampling
☑ In- or Over-Water Structure	☐ Maintenance	☐ Other:

(4) PROJECT DESCRIPTION

A. Summarize the overall project including work in areas both in and outside of waters or wetlands.

INTRODUCTION /OVERALL PROJECT DESCRIPTION:
Historically, the Coquille River valley floor contained extensive freshwater tidal wetlands, tidal channels, and non-tidal wetland habitats that are estimated to have once comprised over 12,000+ acres of prime fish and wildlife habitat (Benner 1992). Native salmonids, specifically coho juveniles, used these habitats heavily during fall/winter/spring months to feed and rear prior to smoltification. A significant percentage of those habitats were cleared, leveed, tidegated, and drained for agriculture in the late 19th - early 20th century, thereby substantially altering the land from its natural state as a freshwater tidal wetland complex into drained pasture used seasonally to year round for grazing and hay production.

The "Winter Lake" floodplain area south of North Bank Lane/Hwy 42S, and west of Coquille, OR, at over 1,806 acres, represents one of the largest contiguous land areas in the lower Coquille Basin with high potential for Oregon Coast (OC) coho overwinter habitat and high-quality pasture production. Approximately 1,295 acres within the Beaver Slough Drainage District (BSDD) are below elevation 8.0ft NAVDD 88, and thus below the highest measured tides. The project-area is upstream of saline influence at River Mile (RM) 21.5 in the Coquille estuary (***Attachment A, Figure 2***). All figures and photos referenced within this permit text can be found within ***Attachment A: Figures and Photos.*** The Beaver Slough Drainage District (BSDD) was formed in 1906-1907 and this collaboration provided the framework for initiating converting the forested tidal floodplain at the project area, which prior to agricultural development and installation of the linear canals and tidegates in 1908-1909, the lands were forested and contained a dense tidal channel network (Benner 1992). The Coaledo Drainage District (CDD) was formed thereafter and installation of a tidegate on Beaver Creek in the "Winter Lake" area west of the BSDD allowed for drainage of pastures on the west side of Beaver Creek.

From 2010 to 2017 the BSDD, Oregon Department of Fish and Wildlife (ODFW), and The Nature

Conservancy (TNC) developed restoration actions for a portion of lands within the BSDD. The plans focused on two projects (Phase I and II) within three management Units (***Attachment A*, *Figure 5-6***) of the BSDD. The "Winter Lake Phase I," project installed seven new tidegates to replace the previously existing undersized and top-hinged gates that had obstructed fish movements. Four 8.0ft corrugated metal culverts (CMP's) installed in the early 1990's were replaced with seven 10.0x8.0ft concrete box culverts at the interface of the BSDD floodplain with the Coquille River. Slide-gate style and side-hinged aluminum tidegates (***Attachment A, Figure 7-8***) were installed to provide a dual controllability. The Vertical Slideframe Style Tidegates (VSFTG) network is configured with both manual and remote access control. The new tidegates have the capacity to be operated with Muted Tidal Regulator (MTR) technology, whereby the tidegates can be opened to allow for tidal inflow to a desired set level, computer controlled, and linked to river/tidal level feedback. The new gates have increased the capacity for water movement into and out of the 1,700-acre BSDD by 300%.

Unit 2 lands are owned by the China Camp Gun Club and ODFW and account for 407 acres of the BSDD. The China Camp Gun Club lands are managed for summer pasture grazing and recreational duck hunting during winter months. The ODFW lands comprise 286 acres (northern portion of Unit 2) with the Gun Club accounting for the remaining 121 acres that extend south to the C3P tidegate in Unit 2. In 2018 the Unit 2 restoration project or "Winter Lake Phase II" was implemented and a total of 31,000ft of tidal channel were excavated as designed by Tetratech Engineering staff through coordination with ODFW and the BSDD in the 407 acres of Unit 2 (***Attachment A, Figure 9***). The main tidal channel upstream of the C3P tidegates in Unit 2 was designed with capacity that exceeds the four concrete box culverts and tidegates. This has allowed for full ability to serve water from the C3P tidegates to Unit 2 lands and provide juvenile coho and other native fish passage into the site as well as provide for pasture irrigation into Units 1 and 3 at appropriate elevations that tidal inflow will reach.

The Winter Lake C3P tidegate construction (Phase I) and tidal channel restoration in Unit 2 (Phase II) resolved hydrologic restriction that existed prior to the projects and is currently allowing for water management strategies that are designed to more closely mimic historical conditions in Unit 2. Hydrologic connectivity in Unit 2 is considered fully adequate following restoration in 2017-2018. The proposed Phase III project does not include any actions within Unit 2. However, interior culverts/channel networks within Units 1 and 3 (**Figures 5,6**) remained unchanged following completion of Phase I and II. These remaining 1,399 acres in Units 1 and 3 and CDD pastures (1,806 minus Unit 2) of Winter Lake, which have had no internal restorative actions to date upstream of C3P, suffer from rampant hydrologic discontinuity across the land area. The main drainage canals in Winter Lake were aligned East/West and North/South (***Attachment A, Figure 10***) rather than based on land elevations or natural flow paths. Overall these main canals are sufficient in capacity to provide proper hydrology for the new concrete box culvers and tidegates for Units 1 and 3. However, the interior pasture drainage channels were installed historically largely on property lines, pasture boundaries, and without concern for "microtopography."

The proposed "Winter Lake Phase III" project has been developed by a team of partners including Coos Soil and Water Conservation District (Coos SWCD), the ODFW, and the BSDD. The project is designed as both ecological restoration and agricultural improvement to complement the BSDD C3P tidegate replacement project completed in 2017 (Winter Lake Phase I) and the 2018 installation of 31,000 ft of restored natural tidal channel which was completed in Unit 2 (Winter Lake Phase II). The Phase III Project Proposal seeks to address hydrologic connectivity within BSDD Units 1 and 3 (1,700 acres) and two pastures, which are 62 and 44 acres respectively, in the Coaledo Drainage District (CDD) (***Attachment A, Figure 5***).

Winter Lake Units 1 and 3 have high inherent potential for fish production; however, their current hydrologic disconnection yields:

- **a).** Poor access for fish from existing canals into floodplains which are rich in macroinvertebrate food items when flooded; resultantly, there is limited potential for fish use of the floodplain for foraging.
- **b).** Few or no channels present across large portions of the floodplain land area to provide refugia for native fishes when floodwaters periodically recede, which results in high potential for mortality due to predation and stranding.
- **c).** Poor capacity for landowning ranchers to move irrigation water from the canals into pastures during summer months.

Winter Lake Phase III specifically proposes to replace 42 existing undersized culverts and associated old style

top-hinged tidegates with 38 new culverts and redesigned channels. The project actions are anticipated to maximize hydrologic connectivity in order to achieve a balance of fish/wildlife and agricultural (pasture) production.

NOTE: *Irrigation has been used by ranchers within the BSDD consistently over the past 100+ years through opening of the tidegates and allowing tidal inflow into pastures on high tide cycles. The new C3P tidegates installed in 2017, greatly enhanced irrigation inflow potential at the main tidegate network. Native fish have adapted to both tidal and floodwater inflow regimes. BSDD irrigation tactics utilize tidal inflow, which is a natural hydrologic pattern within native fish adaptive capacity. Native fish have used inherent adaptive genetic traits to react to tidal/floodwater cues that allow movement into floodplain habitats and retreat to channels following relatively short (6hr tidal cycles) inundation periods. Irrigation is implemented from mid-June to mid- September generally for the individual pastures over one or two days monthly. Coho juveniles are smolted and entering the ocean prior to the summer irrigation period. Salmonids including zero age coho are essentially absent from the BSDD canals and the mainstem Coquille River other than localized thermal refugia during summer months as canal and river temperatures have been measured as high as 80°F and 76° respectively. Resultantly, irrigation utilizing tidal inflow during summer is considered comparable with the natural life-history of native fish that are present. Additionally, native salmonid fishes are not likely to be present in high abundance during the months when irrigation is implemented within Units 1 and 3.*

PROPOSED PROJECT ACTIONS: ***ALL ASSOCIATED WORK BOTH WITHIN AND OUTSIDE OF WATERS/WETLANDS AND TOTAL GROUND DISTURBANCE***

There are no active streams generated or moving through the active work areas on project site.

Note: *The lands within the project area were Shrub/Scrub and Forested wetland historically with tidal inflow/outflow. The Phase III project is designed to provide a substantial net benefit increase in wetland function over current condition that fully offsets the impacts of work. The site is anticipated to be for the most part dry during the work period although there will be water in existing historical channels. Some non-salmonid fish may be present in low lying areas during construction although no coho or other salmonids will likely be present in channels and ponded water in pastures during July 1 to September 15th as the temperatures are known to exceed thermal lethal limits during summer months in these habitats.*

1. Installation of New HDPE Culverts

We will be replacing 38 individual culverts in Units 1 and 3, (see ***Attachment B "Project Actions," Sheet 1, pg. 16***) that connect pasture floodplain channels with canals. New culverts will be primarily HDPE materials as this material provides for maximized life expectancy in tideland soils (with possibility of installation of three Corrugated Metal Pipes). The interior pasture channel network culverts currently are substantively undersized, and the new culverts have been sized to accommodate appropriate inflow/outflow. This ***"Winter Lake Hydrologic Assessment"*** is located in ***Attachment C***. Sizing was based on:

a). The volumetric inflow/outflow capacity of the C3P project and previous ODFW and NMFS approvals for fish passage.

b). The precipitation hydrology for the "micro-watershed" pasture areas specifically associated with the individual culverts (Figure 12).

c). Culvert hydraulic capacity for a given culvert size, which was then paired to a, and b.

The overall BSDD Water Management Plan (DWMP) guides inflow/outflow into Units 1 and 3 through the C3P tidegate. This DWMP plan has substantive effects on the methodology for the hydrology within Units 1 and 3, which is fully discussed in the "*Winter Lake Phase III Hydrologic Assessment."* The **DWMP and Winter Lake Phase III Hydrologic Assessment** are located within ***Attachment C.***

2. Installation of New Water Control Mechanisms

We will install two styles of water control mechanisms on the on the new HDPE pasture channel and canal connection culverts that provide for a higher degree of control over previously used top-hinged wooden and flapper tidegates. These new structures will allow for an open culvert strategy during late fall and winter months maximizing fish access to pasture channels and floodplain habitats and they will provide for individual pasture irrigation tactics during summer months.

Water control structures that will be used shall consist of two styles (specific style based on individual site and landowner needs):

a). Side-hinged aluminum tidegates (***Attachment A, Figure 13***) with an additional arm that can be set in a manner for the tidegate to be managed fully open or closed as is the water management strategy.

b). Aluminum slide-gates (***Attachment A, Figure 14***) on adjustable worm drive hand wheel operated

shafts that allow for incremental degrees of door openness.

c). The BSDD and ODFW are in the process of developing a third louvered water control structure and seek the approval to install a single site as a prototype for testing.

3. Install New Bridge:

One new free-spanning 60ft railcar that is channel spanning (***"Winter Lake Phase III Project Actions" in Attachment B; Figures 15-18***) will be installed over the S.E. portion of the Unit 1 main canal (see ***Attachment A, Figure 15, 16*** for location of bridge). This bridge provides the landowner livestock management access point into the Messerle property from Hwy 42 ~1.0 miles west of the City of Coquille. This bridge will have appropriate approach sloping so as to minimize erosion. Riprap will be installed on banks to prevent inflow/outflow scour. The earthen streambanks provides the channel form and the location is generally low-energy hydrology, with the site subject to slow rising tidal inflow and outflow. Footer design will be a rock/fabric layered pattern with a railcar beam for the decking to rest upon (***Attachment A, Figures 17-18***). The bridge is designed to have fully sufficient capacity to provide for proper hydrologic connectivity and fish passage for all channels developed upstream of that location.

4. Construct On-Grade Tidal/Floodplain Channels:

NOTE: *(All channels proposed for construction are assumed to have the ecological productive capacity similar or equal to "Pasture Trenches" referenced in North Bank Access permit application (ODFW unpublished 2016).*

These channels will provide a greatly improved level of accessibility to the site for fish that has not been present since the interior pastures were originally bermed and drained in the early 1900's. Additionally the channels will allow for natural hydrologic regimes to the extent that is possible. The C3P tidegate ultimately controls water levels during low and moderate elevations and flows. The project is anticipated to improve water quality through:

a). Increased movement of water inflow/outflow and mixing. Elimination of stagnation of water where organic decomposition results in high levels of bioprocessed compounds, related to increased movement.

b). Improved thermal regimes resulting in decreased water temperatures during warmer months due to movement of water and elimination of shallow ponded areas where solar input is extreme. On-grade channels constructed to connect these low-lying areas in the floodplain will address this issue.

c). Greatly improved nutrient and energy cycling, which will result from increased inflow/outflow and movement of waters in winter through pasture stubble height vegetation prior to entering the main canals and Coquille River mainstem.

Channels will be constructed using an excavator. If soils/sod conditions are such that the excavator is likely to penetrate and sink, matting will be used. Spoils will be spread to the sides of channels to an average depth of 3.0 inches or end hauled to be used to assist with berm/road reconstruction if they meet particle specifications. Spoils will be spread at time of excavation or as channel segments are completed with the flat back of the excavator bucket and or a dozer. Standard dump truck equipment will be used where there is a need to end haul channel spoils to locations for berm repair (*see below*).

