Coos County Community Development

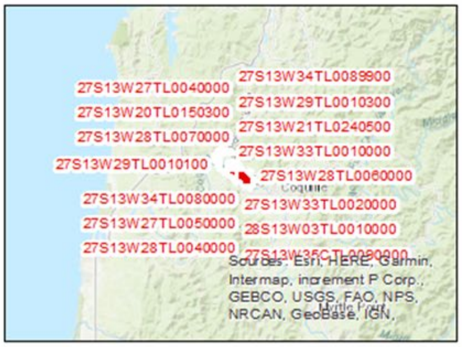
FILE NUMBER:	ACU-23-074/FP-23-012
HEARING DATE:	Wednesday, April 17, 2024 at 1:30 PM
HEARING LOCATION:	201 N. Adams Street, Coquille Oregon 97423 This meeting can be attended virtually at **Board of Commissioners Hearings** **Please join my meeting from your computer, tablet or smartphone.** https://meet.goto.com/964495293 **You can also dial in using your phone.** Access Code: 964-495-293 United States: +1 (571) 317-3122
APPLICANT(s):	Fred Messerle, Beaver Drainage District Caley Sowers, Coos Soil and Water District Manager Fred Messerle, Treasure, Fred Messerle & Sons, Inc. Cynthia Henson, President, Everett-Ona Isenhart Ranch, Inc. Laura and John Isenhart, Trustee, Isenhart Living Trust Sara Gregory, ODFW, Umpqua Watershed District Manager Luke Fitzpatrick, Trustee, The Bridges Family Trust Juliana Ruble, District 7 Permit Specialist
STAFF CONTACT:	Jill Rolfe, Planning Director Phone: 541-396-7770 Email: planning@co.coos.or.us
HEARINGS BODY:	Board of Commissioners
RECORD:	Record items can be viewed and downloaded from the website

SUMMARY/REQUEST: The applicants have requested an Administrative Conditional Use Review. There have been some public concerns raised with this request and the Board of Commissioners called the matter up during a work session on March 5, 2024. The Winter Lake Phase III project entails a working lands infrastructure rehabilitation effort proposed on 1,290 acres within the 1,790-acre Beaver Slough Drainage District and two additional parcels totaling 99 acres in the Coaledo Drainage District. The project aims to replace/consolidate a total of 42 pasture culverts with associated tidegates, install over 90,000 ft of new and reconstructed tidal/farm drainage channels, repair five segments of failing berms, excavate deposited sediments from China Camp Creek, and install up to nine heavy-use watering site troughs.

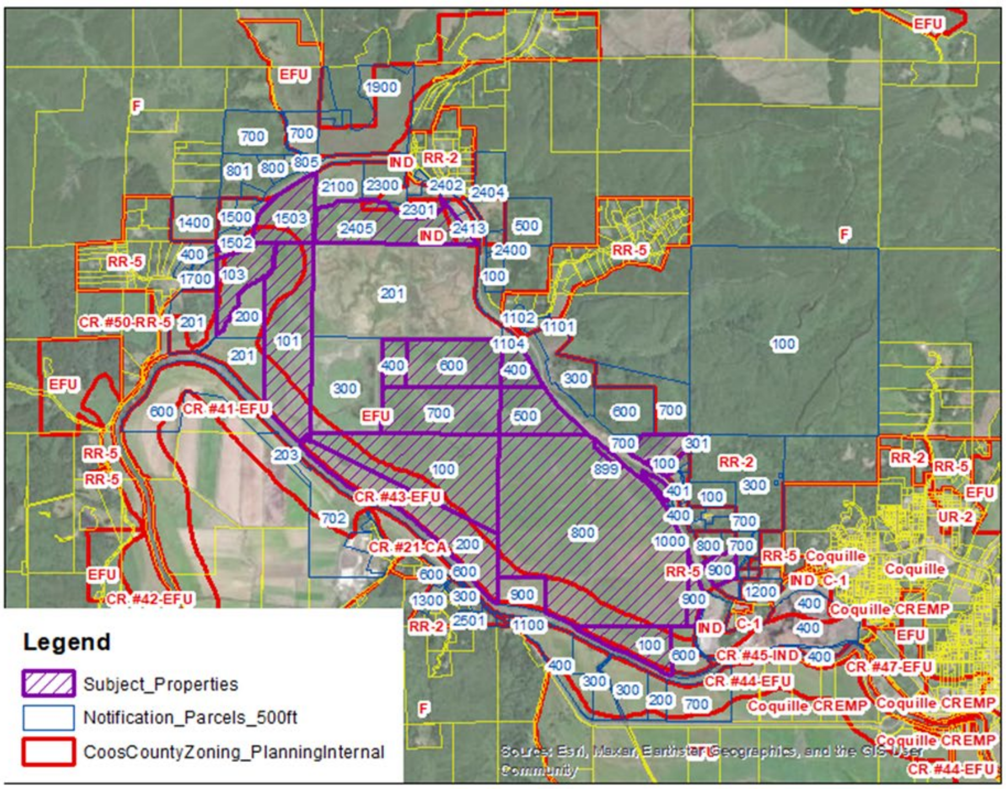
SUBJECT PROPERTY DETAILS:
(map not to scale)

COOS COUNTY PLANNING DEPARTMENT

Mailing Address: 250 N. Baxter, Coquille, Oregon 97423
Physical Address: 60 E. Second, Coquille Oregon
Phone: (541) 396-7770
TDD (800) 735-2900



File:	ACU-23-074/FP-23-012
Applicant/ Owner:	Oregon Department of Fish & Wildlife/ Coos Soil & Water Conservation District/ Various
Date:	February 13, 2024
Location:	Various
Proposal:	Conditional Use/Floodplain Review



Account Number: Map Number:	716702 27S132700-00400	716800 27S132700-00500	717401 27S132800-00600
Property Owner:	THE BRIDGES FOUNDATION C/O FITZPATRICK, LUKE, TRUSTEE PO BOX 1123 TURNER, OR 97392-1123	THE BRIDGES FOUNDATION C/O FITZPATRICK, LUKE, TRUSTEE PO BOX 1123 TURNER, OR 97392-1123	THE BRIDGES FOUNDATION C/O FITZPATRICK, LUKE, TRUSTEE PO BOX 1123 TURNER, OR 97392-1123
Acreage:	25.36 Acres	54.43 Acres	80.00 Acres
Zoning:	EXCLUSIVE FARM USE (EFU)	EXCLUSIVE FARM USE (EFU)	EXCLUSIVE FARM USE (EFU)
Special Development Considerations and Overlays:	FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY (NWI) NH LIQUEFACTION (NHEQL) NH TSUNAMI (NHTHO)	FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY (NWI) NH LIQUEFACTION (NHEQL) NH TSUNAMI (NHTHO) WET MEADOW WETLAND (WM)	FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY (NWI) NH LIQUEFACTION (NHEQL) NH TSUNAMI (NHTHO) WET MEADOW WETLAND (WM)
Account Number: Map Number:	717500 27S132800-00700	717600 27S132900-00101	721200 27S133300-00200
Property Owner:	THE BRIDGES FOUNDATION C/O FITZPATRICK, LUKE, TRUSTEE PO BOX 1123 TURNER, OR 97392-1123	THE BRIDGES FOUNDATION C/O FITZPATRICK, LUKE, TRUSTEE PO BOX 1123 TURNER, OR 97392-1123	ISENHART LIVING TRUST ET AL ISENHART, JOHN & LAURA J TTEE PO BOX 174 BROADBENT, OR 97414-0174
	100.00 Acres	148.51 Acres	120.60 Acres
Acreage: Zoning:	EXCLUSIVE FARM USE (EFU) FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY	COQUILLE RIVER ESTUARY MGT PLN CREMP AQUATIC D21 CONSERVATION (CRA21C) CREMP EXCLUSIVE FARM USE (CR-EFU) CREMP SHORELAND SEGMENT 43 (CRS43) EXCLUSIVE FARM USE (EFU)	COQUILLE RIVER ESTUARY MGT PLN CREMP AQUATIC D21 CONSERVATION (CRA21C) CREMP EXCLUSIVE FARM USE CREMP SHORELAND SEGMENT 43 EXCLUSIVE FARM USE (EFU)
Special Development Considerations and Overlays:	NH LIQUEFACTION (NHEQL) NH TSUNAMI (NHTHO) WET MEADOW WETLAND (WM)	BIRD SITE MEETS GOAL 5C REQRMT (B5C) COLEDO DISTRICT AREA (CDA) FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY (NWI) NH LIQUEFACTION (NHEQL) WET MEADOW WETLAND (WM)	ARCHAEOLOGICAL AREAS (ARC) FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY (NWI) NH LIQUEFACTION (NHEQL)

Account Number: Map Number:	722300 27S133400-00800	99916787 27S132900-00103	99916790 27S132000-01503
Property Owner:	FRED MESSERLE & SONS, INC. 94881 STOCK SLOUGH LN COOS BAY, OR 97420-6346	THE BRIDGES FOUNDATION C/O FITZPATRICK, LUKE, TRUSTEE PO BOX 1123 TURNER, OR 97392-1123	THE BRIDGES FOUNDATION C/O FITZPATRICK, LUKE, TRUSTEE PO BOX 1123 TURNER, OR 97392-1123
Acreage:	554.53 Acres	47.34 Acres	52.19 Acres
Zoning:	COQUILLE RIVER ESTUARY MGT PLN CREMP AQUATIC D21 CONSERVATION (CRA21C) CREMP EXCLUSIVE FARM USE CREMP SHORELAND SEGMENT 43 EXCLUSIVE FARM USE (EFU)	COQUILLE RIVER ESTUARY MGT PLN CREMP EXCLUSIVE FARM USE (CR-EFU) CREMP SHORELAND SEGMENT 43 (CRS43) EXCLUSIVE FARM USE (EFU)	COQUILLE RIVER ESTUARY MGT PLN CREMP EXCLUSIVE FARM USE CREMP SHORELAND SEGMENT 43 (CRS43) EXCLUSIVE FARM USE (EFU)
Special Development Considerations and Overlays:	FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY NH LIQUEFACTION (NHEQL) NH TSUNAMI (NHTHO)	BIRD SITE MEETS GOAL 5C REQRMT (B5C) COLEDO DISTRICT AREA (CDA) FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY (NWI) NH LIQUEFACTION (NHEQL) NH TSUNAMI (NHTHO) WET MEADOW WETLAND (WM)	COLEDO DISTRICT AREA (CDA) FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY NH LIQUEFACTION (NHEQL) NH TSUNAMI (NHTHO) WET MEADOW WETLAND (WM)
Account Number: Map Number:	712904 27S132100-02405	716702 27S132700-00400	724600 27S1335C0-00900
Property Owner:	OREGON DEPARTMENT OF FISH AND WILDLIFEC/O REALTY SERVICES 4034 FAIRVIEW INDUSTRIAL DR SE SALEM, OR 97302-1142	THE BRIDGES FOUNDATION C/O FITZPATRICK, LUKE, TRUSTEE PO BOX 1123 TURNER, OR 97392-1123	FRED MESSERLE & SONS, INC. 94881 STOCK SLOUGH LN COOS BAY, OR 97420-6346
Acreage:	109.20 Acres	25.36 Acres	27.00 Acres
Zoning:	EXCLUSIVE FARM USE (EFU) INDUSTRIAL (IND)	EXCLUSIVE FARM USE (EFU)	EXCLUSIVE FARM USE (EFU) INDUSTRIAL (IND)
Special Development Considerations and Overlays:	FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY NH LANDSLIDE (NHLND) NH LIQUEFACTION (NHEQL)	FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY (NWI) NH LIQUEFACTION (NHEQL)	COQUILLE MUTUAL INTEREST AREA FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY NH LIQUEFACTION (NHEQL)

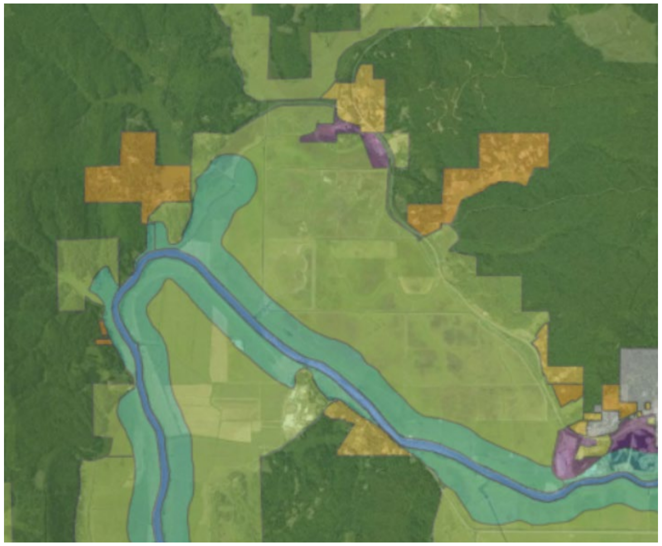
Account Number: Map Number:	898300 28S130300-00100	7715000 27S133400-00899	721202 27S133300-00100
Property Owner:	FRED MESSERLE & SONS, INC. 94881 STOCK SLOUGH LN COOS BAY, OR 97420-6346	STATE OF OREGON 61036 HWY 101 SOUTH COOS BAY, OR 97420	EVERETT-ONA ISENHART RANCH,INC; ETAL 97065 LANGLOIS MOUNTAIN RD LANGLOIS, OR 97450-9668
Acreage:	46.24 Acres	4.06 Acres	175.68 Acres
Zoning:	COQUILLE RIVER ESTUARY MGT PLN CREMP EXCLUSIVE FARM USE (CR-EFU) CREMP SHORELAND SEGMENT 43 (CRS43) EXCLUSIVE FARM USE (EFU)	EXCLUSIVE FARM USE (EFU)	COQUILLE RIVER ESTUARY MGT PLN CREMP EXCLUSIVE FARM USE CREMP SHORELAND SEGMENT 43 (CRS43) EXCLUSIVE FARM USE (EFU)
Special Development Considerations and Overlays:	FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY NH LIQUEFACTION (NHEQL)	FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY (NWI) NH TSUNAMI (NHTHO)	ARCHAEOLOGICAL AREAS (ARC) FLOODPLAIN (FP) NATIONAL WETLAND INVENTORY NH LIQUEFACTION (NHEQL) WET MEADOW WETLAND (WM)

Zoning: Exclusive Farm Use (EFU)
Coquille River Estuary Management Segments:

- CREMP-Exclusive Farm Use Shoreland Segment CREMP EFU 43,
- CREMP Aquatic 21 Conservation Aquatic

Industrial

The project will take place in the Exclusive Farm Use and Coquille River Estuary Management Plan Zoning.