Channels will be constructed on a grade that meets the topography from mouth to terminus to provide for proper hydrologic inflow and outflow, long-term improved transport of sediments, proper fish ingress/egress, and irrigation capacity. The project is requesting permit approval to as well to install a total of 200 pieces of large woody debris, which at individual landowner discretion will be installed into strategic locations in channels on interval in order to provide additional ecological uplift for juvenile coho. Final channel layout trajectories on floodplain pastures will be based by individual site and coordinated agreement of SWCD, ODFW, the BSDD, and the landowner. All channel design is structured to meet the National Marine Fisheries (NMFS) Tidal Area Restoration Project (TARP) guidelines.

Primary/Large Conveyance Channels:

A total of 31,543 ft of Large channel with an avg depth 4.0ft in first 500ft; 3.0ft thereafter with 6.0 ft bottom width; Avg top width 18.0ft for the first 500ft; 21.0ft thereafter will be constructed to hydrologically connect the pasture floodplains of lands residing in Units 1 and 3 within the BSDD with canals to the Coquille River via the C3P tide gate (see ***Attachment A, Figure 19: Proposed Channel Enhancements map***). Channels mouth elevations will be set at canal junctions with an invert of either -0.5 to -1.0ft NAVDD 88 at connection point.

Large channels will be constructed with 1:1 side sloping (see ***Attachment A, Figure 20***, and ***"Winter Lake Phase III Project Actions" Attachment B, Sheets 2-17***). Skip Planting concepts will be used to increase ecologic uplift of large channels through planting of native ash and cottonwood trees (see ***Attachment A, Figures 21-23***, and ***Attachment B, Sheets 24-26***). Individual landowners have expressed that interior management fences will be beneficial to livestock operations. These fencing concepts for some parcels will be installed in a manner to augment protection of water quality and skip-style riparian planting will be done on large channels (**"Winter Lake Phase III Project Actions" Attachment B, Sheets 24-26**). Channels will be on-grade and provide the primary conveyance to supply inflow/outflow for Medium and Small Swale channels and water flow in the low-lying zones of the landscape as determined by LiDAR (***Attachment A, Figure 24-26***).

Medium Conveyance Channels:
A total of 36,146 ft. of Medium tidal/floodplain channel with an avg depth of 3.0ft in first 300ft; 2.5ft thereafter with 4.0 ft bottom width; avg top width 11.5ft for first 300ft 14.0ft thereafter (***"Winter Lake Phase III Project Actions" Attachment B; Sheets 2-17***); will be constructed connecting to the primary/large channel network. These will be on-grade and have been designed in the low- lying zones of the landscape as determined by LiDAR (***Attachment A, Figure 24-26***).

Small Swale Channels:
A total of 38,090 smaller swale type channels with an avg depth of 2.5ft in first 300ft; 1.5ft thereafter Avg width 8.0ft for first 300ft 9.5ft thereafter *(***"Winter Lake Phase III Project Actions" Attachment B; Sheets 2-17**); will be constructed on grade with side-sloping of 4:1 from connection point with Medium Size Conveyance Channels. Bottom width will be on average 2.0ft in width (***Attachment A, Sheets 2-17***). These channels will be at a depth that varies depending on the surrounding pasture elevations, however, are designed to provide fish ingress/egress to locations currently that have juvenile coho/salmonid stranding potential during the winter months and generate stagnate water areas during the summer that present risk for mosquito production. These will be on-grade and located in the low-lying zones of the landscape as determined by LiDAR (***Attachment A, Figure 24-26***).

5. Hydrologic Bulbs: At the endpoints of selected channels (***Attachment A, Figure 12***) the project will construct "hydrologic bulbs." These habitat improvement actions will:

- **a).** Provide areas of greater depth long distances within the pasture networks where native fish, e.g. coho can shelter and feed during winter months prior to floodwaters rising and allowing fish to feed on pastures.
- **b).** These habitat improvement structures will provide volumetric areas at endpoints where the hydraulic forces of inflow/outflow will flush minor sediment accumulations from the length of the channel network downstream.

6. Berm Repair:
No new berms will be constructed during the project. Existing internal berms are located along main canal pasture edges upstream of the C3P tidegate complex in within Units 1 and 3. These berms are essential to provide for winter and summer management strategies of water on the various individual landowner properties up to elevation 5.5ft NAVDD 88. Above that water level properties within Units 1 and 3 become connected as water overtops the berm network. Many of internal berms have been subjected to over 40yrs of rainfall, cattle, and general degradation since they received any substantial rehabilitative action in the 1960's and 1970's. Resultantly, the ability for these berms to provide isolation of individual pastures during irrigation events has been compromised by degraded sections where the berm height elevation is well below 5.5ft. Isolation of pastures is essential during summer irrigation events in order to allow for irrigation on incoming high tides in floodplain pastures, while maintaining select pastures dry in order for livestock to remain within the landscape vicinity. Berms will be repaired using channel excavated spoils from new channel construction locations, from hydrologic bulb construction locations or higher value soils obtained from closer to the Coquille River. An Excavator and Dozer methods will be used to complete all berm repair work. The bank sloping of the berms will be a maximum steepness of 1:1 on the canal slopes and <2:1 on the pasture approach side.
***NOTE**: Unit 2 berms are constructed to elevation 7.0ft NAVDD 88 and thus Unit 2 is not connected hydrologically until water is above elevation ~7.0ft*).

B. Describe work within waters and wetlands.

The Winter Lake Phase III project proposed actions within waters and wetlands:
NOTE: *All work for this project will occur below the highest measured tidal elevation of 9.0ft NAVDD88. Therefore, the project assumes that all lands within the project where work will occur are considered Section 10 jurisdiction under the U.S. Army Corps of Engineers (USACE) and thus were historically tidal and or currently are wetland. In that context with all lands under one of both jurisdictions no wetland delineation was completed, and all designs employed BMP's appropriate for wetland habitats.*

1). Replacement of 38 of the existing 42 undersized culverts. At one location, where the Messerle pasture road accesses the floodplain from Hwy 42 a culvert will be replaced with a bridge (***Attachment A, Figure 15***). The remaining four culverts with associated tidegates will be removed and consolidated within the remaining reconstructed 38 channel networks. Culverts are currently located through pasture berms where they deliver water to the main canal networks (***Attachment B; Sheet 1***). The location of entry to main canals will be moved for six of these culverts to configure the network more appropriately to landscape topography. Culverts will be primarily HDPE to extend life with several exceptions where CMP materials might be used. The proposed pipes have been sized based on ***Hydrologic Assessment*** methodology (***Attachment C***) that incorporates outflow volume related to precipitation and hydraulic capacity in relation to:

a). The volumetric inflow/outflow capacity of the C3P project and previous ODFW and NMFS approvals for fish passage.

b). The precipitation hydrology for the "microwatersheds" pasture areas specifically associated with the individual culverts (***Attachment A, Figure 12***).

c). Culvert hydraulic capacity for a given culvert size, which was then paired to a, and b.

2). Replacement of tidegates on the 38 interior culverts with either:

a). Side-hinged aluminum tidegates with door brace for managing in the door open position (***Attachment A, Figures 10-13***);

b). Water control slide gates operated manually through screw drive and wheel (***Attachment A, Figure 14***).

3). Reconfigure/reconstruct ~29,981ft or 5.7 miles of existing tidal channel. The existing channel networks (See ***Attachment A, Figure 10***) were not constructed to grade, and the ability for fish to move successfully to and from the river without becoming vulnerable to stranding currently limits their use of the network during the important fall/winter/spring rearing period.

4). Creation of 74,670 ft or 14.1 miles of new large, medium, and swale channels in Units 1 and 3 that will be designed/engineered through this project (see ***Attachment A, Figures 24-27***)**.** Although these newly constructed channels will be relatively simple compared to the channels previously constructed on Unit 2, they will:

a). Provide depth refugia for native salmonids in winter and native resident fish in summer months,

b). Contribute to greater utilization of the project area by juvenile coho, through increasing channel distribution on the landscape and fish penetration into the floodplain, and

c). Facilitate pasture irrigation more functional irrigation management for landowners during summer months.

5). The project will create hydrologic bulbs at the endpoints of selected channels (*Attachment A*). These habitat improvement actions will:

- **a).** Provide areas of greater depth long distances within the pasture networks where native fish, (e.g. coho) can shelter and feed during winter months prior to floodwaters rising and allowing fish to feed on pastures.
- **b).** These habitat improvement structures will provide volumetric areas at endpoints where the hydraulic forces of inflow/outflow will flush minor sediment accumulations from the length of the channel network downstream.

6). Interior pasture berms will be reconstructed to elevation 5.5ft NAVDD88 in locations where they have degraded and are below elevation 5.5ft. Initial construction will be to elevation 6.0ft to provide for six inches of settling to final performance elevation. Implementation of the project has several goals:

- **a).** The project will restore more natural fish passage from canal networks into secondary channel networks and pasture floodplain habitats.
- **b).** There will be a greater quantity of water exchange within the networks and the Coquille River improving oxygenation loading.
- **c).** There will be a greatly enhanced processing of livestock nutrients. New channels are designed with 1:1 (main channels), 2:1 (medium channels), and 4:1 (pasture swale channels). This side-sloping will provide for greatly reduced bank erosion over traditional channels. The bottom and side slopes will be planted with a pasture seed mix. Roughly 60-70% of the channel surface in the upper 2/3 distance of these channels will be at an elevation where grasses will grow providing filtering of livestock nutrients during outflow from pasture floodplains.
- **d).** The amplified size of culverts feeding channels will increase the ability to irrigate pastures during single high tide events.

C. Construction Methods. Describe how the removal and/or fill activities will be accomplished to minimize impacts to waters and wetlands.

***NOTE**: All work will be conducted within the ODFW/NMFS In-Water Work Window of July 1 to September 15th. This period is also when wetland habitats are dewatered due to summer drying and impacts reduced due to increased firmness of soils. All actions were designed with intent to meet NMFS Tidal Area Restoration Project (TARP) and or SLOPES V Restoration guidelines.*

Staging Area: The staging areas will be located at 4 locations (***Attachment A, Figure 28***); 1). The primary access point into Unit 1 from Highway 42; 2). at the C3P tidegate; 3). at the Chisholm barn parking area on south side of North Bank Rd., and 4). on the Smith/Isenhart properties near the Coquille River.

Minimization Measures:

1. Work will be conducted during the In-Water Work Window of July 1 to September 15th. This period has a number of advantages for minimizing impact to fish, wildlife, and water quality:

- **a).** Soils are driest during this period reducing potential for impacts to wetland, streambanks, and disturbed soils.
- **b).** Many salmonids species are in locations where there is thermal refugia; floodplain water levels are at their lowest level and thus fish are generally confined to known locations. Work can be adjusted to avoid locations where fish are present, or they can be salvaged.
- **c).** Many salmonids species including coho, cutthroat trout, and Chinook are confined to stream channels during summer months as temperatures in floodplain ponded waters in all floodplain pasture channels within the project area are generally lethal from July 1 to September 15th.
- **d).** Temperatures in the BSDD and CDD work areas including main Beaver Creek and Winter Lake Unit 1, 2, and 3 canals (China Camp Creek tributaries) and tidal channels are known to exceed 70.0 degrees F. Accordingly, salmonids are not expected to be in the main canals or interior pasture channels. Most pasture channels will be dry during the period or have only small segments with standing unconnected water.

2. All culvert removal and channel construction where there is connection to the main Winter Lake canals and Beaver Creek channel will be conducted on the low incoming tide cycle to minimize potential for sediment laden waters to move from the work area offsite. Work will be ceased as the tide elevation begins to excessively inundate the work area and reinitiated during the next low cycle. Excavation of culverts and bridge channel construction will be completed during the lowest tide cycles of August and or September. The elevations of water in the work area at low tides is expected to be 1.0-2.0ft based on the C3P data in ***Attachment C, Figures 14-19.***

3. For excavation when reconstructing existing tidal/floodplain channels, earthen channel blocking plugs will be installed at the connection point with the main canals to prevent entry of canal waters into the active construction zone. Native fish will be salvaged from the work area if water is present, which will allow excavation to occur without turbidity to fish resources. Screening will be set up where needed to prevent native fish from entering work areas where channel construction will occur and the site is not able to be dewatered or kept isolated through use of earthen berms.

- **a).** For channel construction on Winter Lake Units 1 and 3 a combination of earthen blocking plugs and as needed screening will be incorporated to prevent fish impacts during excavation of channels.
- **b).** For the two pastures in the CDD low earthen blocking plugs will be installed as needed in reaches of channel under construction to prevent channels from receiving tidal influence water inflow during excavation if the Beaver Creek/Coaledo tidegate does not fully eliminate tidal signal. This will prevent fish from entering the work area.

4. Excavators will work from the top of canal/channel banks, berms, and or in locations where soils are not highly penetrable with operation of heavy equipment. In locations where equipment might be at risk to penetrate through sod/root layers and sink, crane matting will be used. Dozer work will be on dry pastures during spreading of channel construction spoils.

5. No fill, other than clean onsite earthen material and clean riprap around culverts, will brought to the site. Riprap will be from a known clean upland source and earth for berm reconstruction will be from channel construction sites or upland locations near the Coquille River. Fill will be placed in a manner so as to prevent entry into a waterway or ponded wetland area.