I. APPLICABLE CRITERIA

COOS COUNTY ZONING AND LAND DEVELOPMENT ORDINANCE (CCZLDO)

CHAPTER III – ESTUARY ZONES

SECTIONS

- 3.3.710(2) – Coquille River Estuary Management Plan - Exclusive Farm Use (CREMP-EFU) Shoreland Segments - Administrative Conditional Development and Use: Drainage and Tide Gating
- 3.3.730 – Criteria and Review Standards for Conditional Use Permits (Both Administrative & Hearings Body)
- § 3.3.740 – Development and Use Standards

Coquille River Estuary Policies

- Policy #14 – General Policy Uses within the Rural Coastal Shorelands
- Policy #18 – Protection of Historic, Cultural, and Archaeological Sites
- Policy #19 – Management of "Wet-Meadow" wetlands within Coastal Shorelands
- Policy #22 – Mitigation Sites: Protection against Pre-emptory Uses
- Policy #23 – Riparian Vegetation/Streambank Protection
- Policy #27 – Floodplain Protection within Coastal Shorelands

CHAPTER IV - BALANCE OF COUNTY ZONES, OVERLAYS & SPECIAL CONSIDERATION

SECTIONS

- 4.6.200(8) – Exclusive Farm Use – Use Table - Diking, drainage, tide-gating, fill, mitigation, non-shoreland stabilization, dredge material disposal and restoration
- 4.11.243(4) – Duties and Responsibilities of the Floodplain Administrator – Alteration of Watercourses
- 4.11.251 – Floodplain - General Standards – Other Development

CHAPTER V – ADMINISTRATION

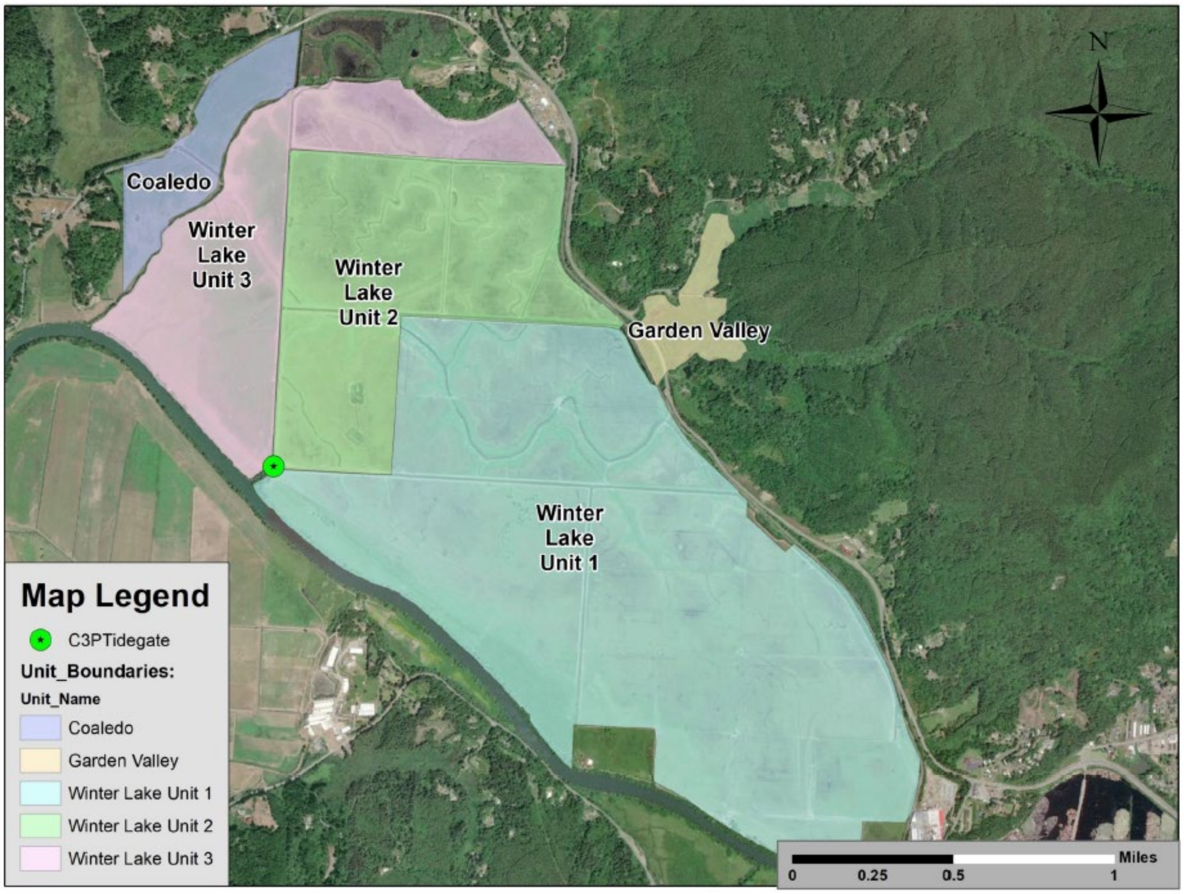
SECTIONS

- 5.0.600 Board of Commissioners Review of Applications and Appeals *** The Board of Commissioners reserves the right to pre-empt any permit review process or appeal process and hear any permit application or appeal directly. The Board also reserves the right to appoint a Hearings Officer or Hearings Body to hear and consider any permit application or appeal. Notice of appeals of administrative actions shall be promptly forwarded to the Board of Commissioners, which may elect to hear the appeal instead of the Planning Commission.

II. BASIC FINDINGS

LEGALLY CREATED UNITS OF LAND STATUS: The Coos County Zoning and Land Development Ordinances requires that property are legally created pursuant to Article 6.1 Lawfully Created Lots and Parcels ORS 92. Staff found that all units of land that are part of the project are legally created units of land.

SITE DESCRIPTION AND LAND USE HISTORY: The property was mainly farmland with drainage area including tidegates.



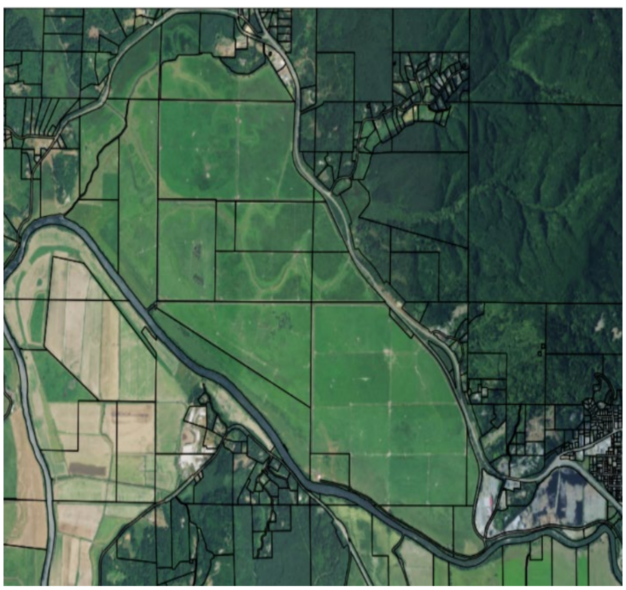
In 2016 an administrative conditional use was approved to allow:

- Replacement of the existing corrugated metal pipe (CMP) culvert and flap-gate tide gate structures with new concrete culverts and side-hinged tide gates, mounted on a vertical slide, controlled by a muted tidal regulator (MTR) and supplemental hydraulic power;
- Excavation of a new primary habitat channel and secondary tidal channels throughout Unit 2 properties;
- Placement of excavated material for topographic diversity and to fill in some existing linear drainage ditches;
- Modification of existing berms and creation of two new berms to isolate Unit 2 from adjacent agricultural properties;
- Excavation of a new alignment of the China Camp Creek canal (proposed North-South Canal) to further isolate the restored site from adjacent properties;
- Removal of nine (9) existing interior or channel crossing culverts (some with existing flap gates) and minor canal excavation in the Wheeler/ODFW canal;
- Installation of up to five (5) new interior culverts with side-hinged tide gate to allow continued drainage from two adjacent landowners in Units I and 3 into primary drainage canals after modifying berms (# depends on preferred drainage route for landowners);
- Installation of five (5) bridges to cross existing drainage canals and the new habitat channel on the ODFW property in Unit 2, to provide construction access, provide more reliable permanent access to the site after

removal of the 9 culverts/flap gates for operation and maintenance of the drainage infrastructure, and to provide potential future public access to the ODFW property;

- Installation of a water control structure and side-hinged tide gate on China Camp Creek at Hwy 42 to prevent normal tidal fluctuations during spring, summer, and early fall from flooding low subsided areas upstream of the highway; and,
- Modification of the existing North Dike and excavation to relocate portions of historical channel along the north side of the upgraded dike in Unit 3 for construction access and permanent access for operation and maintenance for the BSDD;
- Canal maintenance on the North, East, and Messerle/Smith/lsenhart Canals to ensure water flow with the new culverts/tide gates (up to 30,000 linear feet of maintenance);
- Replacement of drainage culverts/tide gates on Messerle, Isenhart Ranch and Isenhart parcels to take advantage of the new flows/water regime with the new culverts/tide gates. These culverts will be the same 48-inch plastic pipes with side-hinged tide gates as proposed above.
- Re-vegetation in Unit 2 with native trees and shrubs.

2016 AERIAL IMAGE



2018 AERIAL IMAGE:

2022 AERIAL IMAGE:

Since the 2016 application there have been other minor applications applied for to facilitate the project. The current application is referenced to as Phase III of the project.

PROPOSAL: According to the applicants the Winter Lake Phase III project is a working lands infrastructure rehabilitation project proposed on 1,290 acres of the 1,790 acre Beaver Slough Drainage District and two additional parcels totaling 99 acres in the Coaledo Drainage District. The project will replace/consolidate a total of 42 pasture culverts with associated tidegates, install over 90,000 ft of new and reconstructed tidal/farm drainage channel, repair five segments of failing berm, excavate deposited sediments from China Camp Creek, and install up to nine heavy use watering site troughs (see 404 Fill and Removal permit application and associated Additional Materials). The project area is fully within properties that are zoned as EFU, EFU/CREMP, and or EFU/IND. As such the proposed actions to rehabilitate drainage infrastructure for farming use are facilitatively allowed under the Coos County Planning Code. The lands are within the FEMA floodway Zone A. An engineer floodplain certification application documenting that the project complies with FEMA guidelines is in preparation for submission separately to accompany the 404 Fill and Removal permit application materials to the County Planning Department.

REVIEW PERIOD: The subject applications were submitted on December 21, 2023, and during the preliminary 30-day review, they were found to be complete with the exception of payment but for the purpose of review. The completeness review is defined in Section 5.0.200. Calculating the 150-day time frame to complete the review from January 19, 2024, which means a final decision of the county is required to be rendered no later than June 18, 2024. Upon receipt of a complete application, the Planning Department may take action on a conditional use request by issuing an administrative decision or scheduling a public hearing as determined by the applicable zoning. In this case, there appears to be some controversy with this matter which led to the decision to have the Board of Commissioners review the matter to see if they would be the decision-maker in place of the Planning Director.

Originally the matter was scheduled for a formal hearing but after reviewing the language regarding pre-empting hearings by the Board of Commissioners it was found to be appropriate to have a work session to allow input on the matter regarding if a public hearing should be granted at this stage or allow the matter to move forward the administrative decision process.

The Board of Commissioners choose to pre-empt the Planning Director's review of the matter and hold a public hearing. An administrative conditional use process (Staff Decision) does not provide for interaction with the public and agency comments to understand concerns or allow the applicant to respond. Therefore, it is staff's opinion that a public hearing was appropriate. The work session was held and a hearing was scheduled; however, due to the volume of information received so close to the hearing the hearing was continued and a date set for written testimony to be submitted to allow staff and the Board of Commissioners to review the information. In accordance with Oregon State Law regarding continuance in a land use hearing, the record remains open for testimony and evidence as the initial official hearing has not yet been conducted. Should new evidence and testimony be submitted, any party may request a continuance. Such a continuance shall be granted, and it may be conducted through the submission of written testimony and evidence, followed by rebuttals and subsequent public deliberation. Alternatively, another hearing may be scheduled.

STAFF'S ROLE: Sometimes there is some confusion about staff's role in a process. Overall, the staff's role is to provide support and guidance to ensure that the land use hearing process is conducted fairly, transparently, and in accordance with applicable laws and regulations. Staff is a neutral party in a land use hearing. Below provides a general outlines the staff's roles in the process:

1. Providing Information: Staff members often play a key role in providing information to the decision-making body (such as a planning commission or County Board of Commissioners) and to the public regarding the proposed land use application or project. This may involve preparing reports, conducting research, and presenting suggested findings related to the application or findings at the time of a decision.
2. Reviewing Applications: Staff are responsible for reviewing land use applications submitted by property owners or developers. This review may involve assessing whether the proposed project complies with zoning regulations, comprehensive plans, and other relevant ordinances or policies.
3. Making Recommendations: Based on their review and analysis of the application, staff may make recommendations to the decision-making body regarding approval, denial, or conditions of approval for the proposed project. These recommendations are typically presented during the public hearing process. At no point is anyone arguing regarding suggested findings in a hearings matter. The arguments and testimony are to be directed to toward the evaluation of an application based on the relevant criteria. Staff provides suggestions and guidance to a decision maker based solely on the information available.
4. Assisting the Decision-Making Body: During the land use hearing, staff members may be called upon to provide technical expertise, answer questions from decision-makers or the public, and facilitate the overall process.
5. Documenting Proceedings: Staff members often play a role in documenting the proceedings of the land use hearing, including keeping records of testimony, evidence, and decisions made by the decision-making body.

PUBLIC AGENCY AND TRIBAL COMMENTS: The Planning Department provided notice of the proposal on February 14, 2024. There have been comments received from Department of State Lands regarding the required removal/fill permits and the Coquille Tribe. The applicant is working with Department of State Lands and a number of other agencies to complete this project. The Coquille Tribe is working closely with the applicant as well.

PUBLIC COMMENTS: The Planning Department mailed notice of the conditional use application to all property owners within 500 feet of the subject property on February 14, 2024 prior to the work session and then again on March 7, 2024 for the public hearing . Staff complied with all notice requirements of Section 5.0.900. Public comments were received and are referenced and summarized below. The full comments can be found at Attachment B.

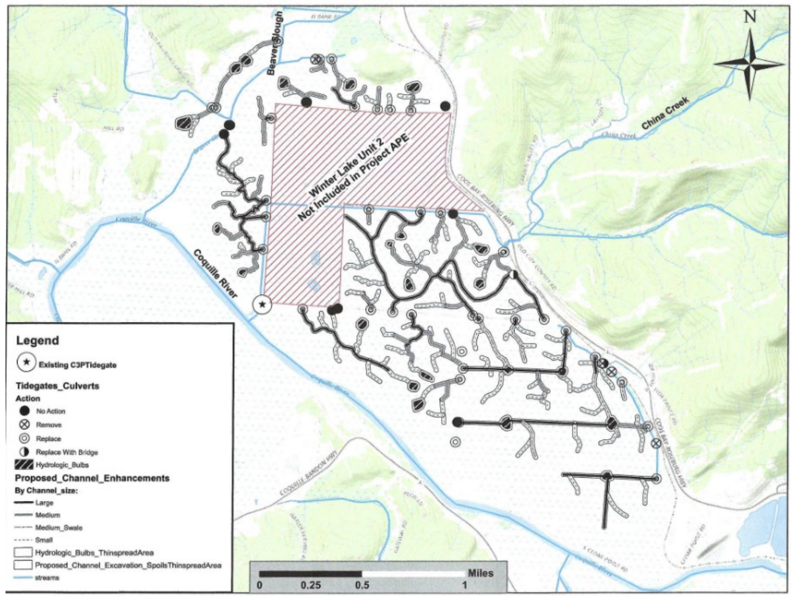
- Exhibit 1 John Krall and Catherine Krall – Written testimony stating they are owners of property located directly across from the acreage included in Winter Lake Phase III. Expansion of the project will further exacerbate the mosquito problem making it impossible for Coquille residents to enjoy any outdoor activities from the beginning of August and into fall of the year. It is our position that no further expansion should be taken until the mosquito problem that was created by the first part of the project is resolved.

- Exhibit 2 Benny Hempstead, Adjacent Property Owner – Written testimony stating he is an adjacent property owner who owns tax lot 2300 Industrial / EFU, The Old Chromite Mill. He received a notice of a meeting in regards to future work to be done in the area surrounding my property in three directions: north, south, and west. He explained a few years back there was a project immediately west of my Tax Lot 2300, on Tax Lot 2100 owned by ODFW. The project lowered the dike on the west of what was referred to as The Old Luckman Parcel on Tax Lot 2100, opened up areas of the dike and installed two bridges allowing waters from the channels west of the dike to flow onto and flood the easterly areas of Tax Lot 2100, and deepened the water channels significantly from the main channel under bridges, and throughout the Old Luckman Parcel (now owned by ODFW). That project has permanently damaged my EFU land by allowing the flow of water through Tax Lot 2100 to flow on to my Tax Lot 2300, as a dike or berm on the east side of Tax Lot 2100 abutting my property was never constructed. Water that never reached my parcel is now allowed to flow freely and flood. No effort to prevent flooding on parcel 2300 was attempted.

  He is concerned with approval of any work to be done on or through Parcel 2300 which could create flooding, deposits of soils, or modify water flows. Additionally, he objects to projects adjacent to his property that could now or in the future possibly cause damage or a loss of value to, due to activities created from any private project, permitted project, or Agency projects/work. He is in general supportive of projects such as restorations of lands designated for such projects, however does not support of over-reach of State or Federal agencies making significant modifications which create a negative impact on private properties. He is concerned about his financial investment of his land. It is my hope that ODFW would provide the required water dike on the westerly side of my land to protect my parcel 2300 from previous projects. The same for future projects as to the one being given notice to.

- Exhibit 3 Verna Rose, Land Owner – Written testimony she resides in the Beaver Slough Drainage District and opposes any land from being removed from the Drainage District without her request being honored. The testimony is related to the taxes being used for larger owner and no benefit for smaller owners.

- Exhibit 4 Sharon Waterman, Land Owner - Written testimony concerning the impacts to their farmlands and other farmland. She questions if this is all pre-wetland work under the disguise of irrigation, water quality and fish habitat. Stating that Oregon Department of Fish and Wildlife already is moving forward with acquisition of the Bridges Foundation property. The attached "Attachment A, Figure 12b" shows, in black and white, a considerable amount of grazing land will be removed from production to build channels but it does not show the fence and planting buffers which take up more grazing land in the project area.



Due to the fact they own a house in proximity to the proposed project, my major concern is mosquitos. The numerous "hydrologic bulbs" being built throughout the project area are concerning. "At the endpoints of selected channels, 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." "Hydrologic bulbs at the terminus of larger channel networks that provide a small basinal low area excavated to provide fish habitat in winter and channel flushing to move any accumulation of sediments from the channel network." These excavated "bulbs" (approximately 22 of them) will be filled with water during irrigation and rain events (Figure 12 & page 45 of 81). The concern is that the bulbs will retain water during hot summer weather especially after irrigation events and the water pools (bulbs) will enhance mosquito habitat. No one wants more mosquitos.

She goes on to explain that "parrot feather" is choking the waterways in the wetland. Its dense growth provides a breeding ground for mosquitos and it can degrade both water quality and habitat for fish and wildlife. There is concern with the potential for spread of this invasive on private property. She speculates that the parrot feather may have been transferred to this area during the last two phases of the Winter Lakes Project.

Sharon Waterman made some recommendations to the Board of Commissioners and/or Coos County Planning the following "conditions" on this Application:

1) ODFW should be required to utilize their CVWA Management Plan (mosquito section) and Vector Control Guidance for Sensitive Areas policy to treat the mosquitos in the existing wetland. BTI is one tool.
2) BSDD landowners, Bridges Foundation, and ODFW should also be required to ensure all hydrologic bulbs have connectivity to the channels. The hydrologic bulbs should be designed to drain completely after each irrigation event to reduce the creation of more mosquito habitat.
3) Invasive species (parrot feather and others) in the project area need to be eradicated prior to the beginning of the work. All equipment must be thoroughly cleaned and free from invasive species prior to entering the site.

- Exhibit 5 Gail Olsen and Eric Olsen, Property Owners – Written testimony that are property owners on Garden Valley echoed the same concerns that Sharon Waterman has expressed.

- Exhibit 6 Jan Hopmans and Mieke Vandenreek, Property Owners – Written testimony that she owns property in the Garden Valley area and has concerns about additional wetlands and mosquitoes. It appears she also requested to be removed from the Beaver Slough Drainage District.

- Exhibit 7 Jeffrey Jackson, Fish Biologist – Written testimony in support of the Beaver Slough Drainage District's and Coos Soil and Water Conservation District's application for infrastructure upgrades as outlined in the Winter Lake Phase III project. He has been a fish biologist with nearly 25 years of experience working for federal, state and non-profit organizations in Oregon, Alaska and California, he expresses confidence that habitat restoration projects such as Winter Lake not only benefit salmon to a great degree, but also benefit drainage that increases use and productivity by agricultural landowners. Recent research at Winter Lake conducted by the Coquille Watershed Association has shown how incredibly productive off-channel areas are to coho salmon. Juvenile coho move downstream and seek areas to over-winter, get out of heavy winter flows and find food and shelter. Replacing internal tidegates will facilitate water movement and help juvenile salmon find their way out of the channels and canals as water temperatures become too high later in the spring. A suite of native fish and amphibians thrive in Winter Lake: steelhead, Cutthroat trout, Pacific lamprey can all be found there seasonally. And while it is true that a variety of non-native fish are present, active water management makes this a less hospitable environment for them to flourish. In addition to the natural resources benefits afforded by this project, Winter Lake Phase III will replace aging and non-functional infrastructure that will greatly benefit grazing and pasture management. As spring turns into summer, native fish move out of the project area, water can be drawn down, and Winter Lake goes into another mode of production – for livestock. Landowners can't turn their animals out until the land is dried out, and upgraded infrastructure will facilitate maximum use. That's the beauty of projects such as this: promote agricultural use in the summer and salmon in the winter.

- Exhibit 8 Susan and Lawrence Graham, Resident – Written testimony explain that they have lived the last two years since Fish and Game took over the wetlands with thousands of mosquitoes. They are opposed to the creation of additional wetlands as they will not help the situation.

- Exhibit 9 Verna Rose, Property Owner – Written testimony asking drainage questions, concerns about back up of water flow impacting drinking water sources from China Creek, issues with the makeup of the drainage district and benefits to one property owner.

- Exhibit 10 John Ogan, the Executive Director of the Natural Resource Office at the Coquille Indian Tribe, provided an overview of the relevant criteria, emphasizing how the county has determined or should assess whether the applicant has met them. However, the focus of his testimony seemed to be more on evaluating the staff report and comments in the staff report rather than on how effectively the applicant addressed the criteria itself. It appears that Mr. Ogan may have misconstrued the applicable law, which places the burden solely on the applicant, rather than on the opponents or the staff. The two most pertinent criteria that the applicant must address are ensuring that **the proposed use will not force** a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use, and that it **will not significantly increase the cost** of accepted farm or forest practices on such lands. This underscores the importance of ensuring the applicant's compliance with these criteria, as it is their responsibility to provide evidence of meeting these standards, rather than relying on the preliminary evaluation of the staff report or the objections of opponents. Ultimately, the County Board of Commissioners shall make a determination based on the preponderance of evidence that the relevant criteria have been addressed but at this time the County has not made a decision in the matter and there has been no determination that any portion of the relevant criteria has been satisfied. The applicant has submitted a study with a methodology that can be accepted by the Board of Commissioners if they find it adequately addresses the criteria.

- Exhibit 11 Daniel Markowski, PhD, Technical Advisor, American Mosquito Control Association provided comments to ODFW regarding the project. The comments provided offer a detailed analysis of the Winter Lake Phase III Project, particularly focusing on remediation efforts to address hydrologic discontinuity and mosquito production within Units 1 and 3. Mr. Markowski, acknowledges the proposed replacement of undersized culverts and tide gates with redesigned channels, aimed at facilitating proper water transfer and reducing mosquito breeding grounds. Additionally, the installation of numerous swale-type channels is highlighted as a key strategy to mitigate stagnant water and improve fish access to low-lying areas. The importance of increasing tidal inflow, outflow, and mixing throughout the site is emphasized to prevent water stagnation favored by mosquitoes. Moreover, Mr. Markowski, suggests continuous monitoring to ensure proper connectivity of channel networks and prevent potential mosquito breeding sites. Detailed monitoring is recommended, particularly in Unit 1's southern extents, where complex channel networks are proposed, to ensure effective drainage and prevent sedimentation that could impede water flow. Overall, the commenter underscores the importance of meticulous planning and ongoing monitoring to achieve the desired ecological restoration outcomes while mitigating mosquito production risks.

- Exhibit 12 Nikki Harris, Contract Manager at Vector Disease Control International, provided testimony on the Winter Lake Phase III project design, highlighting its effectiveness in addressing mosquito breeding habitats within the Winter Lake area. Drawing from her extensive experience working with mosquito control districts across the Northwest, Harris commended the proposed plan for its strategic excavation of new and reconstructed channels to eliminate stagnant water sources, which are prime breeding grounds for mosquitoes. Emphasizing the significant health risks posed by mosquitoes as vectors for diseases such as malaria and West Nile virus, Harris stressed the importance of implementing measures to safeguard public health and agricultural productivity.

  The proposed plan focuses on environmentally sustainable practices, ensuring minimal disturbance to the surrounding ecosystem while effectively reducing the mosquito population. By reconstructing channels to grade and appropriately sizing culverts, the plan aims to facilitate proper water inflow and drainage, preventing the formation of stagnant pools that contribute to mosquito breeding. Moreover, the plan's emphasis on preventing erosion and utilizing tidal flows demonstrates a commitment to maintaining a healthy ecosystem and preventing the stranding of juvenile coho.

Harris highlighted the long-term benefits of the plan, including increased agricultural productivity and improved community well-being through reduced mosquito populations and associated diseases. However, she also noted the importance of ongoing monitoring to address potential issues such as sediment buildup and improper drainage, ensuring the plan's effectiveness in the long run.

Overall, Harris expressed confidence that implementing the proposed plan would yield positive results and significantly reduce mosquito habitats in the Winter Lake Phase III project area, benefiting both public health and agricultural interests.