6. Fueling of equipment will be conducted 150 ft. from waterways or standing water.

7. Channel excavation will occur during drier months. Direct excavation in water is planned for canal excavation in the Unit 1 main canal S.E and Unit 3 canal N.E. Machines that work in the water will have non-toxic biodegradable hydraulic fluid.

8. If any hydraulic or fuel leaks are noted on equipment, they will either be eliminated through repair or equipment will not be allowed to be used until repair or resolution.

9. Dust is not anticipated to be a factor that is likely to be an issue as the site has substantial ground moisture that will hydrate soils as they are placed. However, if dust abatement is needed to prevent entry into ponded water or canals/channels dust abatement measures with application from a pump that is properly screened to meet ODFW/NMFS criteria, or a dust abatement truck will be used.

10. Fill will be dumped, placed/moved, where it is not in contact with water to the highest extent possible. If fill is needed in locations where there is standing water or a stream/tidal/floodplain channel ODFW fisheries staff will determine if fish are present and need salvaged prior to installation of fill.

11. Equipment operators will be briefed on measures to reduce potential that sediment will enter waterways; e.g. excavation in a manner that moves material away from water; pulling upward rather than side to side when excavating in water and placement of temporary fill in locations where it will not impact ponded water or a waterway.

Stormwater Discussion

a). Large channel banks will be sloped to 1:1 for main channels; 2:1 for medium sized channels; and 4:1 for smaller swale channels. This will eliminate the potential for bank sloughing and slumping. Spoils will not be piled adjacent to channels and will be thin spread at time of work.

b). Following installation of culverts, the fill will be seeded with an appropriate pasture/erosion control mixture.

c). Mulching and seeding will be incorporated as needed on culvert fill and channel locations where there is considered to be an elevated risk for sediments to become mobilized during fall/winter precipitation events.

d). Seeding with an erosion control pasture seeding mix will be used on new and reconstructed channel banks to minimize erosion above the zone where water will prevent establishment of vegetation.

e). Soils excavated from channels will be thin spread to an average depth of 3.0 inches at time of excavation or prior to completion of a full channel segment extent Thin spreading allows for existing grass species to fully penetrate though the fill when fall/winter precipitation facilitates pasture grass vigor and thus will not be unvegetated during months with higher precipitation.

(4) PROJECT DESCRIPTION (continued)

D. Describe source of fill material and disposal locations if known.

1). Earthen Fill for berm reconstruction will be obtained from channel or hydrologic bulb construction sites, loaded on a standard dump truck and end hauled to the locations where berms need repaired.
2). Riprap protection for culvert inflow/outflow end protection will be obtained from a Coquille Basin or other south coast local source and installed from top of bank.
3). Soils excavated from channels will be thin spread to an average depth of 3.0 inches at time of excavation or prior to completion of a channel segment. Thin spreading allows for existing grass species to fully penetrate though the fill when fall/winter precipitation facilitates pasture grass vigor.

E. Construction timeline.

What is the estimated project start date?

Some work estimated August 15th 2024.

What is the estimated project completion date?

The estimated completion date is September 15th 2030

Is any of the work underway or already complete? If yes, please describe.

☐ **Yes** ☒ **No**

F. Removal Volumes and Dimensions (if more than 7 impact sites, include a summary table as an attachment)

Wetland / Waterbody Name *	Removal Dimensions					Time Removal is to remain**	Material***
	Length (ft.)	Width (ft.)	Depth (ft.)	Area (sq.ft. or ac.)	Volume (c.y.)		
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Channels	99,781	Ave 14.0 lg Ave 1.5md Ave 1.0sm	4.0lg 3.0med 2.0sm	27.8 acres tot	110,815	Permanent	Earthen; Channel construction/ thinspread on adjacent pastures
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Canals	2,302	various	various	1.0 acres	6,791	Permanent	Excavate accumulated sediments/ thinspread on adjacent pastures
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Bridge	50	~15ft	3.0ft	500sq ft	456	Permanent	Excavate accumulated sediments/ thinspread on adjacent pastures
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Hydrologic Bulbs	N/A polygons	various	1.5-3.0ft varies	18.6 acres	64,505	Permanent	Earthen; Hydrobulb construction/ thinspread on adjacent pastures
Table 2; and See "Winter Lake Phase III Actions" Heavy Use Livestock Watering Areas	20x20ft Polygons	20x20ft Polygons	0.8ft	0.8 acres	107	Permanent	Excavate, thinspread on adjacent pastures; leaving 0.8ft inset area for Heavy Use rock installation

G. Total Removal Volumes and Dimensions

Total Removal to Wetlands and Other Waters	Length (ft.)	Area (sq. ft or ac.)	Volume (c.y.)
Total Removal to Wetlands	Table 2 & previous	47.6 acres	182,780
Total Removal Below Ordinary High Water	Table 2 & previous	47.6 acres	182,780
Total Removal Below Highest Measured Tide	Table 2 & previous	47.6 acres	182,780
Total Removal Below High Tide Line	Table 2 & previous	47.6 acres	182,780
Total Removal Below Mean High Water Tidal Elevation	Table 2 & previous	47.6 acres	182,780

H. Fill Volumes and Dimensions (if more than 7 impact sites, include a summary table as an attachment)

Wetland / Waterbody Name*	Fill Dimensions					Time Fill is to remain**	Material***
	Length (ft.)	Width (ft.)	Depth (ft.)	Area (sq. ft. or ac.)	Volume (c.y.)		
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Channels	Various polygons	Various	3.0" ave	87.2 acres	105,492	Permanent	Earthen excavated material from project area new/excavated channels; thinspread to 3.0" on pastures
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Canals	Various polygons	Various	3.0" ave	5.6 acres	6,791	Permanent	Earthen excavated material from project area canals; thinspread to 3.0" on pastures
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Bridge	Single Polygon	Single site Approx. 50x50ft	3.0" ave	0.11 acres	456	Permanent	Earthen excavated material from bridge location canal; thinspread to 3.0" on pastures
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Berm Reconstruction	3,247ft total	20ft base	Various 1.0-3.5ft	1.49 acres	5,323	Permanent	Earthen excavated material from project new/excavated channels. ***Material will be placed on existing footprint of old berms.***
Table 2; and See "Winter Lake Phase III Actions" Attachment A; Hydrologic Bulbs	N/A polygons	Various depending on location	1.5-3.0ft varies	53.3 acres	64,505	Permanent	Earthen excavated material from project area new/excavated Hydrobulbs; thinspread to 3.0" on pastures
Table 2; and See "Winter Lake Phase III Actions" Heavy Use Livestock Watering Areas	20x20ft Polygons	20x20ft Polygons	0.8ft	0.25 acres (thinspread acres and 20x20ft polygons)	107	Permanent	Thinspread of excavated material and placement of Heavy Use rock in 20x20ft polygons 0.17 thinspread acres and .08 Heav Use

(4) PROJECT DESCRIPTION (CONTINUED)

I. Total Fill Volumes and Dimensions

Total Fill to Wetlands and Other Waters	Length (ft.)	Area (sq. ft or ac.)	Volume (c.y.)
Total Fill to Wetlands	See Table 2.	149.0 acres	183,453
Total Fill Below Ordinary High Water	See Table 2.	149.0 acres	183,453
Total Fill Below Highest Measured Tide	See Table 2.	149.0 acres	183,453
Total Fill Below High Tide Line	See Table 2.	149.0 acres	183,453
Total Fill Below Mean High Water Tidal Elevation	See Table 2.	149.0 acres	183,453

*If there is no official name for the wetland or water body, create a unique name (such as "Wetland 1" or "Tributary A").
**Indicate whether the proposed area of removal or fill is permanent or, if you are proposing temporary impacts, specify the days, months or years the fill or removal is to remain.
*** Example: soil, gravel, wood, concrete, pilings, rock etc.

(5) PROJECT PURPOSE AND NEED

Provide a statement of the purpose and need for the overall project.

The proposed "Winter Lake Phase III" project has been developed by a team of partners including Coos Soil and Water Conservation District (Coos SWCD), the ODFW, the BSDD, and landowners. The project is designed to complement the BSDD C3P tidegate replacement project completed in 2017. Phase III proposes to replace 42 existing undersized culverts and associated old style top-hinged tidegates with 38 new culverts and redesigned channels. The project actions are anticipated to maximize hydrologic connectivity in order to achieve a balance of fish/wildlife and pasture grass production.

The proposed Phase III project is designed to address insufficient hydrologic capacity and channel layout issues in Units 1 and 3 and two parcels in the CDD (***Attachment A, Figure 5-6***). No work is planned for lands within Unit 2. The lands within Units 1 and 3 are managed with agricultural emphasis during spring and summer months, however, are considered by ODFW to have large unrealized capacity for juvenile coho rearing during the late fall and winter. Water management to date within Units 1 and 3 has relied largely on channel networks that were installed in the early 1900's with subsequent excavation on roughly a 15yr interval to clean sediments that accumulated.

The individual landowner pastures within Units 1 and 3 are isolated up to elevation 5.5ft NAVDD88 by legacy earthen berms. Berms run along the sides of the major canals (***Attachment A, Figure 29***) and serve as isolation of the individual landowner pastures during tidal inflow irrigation events associated with culverts that feed into these pastures. During summer irrigation the culvert water control tidegates are manipulated to move water into desired bermed pastures, while maintaining a dry refuge in others for livestock that are present. These berms have had little or no maintenance for a number of years and currently have substantive need for repair. There are 16 key locations where 100-200ft segments of the berms are below elevation 4.5ft and individual pasture irrigation inflow management is not possible.

Key Hydrology/Habitat Issues

The current culvert/tidegate infrastructure and channel network within the BSDD interior floodplain upstream of the C3P tidegate have multiple features that remain dysfunctional for tidal and floodwater inflow/outflow. Specifically, the project will work to improve conditions for Oregon Coast (OC) juvenile coho overwinter rearing and landowner pasture grazing production in Units 1 and 3. The project will address:

- *Hydrologic Flow Paths:* Discontinuity of channel networks due to construction of linear networks in 1909-current that redirected flow from the historical natural hydrologic flow paths.

- *Channel Density/Limited Intrusion:* Lack of density, per acre and limited length of interior channels within Units 1 and 3. These features are need to provide access routes to feed and sufficient refugia depth for juvenile fish within the BSDD floodplain. This deficiency results in very limited use of large portions of the floodplain by native salmonid fishes except at very high flood levels.

- *Salmonid Stranding Areas:* Low-lying land areas within individual ownership pastures are in many locations disconnected from channel networks, which results in water retention when flood levels decline resulting in high stranding risk for juvenile coho on the floodplain.

- *Undersized Culverts for Hydrology:* Undersized culverts connecting to the main canals within Units 1 and 3 that restrict proper tidal/flood-flow and underserve irrigation needs in summer months.

- *Invert Elevations Inappropriate:* Culverts that were installed with an elevation invert where interior pasture channel networks at early winter flow levels are disconnected from the main canals resulting in delayed ability for fish to enter the floodplain and subsequent increased potential for stranding and predation as floodflows recede.

- *Top Hinged Tidegates:* Top-hinged tidegates on the existing interior culverts upstream of the C3P tidegates that are difficult to manage in the open position. This results in long periods where the tidegate doors are closed leading to restriction of fish movements from the main canals into pasture floodplain channels where food availability is higher and competition with non-native fish lower.

- *Channels Not On Grade:* Channel networks that were not constructed on-grade and thus do not allow for sediments to be transported properly, resulting in premature accumulation, limited connectivity for fish movement, and poor drainage for landowners.

- *Poor Channel Locations:* Poorly located linear channel networks that do not follow land elevation hydrologic paths and undersized internal channels that do not provide sufficient length or route to provide connectivity to hundreds of acres of agricultural pastures within the BSDD resulting in highly limited ability to utilize the capacity of the new C3P tidegate for irrigation.

- *Non-Native Fish:* Canal networks that do not have substantial upstream channels that result in limited exchange volume when tidal influence is induced at the C3P tidegate. Resultantly, non-native fish including bullhead catfish, yellow perch, black crappie, bluegill, and mosquitofish are served by the relatively slack conditions within the canals that serve Units 1 and 3. This project will allow much greater exchange of volume in those canals reducing life history preference for the current condition and move favorability towards native fish.

- *Low-Lying Pasture Production Issues:* Channel networks that do not connect to low-lying areas properly resulting in long periods of standing water reducing pasture grass production during spring drain-out and early summer.

- *Channel Location Irrigation Issues:* Channel networks that are not located properly for individual pasture irrigation, resulting in over/under-watering of individual landowner pastures.

Water Elevation Management:
The Coquille River natural levee has developed over thousands of years as higher sediment deposition occurred in the first 100-350ft adjacent to the river channel with decreasing loading as the floodplain distance extends to the north. The natural levee runs from the hillslope just west of Coquille at Roseburg Forest Products mill upstream of the C3P tidegate to the west/northwest connecting to the hillslope at Coquille RM ~20.0, just west of Beaver Creek. There are two channels that currently enter the main Coquille River through the natural levee, the BSDD channel at the C3P tidegates and Beaver Creek. This levee has facilitated the ability to manage water elevation within the Winter Lake floodplain up to elevation 10.5ft NAVDD88 through management of the tidegates. At elevation 10.5 river waters overtop the Beaver Creek dike (***Attachment A, Figure 29***) and flows overland into the valley floodplain.