- Exhibit 13 Dean Finnerty of Trout Unlimited expressed strong support for the Winter Lake Phase III project, citing the organization's extensive experience and commitment to cold water conservation. With over 350,000 members nationwide, including over 4,000 in Oregon, Trout Unlimited has invested significantly in habitat projects and policy initiatives across the state. They have collaborated with various stakeholders, including the Coquille Indian Tribe and the Oregon Department of Fish and Wildlife (ODFW), to address issues such as invasive bass in the Coquille River and the establishment of a conservation hatchery for fall Chinook salmon.

  Trout Unlimited staff and volunteers have actively participated in the Winter Lake Project, dedicating resources and expertise to habitat restoration efforts. They emphasize the importance of such projects in reversing the decline of iconic salmon and steelhead runs in Oregon, particularly in light of challenges such as climate change and poor ocean conditions. While many salmon and steelhead populations are declining, Trout Unlimited highlights the positive trend in Coho Salmon populations, which benefit significantly from habitat restoration projects like Winter Lake.

  In addition to ecological benefits, Trout Unlimited emphasizes the economic importance of healthy salmon populations to Oregon's southwest communities. Recreational fisheries supported by Coho Salmon contribute substantially to the local economy, generating tourism revenue and supporting jobs in various sectors. Dean Finnerty underscores the critical role of habitat restoration in sustaining both ecological health and economic prosperity in Oregon's coastal regions.

- Exhibit 14 Applicants - This exhibit is from the applicant’s project team and is in direct response to the criteria and will be discussed under the Suggested findings and conclusions.

- Exhibit 15 Winter Lake Project Team, submits a response based on email provided to the project team regarding statement policies in the Coos County Comprehensive Plan Volume I, Part 1. Staff explained that there are policy statements within the Coos County Comprehensive Plan. The email is below:

  “Comprehensive Plan: The comprehensive plan, often referred to as the master plan or general plan, is a long-term vision document that outlines broad goals, objectives, policies, and strategies for guiding future growth and development within a jurisdiction. It typically covers various aspects of community development, including land use, transportation, housing, economic development, environmental conservation, and infrastructure. The comprehensive plan reflects the community's values, priorities, and aspirations and provides a framework for decision-making by local government officials, planners, developers, and residents. It serves as a blueprint for the physical, social, and economic development of the community over a specified period, often ranging from 10 to 20 years.

Ordinances: Ordinances, also known as zoning regulations or land use codes, are legal instruments adopted by local governments to implement the policies and objectives set forth in the comprehensive plan. These ordinances translate the broad principles and guidelines outlined in the comprehensive plan into specific regulations and standards that govern land use, development, and construction activities within the jurisdiction. Ordinances typically include zoning districts, land use classifications, development standards (such as setbacks, building heights, and parking requirements), subdivision regulations, environmental protections, and other provisions aimed at shaping the physical environment and ensuring compatibility between different land uses. By establishing clear rules and requirements, ordinances provide a framework for managing growth, protecting community assets, and promoting orderly development while safeguarding public health, safety, and welfare.

In essence, the comprehensive plan serves as the overarching vision and policy framework for guiding community development, while ordinances serve as the tools for implementing that vision by regulating land use and development activities on the ground. The ordinances are designed to ensure that development and land use decisions align with the goals and objectives outlined in the comprehensive plan, thereby promoting orderly growth, sustainable development, and the preservation of community character.

A statement such as the one you cited, is important and while there should be an effort follow the guidance, it is not a legal binding criteria."

The project team highlighted a specific provision within the Coos County Comprehensive Plan, a reminder to the Board of Commissioners that the county shall preserve and maintain agricultural lands for farm uses "consistent with existing and future needs for agricultural products, forest, and open space," except where legitimate needs for nonfarm uses are justified. This provision underscores the importance of preserving agricultural lands while also considering legitimate nonfarm needs, thereby balancing the interests of agricultural production and other land uses within the jurisdiction. The excerpts from the plan policy statements are a good reminder but are not direct criteria related to this application.

- Exhibit 16 Verna Rose provided a copy of a letter she submitted to Oregon Department of Revenue to be removed from the drainage district. This is a matter that is not relevant to the land use application.
- Exhibit 17 Mark Villers, photos in which he will provide verbal testimony to at the public hearing.
- Exhibit 18 Barbara Grant submitted a letter of support regarding allowing the decaying tidegates to be replace to enhance agricultural production.

III. SUGGESTED FINDINGS & CONCLUSIONS

Coos County Zoning and Land Development
Chapter III – Estuary Zones

Coquille River Estuary Management Plan - Exclusive Farm Use (CREMP-EFU) Shoreland Segments

- *Exclusive Farm Use Shoreland Segments 23 (23-EFUS) and 26 (26-EFUS) shall be managed for the continuation of farm use as defined in ORS 215.203 (2) (a) and such other non-farm uses as are conditionally permitted in ORS 215.213. Mitigation shall also be permitted, and designated mitigation sites shall be protected against pre-emptory uses.*

- *Exclusive Farm Use Shoreland Segments: 27 (27-EFUS), 28 (28-EFUS), 31(31-EFUS), 32(32-EFUS), 33 (33-EFUS), 34 (34-EFUS), 36 (36-EFUS), 37 (37-EFUS), 41 (41-EFUS), 42 (42-EFUS), 43 (43-EFUS), 44 (44-EFUS), 47(47-EFUS), 53(53-EFUS), 55 (55-EFUS), 56 (56-EFUS), 60 (60-EFUS), 62 (62-EFUS), 73 (73-EFUS), 75 (75-EFUS) shall be managed for the continuation of farm use as defined in ORS 215.203 (2)(a) and such other farm uses as are conditionally permitted in ORS 215.213.*

FINDING: In the Estuary Zones the applicant is required to show how a proposal meets the management objective. The applicant is required to show that the use will continue and for the property to be managed for uses as defined in ORS 215.203 and such other farm uses as are conditionally permitted in ORS 215.213.

The applicant submitted supplemental application information on March 19, 2024 to address the estuary requirements regarding impacts to adjacent properties. The applicant explains that Proposed modifications to channels have been designed to provide tidal inflow access as well as improve drainage from interior pasture locations. All proposed new channels and any modifications to existing channel networks have been engineered on-grade to fully accommodate proper drain out and to address habitats where water could otherwise pond and develop conditions where there was potential for mosquito production. The overall Winter Lake Phase III project goals include:

- **substantively increasing pasture grass production through maintenance and enhancement of existing agricultural drainage infrastructure**
- **Substantively increasing capability of the project area to facilitate salmonid (specifically juvenile coho) access to and use of overwintering and rearing habitats**
- **Implementing generally accepted best management practices for the protection of agricultural water quality and reducing non-point source pollution.**

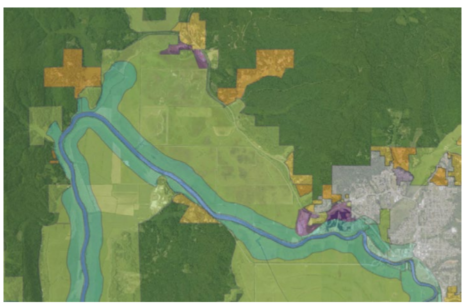
Farm use is defined by ORS 215.203, *"farm use" means the current employment of land for the primary purpose of obtaining a profit in money by raising, harvesting and selling crops or the feeding, breeding, management and sale of, or the produce of, livestock, poultry, fur-bearing animals or honeybees or for dairying and the sale of dairy products or any other agricultural or horticultural use or animal husbandry or any combination thereof. "Farm use" includes the preparation, storage and disposal by marketing or otherwise of the products or by-products raised on such land for human or animal use. "Farm use" also includes the current employment of land for the primary purpose of obtaining a profit in money by stabling or training equines including but not limited to providing riding lessons, training clinics and schooling shows. "Farm use" also includes the propagation, cultivation, maintenance and harvesting of aquatic, bird and animal species that are under the jurisdiction of the State Fish and Wildlife Commission, to the extent allowed by the rules adopted by the commission. "Farm use" includes the on-site construction and maintenance of equipment and facilities used for the activities described in this subsection. "Farm use" does not include the use of land subject to the provisions of ORS chapter 321, except land used exclusively for growing cultured Christmas trees or land described in ORS 321.267 (Lands not eligible for special assessment) (3) or 321.824 (Lands not eligible for special assessment) (3).*

Given the understanding of the proposal is to facilitate enhanced pasture land for the purpose of farm use and increase aquatic and bird habitat the project complies with the management unit objective.

SECTION 3.3.710 ADMINISTRATIVE CONDITIONAL DEVELOPMENT AND USE:
The following uses and their accessory uses may be allowed as administrative conditional uses in the "CREMP-EFU" zone subject to applicable requirements in Sections 3.3.730 and 3.3.740.

1. Diking (construction and maintenance). CREMP Policies #14, #18, #19, #22, #23, and #27.
2. Drainage and tide-gating. The applicable review criteria are CREMP Policies #14, #18, #19, #22, #23, and #27.
3. Fill. CREMP Policies #14, #18, #19, #22, #23, and #27. Use not permitted in Segment 26.
13. Shoreland structural stabilization. Flood elevation certificate required. CREMP Policies #9, #14,#23, #27, #18, #19, and #22. Use not permitted in Segment 47.

FINDING: Policies #14, #18, #19, #22, #23, and #27 and Sections 3.3.730 and 3.3.740 are required to be addressed as part of this project for the portions that will occur in the Coquille River Estuary Management Plan. The applicant has stated the project is consistent with the criteria and did submit supplemental documentation to further address Sections 3.3.730.



The area identified as bluish in color are subject to the estuary zone. The areas outside of the blue area are zoned Elusive Farm Use and not subject to the policies identified in this section.

Coquille River Estuary Policies

- Policy #14 – General Policy Uses within the Rural Coastal Shorelands

I. Coos County shall manage its rural areas with the "Coquille River Coastal Shorelands Boundary" by allowing only the following uses in rural shoreland areas, as prescribed in the management units of this Plan, except for areas where mandatory protection is prescribed by LCDC Goal #17 and #18:

a. farm uses as provided in ORS 215;
b. propagation and harvesting of forest products consistent with the Oregon Forest Practices Act;
c. private and public water-dependent recreation developments;
d. aquaculture;
e. water-dependent commercial and industrial uses, water-related uses and other uses only upon a finding by the county that such uses satisfy a need which can not be accommodated on uplands or in urban and urbanizable areas or in rural areas built upon or irrevocably committed to non-resource use;
f. single family residences on lots, parcels, or units of land existing on January 1, 1977 when it is established that:
    1. the dwelling is in conjunction with a permitted farm or forest use, or

2. the dwelling is in a documented "committed" area, or
3. the dwelling has been justified through a goal exception, or
4. such uses do not conflict with the resource preservation and protection policies established elsewhere in this Plan;

g. any other uses, provided that the Board of Commissioners determines that such uses satisfy a need which cannot be accommodated at other upland locations or in urban or urbanizable areas. In addition, the above uses shall only be permitted upon a finding that such uses do not otherwise conflict with the resource preservation and protection policies established elsewhere in this Plan.

This strategy recognizes (1) that Coos County's rural shorelands are a valuable resource and accordingly merit special consideration, and (2) that LCDC Goal #17 places strict limitations on land divisions within coastal shorelands. This strategy further recognizes that rural uses "a" through "g" above, are allowed because of need and consistency findings documented in the "factual base" that supports this plan.

FINDING: The applicant has provided information to show how the use is consistent with a use permitted under ORS 215. Therefore, this has been addressed.

- Policy #18: Protection of "Historical, Cultural and Archaeological Sites"

Local government shall provide special protection to historic and archaeological sites and shall continue to refrain from widespread dissemination of site-specific information about identified archaeological sites.

I. This strategy shall be implemented by requiring review of all development proposals involving an archaeological or historical site to determine whether the project as proposed would protect the historical and archaeological values of the site.

II. The development proposal, when submitted shall include a site development plan showing, at a minimum, all areas proposed for excavation, clearing and construction. Within three (3) working days of receipt of the development proposal, the local government shall notify the Coquille Tribe in writing, together with a copy of the site development plan. The Coquille Tribe shall have the right to submit a written statement to the local government within Thirty (30) days of receipt of such notification, stating whether the project as proposed would protect the historical and archaeological values of the site, or, if not, whether the project could be modified by appropriate measure to protect those values. "Appropriate measures" may include, but shall not be limited to, the following:

a. retaining the historic structure in-situ or moving it intact to another site; or

b. paving over the site without disturbance of any human remains or cultural objects upon the written consent of the Tribe; or

c. clustering development so as to avoid disturbing the site; or

d. setting the site aside for non-impacting activities, such as storage; or

e. if permitted pursuant to the substantive and procedural requirements of ORS 97.750 and 358.920, contracting with a qualified archaeologist to excavate the site and remove any cultural objects and human remains and reinterring the human remains at the developer's expense.

f. Using civil means to ensure adequate protection of the resources, such as acquisition of easements, public dedications, or transfer of title.

If a previously unknown or unrecorded archaeological site is encountered in the development process, the above measures shall still apply. Land development activities, which violate the intent of this strategy, shall be subject to penalties prescribed in ORS Chapter 97.990.

III. Upon receipt of the statement by the Tribe, or upon expiration of the Tribe thirty day (30) response period, the local government shall conduct an administrative review of the development proposal and shall:

a. approve the development proposal if no adverse impacts have been identified, as long as consistent with other portions of this Plan, or

b. approve the development proposal subject to appropriate measures agreed upon by the landowner and the Tribe, as well as any additional measures deemed necessary by the local government to protect the historical and archaeological values of the site. If the property owner and the Tribe cannot agree on the appropriate measures, then the governing body shall hold a quasi-judicial hearing to resolve the dispute. The hearing shall be a public hearing at which the governing body shall determine by preponderance of evidence whether the development project may be allowed to proceed, subject to any modifications deemed necessary by the governing body to protect the historical and archaeological values of the site.

c. Through the "overlay concept" of this policy and the Special Considerations Map, unless an Exception has been taken, no uses other than propagation and selective harvesting of forest products consistent with the Oregon Forest Practices Act, grazing, harvesting wild crops, and low-intensity water-dependent recreation shall be allowed unless such uses are consistent with the protection of the historic and archaeological values, or unless appropriate measures have been taken to protect the historic and archaeological values of the site.

This strategy recognizes that protection of historical and archaeological sites is not only a community's social responsibility, is also legally required by ORS 97.745. It also recognizes that historical and archaeological sites are non-renewable cultural resources.

FINDING: Staff provided notice to the Coquille Tribe. The Tribe has been involved with the project through the Corp permitting process and made comments regarding the project found at Exhibit 10. However, the comments are supporting the project and not how the proposal will be in compliance with Policy #18. The time period has expired for comments to be submitted under Policy #18. Therefore, this has been addressed.

- Policy #19: Management of "Wet-Meadow" Wetlands within Coastal Shorelands

I. Coos County shall protect for agricultural purposes those areas defined as 'wet meadow' wetlands by the U.S. Fish and Wildlife Service but currently in agricultural use or with agricultural soils and not otherwise designated as "significant wildlife habitats" or "major marshes", unless an Exception allows otherwise. Permitted uses and activities in these areas shall include farm use and any drainage activities, which are necessary to improve agricultural production. Filling of these areas, however, shall not be permitted, so as to retain these areas as wildlife habitats during periods of seasonal flooding and high water tables, with the following exceptions:

a. for transportation corridors where an Exception has been taken to Goal #3 (Agricultural Lands); or
b. agricultural buildings, where no alternative site exists on the applicant's property; or
c. minor improvements for which there is no practical alternative; or
d. where no fill permit is required under Section 404 of the Water Pollution Control Act; or
e. for priority dredged material disposal sites designated by this Plan for protection from pre-emptory uses.

Any activity or use requires notification of Division of State Lands, with their comments received prior to the issuance of any permits.

II. This policy shall be implemented by designating these lands as "Agricultural Lands" on the Special Considerations Map and by making findings in response to a request for comment by the Division of State Lands, which show whether the proposed action is consistent with the Comprehensive Plan. This strategy recognizes:
  a. that protection of these areas for agricultural use is necessary to ensure the continuation of the local agricultural economy;
  b. that improved drainage is necessary to maintain or enhance productivity by establishing preferred forage types;
  c. that the present system of agricultural use in the Coquille Valley is compatible with wildlife habitat values because the land is used for agriculture during the season when the land is dry and therefore not suitable as wetland habitat, and provides habitat areas for wildfowl during the flooding season when the land is unsuitable for most agricultural uses; and
  d. that these habitat values will be maintained provided filling is not permitted.

FINDING: This property does have identified wet meadow wetlands. The wetlands are hydraulic soils and wetland plants but not identified as protected wetlands subject to this policy. Therefore, this policy is not applicable.

- Policy #22: Mitigation Sites: Protection Against Pre-emptory Uses

Consistent with permitted uses and activities:

~ "High Priority" designated mitigation sites shall be protected from any new uses or activities which could pre-empt their ultimate use for this purpose.

~ "Medium Priority" designated mitigation sites shall also be protected from uses which would pre-empt their ultimate use for this purpose.

However, repair of existing dikes or tidegates and improvement of existing drainage ditches is permitted, with the understanding that the permitting authority (Division of State Lands) overrides the provisions of Policy #38. Wetland restoration actions designed to answer specific research questions about wetland mitigation and/or restoration processes and techniques, may be permitted upon approval by Division of States Lands, and as prescribed by the uses and activities table in this Plan.

~ "Low Priority" designated mitigation sites are not permanently protected by the Plan. They are intended to be a supplementary inventory of potential sites that could be used at the initiative of the landowner. Pre-emptory uses shall be allowed on these sites, otherwise consistent with uses and activities permitted by the Plan. Any change in priority rating shall require a Plan Amendment.

Except as provided above for research of wetland restoration and mitigation processes and techniques, repair of existing dikes, tidegates and improvement of existing drainable ditches, "high" and "medium" priority mitigation sits shall be protected from uses and activities which would pre-empt their ultimate use for mitigation.

I. This policy shall be implemented by:

a. Designating "high" and "medium" priority mitigation sites in the plan inventory.

b. Implementing an administrative review process that allows uses otherwise permitted by this Plan but proposed within an area designated as a "high" or "medium" priority mitigation site only upon satisfying all of the following criteria:

1. The proposed use must not entail substantial structural or capital improvements (such as roads, permanent buildings or non-temporary water and sewer connections);

2. The proposed use must not require any major alteration of the site that would affect drainage or reduce the usable volume of the site (such as extensive site grading/excavation or elevation from fill); and

3. The proposed use must not require site changes that would prevent the expeditious conversion of the site to estuarine habitat; or

4. For proposed wetland restoration research projects in "medium" priority mitigation sites the following must be submitted:

   i. A written approval of the project from Division of State Lands, and

ii. A description of the proposed research, resource enhancement and benefits expected

c. Local government's review of and comment on state and federal waterway permit applications for dike/tidegate and drainage ditch actions.

This policy recognizes that potential mitigation sites must be protected from pre-emptory uses. However, "low priority" sites are not necessarily appropriate for mitigation use and are furthermore in plentiful supply. It further recognizes that future availability of "medium priority" sites will not be pre-empted by repair of existing functional dikes, tidegates and drainage ditches or otherwise allowed by this policy. This insures the continuation of agricultural production until such time as sites may be required for mitigation. This policy also recognizes that research activities designed to gain further understanding of wetland, restoration and mitigation processes and techniques are needed. The consideration of "medium priority" mitigation sites for this purpose will facilitate future identification and successful use of mitigation sites (OR 95-11-010PL 1/24/96).

FINDING: According to the CCCP map this property is not located within a mitigation site. Therefore, this policy does not apply.

- Policy #23: Riparian Vegetation and Streambank Protection

I. Local government shall strive to maintain riparian vegetation within the shorelands of the estuary, and when appropriate, restore or enhance it, as consistent with water-dependent uses. Local government shall also encourage use of tax incentives to encourage maintenance of riparian vegetation, pursuant to ORS 308.792 - 308.803.

Appropriate provisions for riparian vegetation are set forth in the CCZLDO Section 3.2.180 (OR 92-05-009PL).

II. Local government shall encourage streambank stabilization for the purpose of controlling streambank erosion along the estuary, subject to other policies concerning structural and non-structural stabilization measures.

This strategy shall be implemented by Oregon Department of Transportation (ODOT) and local government when erosion threatens roads. Otherwise, individual landowners in cooperation with the Ports of Bandon and Coquille, Coos Soil and Water Conservation District, Watershed Council, Division of State Lands and Oregon Department of Fish & Wildlife shall be responsible for bank protection.

This strategy recognizes that the banks of the Coquille Estuary are susceptible to erosion and has threatened valuable farm land, roads and other structures.

FINDING: The applicant has provided a plan for stabilization of any disturbed areas but there are none anticipated within this project. The work is internal. Therefore, this has been addressed.

- Policy #27: Floodplain Protection within Coastal Shorelands

The respective Flood Regulations of local governments set forth requirements for uses and activities in identified flood areas; these shall be recognized as implementing ordinances of this Plan.

This strategy recognizes the risk of substantial loss of stock and property damage resulting from the widespread flooding of the Coquille River Valley floor which occurs during most winters.

FINDING: The applicant is required to address Section 4.11.251 for compliance with the relevant floodplain ordinance. This is done further on in the staff report.

Section 3.3.730 – Criteria and Review Standards for Conditional Use Permits (Both Administrative & Hearings Body)
A use may be allowed provided the following requirements are met:

1. Such uses will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use.

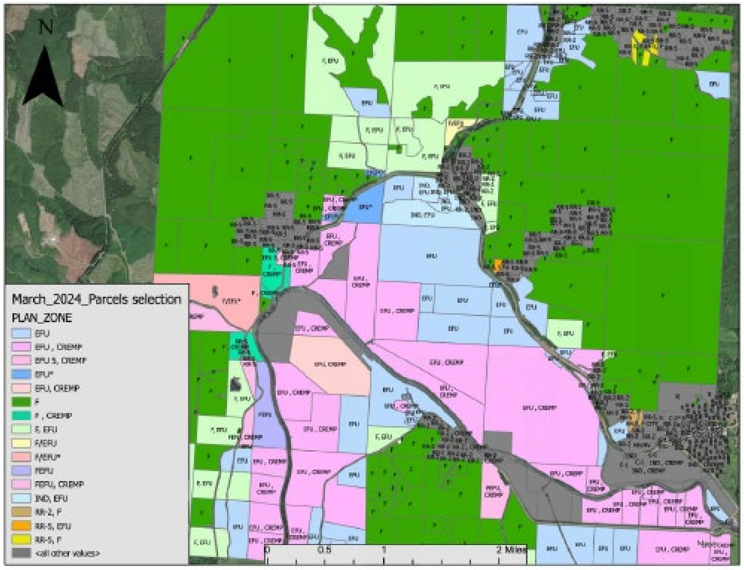
2. Will not significantly increase the cost of accepted farm or forest practices on lands devoted to farm or forest use.

3. Siting Standards for Dwellings and Structures in the EFU Zone. (Not Applicable)

FINDING: The applicant is required to do an impacts analysis showing that the proposed use will not force a significant change in accepted farm or forest practices on surrounding properties zoned and devoted to farm or forest. The applicant shall address how the proposal will not increase the cost of accepted farm or forest practices on lands devoted to farm or forest use. The analysis is required to define the study area, look at current practices within that area and then make a determination if the current proposal will significantly force a change in accepted farm and forest practices and if it would increase the cost of accepted farm or forest practices. The applicant submitted this information on March 19, 2024. The full results of the study are found at Attachment A, Application Submittal.

The methodology used by the applicant is as follows:
The Geographic Scope of this analysis includes all parcels within an approximate 1-mile radius of the project area. For this analysis, only lands zoned for farm and/or forestry practices were considered. Properties with industrial, commercial, rural residential, or other zoning were not evaluated for impacts unless combined with a farm or forest plan zoning. It should be noted here that most of the Garden Valley area parcels are zoned RR-5 and were not analyzed according to the selected evaluation criteria.

The results provided a total of 234 parcels for consideration, 15 of which are already included in the proposed project area. Project Area parcels were evaluated separately (see applicants Appendix A. Winter Lake Phase III Project Area and Surrounding Lands Impacts Analysis Tables 1. And 2.) as well as in combination with surrounding land parcels.



Based on the provided details of this enhancement project within the Beaver Slough Drainage District and the Coaledo Drainage District, here are the anticipated significant changes in accepted farm or forest practices and associated costs for adjacent landowners that have been raised:

1. **Altered Drainage Patterns and Loss of Water Sources: The replacement and consolidation of pasture culverts, installation of new drainage channels, and repair of failing berms may alter the drainage patterns within the affected areas. This could impact the way adjacent landowners manage water on their properties, potentially requiring adjustments to irrigation systems, drainage infrastructure, water sources or land grading practices. Landowners may need to invest in new equipment or infrastructure to adapt to the changed drainage conditions.**

2. **Increased Maintenance Responsibilities: The installation of new infrastructure, such as tidegates, drainage channels, and watering site troughs, may require ongoing maintenance by adjacent landowners. This could involve tasks such as cleaning debris from channels, inspecting and repairing tidegates, or managing vegetation around watering sites. Landowners may need to allocate resources for regular maintenance activities and potentially invest in equipment or labor to ensure the proper functioning of the infrastructure.**

3. **Potential Pest and Invasive Plant Management: Wetlands can serve as breeding grounds for mosquitoes and other pests, which may pose a nuisance to adjacent landowners, particularly during certain times of the year. The change the land may also bring in invasive plants and that can spread to adjacent properties. Landowners may need to implement pest and/or invasive plan management strategies to mitigate the impact of increased pest or plant populations on their farming or forestry activities. This could involve measures such as insecticide application, pesticide applications, habitat modification, or the installation of mosquito control devices, which may entail additional costs.**

4. **Loss of Agricultural Lands: The project could contribute to the ongoing loss of agricultural lands due to various factors. Firstly, the installation of new infrastructure and drainage systems may require the conversion of agricultural land into construction sites or water management areas, directly reducing the available acreage for farming activities. Additionally, alterations in drainage patterns and the**

introduction of wetlands as part of the project may render certain portions of agricultural land less suitable for cultivation, further diminishing the overall area available for farming. Furthermore, the potential increase in maintenance responsibilities for adjacent landowners could divert resources and attention away from agricultural activities, leading to reduced productivity or abandonment of agricultural land.

Overall, the wetland enhancement project is not likely to bring significant changes to accepted farm or forest practices and associated costs for adjacent landowners. The applicants have provided a comprehensive study to show that the project does not intend to have any significant changes to adjacent accepted farm or forest practices or significantly change the cost of Farm or Forest Practices. The applicant did provide additional information specific to the reductions of mosquito population as a result of this project.

After reviewing testimony and attending the work session, it appears that there has been significant discussion regarding mosquitoes and their impact on landowners and residents. In the applicant's testimony, it is suggested that there may have been unintentional creation of mosquito habitat during phases I and II of the project, as indicated in Exhibit 11 and 12. However, the current phase of the project aims to address this issue and mitigate the unintentional mosquito habitat. Nevertheless, it is acknowledged that additional monitoring will be necessary to ensure the effectiveness of these mitigation efforts the testimony also acknowledges there may be other impacts from property not part of this project contributing to the mosquito issue. Staff will remind everyone that if the mosquito's are significantly impacting farm and forest practices that then either the project needs to show how it will not or conditions around mitigation have to be considered to ensure that it will not significantly impact farm and forest practices.