Tidal elevations are softened by the riverbank friction in the length from the ocean to RM 21.5 where the C3P tidegate channel enters the main river. Despite this effect the tidal signal is substantial and generally ranges from a low of around +1.5ft when there are powerful low tides at the ocean to highs at the C3P channel of 8.5ft (See ***Attachment C, Appendix A: Northwest Hydrology Consultants "Hydraulic Analysis"***). Tidal signal is highly related to river flow and when precipitation events raise river flows the tidal signal is also dampened. River levels are able to exceed elevation 16ft NAVDD88 with major flooding events.

Up to elevation 10.5ft the C3P tidegates are able to resist inflow and allow for managed water elevations upstream into interior floodplain pasturelands in the BSDD; of which ~1,295 acres is below elevation 8.0ft (***Attachment A, Figure 24, LiDAR imagery***). The C3P tidegate has been assigned water management based on the needs of both the upstream landowners and fish and wildlife goals within the BSDD. The interior lands upstream of the C3P tidegates and the 42 culverts addressed in the **"Winter Lake Phase III Hydrologic Assessment" (Attachment C)** are subservient to water management at the C3P tidegates and the BSDD DWMP, which has been reviewed and approved by ODFW and the National Marine Fisheries Service during the Winter Lake Phase I and II permitting process. The Units 1 and 3 DWMP is structured around seasonal agriculture and fish/wildlife needs with the following strategy periods:

Winter- October to March: *Manage for fish and wildlife aggressively in Unit 2 and to a more moderate level in Units 1 and 3.*
Spring- April to May: *Drain-out period*
Summer- June to September: *Manage for water at minimums; some flushing*

The specific DWMP goals for water elevations throughout the year are in ***Attachment C, Appendix A***.

NOTE: *there currently are locations where the interior berms in Units 1 and 3 are below elevation 5.5ft NAVDD 88 and in need of repair. This section discusses the water management goals with berms reconstructed to their goal height of elevation 5.5ft.*

When floodwaters are above elevation 10.5ft NAVDD88 water moves up Beaver Creek and flows over the low portion of the berm across the pastures. At this elevation Units 1, 2, 3, and the CDD are connected. Berms that isolate Unit 2 are elevation 7.0ft and berms around individual water management pastures in Units 1 and 3 are elevation 5.5ft or lower.

As floodwaters recede below elevation 10.5ft, the berm height is sufficient to allow for management of water elevation in the BSDD and CDD. The CDD tidegate (***Attachment A, Figure 7-8***) on Beaver Creek consists of three 6.0ft CMP's with top-hinged tidegates. There is currently no MTR capability at that site thus water is managed for drain-out only. At the BSDD C3P tidegates water can be managed for drain-out or using the slide-gates for tidal/floodwater inflow. From 10.5ft to elevation 7.0ft (the Unit 2 berm height), Units 1, 2, and 3 in the BSDD are connected, however, BSDD is disconnected from CDD.

From elevation 7.0ft to 5.5ft Unit 2 is isolated from Units 1 and 3. As Unit 2 is located between Units 1 and 3 there is no longer connection of Units 1 and 3 hydrologically below elevation 7.0ft. Below elevation 5.5ft the interior berms in Units 1 and 3 allow for individual water management on the various pastures using the interior culvert water control structures and channel networks.

Note: *It is important to keep in mind that above elevation 5.5ft water is able to move laterally over berms within the various pastures and into canals in Units 1 and 3 without dependence on or control through culverts and associated water control structures. This allows for large flood inflow/outflow independent of the culvert infrastructure in place in the berms when water is above elevation 5.5ft. The sizing of culverts and channels developed for the project (**Attachments B and C**) were guided by the following:*

1) In order to provide for fully adequate connectivity of interior pastures with main canals when water levels are below elevation 5.5ft;
2) To provide fully functional fish passage that meets State and Federal criteria in periods when water is restricted to movement through the Units 1 and 3 culvert networks below elevation 5.5ft.

Culverts/tidegates
Historically, culverts on the project area were installed with undersized capacity for various reasons, however, often due to lower cost. There have been long-term negative effects during winter flooding for fish passage and landowner pasture management impacts related to an extended drain-out period prior to spring and summer delaying vegetation growth. The Phase III project is designed to address the hydrologic capacity limitation associated with the culverts that are currently in place for fish/wildlife and pasture grass production.

Four channel networks will be realigned to reduce the overall culvert numbers needed from the current 42 to 38 through channel network consolidation. Old-style flapper tidegates are the predominant style (***Attachment A, Figure 11***) currently present. These will be replaced with either slide-gate/knife gate water control devices or side-hinged aluminum tidegates with a device to maintain the door open as desired. The BSDD DWMP dictates water management strategies (see ***Attachment C, Appendix A***), which provide for a high degree of access for water and fish during winter months. Landowners are on board with opening all interior culvert water control structures fully open from ~November 1st to March 30th in alignment with the BSDD DWMP and winter needs for fish access and flood flow hydrology.
***Note*:** *There is flexibility under the DWMP for individual landowner water control structure operations with various pasture management goals during the late fall and drain-out periods.*

Channels
The existing channels in Units 1 and 3 were installed historically:
a). Design/layout that failed to align with micro-elevation topography on the landscape from interior pasture locations to delivery points with main canals;

b). Flow path trajectories of interior channels that are linear along pasture or landowner boundaries;
c). Channels were not constructed with on grade invert elevations;
d). Channels were constructed with vertical side-wall form that accelerated natural sloughing/slumping as well as livestock-related erosion resulting in exacerbated soil deposition into the channels. This has over time reducing their capacity to transport water effectively. The factors noted for pasture channel networks in Units 1 and 3 have resulted in widespread hydrologic discontinuity, poor access for juvenile native fish to enter and leave pasture habitats, and poor drainage for production of pasture grass. Winter Lake Units 1 and 3 have high inherent potential for fish production; however, their current hydrologic disconnection yields the issues noted in the previous ***Key Hydrology/Habitat*** section.

NOTE: *Irrigation has been used by ranchers within the BSDD consistently over the past 100+ years through opening of tidegates and allowing tidal inflow into pastures on high tide cycles. The new C3P tidegates installed in 2017, greatly enhanced irrigation inflow potential at the main tidegate network. Native fish have adapted to both tidal and floodwater inflow regimes. BSDD irrigation tactics utilize tidal inflow, which is a natural hydrologic pattern within native fish adaptive capacity. Native fish have used inherent adaptive genetic traits to react to tidal/floodwater cues that allow movement into floodplain habitats and retreat to channels following relatively short (6hr tidal cycles) inundation periods. Irrigation is implemented from mid-June to mid-September generally for the individual pastures over one or two days monthly. Coho juveniles are smolted and entering the ocean prior to the summer irrigation period. Salmonids are essentially absent from the BSDD canals and the mainstem Coquille River during summer months as canal and river temperatures have been measured as high as 80°F and 76° respectively. Irrigation utilizing tidal inflow during summer is therefore considered to be comparable with the natural life-history of native fish that are present, and native salmonids are unlikely to be present in high abundance during the months when irrigation is implemented within Units 1 and 3.*

(6) DESCRIPTION OF RESOURCES IN PROJECT AREA

A. Describe the existing physical, chemical, and biological characteristics of each wetland or waterbody. Reference the wetland and waters delineation report if one is available. Include the list of items provided in the instructions.

The Coquille River Valley is an expansive alluvial floodplain extending upstream from the mouth of the Coquille River at Bandon, OR upstream to the head of tidal influence at river mile 41. Other than the Columbia River, the Coquille River Valley encompasses the longest coastal estuary in Oregon. Historically the Coquille valley floor contained extensive freshwater tidal wetlands, tidal channels, and non-tidal wetland habitats that are estimated to have comprised over 12,000+ acres (Benner 1992) with some estimates as high as 17,000 acres. These habitats provided very high-quality fish and wildlife habitat historically (Benner 1992; Scranton, 2004). The Winter Lake Phase III project action area is located on floodplain pastures within the BSDD and CDD wetlands to the South of Northbank Lane/Hwy 42 and west of Coquille, OR, on the historic China Camp and Beaver Creek floodplain (***Attachment A, Figures 1 - 6***). The project area is predominated by lands that are below elevation 8.0ft (1,295+ acres).

The predominant majority of the floodplain and wetlands habitats in the Coquille estuary were cleared, leveed, tidegated, and drained for agricultural purposes in the late 19th - early 20th century, thereby substantially altering the land from its historical natural state as a freshwater tidal wetland complex into drained pasture lands. These lands are currently used seasonally to year-round for grazing. By the 1990s, the amount of tidally influenced and standing wetland within the Coquille Valley was reduced to less than 600 acres or ~5% of historical. Resultantly, there have been widespread ecological changes in the capacity of the valley floor to produce fish and wildlife. Coho abundance has averaged ~14,499 annually in the 1990- 2020 period compared to peak estimated abundance of over 400,000 historically and an annual abundance that likely averaged near ~150,000.

Research and salmonid population monitoring indicate that tidal floodplains, wetlands, and estuaries are a highly important habitat for young salmon. Restoration of these habitats is repeatedly identified as a critical action for increasing endangered coho populations in multiple federal, state, and local recovery plans. Substantial scientific evidence indicates that body size at ocean entry is an important, if not the primary, indicator of an individual's probability of returning from the ocean to spawn (*Katz JVE, et al. 2017*). Studies of the Coquille River Basin specifically have shown smolt growth rates are often 1.5-2.0 times greater for off channel and wetland habitats (*Nickelson 2012*) compared to stream and river locations. The Coquille River valley floodplain channels and freshwater tidally influenced habitats are believed to have the capacity to rear

sufficient numbers of juvenile coho to produce up to 11-17 returning coho adults per acre of restored habitat on average (*Nickelson 2012*).

Enabling native salmonid fish access onto these productive floodplain rearing habitats is currently presents a widespread and complex challenge within the Coquille watershed. One of the largest factors suppressing juvenile fish use of the Coquille River Valley floodplains specifically has been the elimination of tidal inflow and access for fish due to installation of tidegate and levee networks onto such low-lying floodplain pastures that historically comprised large tidal wetlands. These tidegate networks were installed historically to facilitate agricultural production. Currently exhibited tidegate styles reflect legacy design and are typically top-hinged wood or steel (***See Attachment A, Figure 11***); typical style of existing top-hinge interior tidegate). The angle these gates open is generally <20% when open on an outgoing tide and velocities during winter months can be above swimming thresholds for juvenile salmonid fish. When tide levels are above inside pasture water elevations the tidegate doors are closed and the resultant condition result is severe restriction of juvenile fish movements from the main stem Coquille River into locations that would historically have provided very high quality fall and winter rearing.

Wetland Habitats: The project area has a substantial component of wetlands below elevation 8.0ft NAVDD 88 (***as determined by LiDAR and ground engineering survey; Attachment A, Figures 24 and 25***). Above elevation 8.0ft. the vegetative community is primarily a mixture of upland grasses and shrubs. All lands (except for berm crests that run east-west along the main Unit 1 canal and north-south along the new China Camp Creek canal to the east of Unit 2) within the action area are predominantly classified as Freshwater Emergent Wetlands (Figure 30). They are specifically classified as PEM1Ch or PEM1Ah (Palustrine Emergent Persistent Semi Permanently Flooded Berm Impounded and Palustrine Shrub-Shrub Broad Leafed Seasonally Flooded Berm Impounded wetland) and under the Hydrogeomorphic Class and Cowardin Class wetlands based on information obtained from the U.S. Fish and Wildlife Service National Wetlands Inventory. For this project the small strips of land elevated by historical berm construction that are not classed as wetland, under the USFWS national wetlands Inventory, will be considered wetland and ecological uplift of the implemented as a restoration action has been designed to develop ecological uplift that exceeds impacts. Overall there will be around 130 acres of impact (***Table 2 and "Winter Lake Phase III Project Actions" Attachment B***).

Hydrology: Diking and land elevation manipulations have resulted in a high degree of dysconnectivity in the project area as documented on the landscape and visible from LiDAR elevation information (Figure 24-25). Resultantly, accessibility for anadromous and resident fish is limited and stranding potential following flooding events is currently high. Function of the pasture wetlands has also been substantially altered due to lack of nutrient movements that would have occurred historically with tidal inflow/outflow and excessive persistent water in low-lying areas during late spring months that have been disconnected due to Euro-human channel construction tactics. In native tidal floodplains channel densities have been documented to have been as high as 192ft per acre. Densities at this magnitude and would have resulted in daily tidal inflow/outflow patterns. The historical plant communities adapted to tidal water regimes. Those conditions had vegetative native composition with a high disposition for aquatic production. Floodwaters currently flow onto a number of locations in the project area and remain for long periods in low areas surrounded by berms or where culvert and channels have altered historical flow paths. Overall the project actions are anticipated to improve Ecological Function for aquatic plants and production of fish/wildlife substantively:

- The project will restore more natural fish passage from main canal networks into secondary channel networks and pasture floodplain habitats.
- There will be a greater quantity of water exchange within the networks and the Coquille River improving oxygenation loading.
- There will be a greatly enhanced processing of livestock nutrients. New channels are designed with 1:1 (main channels), 2:1 (medium channels), and 4:1 (pasture swale channels) side-sloping. This side-sloping will provide for greatly reduced bank erosion over traditional channels. The bottom and side slopes will be planted with a pasture seed mix. Roughly 60-70% of the channel surface in the upper 2/3 distance of these channels will be at an elevation where grasses will grow providing filtering of livestock nutrients during outflow from pasture floodplains.
- The amplified size of culverts feeding channels will increase the ability to irrigate pastures during single high tide events.