Therefore, staff suggests implementing ongoing mosquito monitoring as part of the solution to address the potential unintended mosquito habitat created during prior phases of the project. This ongoing monitoring will be crucial in ensuring that the mitigation efforts undertaken during the current phase effectively alleviate the mosquito issue and prevent its recurrence in the future. By closely monitoring mosquito populations and their habitat, it will be possible to gauge and ensure there are no significant impacts to adjacent farm and forest practices. This monitoring will provide valuable data to assess whether the project is satisfying the requirements related to farm and forest practices, ensuring that any adverse impacts are identified and addressed promptly. A plan should be considered on how to reduce mosquito population if the monitoring shows an significant increase.

As a suggestion a comprehensive plan for monitoring mosquito populations and their habitat to gauge and ensure minimal impacts to adjacent farm and forest practices would involve several key components:

1. **Baseline Assessment: Conduct an initial assessment of mosquito populations and their habitat in the project area before any mitigation efforts begin. This baseline assessment will provide a reference point for comparison during subsequent monitoring.**
2. **Monitoring Protocol: Develop a detailed protocol outlining the methods, frequency, and locations for monitoring mosquito populations and habitat. This protocol may include trapping and sampling techniques, such as setting mosquito traps at strategic locations and collecting larvae samples from potential breeding sites.**
3. **Data Collection and Analysis: Implement the monitoring protocol to collect data on mosquito abundance, species composition, breeding sites, and habitat characteristics. Analyze the collected data to identify trends and potential correlations with adjacent farm and forest practices.**
4. **Thresholds and Triggers: Establish thresholds for mosquito population levels or habitat conditions beyond which significant impacts to adjacent farm and forest practices are deemed likely. Define triggers for initiating mitigation measures if these thresholds are exceeded.**

5. **Mitigation Strategies: Develop a contingency plan outlining specific mitigation measure to be implemented in response to significant increases in mosquito populations or adverse impacts on farm and forest practices. These measures may include targeted mosquito control efforts, such as larvicide treatments or habitat modification to eliminate breeding sites.**
6. **Stakeholder Communication: Maintain open communication with stakeholders, including landowners, farmers, foresters, and local authorities, throughout the monitoring process. Provide regular updates on monitoring results and any mitigation actions taken to address identified issues.**
7. **Adaptive Management: Continuously evaluate the effectiveness of the monitoring plan and mitigation measures and adjust them as necessary based on observed outcomes and feedback from stakeholders. Incorporate lessons learned into future monitoring efforts to improve overall effectiveness.**

By implementing a systematic monitoring plan with clear protocols, thresholds, and mitigation strategies, it will be possible to proactively assess and address any potential impacts of mosquito populations on adjacent farm and forest practices. This approach ensures that adverse impacts are identified early and promptly mitigated, thereby safeguarding the interests of all stakeholders involved. The Board of Commissioners could consider implementing this plan as a condition of approval to ensure that significant impacts to farm and forest practices would be addressed.

The other issue raised was the spread of invasive plant Parrots feather (Myriophyllum aquaticum). Parrots feather is native to South America and the Amazon River basin, parrots feather was introduced into the US for use in aquariums and water gardens. It is limited to shallow water and is not known to invade beyond its ability to root in the substrate. Parrots feather has been reported in the Pacific Northwest since the 1940's and can now be found in many slow-moving waterways, lakes, ponds, and sloughs throughout Western Oregon. Parrots feather is an attractive aquatic plant with feathery limegreen leaves arranged in whorls on long floating stems (rhizomes). Flowers are small and white. The emerged parts of the plants are a distinctive trait resembling small fir trees growing up to a foot above the water. Parrots feather is found in freshwater lakes, ponds, streams, and canals thriving in high nutrient environments. It tends to colonize slow moving or still water rather than in areas with higher flow rates. The emergent stems can survive on wet banks of rivers and lakeshores, so it is well adapted to moderate water level fluctuations. Impacts: Negative impacts result from the dense mat formation blocking sunlight and oxygen exchange. Heavily infested waters face reductions in native plant diversity and community structure, recreational use, fish production and alterations of water chemistry. Irrigation canal systems in California, experience flow restrictions and increased maintenance costs due to plant removal efforts. Mosquito populations are documented to increase significantly in infested waters[1]. According to Oregon Department of Agriculture this is an B rated weed and does have economic importance. Although limited in the area there are known smaller infestations in this area. The applicant shall continue to work on eradication and submit a plan and evidence to show treatment. Any new excavation in this area shall require that all equipment used is washed on site to prevent transfer.

Staff suggested the Board find that with mitigation measures the project can be found to meet the criteria.

Section 3.3.740 – Development and Use Standards
All dwellings and structures approved shall be sited in accordance with this section.

FINDING: Development and Use standards only apply to structures. There are no planned structures at this time; therefore, this criterion is not applicable.

[1] Source - https://www.oregon.gov/oda/shared/Documents/Publications/Weeds/ParrotsFeatherProfile.pdf

CHAPTER IV - BALANCE OF COUNTY ZONES, OVERLAYS & SPECIAL CONSIDERATION

Section 4.6.200(8) – Exclusive Farm Use – Use Table - Diking, drainage, tide-gating, fill, mitigation, non-shoreland stabilization, dredge material disposal and restoration.

FINDING: In the EFU portion of the properties that are not located in the CREMP the use is permitted subject to notifications to Department of State Lands and the local Tribes. This is a permitted outright use and does not have any discretionary criteria. Therefore, there are no standards to apply. However, the property is subject to floodplain standards which is addressed in the next section.

Section 4.11.243(4) – Duties and Responsibilities of the Floodplain Administrator – Alteration of Watercourses

4. Alteration of Watercourses
    a. Notify adjacent communities, the Department of Land Conservation and Development and other appropriate state and federal agencies, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance & Mitigation Administration.
    b. Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

Section 4.11.251 – Floodplain - General Standards – Other Development ***

7. Other Development. Includes mining, dredging, filling, grading, paving, excavation or drilling operations located within the area of a special flood hazard, but does not include such uses as normal agricultural operations, fill less than 12 cubic yards, fences, road and driveway maintenance, landscaping, gardening and similar uses which are excluded from definition because it is the County's determination that such uses are not of the type and magnitude to affect potential water surface elevations or increase the level of insurable damages.

   Review and authorization of a floodplain application must be obtained from the Coos County Planning Department before "other development" may occur. Such authorization by the Planning Department shall not be issued unless it is established, based on a licensed engineer's certification that the "other development" shall not:

    a. Result in any increase in flood levels during the occurrence of the base flood discharge if the development will occur within a designated floodway; or,
    b. Result in a cumulative increase of more than one foot during the occurrence of the base flood discharge if the development will occur within a designated flood plain outside of a designated floodway.

FINDING: The applicant is required to address the cumulative increase as addressed by a licensed engineer. The applicant submitted a report that was completed by Ryan Wesley Kilgren, Kilgren Water Resources, LLC. Mr. Kilgren is a registered licensed professional civil engineer. The report documents hydraulic analysis demonstrating the proposed project will maintain the flood carrying capacity of the watercourse, and with no cumulative increase in the associated base flood inundation or base flood levels per Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other development. This hydraulic analysis evaluated the existing conditions and proposed conditions for the 1-percent annual chance exceedance flood event (i.e., the base flood) conditions documented in the FEMA Flood Insurance Study (FIS) for Coos County, Oregon and Incorporated Areas (FIS Number 41011CV001C with a revised date of December 7, 2018; FEMA 2018c). The analysis and this report provide documentation and support for compliance with Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other

development, and the National Flood Insurance Program (NFIP) regulations governed by Title 44 of the Code of Federal Regulations (CFR) Section 60.3(d)(3). The full report is part of Attachment A.

IV. STAFF RECOMMENDATIONS – In order for the Board of Commissioners to make a determination regarding the proposed project, it is imperative to assess whether its implementation would necessitate substantial alterations to established agricultural or forestry methods on adjacent lands, as well as whether there will be significant expenses associated with the project on accepted Farm or Forest practices on these designated lands. The applicant has provided analysis to demonstrate compliance with these criteria.

The issues raised primarily revolve around potential alterations of drainage patterns and loss of water sources, increased maintenance responsibilities, potential pest and invasive plant management, and loss of additional agricultural land. While the applicant has addressed these concerns comprehensively in their report, staff has made suggestions to specifically address impacts from pest (mosquito) and invasive plant (Parrots feather) management to ensure there are no significant impacts to adjacent farm and forest practices as these seem to be the most relevant issues raised.

These issues have the potential to increase accepted costs and management practices for surrounding property owners. However, the record is not definitive in showing how substantial this increase may or may not be on actual farm and forest practices. Nevertheless, staff is confident that with the mitigation suggestions proposed, the criteria would be adequately covered, thereby ensuring minimal impact on adjacent farm and forest practices.

ATTACHMENTS **A – Application and application supplemental information**
B – Testimony (Exhibits 1-18)

ATTACHMENT A
A – Application and application supplemental information

File Number : ACU-23-074, FP-23-012

COOS COUNTY CONDITIONAL USE LAND USE APPLICATION

SUBMIT TO COOS COUNTY PLANNING DEPT. AT 60 E. SECOND STREET OR MAIL TO: COOS COUNTY PLANNING 250 N. BAXTER, COQUILLE OR 97423. EMAIL PLANNING@CO.COOS.OR.US PHONE: 541-396-7770

If the fee is not included the application will not be processed

(If payment is received on line a file number is required prior to submittal)

Date Received: Dec 21, 2023 *Receipt #:* ______ *Amount:* ______ *Received by:* C. Carr

This application shall be filled out electronically. If you need assistance please contact staff.

Applications shall be submitted by the property owner or a purchaser under a recorded land sale contract. "Property owner" means the owner of record, including a contract purchaser. The application shall include the signature of all owners of the property. A legal representative may sign on behalf of an owner upon providing evidence of formal legal authority to sign.

LAND INFORMATION

A. Property Owner(s) See attached Appendix A. Table 1 for full list of property owner

Mailing address: 379 North Adams St. Coquille OR 97423

Phone: 541-396-6879 Email: info@coosswcd.org

Township:	Range:	Section:	¼ Section:	1/16 Section:	Tax lots:
Select	Select	Select	Select	Select	
Select	Select	Select	Select	Select	

Tax Account Number(s): ______

Tax Account Number(s) ______

Zone: Select Zone Exclusive Farm Use (EFU)

Please Select

B. Special Districts and Services

Water On-Site (Well or Spring)

School Coquille

Sewage Disposal Select type of Sewage System

Fire District Coos Forest Protective Association

C. Type of Application (s) please consult with staff to determine prior to submittal

- ☑ Administrative Conditional Use for CREMP Zoning, EFU
- ☐ Hearings Body Conditional Use for ______
- ☐ Historical, Cultural and Archaeological Resources, Natural Areas of Wilderness
- ☐ Beaches and Dunes
- ☐ Non-Estuarine Shoreland Boundary
- ☐ Significant Wildlife Habitat
- ☑ Natural Hazards ☑ Flood ☐ Landslide ☐ Liquefaction ☐ Erosion ☐ Wildfires
- ☐ Airport Surfaces Overlay
- ☐ Variance to which standard ______

Include the supplemental application with all criteria addressed. If you require assistance with the criteria please contact a land use attorney or professional consultant. Property information may be obtained from a tax statement or can be found on the County Assessor's web page at the following links: Map Information Or Account Information

D. ATTACHED WRITTEN STATEMENT. With all land use applications, the “burden of proof” is on the applicant. It is important that you provide information that clearly describes the nature of the request and indicates how the proposal complies with all of the applicable criteria within the Coos County Zoning and Land Development Ordinance (CCZLDO). You must address each of the Ordinance criteria on a point-by-point basis in order for this application to be deemed complete. A planner will explain which sections of the Ordinance pertain to your specific request. The information described below is required at the time you submit your application. The processing of your application does not begin until the application is determined to be complete. An incomplete application will postpone the decision, or may result in denial of the request. Please mark the items below to ensure your submittal is complete.

Application Check List: Please make off all steps as you complete them.

☑ I. PROPOSAL AND CRITERIA: A written statement of intent, attached to this application, with necessary supporting evidence which fully and factually describes the following:

1. Project summary and details including timelines.
2. A complete explanation of how the request complies with the applicable provisions and criteria in the Zoning Ordinance. A planner will explain which sections of the Ordinance pertain to your specific request. You must address each of the Ordinance criteria on a point-by-point basis in order for this application to be deemed complete. This shall be addressed on the supplemental criteria page (see staff for criteria).

☑ II. PLOT PLAN OR SKETCH PLAN: A detailed drawing delineating the following:

- Owner's name, address, and phone number, map and Tax lot number
- North Arrow and Scale - using standard engineering scale.
- Accurate shape and dimensions of parcel, development site, including the lengths of the all property lines.
- Any adjacent public or private roads, all easements and/or driveway locations. Include road names. Driveway location and parking areas, including the distance from at least one property line to the intersection of the driveway and the road (apron area);
- All natural features, which may include, but are not limited to water features, wetlands, ravines, slope and distances from features to structures.
- Existing and proposed structures, water sources, sewage disposal system and distances from these items to each other and the property boundaries.