Dominant Plant Species: Historically, the wetland habitats on the project area were subjected to full tidal amplitude and flooded for roughly 4.0-8.0 months annually associated with high river flows from heavy rainfall that prevented drain-out and from upland inflow to the floodplain. Historically, when the land area was un-tidegated it is suspected that the strength of ocean tidal inflow would have been greater in response to filling the 1,295 acres of the BSDD below elevation 8.0ft. It is possible this greater inflow would have drawn salinity upstream to the C3P tidegate location at RM 21.5. However, currently both tidal and river flooding that occurs currently is with freshwater as the upper extent of saline influence is downstream ~12 miles from the project area. This is important in regard to the plant community on site as many species are not salinity tolerant. The vegetation on the 1,295 acres below elevation 8.0ft is a mix of native and non-native species, primarily reed canary grass *(Phalaris arundinaceae)* and creeping bentgrass *(Agrostis stolonifera)*, however, there is a component of native slough sedge *(Carex obnupta)*, smartweed *(Polygonum hydropiper)*, and large areas with stands of Pacific silverweed *(Potentilla anseria)*. Seasonal grazing has occurred since the early 1900's and the plant community is reflective of the herbivory impact that has suppressed reestablishment of native woody trees and shrubs following forest clearing from 1907-the 1950's. There is a small stand of native Oregon Ash *(Fraxinus latifolia)* in Unit 1 on the Isenhart property and some native Scouler's willow *(Salix scouleriana)* along Hwy 42. Douglas spirea *(Spiraea douglasii)* is common along canal berms.

Existing Uses:

Agriculture/Recreational: Unit 1 and 3 lands are privately owned as are the pastures where work will occur in the CDD. The China Camp Gun Club lands are managed for summer pasture grazing and recreational duck hunting during winter months. Units 1 and 3 and CDD pastures are agricultural lands which are managed for seasonal (late spring and summer) cattle grazing. Individual owners of the parcels in the project area use the canals and pastures for fishing and hunting with invitation to others.

Fish: The Project interior pasture channels directly enter canals upstream of the C3P and Beaver Creek tidegates and then connect to the Coquille River. The main canals provide some suitable habitat for Oregon Coast (OC) ESA threatened Coho salmon *(Oncorhynchus kisutch)* currently. Interior pasture channels are of extremely limited benefit currently as they fail to penetrate with sufficient depth into interior pasture areas. The project is anticipated to substantially increase the capacity of the pasture floodplains to rear OC coho juveniles during the fall/winter. Both coho juveniles and non-ESA listed coastal cutthroat trout *(O. clarki clarki)* are present in the Coquille River during the cooler months of the year. In summer months when thermal regimes reach near lethal levels. Temperatures as high as 74ºF have been measured in the main Coquille River at RM 26.0.

Unit 1 and 3 canals are unshaded and thus provide fall/winter/spring habitat for juvenile coho and cutthroat trout. Juvenile coho are able to rear yearlong in Beaver Creek in the CDD. Coho emigrate through the C3P and CDD Beaver Creek tidegates during the fall/winter/spring months as large numbers of pre-smolts move from natal areas into the Coquille River floodplain stream networks to find improved foraging conditions and escape high velocities in the mainstem Coquille River. When flooding is generally >1.5 ft. in depth on the landscape coho may also move into pasture habitats to feed and rear. Cutthroat trout also have been documented using the floodplain as well during winter months when flooding occurs. Fall Chinook salmon *(O. tshawytscha)* are present in the mainstem Coquille River from April through June, however, while it is considered that they likely used these habitats historically, more work is needed to determine present levels of use. Pacific lamprey *(Entosphenus tridentata)* ammocoetes are known to rear in the Unit 1 and 3 canals as well as main Beaver Creek channel as well as several native sculpin species *(Cottus spp.)*. Movement of fish into the floodplains in the project area is currently obstructed to a notable degree when rising waters are below elevation 5.5ft due to undersized culvert and channel infrastructure.

Waterfowl/shorebirds: The pastureland wetlands of the project area provide high quality waterfowl (Anas spp.; Branta spp.) resting and feeding habitat. Some nesting occurs in the valley during spring and summer, but nesting habitat is limited since the Coquille River floodplain tributaries are channelized and much of the edge hiding cover has been removed with diking efforts. Farming practices have resulted in conversion of wetland to intensively managed pasture dominated by bent and reed canary grasses, but despite non-native

conversion the plants remains a suitable carbohydrate source for ducks. Thousands of migrating and wintering ducks use the Winter Lake Valley for feeding and resting during the months of November through April annually, with notable use of the wetlands of the Action Area. It is likely the Coquille River Valley once provided extensive habitat for breeding marsh birds when tidally flooded. Restoration of tidally influenced wetland habitats will benefit these species. Shorebirds, which feed in mud flats, are expected to benefit from restoration of tidal activity on Unit 1, 3, and CDD pasturelands as these species often are found feeding along channels and in shallows. Bird species such as Western sandpipers *(Calidris mauri)* and greater yellow legs *(Tringa melanoleuca)* find feeding opportunities in floodplain pastures as well. The site is highly used by great blue herons *(Ardea Herodias)* and great egrets *(Ardea alba)*.

Eagles and Osprey: Both bald eagles *(Haliaeetus leucocephalus)* and osprey *(Pandion haliaetus)* have been known to nest in the valley and there is a known/active eagle nest ~0.5 mi. north, northwest of the very northern project area. Following the Oregon Forest Practices Act (OFPA) we will treat this nest as a "Resource Site." According to OFPA 629-665-0010 "the goal of resource site protection is to ensure that forest practices (in our case, berm building, culvert installation) do not lead to resource site destruction, abandonment or reduced productivity." To ensure protection of this site we wanted to make note that no channel, berm rehabilitation, or culvert installation work occur within one-half mile of the site within the critical use period (January 1 – August 31) per OFPA 629-665-0220 subsection 2- C however, "The specific critical period of use for individual nesting resource sites may be modified in writing by the State Forester (ODFW wildlife biologist) depending upon the actual dates that bald eagles are present at the resource site and are susceptible to disturbance." Construction will occur outside the core nesting period, however, in order to ensure compliance ODFW staff will monitor the nesting site weekly during project completion in accordance with OFPA rules in order to minimize impacts to the birds.

Other Wildlife: Rough skinned newts *(Taricha granulaosa)* breed in the existing floodplain channels and mainstem Beaver Creek and perhaps on occasion in some pasture wetland locations within Units 1 and 3. Several species of frog including Oregon State listed red legged frogs *(Rana aurora)* noted as Sensitive Vulnerable are also present in Winter Lake, however, mostly north of the active work area. Northwestern salamanders *(Ambystoma gracile)* are regularly captured by ODFW fish sampling staff in Beaver Creek and likely use the Winter Lake floodplain channels. American Beaver (Castor canadensis), river otter *(Lontra canadensis)*, and non-native nutria *(Myocastor coypus)* are present as well.

Streamflow Regime: The 1,806+ acres that comprises the project area has little elevation relief (***Attachment A, Figures 24-25***). There is no stream from an upland site that runs through the floodplain pastures of the project area. China Camp Creek is currently captured in a main canal. Rainfall in pasture floodplain channels and moves to main canals and out through the C3P and CDD Beaver Creek tidegates. The quantity of flow generated from the Winter Lake floodplain is considered sufficient to produce small seasonal stream channels, however, the primary force that generated channels historically was tidal action. The C3P tidegate is able to control inflow to the landscape up to elevation 10.5ft NAVDD88.

China Camp Creek is a medium sized stream (under Oregon Dept. of Forestry classification) that runs through the project area. Excavation of 1,262ft of the southeast portion of the China Camp Creek main canal is proposed. Beaver Creek is immediately adjacent to the Action Area on the West and is a medium sized stream under Oregon Dept. of Forestry classification. The China Camp Creek watershed is just over 1,600 acres. The Beaver Creek watershed is 12.1 mi^2 in size or 7.774 acres with average annual precipitation of 62.2 inches. The Coquille River has peak flows that move into the floodplain through the C3P tidegates, however, above elevation 10.5ft there are a number of locations where the river is able to move up Beaver Creek and move over berms onto the floodplain. Higher Coquille flows occur primarily during December through February with low flows from July through October. Peak flows from the Coquille River and Beaver Creek result in extensive floodplain inundation during wetter winter months. Tidal influence in the mainstem Coquille River is greatest in June, December, and January, however, tidal inflow is muted at the C3P tidegates and is managed within the BSDD Water Management Plan. On Beaver Creek the tidegates do not have the ability to allow for tidal inflow, however, they do leak to a readily detectable level.

Ordinary High Water (OHW): The project team has defined the Ordinary High Watermark for this project as the normal extent that tidal flooding would occur. The extent of high tides without tidegates would be around 9.0ft NAVDD88. Flood flows commonly reach elevation 10-11ft. Inundation of the site at elevation 10.0+ft is considered above OHW. The entire project area is within the 100yr. floodplain.

Channel and Bank Conditions: The interior pasture channels and main canals has been excavated/dredged multiple times since the early 1900s. The Unit 1 and 3 main canals are roughly 30ft in width, with very soft organic and silty substrates 3-4ft in depth. Canal Banks are vegetated with reed canary and pasture grasses along with Douglas spiraea. Interior channels in pastures are generally very shallow (<3.0ft in depth) and have banks sodded with bent grass/other pasture grasses. Canal and pasture channels were originally constructed with vertical banks, which has contributed to bank sloughing and filling of bedform. The Beaver Creek main channel is roughly 25ft. in width. Depths range at an estimated 3-10 ft. in mainstem Beaver Creek in the project reach. No work will occur in the main Beaver Creek channel.

Riparian Condition: There is no hardwood riparian plant community present adjacent to pasture channels and thus the riparian condition is noted as "Poor." Current lack of hardwoods is, due to historical clearing, altered hydrology, and livestock consumption of prodigals. The riparian community on the Beaver Creek berm is in "Very Poor" condition due to historical forest clearing and long-term browse effects as well as highly altered hydrology. Currently there is little or no native woody vegetation and steep streambanks immediately adjacent to Beaver Creek. Some of this steep condition is related to deposition of dredging spoils on the shoulder of the Creek bank.

Channel Morphology: The existing channels in Units 1 and 3:
a). Were installed historically with design that was not based on micro-elevation topography on the landscape from interior pasture locations to delivery points with main canals;
b). The drainage channels are linear along pasture or landowner boundaries;
c). The channels were not constructed on grade;
d). Channels were constructed with vertical side-wall form that accelerated natural sloughing and cattle hoof action soil deposition into the channels reducing their capacity to transport water. The factors noted for pasture networks in Units 1 and 3 have resulted in widespread hydrologic discontinuity, poor access for juvenile native fish to enter and leave pasture habitats, and poor drainage for production of pasture grass. Winter Lake Units 1 and 3 have high inherent potential for fish production; however, their current hydrologic disconnection yields the issues noted in the previous ***Key Hydrology/Habitat*** section.

Stream Substrate: Pasture floodplain channel substrates are organic/silt/clay.

Hydrologic Assessment:

Assessment of Functional Attributes: The two main linear canals in Units 1 and 3 that inflow/outflow through the C3P tidegate from the project area reflect a managed inflow/outflow regime. The project area is estimated to have subsided from 1.0-5.0ft, however, despite subsidence historically at the extent of high tide several feet of water would have likely been present on the floodplain over most of the lower elevations of the BSDD and CDD. This is supported by the need for tidegates prior to instituting farming in the early 1900's.

Historically, daily tidal inflow and outflow would have resulted in relatively high dissolved oxygen, nutrient cycling, and aquatic production potential. Currently, inflow/outflow to the project area through the C3P tide-gate allows for interior water management modestly imitating historical conditions. The Phase III project will address interior channel networks and water control structures within Units 1 and 3 (***Attachment A, Figures 5,6, and 10***) that have remained unchanged following completion of Phase I and II. Units 1 and 3 tidal interior pasture channel networks are dissimilar from historical conditions and the hydrologic connectivity is considered "Poor."

Disconnection of the floodplain from river high flows due to the previous non-MTR tidegate have contributed

to less deposition of sediment during flood events. Restriction of movement of turbid water onto the project area and is considered a factor contributing to subsidence. However, dewatering of the site through elimination of the tidal cycles has resulted in drying of the soils during summer and facilitated biological digestion of the high carbon content in the soil. These human induced alterations have resulted in a myriad of negative effects for water quality and ecology including poor nutrient cycling. Water quality in the pasture channels is considered extremely low during the summer and early fall months and it is likely that nitrogen compounds are elevated as pools stagnate and bacterial digestion of organic material occurs. The negative impacts to ecological production on the project area are primarily related and ranked in decreasing order of negative impact as:

1). Hydrological Disconnection

2). Greatly inhibited natural hydrology; and

3). Poorly developed/functioning riparian condition.

B. Describe the existing navigation, fishing and recreational use of the waterbody or wetland.

The recreational use of the lands within the Action Area of the project, have historically been primarily for waterfowl hunting and fishing. Improved ecological function (water quality, nutrients) is expected to have benefits for production of fish resources and waterfowl.

(7) PROJECT SPECIFIC CRITERIA AND ALTERNATIVES ANALYSIS

Describe project-specific criteria necessary to achieve the project purpose. Describe alternative sites and project designs that were considered to avoid or minimize impacts to the waterbody or wetland.*

Alternatives Considered:

1). No Action Alternative: This alternative would leave the BSDD Unit 1 and 3 and CDD project lands in their current condition. The culverts under the berms would continue to obstruct proper hydrologic connection with the floodplain pastures and inflow/outflow capacity and interior pasture networks would remain in a condition that results in minimal ecological productivity. Locations where berms have deteriorated would also prevent individual pasture irrigation tactics. Without construction of new channels to provide fish ingress/egress to low lying swales stranding will continue to be a factor impacting juvenile coho that venture on the floodplain pastures. Poor access channels to interior floodplain pasture feeding areas results currently in low productivity during critical winter months for juvenile coho. This alternative was not the preferred alternative as it fails to address ecological function, and long-term pasture management goals issues on the project area lands.

2). Replace only culverts in worst condition without channel reconstruction and new channel development. This option would partially address ponding areas and benefit pasture grass production in those locations, however, continues to fail to address fish stranding as channels are needed for fish to move properly from these locations. This option would also not address the need to develop channel networks into the interior of pastures to provide for fish movements and staging. This option would also fail to address the limited capacity currently for irrigation management. Due to these reasons this alternative was not chosen.

3). Install new vertical walled channels and culverts with water control structures that do not have the ability to be maintained in an open position. This option would result in channels where the banks that are not sloped at 1:1 or 2:1. These designs, while identical to historically installed channels and of lower cost, are susceptible to high rates of sloughing/slumping than with sloped side-walls. This design would result in less volume capacity as well. While cost would be reduced the bank sloughing would result in reduced channel life prior to needing to be re-excavated. There are several water control structures (e.g. traditional top hinged tidegates) that are much cheaper than those proposed for the project. New water control structures that are not able to be managed in the open position would provide cost savings, however, would not meet one of the primary goals, providing optimum fish passage from main canals into interior pasture channels. Top-hinged tidegate designs currently do not meet ODFW and NMFS criteria for fish passage. These types of water control structures also do not facilitate irrigation management tactics. This option would also fail to meet project goals and was not chosen.

4). Chosen Alternative: Replacement of undersized interior culverts; installation of new technologically advanced water control structures; reconfigure/reconstruct channel networks with side sloping and rehabilitate locations where the berms are below elevation 5.5ft Upgrade Berm. This alternative will provide for the greatest public and ecological benefit with manageable impacts. Restoring hydrologic connectivity to the floodplain of the site will have substantive ecological and agricultural benefits.

Not required by the Corps for a complete application but is necessary for individual permits before a permit decision can be rendered.

Coho Critical Habitat Avoidance Measures: The project will be conducted during the summer In-Water Work Window outlined by the ODFW and the National Marine Fisheries Service. Work will be conducted from top of bank with an excavator or dozer. When excavating/grading all material will be pushed away from contact with any stream or waterway that has standing or running water. Equipment will be fueled in an upland dry location 150 ft. or greater from standing or running water as outlined in TARP and SLOPES V restoration. Disturbance will be confined to the work area to the degree possible. Excavator pads will be used if there is a likelihood of incurring deep ruts and substantial damage to wetland and stream habitats. Fish will be salvaged by ODFW staff prior to work and if electroshocking is used to salvage salmonids staff will employ NMFS guidelines. Temperatures have been measured at 70+ degrees during summer months in the project area wetland channels after early July, thus it is considered unlikley that native salmonids will be present during the work period. Some coho are present in the main Beaver Creek channel yearlong, however, work will be conducted during drier months and excavation for the two tidal channel connections to Beaver Creek will be conducted at the extent of low tide when the work area is dewatered to the greatest extent possible.

Floodplain Impact Avoidance Measures: Work will be conducted during the summer months when the soils are drier and more firm. The project area pastures and berms are vegetated with bent, reed canary, and other pastured grass, which forms a dense consolidated sod. Accordingly, impacts from equipment will be partially minimized due to the heavy rootmass layer. Some compaction may occur, however, equipment will be confined to the work area and crane mat/pads will be used as necessary to prevent equipment from breaking through the sod layer and settling into the deep organic soils when constructing the channels, installing culverts, and recontructing berms. Any excavator/equipment track turn soil rows will be inspected and if necessary graded to prevent specific channeling of water into locations where fish will become stranded or where hydrologic connectivity is negatively impacted.

(8) ADDITIONAL INFORMATION

Are there state or federally listed species on the project site?	☒ Yes	☐ No	☐ Unknown
Is the project site within designated or proposed critical habitat?	☒ Yes	☐ No	☐ Unknown
Is the project site within a national Wild and Scenic River ?	☐ Yes	☒ No	☐ Unknown
Is the project site within a State Scenic Waterway?	☐ Yes	☒ No	☐ Unknown
Is the project site within the 100-year floodplain?	☒ Yes	☐ No	☐ Unknown

If yes to any above, explain in Block 6 and describe measures to minimize adverse effects to those resources in Block 7.

Is the project site within the Territorial Sea Plan (TSP) Area? **If yes, attach TSP review as a separate document for DSL.**	☐ Yes	☒ No	☐ Unknown
Is the project site within a designated Marine Reserve? **If yes, certain additional DSL restrictions will apply.**	☐ Yes	☒ No	☐ Unknown
Will the overall project involve ground disturbance of one acre or more? **If yes, you may need a 1200-C permit from the Oregon Department of Environmental Quality (DEQ).**	☒ Yes	☐ No	☐ Unknown
Is the fill or dredged material a carrier of contaminants from on-site or off-site spills?	☐ Yes	☒ No	☐ Unknown
Has the fill or dredged material been physically and/or chemically tested? **If yes, explain in Block 6 and provide references to any physical/chemical testing report(s).**	☐ Yes	☒ No	☐ Unknown
Has a cultural resource (archaeological and/or built environment) survey been performed on the project area? ***A previous Archeological Survey has been completed and is applicable with some caveats.***	☐ Yes	☒ No	☐ Unknown
Do you have any additional archaeological or built environment documentation, or correspondence from tribes or the State Historic Preservation Office? ***A previous Archeological Survey has been completed and is applicable with some caveats.***	☐ Yes	☒ No	☐ Unknown

See Section 9.

If yes, provide a copy of the survey and/or documentation of correspondence with this application to the Corps only. Do not describe any resources in this document. Do not provide the survey or documentation to DSL.

Is the project part of a DEQ Cleanup Site? No ☒ Yes☐ Permit number _____
DEQ contact._____

Will the project result in new impervious surfaces or the redevelopment of existing surfaces? Yes ☐ No ☒
If yes, the applicant must submit a post-construction stormwater management plan as part of this application to DEQ's 401 WQC program for review and approval, see https://www.oregon.gov/deq/FilterDocs/401wqcertPostCon.pdf

Identify any other federal agency that is funding, authorizing or implementing the project.

Agency Name	Contact Name	Phone Number	Most Recent Date of Contact
None			

List other certificates or approvals/denials required or received from other federal, state or local agencies for work described in this application.

Agency	Certificate / approval / denial description	Date Applied
None		

Other DSL and/or Corps Actions Associated with this Site (Check all that apply.)

☐ Work proposed on or over lands owned by or leased from the Corps (may require authorization pursuant to 33 USC 408). These could include the federal navigation channel, structures, levees, real estate, dikes, dams, and other Corps projects.

☐ State owned waterway — DSL Waterway Lease #:

☐ Other Corps or DSL Permits — Corps # DSL #

☐ Violation for Unauthorized Activity — Corps # DSL #

☐ Wetland and Waters Delineation — Corps # DSL #

Submit the entire delineation report to the Corps; submit only the concurrence letter (if complete) and approved maps to DSL. If not previously submitted to DSL, send under a separate cover letter

(9) IMPACTS, RESTORATION/REHABILITATION, AND COMPENSATORY MITIGATION

A. Describe unavoidable environmental impacts that are likely to result from the proposed project. Include permanent, temporary, direct, and indirect impacts.

Archeology Note: In March 2016 Tetratech completed and submitted the following document "*Cultural Resources Reconnaissance and Water Control System Recording for the Winter Lake and China Camp Creek Restoration Projects, Coquille, Coos County, Oregon"* This cultural review covers substantive cultural resource information on the project area. This document is on file with Oregon SHPO.

This project is designed to be restorative with actions that improve function for wetlands, tidal regimes, and more ecological uplift. A number of measures will be incorporated to minimize impacts associated with construction. As the project is considered restorative no Compensatory Mitigation is proposed.

1. Installation of New HDPE Culverts
There will be disturbance of earth through the berms when old culverts are excavated and new channels are excavated through pasture berms. All work will be completed during the NMFS and ODFW approved July 1 to September 15th In-Water work window. Excavators will work from top of

bank, pulling soils towards the berm crest or pasture locations to minimize potential or soils to enter the canals culverts connect to. Following the project actions seeding and mulching will be applied at culvert installations through berm locations. Culvert excavation and installation will be conducted at the low-incoming tide. During that period there will be minimal water in work areas. An earthen plug will be installed upstream of the installation site to prevent flow of water from work area into pasture channels. Fish salvage is not expected to be needed as work at low tides will assist with removing water from work area, however, the project will coordinate with ODFW staff for individual locations on the need and tactics for fish salvage as needed. Deployment of a seine net isolation will be incorporated as necessary for individual sites to prevent fish from entering trenches where culvert excavation/installation occurs. Conducting work on the low incoming tide will isolate turbidity to the immediate work area.

2. Installation of New Water Control Mechanisms
Installation of these mechanisms (side-hinged tidegates and vertical slide/knife-gates) is not soil disturbing and will be accomplished through inserting them on culverts prior to installation.

3. Install New Bridge:
There will be earth disturbance and some modest In-Water Work to remove the old culvert at this site where the bridge will be installed for the farm road entrance from Hwy 42 to the pasture. Following removal of the culvert channel banks will be shaped to 1.5:1 sloping and seeded and mulched following construction. The excavator will work from the top of bank. In-Water Work will be conducted during a low incoming tide to provide for turbidity to be maintained in the work area and not export to the main Coquille River.

4. Construct On-Grade Tidal/Floodplain Channels:
Excavation/reconstruction of pastured channels will result in soil disturbance. Additionally, there will be soil thin-spreading in pastures to an average depth of 3.0” adjacent to channel excavation locations. Those soils will have new regrowth of pasture grass/vegetation in the early fall with cooler temperatures. Side slopes of channels will be seeded with an appropriate pasture erosion control mix, following construction to expedite healing. Channels will be installed from July 1 to September 15th. Small earthen plugs will be installed at the connection point with the main canals at low tide to prevent entry of water into the canals during construction. Connection will be accomplished through excavation of the final water control plugs during a low-incoming tide. Channels will be isolated from water inflow through installation of a low earthen berm in the channel entry point from the berm culvert into the pastures. Work area isolation berms will be removed following channel completion on a low incoming tide, which will isolate turbidity to the immediate work area. There will be some limited excavator depression of pasture/wetland soils, soil disturbance, and placement of fill to an average depth of 3.0” on pastures.

5. Installation of Hydrologic Bulbs:
These excavated land areas are at the upper ends of channel networks. Excavation is expected to be fully in dry conditions. Earthen spoils will be thin spread to an average depth of 3.0” adjacent to the hydrologic bulb sites or in some cases hauled with use of a standard dump truck to berm repair locations. These locations have been designed with an elevation invert that provides for pasture grass growth. Following construction, we will seed and mulch these locations with an appropriate coastal pasture grass mix and weed free hay/straw. Five elevational diversity wetland mounds adjacent to hydrologic bulbs on the Bridges west and east properties will provide for planting success of Sitka Spruce and cottonwood. The max elevations will be 7.5ft NAVDD 88, which ensures wetland function.

6. Excavation of China Camp Creek and Unit 1 Canal S.E.:
This work will be conducted later in the summer In-Water Work window for two reasons:

- **a).** Temperatures continue to increase during the duration of the summer months, which will ensure salmonid fish are not present during excavation.
- **b).** Streamflows from China Creek and groundwater inputs into the Unit 1 S.E. canal will be minimized, reducing the movement of turbidity from the work area. ODFW consultation has determined that salmonid fish will be highly unlikely to be in the work area due to high stream temps in August-Early September. That said there is likely to be some lamprey ammocoetes, three-spined sticklebacks (*Gasterosteus aculeatus*), and a few native sculpin in the work zone.

The deep muddy substrates and overall width of the canals at the sites present conditions where the primary tactics that will be successful to minimize impacts will be to:

- **a).** Excavate sediments on low-incoming tide, which will hold turbidity in the work area;
- **b).** Salvage lamprey ammocoetes, sticklebacks, amphibians, and sculpin that become entrained

with bucket deposition of excavated earth as deposited in field locations using hand methods. All fish will be released into another reach of the canals where conditions are favorable.