☑ III. DEED: A copy of the current deed, including the legal description, of the subject property. *See Attached Appendix A. Pages 11-19*

☑ IV. CERTIFICATION: I certify that this application and its related documents are accurate to the best of my knowledge. I am aware that there is an appeal period following the date of the Planning Director’s decision on this land use action. I understand that the signature on this application authorizes representatives of the Coos County Planning Department to enter upon the subject property to gather information pertinent to this request. If this application is refereed directly to a hearings officer or hearings body I understand that I am obligated to pay the additional fees incurred as part of the conditions of approval. I understand that I/we are not acting on the county’s behalf and any fee that is a result of complying with any conditions of approval is the applicants/property owner responsibility. I understand that conditions of approval are required to be complied with at all time and an violation of such conditions may result in a revocation of this permit. If the property owner would like staff to contact a legal representative or consultant please provide the contact information using a consent form.

PROPERTY OWNER SIGNATURES REQUIRED FOR PROCESSING

(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 Fred R. Messerle	Title District Manager
Signature Fred R. Messerle	Date 06/01/2022
Authorized Agent Signature	
Print Name Caley Sowers	Title District Manager
Signature Caley Sowers	Date 02/09/2023

Landowner Signature(s)*	
Landowner of the Project Site (if different from applicant)	
Print Name Fred Messerle & Sons, Inc.	Title Secretary-Treasurer
Signature Fred R. Messerle	Date 6/10/2022
Landowner of the Project Site (if different from applicant)	
Print Name Everett-Ona Isenhart Ranch, Inc.	Title President
Signature Cynthia Henson	Date 06/02/2022
Landowner of the Project Site (if different from applicant)	
Print Name Laura Isenhart	Title ~~Owner~~ Trustee, Isenhart Living Trust
Signature Laura J. Isenhart	Date 6.10.22
Landowner of the Project Site (if different from applicant)	
Print Name John Isenhart	Title Trustee, ~~6.10.22~~ Isenhart Living Trust
Signature John Isenhart	Date 6.10.22

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	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

APPENDIX A.

Winter Lake Phase III Restoration Project

Assessment of Project Actions and Coos County Planning/Zoning

Prepared by,

Christopher W. Claire
Habitat Protection Biologist
ODFW
Charleston, OR

Caley Sowers
District Manager
Coos Soil and Water Conservation District
Coquille, OR

Introduction

The Winter Lake Phase III project is a working lands infrastructure rehabilitation project proposed on 1,290 acres of the 1,790 acre Beaver Slough Drainage District and two additional parcels totaling 99 acres in the Coaledo Drainage District. The project will replace/consolidate a total of 42 pasture culverts with associated tidegates, install over 90,000ft of new and reconstructed tidal/farm drainage channel, repair five segments of failing berm, excavate deposited sediments from China Camp Creek, and install up to nine heavy use watering site troughs (see 404 Fill and Removal permit application and associated Additional Materials). The project area is fully within properties that are zoned as EFU, EFU/CREMP, and or EFU/IND. As such the proposed actions to rehabilitate drainage infrastructure for farming use are facilitatively allowed under the Coos County Planning Code. The lands are within the FEMA floodway Zone A. An engineer floodplain certification application documenting that the project complies with FEMA guidelines is in preparation for submission separately to accompany the 404 Fill and Removal permit application materials to the County Planning Dept. All potentially affected parcels are noted in Table 1. Herefore, this report is written feedback for specifically applicable planning criteria that directly guide project actions within these zoning codes. Ownership documentation in Appendix A.

Table 1. Winter Lake Phase III taxlot parcels within and included in project action area.

Owner Name	TLID	Tax Account #	Plan Zoning
BRIDGES FOUNDATION LANDS	27S13W29TL0010300	99916787	EFU , CREMP
BRIDGES FOUNDATION LANDS	27S13W20TL0150300	99916790	EFU*
BRIDGES FOUNDATION LANDS	27S13W29TL0010100	717600	EFU , CREMP
BRIDGES FOUNDATION LANDS	27S13W28TL0040000	717402	EFU
BRIDGES FOUNDATION LANDS	27S13W28TL0060000	717401	EFU
BRIDGES FOUNDATION LANDS	27S13W27TL0040000	716702	EFU
BRIDGES FOUNDATION LANDS	27S13W27TL0050000	716800	EFU
BRIDGES FOUNDATION LANDS	27S13W28TL0070000	717500	EFU
EVERETT-ONA ISENHART RANCH,INC; ETAL	27S13W33TL0010000	721202	EFU , CREMP
ISENHART, JOHN & LAURA J TTEE	27S13W33TL0020000	721200	EFU , CREMP
FRED MESSERLE & SONS, INC.	27S13W34TL0080000	722300	EFU , CREMP
FRED MESSERLE & SONS, INC.	28S13W03TL0010000	898300	EFU , CREMP
FRED MESSERLE & SONS, INC.	27S13W35CTL0090000	724600	EFU
OREGON DEPARTMENT OF FISH/WILDLIFE	27S13W21TL0240500	712904	IND, EFU
STATE OF OREGON	27S13W34TL0089900	7715000	EFU

Responses to Applicable Coos Planning Code Criterion

Criterion One

SECTION 3.3.710, pg 491 ADMINISTRATIVE CONDITIONAL DEVELOPMENT AND USE:

The following uses and their accessory uses may be allowed as administrative conditional uses in the "CREMP-EFU" zone subject to applicable requirements in Sections 3.3.730 and 3.3.740.

1. *Diking (construction and maintenance). CREMP Policies #14, #18, #19, #22, #23, and #27.*
2. *Drainage and tide-gating. CREMP Policies #14, #18, #19, #22, #23, and #27.*
3. *Fill. CREMP Policies #14, #18, #19, #22, #23, and #27. Use not permitted in Segment 26.*
5. *Dredge material disposal. CREMP Policies #14, #18, #19, #20, #22, #23, and #27. DMD is to include stabilization measures to control run-off and prevent sloughing. Use not permitted in Segment 26.*

13. Shoreland structural stabilization. Flood elevation certificate required. CREMP Policies #9, #14, #23, #27, #18, #19, and #22. Use not permitted in Segment 47.

Winter Lake Phase III Project Information in regard to Criterion One

<u>Response items #1-5):</u>

- *The Winter Lake Phase III project will address insufficient culvert size at 42 existing interior pasture drain culverts upstream of the Winter Lake Phase I control point large tidegates installed in 2017 and upstream of the Coaledo Tidegates upgraded last in the 1990's. Project actions are within Zoning codes EFU, EFU/IND, and EFU/CREMP. The full suite of project actions, tactics, and Best Management Practices are illuminated in detail within the 404 Fill and Removal permit application and associated Additional Materials submitted with this assessment.*
- *The project will address rehabilitation of five segments of existing dike, installation of new larger culverts and upgraded tidegates, place fill to 3" depths in accordance with Oregon Department of State Lands (DSL) and U.S. Army Corps of Engineers (USACE) guidelines, and dispose of dredge fill through 3" thinspread in alignment with DSL/USACE. All actions are designed to minimize effects to the floodplain and estuary habitat in accordance with the National Marine Fisheries Service (NMFS) Tidal Area Restoration Programmatic (TARP), which requires construction actions within tidal areas to be implemented with specific tact and measures to minimize negative effects.*
- *The project materials will include (in progress) an engineer Flood certification (in progress) for submission to the County providing documentation the project will align with the FEMA Floodway guidelines for the project area, which is designated Zone A.*

Criterion Two

SECTION 3.3.730, pg 495 CRITERIA AND REVIEW STANDARDS FOR CONDITIONAL USE PERMITS (BOTH ADMINISTRATIVE AND HEARINGS BODY)

A use may be allowed provided the following requirements are met:

1. Such uses will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use.

2. Will not significantly increase the cost of accepted farm or forest practices on lands devoted to farm or forest use.

3. Siting Standards for Dwellings and Structures in the EFU Zone. The following siting criteria shall apply to all dwellings, including replacement dwellings and structures in the EFU zone. Replacement dwellings may be sited in close proximity to the existing developed homesite. These criteria are designed to make such uses compatible with forest operations and agriculture, to minimize wildfire hazards and risks and to conserve values found on agricultural lands. These criteria may include setbacks from adjoining properties, clustering near or among existing structures, siting close to existing roads, and siting on that portion of the parcel least suited for agricultural uses, and shall be considered together with the requirements in Section 3.3.740 to identify the building site. Dwellings and structures shall be sited on the parcel so that:

a. They have the least impact on nearby or adjoining forest or agricultural lands;

b. The siting ensures that adverse impacts on forest operations and accepted farming practices on the tract will be minimized;

c. The amount of agricultural lands used to site access roads, service corridors, the dwelling and structures is minimized; and

d. The risks associated with wildfires are minimized.

Winter Lake Phase III Project Information in regard to Criterion Two

Response items #1-3):

- *The Winter Lake project is designed specifically to improve the functional production of forage grasses, while allowing for increased ecological productivity. The project will provide substantial benefit to the farming/ranching operations. The project is expected to improve irrigation water delivery and benefit operations costs of ranching/farming. No dwellings, barns, or similar structure will be installed/sited within the project area as part of the project.*

Criterion Three

SECTION 3.3.740, pg 496 DEVELOPMENT AND USE STANDARDS

Development Standards *All dwellings and structures approved shall be sited in accordance with this section.*

Winter Lake Phase III Project Information in regard to Criterion Three

Response:

- *The Winter Lake Phase III project will not implement installation of any housing, dwelling, barn, or other similar infrastructure. The project is designed to minimize removal of riparian woody vegetation. The actions of the project will include installation of 72,000ft of fencing to provide for planting of native riparian woody species (willow, cottonwood, ash) along selected reconstructed/new channels. This riparian enhancement is a critical component of the design of the project with the goal of improving water quality (temperature and dissolved oxygen).*

Criterion Four

SECTION 4.6.200, EXCLUSIVE FARM USE – USE TABLES:

Table II identifies the uses and activities in the Exclusive Farm Use (EFU) zone. The tables describe the use, type of review, applicable review standards and Section 4.6.210 Development and Siting Standards. Properties that are located in a Special Development Consideration and/or overlays shall comply with the applicable review process identified by that Special Development Consideration and/or overlay located in Article 4.11.

Winter Lake Phase III Project Information in regard to Criterion Four

Response:

- *The Winter Lake Phase III project will enhance riparian habitat through project actions which in compliance with the CREMP goals. The channel excavation, installation of interior field drain culverts/tidegates and fence construction are allowed actions under the Exclusive Farm Use.*

Criterion Five

SECTION 4.6.210, *pg 142* ADMINISTRATIVE CONDITIONAL DEVELOPMENT AND USE:

The following uses and their accessory uses may be allowed as administrative conditional uses in the "Exclusive Farm Use" zone and "Mixed Use" overlay subject to the applicable requirements in and applicable siting and development requirements. Additional conditional use review criteria can be found in § 4.6.230 and must be addressed unless otherwise specified by the ordinance.

i. Creating of, restoration of, or enhancement of wetlands. The removal of high value farmland from agricultural production for the purpose of creating wetlands except within 35 feet of the mean high water mark (extended riparian vegetation area). The applicant must address floodplain requirements.

Winter Lake Phase III Project Information in regard to Criterion Five

Response***:***

- *The project will improve inflow outflow drainage from the Beaver Slough Drainage District (BSDD) and Coaledo Drainage District (CDD) lands where work will be completed. Improvement of drainage will be accomplished by replacing undersized culverts with new appropriately sized infrastructure addressing issues at 42 locations in the Winter Lake floodplain and reconstructing/installing a greatly increased channel network.*

- *The project is designed to enhance Exclusive Farm Use and Coquille River Estuary Management Plan (EFU/CREMP) habitat function for native fish and wildlife. The improved drainage will facilitate reduced water souring of pasture soils and allow for appropriate irrigation in the summer months. Management of water during winter through the new tidegates*

- *The proposed project actions have been reviewed and evaluated for relationship to the 100 year floodflow levels. The project floodplain certification is currently in progress by the project engineer to delineate that the project will not result in greater than 1.0ft of floodwater rise associated with the 100yr flood.*

Criterion Six

SECTION 4.6.230,* 4.6.230, pg 194 *CRITERIA AND REVIEW STANDARDS FOR CONDITIONAL USE PERMITS (BOTH ADMINISTRATIVE AND HEARINGS BODY):

A use may be allowed provided the following requirements are met:

1. *Such uses will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use.*
2. *Will not significantly increase the cost of accepted farm or forest practices on lands devoted to farm or forest use.*
3. *Siting Standards for Dwellings and Structures in the EFU Zone. The following siting criteria shall apply to all dwellings, including replacement dwellings and structures in the EFU zone. Replacement dwellings may be sited in close proximity to the existing developed homesite. These criteria are designed to make such uses compatible with forest operations and agriculture, to minimize wildfire hazards and risks and to conserve values found on agricultural lands. These criteria may include setbacks from adjoining properties, clustering near or among existing structures, siting close to existing roads, and siting on that portion of the parcel least suited for agricultural uses, and shall be considered together with the requirements in § 4.6.240 to identify the building site. Dwellings and structures shall be sited on the parcel so that:*

    a. *They have the least impact on nearby or adjoining forest or agricultural lands.*

    b. *The siting ensures that adverse impacts on forest operations and accepted farming practices on the tract will be minimized.*

    c. *The amount of agricultural lands used to site access roads, service corridors, the dwelling and structures is minimized.*

    d. *And The risks associated with wildfires are minimized.*

Winter Lake Phase III Project Information in regard to Criterion Six

- *The Winter Lake Phase III project is designed to improve the drainage and irrigation capacity for the lands that are in the project area. Accordingly, the project goals will maintain or increase function for farming use. There is not forestry use on the project area. Project actions will not have offsite effects to neighboring properties.*

- *The project actions (reconstructed/new channels, culverts, water control structures) will provide infrastructure that will reduce the effort of the agricultural landowners to manage water levels that occur from flooding and rainfall on the pastures. In that context the cost to manage the lands will be maintained or reduced over current levels.*

- *No structures such as houses, barns, sheds, or other will be constructed as part of this project.*

Criterion Seven

SECTION 4.6.240,* pg 194 *DEVELOPMENT AND USE STANDARDS

Development Standards *All dwellings and structures approved shall be sited in accordance with this section.*

Winter Lake Phase III Project Information in regard to Criterion Seven

1). The Winter Lake Phase III project will not implement construction of houses, barns, or similar structures or roads, thus this Section 4.6.240, 1-9 are not applicable.

2. The project area has few if any trees, however, riparian sedges and grass vegetation will be impacted through excavation actions that will be used to construct channels, rebuild berms, and install new culverts. ODFW guidance for the project has been incorporated to develop tactics and strategies that minimize impacts to the riparian vegetation and wetlands. ODFW technical oversight is noted as an approved pathway for compliance with the county ordinance 4.6.240 (10)(d).

Criterion Eight

SECTION 4.11.125,* 4.11.125(3), pg 228 *SPECIAL DEVELOPMENT CONSIDERATIONS:

The considerations are map overlays that show areas of concern such as hazards or protected sites. Each development consideration may further restrict a use. Development considerations play a very important role in determining where development should be allowed In the Balance of County zoning. The adopted plan maps and overlay maps have to be examined in order to determine how the inventory applies to the specific site.

Winter Lake Phase III Project Information in regard to Criterion Eight

Section 1, 2, 4, and 7 not applicable

Section 3. Historical, Cultural and Archaeological Resources, Natural Areas and Wilderness (Balance of County Policy 5.7): The Winter Lake Phase III project area has legacy berms/dikes that were constructed in 1908 and 1909 when the interior pasture canals were excavated (see DSL/USACE 404 Fill and Removal permit application). These berms have been altered repeatedly over the years through repair and additional excavation events. These berms will not be permanently altered in character or nature during rebuilding as the rebuilt sections will be blended in to match with those segments that need no repair.

Section 5. 5. Non-Estuarine Shoreland Boundary (Balance of County Policy 5.10)

- *Riparian Vegetation*
- *Wetlands under agricultural use*

The Winter Lake Phase III project is designed to reconstruct and install channels, replace existing culverts, and water control structures that will improve the wetland hydrology and facilitate a more functional level of pasture management. Riparian vegetation in the project area consists of sedges and grasses. These cover types and all channel adjacent vegetation will be benefitted by the more natural inflow/outflow tidal regimes that will be able to be incorporated as a goal of the project.

Section 6. Significant Wildlife Habitat (Balance of County Policy 5.6): The wetland pastures comprise the majority of the work area (other than berms). These pastures are able to serve as high quality habitat for juvenile anadromous fish. The current undersized culverts and lack of channel networks inhibit full wetland function and access for anadromous fish. This project has as a major goal incorporated features that will improve the access for juvenile anadromous fish to rear and feed in the wetland pastures. As such the project proposed actions fully support County Planning goals in Section 6 of 4.11.125, 4.11.125(3).

Criterion Nine

SECTION 4.11.217, pg 249; PROCEDURAL REQUIREMENTS FOR DEVELOPMENT WITHIN SPECIAL FLOOD HAZARD AREAS:

4. Other Development. Includes mining, dredging, filling, grading, paving, excavation or drilling operations located within the area of a special flood hazard, but does not include such uses as normal agricultural operations, fill less than 12 cubic yards, fences, road and driveway maintenance, landscaping, gardening and similar uses which are excluded from definition because it is the County's determination that such uses are not of the type and magnitude to affect potential water surface elevations or increase the level of insurable damages.

Review and authorization of a floodplain application must be obtained from the Coos County Planning Department before "other development" may occur. Such authorization by the Planning Department shall not be issued unless it is established, based on a licensed engineer's certification that the "other development" shall not:

a. Result in any increase in flood levels during the occurrence of the base flood discharge if the development will occur within a designated floodway. or,

b. Result in a cumulative increase of more than one foot during the occurrence of the base flood discharge if the development will occur within a designated flood plain outside of a designated floodway.

Winter Lake Phase III Project Information in regard to Criterion Nine

1). The Winter Lake Phase III project designs and proposed actions have been developed by ODFW, the Coos Soil and Water District, the Beaver Slough Drainage District, and are under review by an Oregon Licensed engineer. The Oregon licensed engineer is currently developing information to support the proposed designs do not have attributes or features incorporated into the project that will: a). Not raise the base flood discharge; and b). Will not result in a cumulative increase of more than one foot during the occurrence of the base flood discharge. (see attached floodplain certification).

Criterion Ten

SECTION 4.11.231, pg 255; ALTERATION OF WATER COURSES:

If a development application proposes a stream, creek or other water body relocation or alteration, Coos County shall:

1. *Notify affected cities and the State Coordinating Agency (Department of Land Conservation and Development – DLCD) and other appropriate state and federal agencies prior to any alteration or relocation of a water course, and shall submit evidence of such notification to the Federal Insurance Administration at the following address (or if the office moves, at any subsequent address):*

    Federal Insurance Administration
    500 C Street SW

    Washington, DC 20472

2. *Require that maintenance is provided within the altered or relocated portion of said water course so that the flood carrying capacity is not diminished.*

Winter Lake Phase III Project Information in regard to Criterion Ten

Note: The Winter Lake Phase III project will realign tidal/drainage channels, however, they are within the control and upstream of the Winter Lake Beaver Slough Drainage District C3P tidegate. As such the realignment of drainage networks is subservient hydrologically to that tidegate structure and the associated Water Management Plan.

- *The project will install numerous additional on grade channels within agricultural wetland pastures that follow historical tidal channel paths and provide hydrologic connectivity that mimics conditions that were present pre-European settlement.*
- *These channels and increased culvert sizes on pasture channels will provide for improved pasture drainage and designs have been evaluated to not have potential to raise the floodflows as is specified with FEMA guidelines.*
- *There will not be impacts to adjacent properties associated with the project actions.*
- *Channels and culverts will increase the outflow capacity improving hydrologic function. Channels will be inspected by landowners annually for drainage function and if there is an accumulation of material that needs cleaned it will be addressed.*

Appendix B: FIGURES AND PHOTOS

WINTER LAKE PHASE III

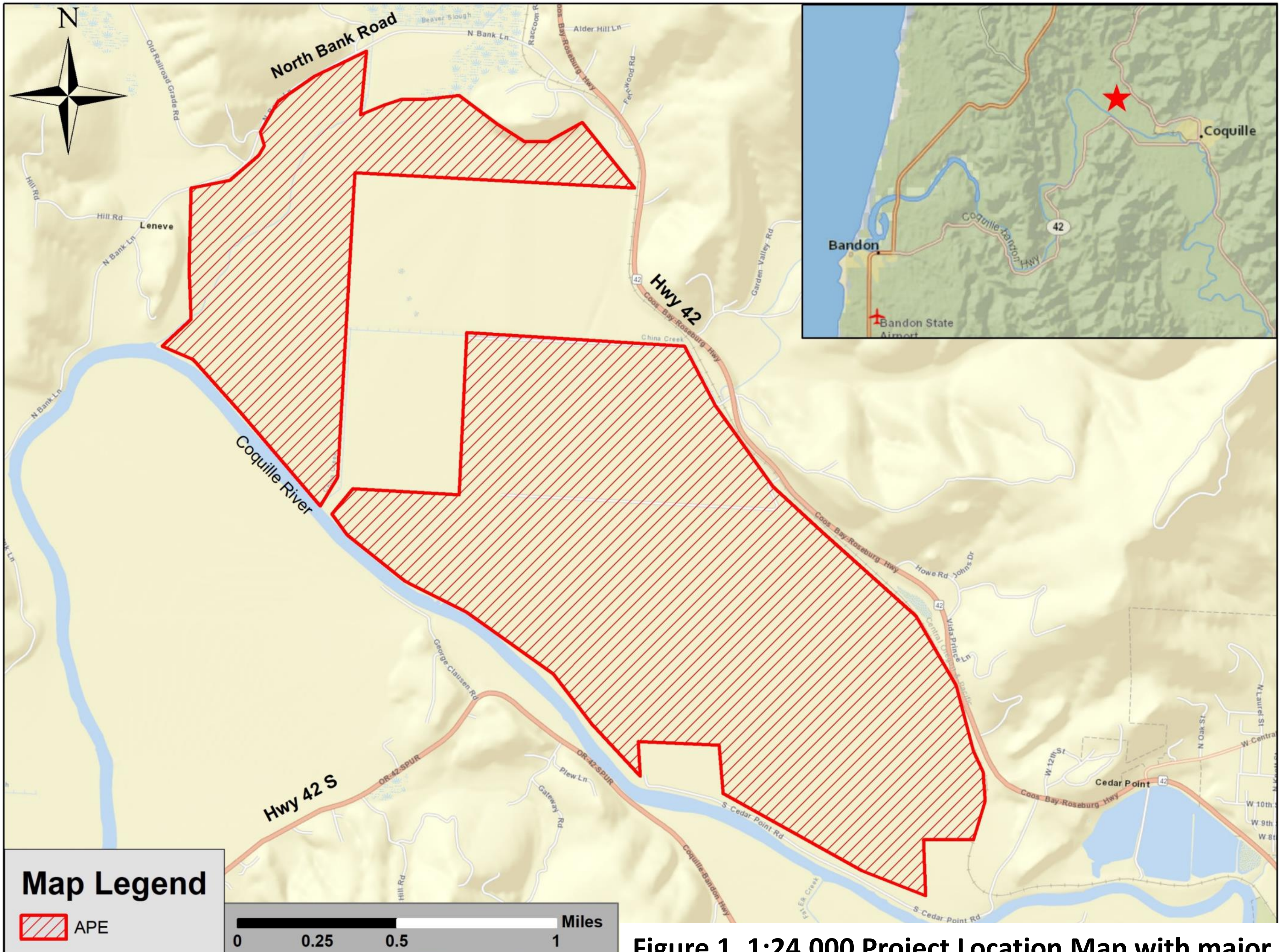


Figure 1. 1:24,000 Project Location Map with major roads/highways identified

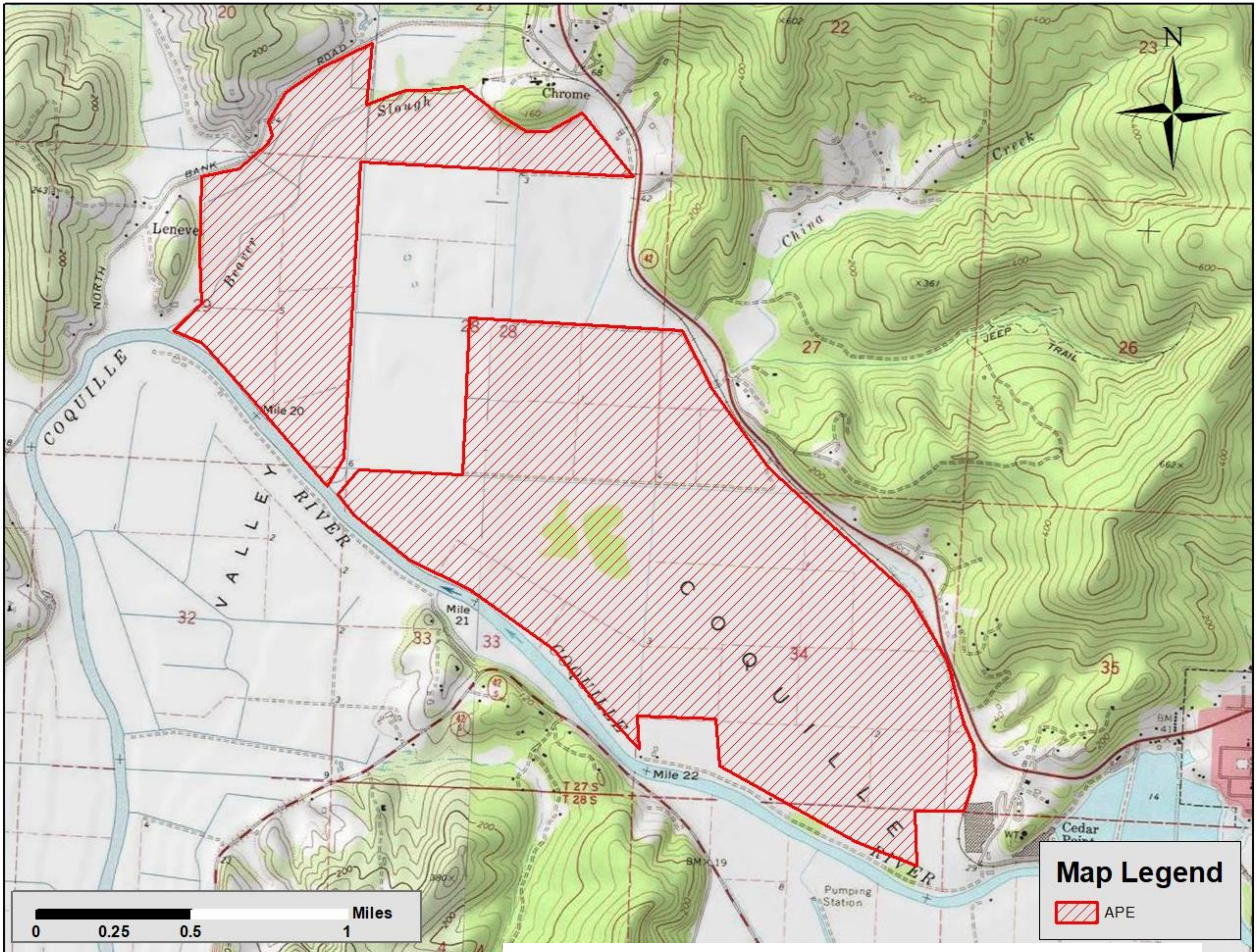