7. Berm Repair:
Berm repair will be accomplished during the July 1 to September 15th In-Water Work window. The excavator and dozer will work from top of bank. Canal slopes will be from 1:1 to 1.5:1 sloping depending on reach. Pasture side sloping will be 2:1 or more gentle. Side-sloping will allow for mulching/seeding that will minimize erosion. Berm work will occur above canal water elevation as construction will be completed at either a low tide or when the C3P tidegates have been able to sustainably lower water elevations below the work zone. There will be several segments where some new earthen material will be needing to be placed down to the water surface elevation, however, turbidity will be contained within the work area as the work at those locations will be conducted on a low incoming tide.

Stormwater Management Discussion:
Channel Construction: Excavator work will result in minimal soil compaction levels for the floodplain/wetland soils present on the project area. Channel banks will be sloped to 1:1lg, 1.5:1med, and <2:1sm sloping depending on reach segment to prevent erosion. Pasture grass and sedge vegetation is anticipated to immediately re-sprout with fall rains and grow through thin-spread soils. This was readily evident from the North Bank Access Project (*see* ***ODFW report to USAC; North Bank Access Project Monitoring Report***) where soils were spread to an average depth of 3.0" on the land area. Seeding and mulching will be used where there is substantial soil disturbance with a potential to move from the location to a canal or watercourse outside the immediate channel construction area. No new hard surface roads will be constructed with this project.

B. For temporary removal or fill or disturbance of vegetation in waterbodies, wetlands or riparian (i.e., streamside) areas, discuss how the site will be restored after construction to include the timeline for restoration.

- Temporary fill storage areas will be only adjacent to berm repair locations and on the pasture side where there is not risk of slumping or bucket drift into main canals or waterways. Fill may be stored for a few days to a week. Fill will be excavated down to the existing vegetation level following storage to allow for re-sprouting of native/other vegetation that is currently on site after construction. If the root structure is removed through excavation at these sites occurs seeding and mulching will be employed to reestablish vegetation.

- We will employ seeding with a coastal zone pasture mix and mulching with weed free straw/hay for all locations where there is loose earthen fill, excavated fluff, or unconsolidated soils that have a likelihood of being activated with rainfall, wind, or tidal inflow/outflow due to project implementation. Seeding and mulching will be employed prior to the fall rainy period in order to provide for initial establishment of vegetation and prevent entry of sediments in watercourses.

- Noise and equipment vibration disturbance will be completed prior to cooler fall water temperatures and entry of listed salmonids into project area canals and waterways.

- Excavator work will be conducted from dry upland locations and top of bank during all work during unless necessary and then excavator support mats to prevent soil damage will be used as necessary.

- Skip Planting tactics (***Attachment B; Sheets 24-26***) will be employed as a long-term ecological uplift on chosen segments of larger and medium channels from the connection point with main canals upstream for 500ft or further (depending on landowner). Individual landowners have expressed interest in fencing larger channels with a minimal setback from livestock grazing. These hotwire fences would provide for full establishment of grasses/sedges on these reaches of channel providing fish cover and filtration of pasture nutrients.

Assessment Note: We have considered the ecological influence/effects of individual hydrologic/productivity factors and proposed Project Action effects at the site and have ranked them according to their capacity to benefit production or impact conditions. *(**Table 1, p. 26**):*

- Hydrologic Connectivity: Increasing access for fish and water movements to habitats through installation of a more natural channel network is considered to have the greatest capacity for ecological benefit.

- Hydrologic Regimes/natural hydrology: New channels and culverts with proper sizing in combination with more functional water control structures will increase the ability for channel networks to reflect C3P tidegate operations and deliver a more natural tidal inflow/outflow from the project area. This is considered the second largest factor affecting ecological productivity.
- Riparian condition: Skip planting of native trees (cottonwood, spruce, and Oregon ash) with three trees per plot and spacing of plots on 100ft intervals will provide for some shading of the larger channels through time improving summer water quality and winter wildlife habitat. Other Skip Planting strategies were also considered similarly effective (**Attachment B; Sheets 24-26**).

Table 1. Analysis of Impacts and Benefits for Winter Lake Phase III proposed actions.
Note: *All disturbance actions are considered to be recovered/revegetated from disturbance 3yrs post project. Majority of attributes are designed to produce uplift that result in "Net Benefit" ecologically*

Action	Impact	Impact to Ecology Time of Construction Yes/No	Severity of Impact High/Med/Low	Healed by Year 2 Yes/No	Net Ecologic Benefit by Yr 3 Yes/No	Benefit Power High/Med/Low	Explanation
Installation of new proper sized culverts	Earth Work interior berms	Yes, due to soil disturbance	**Low**	**Yes**	**Yes, immediate uplift**	**High**	*New culverts allow for more natural hydrologic flow of water to interior pasture channels. greatly improved fish passage and wetland function. Net benefit strong much greater than impacts from time zero forward*
Channel construction/reconstruction; Excavation	Excavation/ soil disturbance	Yes, soil disturbance	**Medium**	**Yes**	**Yes, immediate uplift**	**High**	*New/reconstructed channels provide for more natural hydrologic flow of water to interior pastures, greatly improved fish passage and wetland function. Net benefit much greater than impacts from time zero forward.*
Channel construction/reconstruction; soil Thin-spread	Soil distribution to 3" on wetlands	Yes, plant disturbance, unvegetated soils	**Medium**	**Yes**	**Neutral by year 3**	**Neutral by year 3**	*Soils that are distributed on wetland pastures will be thin-spread on average to 3" in depth; they will be integrated into pasture grasses as wetland plants are fully able to grow through this application fall of year 1 with full healing by year 2.*
Channel Reconstruction bank sloping 1:1 and 2:1	Soil disturbance	Yes, soil disturbance	**Medium**	**Yes**	**Uplift by year 2**	**Medium**	*Current pasture drainage channels have vertical banks that lead to bank sloughing and provide little if any edge habitats for fish when winter flows fill channels. Sloping of banks of channels will provide edge for growth of vegetation/fish cover, reduce erosion, and sediments*
Construction of Hydrologic Bulbs	Soil disturbance	Yes, soil disturbance	**Low**	**Yes**	**Yes, immediate uplift**	**High**	*Hydrologic bulbs will be installed at upper reaches of channel networks in selected locations. These bulbs will be excavated to an elevation that during winter months they provide long-term wetted habitat for juvenile coho. These also increase hydrologic exchange of water, which results in greater flushing of channels during tidal inflow/outflow. This prevents channels from accumulating sediments and provides long term channel life expectancy with little or no reexcavation to "clean" sediment. These bulbs also allow for greater volume capacity of channel networks duriing inflow/outflow events, which provide for exchange of water in channels and canals improving water quality.*
Excavation of China Camp/Unit 1 Canal S.E.	Direct Substrate Disturbanc/ Turbity	Yes, remove substrates, organisms, turbidity	**Medium**	**Yes**	**Neutral by year 3**	**Neutral by year 3**	*Initial excavation will remove substrates that have macroinvertebrates and lamprey present. This action will, however, be carried out where banks of canals are not denuded of established grass cover. Skip Planting will be employed in these reaches on pasture side of berm. Spreading of spoils to 3.0" in adjacent pastures is anticipated provide for stabilization in year 1.*
Berm Reconstruction		Yes, soil disturbance	**Low**	**Yes**	**Neutral by year 2**	**Neutral by year 2**	*Locations where berms are reconstructed will be be seeded/mulched. They are expected to be fully revegetated by year by end of growing season year 2.*
Fence installation	Some soil disturbance	Minimal	**Very Low**	**Yes**	**Yes**	**Medium**	*Fencing of selected segments of channels provides immediate benefits to water quality and longer term establishment of riparian vegetative and woody plants for fish habitat complexity.*
Large Woody Debris Installation large channels	Some soil disturbance	Minimal	**Very Low**	**Yes**	**Yes**	**High**	*Installation of LWD rootwads in first 500ft of larger channels will fully provide uplift through providing complexity for fish and other aquatic organisms.*
Planting of Trees on large and selected secondary channels	N/A	N/A	**N/A**	**N/A**	**N/A**	**HIgh**	*Skip planting of trees will be implemented on large and selected medium channels in segments where fence is installed. Additionally, individual caged trees will be planted. Skip planting will be three trees planted in a single 8x8ft plot every 100ft on large channels and selected medium channel reaches (Sheets 24-26). Tree species will be either Oregon Ash, Black Cottonwood, or Spruce.*
		Net Estimated Project Overall Ecological Benefit by Year 1				**Medium**	
		Net Estimated Project Overall Ecological Benefit by Year2				**High**	

Table 2. Winter Lake Phase III Project Action Design Yardages.

Channel Construction/Reconstruction*

Landowner	Wetland/Waterbody	Size	Length (ft)	Excavate Cubic Yards	Fill Cubic Yards	Excavate Acres	Thinspread Area Acres	Fill Comments
Bridges Foundation	*Interior Pasture Channel*	Small	15,006	10,473	10,473	3.8	8.7	3.0" ave thinspread pasture
	Interior Pasture Channel	Medium	14,851	14,876	14,876	3.9	12.3	3.0" ave thinspread pasture
	Interior Pasture Channel	Large	18,690	31,121	29,292	6.0	24.2	3.0" ave thinspread pasture
Isenhart/Smith	*Interior Pasture Channel*	Small	8,633	5,974	5,317	2.2	4.4	3.0" ave thinspread pasture
	Interior Pasture Channel	Medium	3,651	3,666	3,666	1.0	3.0	3.0" ave thinspread pasture
	Interior Pasture Channel	Large	4,335	6,983	6,750	1.4	5.6	3.0" ave thinspread pasture
Messerle	*Interior Pasture Channel*	Small	12,582	8,795	7,556	3.2	6.2	3.0" ave thinspread pasture
	Interior Pasture Channel	Medium	2,119	2,078	2,078	0.6	1.7	3.0" ave thinspread pasture
	Interior Pasture Channel	Medium-S	3,030	4,038	4,038	0.8	3.3	3.0" ave thinspread pasture
	Interior Pasture Channel	Large	9,052	14,780	13,734	2.9	11.4	3.0" ave thinspread pasture
ODFW	*Interior Pasture Channel*	Small	2,495	2,037	2,037	0.6	1.7	3.0" ave thinspread pasture
	Interior Pasture Channel	Medium	4,562	4,675	5,175	1.2	4.3	3.0" ave thinspread pasture
	Interior Pasture Channel	Large	775	1,319	500	0.2	0.4	3.0" ave thinspread pasture
		Subtotals	***99,781***	***110,815***	***105,492***	***27.8***	***87.2***	

** 5,323 cy of cubic yards excavated used for berm repair*

Canal Excacavation

Landowner	Wetland/Waterbody	Size	Length (ft)	Excavate Cubic Yards	Fill Cubic Yards	Excavate Acres	Thinspread Area Acres	Fill Comments
Bridges Foundation	*China/Camp Canal E.*	Canal	1,262	3,675	3,675	0.87	3.0	3.0" ave thinspread pasture
Messerle	*Unit 1 Canal S.E. (2 locs)*	Canal	~200	2,000	2,000	0.06	1.7	3.0" ave thinspread pasture
ODFW	*Unit 3 Canal N.E.*	Canal	840	1,116	1,116	0.12	0.9	3.0" ave thinspread pasture
		Subtotals	***2,302***	***6,791***	***6,791***	***1.0***	***5.6***	

Berm Reconstruction

Landowner	Wetland/Waterbody	Size	Length (ft)	Excavate Cubic Yards	Fill Cubic Yards	Excavate Acres	Fill Area Acres	Fill Comments
Bridges Foundation	*China/Camp Canal Berm*	20ft base	587	0	997	N/A	0.27	Fill from chan construction
Bridges Foundation	*Unit 1 Canal Berm misc*	20ft base	221	0	376	N/A	0.10	Fill from chan construction
Messerle	*Unit 1 E.; #1 and 2 sites*	20ft base	530	0	901	N/A	0.24	Fill from chan construction
Messerle	*Unit 1 S. #2*	20ft base	220	0	374	N/A	0.10	Fill from chan construction
Messerle	*Bridge approach*	20ft base	80	0	358	N/A	0.04	Fill from chan construction
Isenhart/Smith	*Unit 1 S. #1, 3, & 4*	20ft base	460	0	675	N/A	0.21	Fill from chan construction
Isenhart/Smith	*Unit 1 E*	20ft base	149	0	732	N/A	0.07	Fill from chan construction
ODFW	*Unit 3 North*	20ft base	600	0	510	N/A	0.28	Fill from chan construction
ODFW	*Unit 3 N.E.*	20ft base	400	0	400	N/A	0.18	Fill from chan construction
		Suttotals	***3,247***	*0*	***5,323***		***1.49***	

Culvert Installation Riprap (and one bridge site)*

Landowner	Wetland/Waterbody	Area Sq Ft	Number Locations	Excavate Cubic Yards	Tot Fill Cubic Yards	Excavate Acres	Fill Area Acres	Fill Comments
Bridges Foundation	*Pasture chan culverts*	100	16	N/A	320	N/A	0.002	
Messerle	*Pasture chan culverts*	100	9	N/A	180	N/A	0.002	
Messerle	*Unit 1 S.E. Bridge*	480	1	456	496	0.01	1.130	3.0" thinspread/40cy riprap install
Isenhart/Smith	*Pasture chan culverts*	100	5	N/A	100	N/A	0.002	
ODFW	*Pasture chan culverts*	100	7	N/A	140	N/A	0.002	
			Totals	***456***	***1,236***	***0.11***	***1.139***	

Hydrologic Bulb Construction* *(some material may be used for berm reconstruction)*

Landowner	Wetland/Waterbody	Area Sq Ft	Number Locations	Excavate Cubic Yards	Fill Cubic Yards	Excavate Acres	Thinspread Area Acres	Fill Comments
Bridges Foundation	Interior Pastures	345,866	10	30,499	30,499	7.94	25.2	3.0" ave thinspread pasture
Messerle	Interior Pastures	184,259	5	12,907	12,907	4.23	10.7	3.0" ave thinspread pasture
Isenhart/Smith	Interior Pastures	134,208	4	10,159	10,159	3.081	8.4	3.0" ave thinspread pasture
ODFW	Interior Pastures	144,184	3	10,940	10,940	3.31	9.0	3.0" ave thinspread pasture
			Totals	***64,505***	**64,505**	***18.6***	***53.3***	
Bridges Foundation	**Wetland Diversity Mounds**	5 mounds 20ft in diameter ~3ft in depth, maintain wetland factors 80cy of 64,505 cy total.						

Heavy Use Watering Trough Sites

Landowner	Wetland/Waterbody	Area Sq Ft	Number Locations	Excavate Cubic Yards	Fill Cubic Yards	Excavate Acres	Thinspread & Rock Acres	Fill Comments
Messerle	Interior Pastures	1600	4	47.4	47.4	0.04	0.08	3.0" ave thinspread pasture/4" rock
Isenhart/Smith	Interior Pastures	800	2	23.7	23.7	0.02	0.04	3.0" ave thinspread pasture/4" rock
Bridges Foundation	Interior Pastures	1200	3	35.6	35.6	0.03	0.06	3.0" ave thinspread pasture/4" rock
			Totals	***106.7***	***106.7***	***0.08***	***0.17***	**0.25 acres thinspread and Heav use rock**

Compensatory Mitigation
Project is designed to be restorative in nature/self mitigating. All actions improve hydrologic function.

B. Proposed mitigation approach. Check all that apply:
Restoration project; will produce ecological uplift that overoffsets impacts.

☐ Permittee-responsible Onsite Mitigation	☐ Permittee-responsible Offsite mitigation	☐ Mitigation Bank or In-Lieu Fee Program	☐ Payment to Provide (not approved for use with Corps permits)

D. Provide a brief description of proposed mitigation approach and the rationale for choosing that approach. If you believe mitigation should not be required, explain why.
Project is designed to be restorative in nature with offset of impacts by improvements in:
1). Hydrological Connectivity that allows for water and fish to move readily from main canals to pasture channels.
2). Hydrological Regimes that more closely mimic historical condition
3). Riparian Improvement that provides for improved water quality and wildlife habitat
4). Improved Sloping of channels that prevents calving of channel banks and improved water quality

Mitigation Bank / In-Lieu Fee Information: N/A
Name of mitigation bank or in-lieu fee project:
Type and amount of credits to be purchased:

If you are proposing permittee-responsible mitigation, have you prepared a compensatory mitigation plan?
☐ Yes. Submit the plan with this application and complete the remainder of this section.
☐ No. A mitigation plan will need to be submitted (for DSL, this plan is required for a complete application).

This project is restorative in nature and uplift offsets temporary impacts

Mitigation Location Information (Fill out only if permittee-responsible mitigation is proposed)

Mitigation Site Name/Legal Description	Mitigation Site Address	Tax Lot #
N/A		
County	City	Latitude & Longitude (in DD.DDDD format)

Township	Range	Section	Quarter/Quarter

(10) ADJACENT PROPERTY OWNERS FOR PROJECT AND MITIGATION SITE

☐ **Pre-printed mailing labels of adjacent property owners attached**	**Project Site Adjacent Property Owners**	**Mitigation Site Adjacent Property Owners**

Contact Name Juliana Ruble
Address 1 District 7, Oregon Department of Transportation
Address 2 307 Hwy 42 W
City, ST ZIP Code Coquille, OR 97423

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

For U.S. Army Corps of Engineers send application to:

USACE Portland District
ATTN: CENWP-ODG-P
PO Box 2946
Portland, OR 97208-2946
Phone: 503-808-4373
portlandpermits@usace.army.mil

Counties:
Baker, Benton, Clackamas, Clatsop, Columbia, Gilliam, Grant, Hood River, Jefferson, Lincoln, Linn, Malheur, Marion, Morrow, Multnomah, Polk, Sherman, Tillamook, Umatilla, Union, Wallowa, Wasco, Washington, Wheeler, Yamhill

U.S. Army Corps of Engineers
ATTN: CENWP-ODG-E
211 E. 7th AVE, Suite 105
Eugene, OR 97401-2722
Phone: 541-465-6868
portlandpermits@usace.army.mil

Counties:
Coos, Crook, Curry, Deschutes, Douglas, Jackson, Josephine, Harney, Klamath, Lake, Lane

For Department of State Lands send application to:

West of the Cascades:
Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
Phone: 503-986-5200

East of the Cascades:
Department of State Lands
1645 NE Forbes Road, Suite 112
Bend, Oregon 97701
Phone: 541-388-6112

For Department of Environmental Quality e-mail application to:

ATTN: DEQ 401 Certification Program
Water Quality
700 NE Multnomah St, Suite 600
Portland, OR 97232
401applications@deq.state.or.us

(11) CITY/COUNTY PLANNING DEPARTMENT LAND USE AFFIDAVIT (TO BE COMPLETED BY LOCAL PLANNING OFFICIAL)

I have reviewed the project described in this application and have determined that:

- ☐ This project is not regulated by the comprehensive plan and land use regulations
- ☐ This project is consistent with the comprehensive plan and land use regulations
- ☒ This project is consistent with the comprehensive plan and land use regulations with the following:
  - ☒ Conditional Use Approval
  - ☒ Development Permit
  - ☒ Other Permit (explain in comment section below)
- ☐ This project is not currently consistent with the comprehensive plan and land use regulations. To be consistent requires:
  - ☐ Plan Amendment
  - ☐ Zone Change
  - ☐ Other Approval or Review (explain in comment section below)

An application or variance request has ☐ has not ☐ been filed for the approvals required above.

Local planning official name (print)	Title	City / County
Chris MacWhorter	**Principal Planner/Floodplain Admin.**	**Coos County**
Signature	Date **5/2/2023**	
Comments: **Proposal requires ACU for CREMP zoning, CD for EFU, and Floodplain Review for all floodplain overlay zone.**		

(12) COASTAL ZONE CERTIFICATION

If the proposed activity described in your permit application is within the Oregon Coastal Zone, the following certification is required before your application can be processed. The signed statement will be forwarded to the Oregon Department of Land Conservation and Development (DLCD) for its concurrence or objection. For additional information on the Oregon Coastal Zone Management Program and consistency reviews of federally permitted projects, contact DLCD at 635 Capitol Street NE, Suite 150, Salem, Oregon 97301 or call 503-373-0050 or click here.

CERTIFICATION STATEMENT

I certify that, to the best of my knowledge and belief, the proposed activity described in this application complies with the approved Oregon Coastal Zone Management Program and will be completed in a manner consistent with the program.

Print /Type Applicant Name	Title
Fred R. Messerle	District Manager
Applicant Signature: Fred R Messerle	Date 6/10/2022

(13) SIGNATURES

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities. By signing this application I consent to allow Corps or DSL staff to enter into the above-described property to inspect the project location and to determine compliance with an authorization, if granted. I hereby authorize the person identified in the authorized agent block below to act in my behalf as my agent in the processing of this application and to furnish supplemental information in support of this permit application. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. I understand that payment of the required state processing fee does not guarantee permit issuance.

To be considered complete, the fee must accompany the application to DSL. The fee is not required for submittal of an application to the Corps.

Fee Amount Enclosed	$

Applicant Signature (required) must match the name in Block 2

Print Name	Title
Fred R. Messerle	District Manager
Signature Fred R. Messerle	**Date** 06/01/2022

Authorized Agent Signature

Print Name	Title
Caley Sowers	District Manager
Signature Caley Sowers	**Date** 02/09/2023

Landowner Signature(s)

Landowner of the Project Site (if different from applicant)

Print Name	Title
Fred Messerle & Sons, Inc.	Secretary-Treasurer
Signature Fred R. Messerle	**Date** 6/10/2022

Landowner of the Project Site (if different from applicant)

Print Name	Title
Everett-Ona Isenhart Ranch, Inc.	President
Signature Cynthia Henson	**Date** 06/02/2022

Landowner of the Project Site (if different from applicant)

Print Name	Title
Laura Isenhart	~~Owner~~ Trustee, Isenhart Living Trust
Signature Laura J Isenhart	**Date** 6.10.22

Landowner of the Project Site (if different from applicant)

Print Name	Title
John Isenhart	Trustee, ~~6.10.22~~ Isenhart Living Trust
Signature John Isenhart	**Date** 6.10.22

(13) SIGNATURES

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities. By signing this application I consent to allow Corps or DSL staff to enter into the above-described property to inspect the project location and to determine compliance with an authorization, if granted. I hereby authorize the person identified in the authorized agent block below to act in my behalf as my agent in the processing of this application and to furnish supplemental information in support of this permit application. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. I understand that payment of the required state processing fee does not guarantee permit issuance.

To be considered complete, the fee must accompany the application to DSL. The fee is not required for submittal of an application to the Corps.

Fee Amount Enclosed	$

Applicant Signature (required) must match the name in Block 2	
Print Name	Title
Signature	Date
Authorized Agent Signature	
Print Name	Title
Signature	Date

Landowner Signature(s)*	
Landowner of the Project Site (if different from applicant)	
Print Name Sara Gregory	Title ODFW, Umpqua Watershed District Manager
Signature Sara Gregory	Date April 13, 2022
Landowner of the Project Site (if different from applicant)	
Print Name Luke Fitzpatrick	Title Trustee, The Bridges Foundation
Signature Luke Fitzpatrick	Date 7-28-2022
Landowner of the Project Site (if different from applicant)	
Print Name Juliana Ruble	Title District 7 Permit Specialist
Signature Juliana Ruble	Date 04.04.2023
Landowner of the Project Site (if different from applicant)	
Print Name	Title
Signature	Date

Landowner of the Project Site (if different from applicant)	
Print Name	Title
Signature	Date
Landowner of the Project Site (if different from applicant)	
Print Name	Title
Signature	Date
Landowner of the Project Site (if different from applicant)	
Print Name	Title
Signature	Date
Landowner of the Project Site (if different from applicant)	
Print Name	Title
Signature	Date
Landowner of the Project Site (if different from applicant)	
Print Name	Title
Signature	Date
Landowner of the Mitigation Site (if different from applicant)	
Print Name	Title
Signature	Date
Department of State Lands, Property Manager (to be completed by DSL)	
If the project is located on state-owned submerged and submersible lands, DSL staff will obtain a signature from the Land Management Division of DSL. A signature by DSL for activities proposed on state-owned submerged/submersible lands only grants the applicant consent to apply for a removal-fill permit. A signature for activities on state-owned submerged and submersible lands grants no other authority, express or implied and a separate proprietary authorization may be required.	
Print Name	Title
Signature	Date

* Not required by the Corps.

(14) ATTACHMENTS

- ☐ Drawings
  - ☐ Location map with roads identified (figure 1)
  - ☐ U.S.G.S topographic map (figure 2)
  - ☐ Tax lot map (figure 3-4)
  - ☐ Site plan(s) (see figures 5-30)
  - ☐ Plan view and cross section drawing(s) (figures 18-24)
  - ☐ Recent aerial photo (figure 5 and 11)
  - ☐ Project photos (figures 8, 10, 12, 14, 17, 28)
  - ☐ Erosion and Pollution Control Plan(s), if applicable (N/A)
  - ☐ DSL / Corps Wetland Concurrence letter and map, if approved and applicable
- ☐ Pre-printed labels for adjacent property owners (Required if more than 5)
- ☐ Incumbency Certificate if applicant is a partnership or corporation
- ☐ Restoration plan or rehabilitation plan for temporary impacts
- ☐ Mitigation plan
- ☐ Wetland functional assessments, if applicable
  - ☐ Cover Page
  - ☐ Score Sheets
  - ☐ ORWAP OR, F, T, & S forms
  - ☐ ORWAP Reports
  - ☐ Assessment Maps
  - ☐ ORWAP Reports: Soils, Topo, Assessment area, Contributing area
- ☐ Stream Functional Assessments, if applicable
  - ☐ Cover Page
  - ☐ Score Sheets
  - ☐ SFAM PA, PAA, & EAA forms
  - ☐ SFAM Report
  - ☐ Assessment Maps
    - ☐ Aerial Photo Site Map and Topo Site Map (Both maps should document the PA, PAA, & EAA)
- ☐ Compensatory Mitigation (CM) Eligibility & Accounting Worksheet
  - ☐ Matching Quickguide sheet(s)
  - ☐ CM Eligibility & Accounting sheet
- ☐ Alternatives analysis
- ☐ Biological assessment (if requested by the Corps project manager during pre-application coordination)
- ☐ Stormwater management plan (may be required by the Corps or DEQ)
- ☐ Other
  - ☐ Please describe: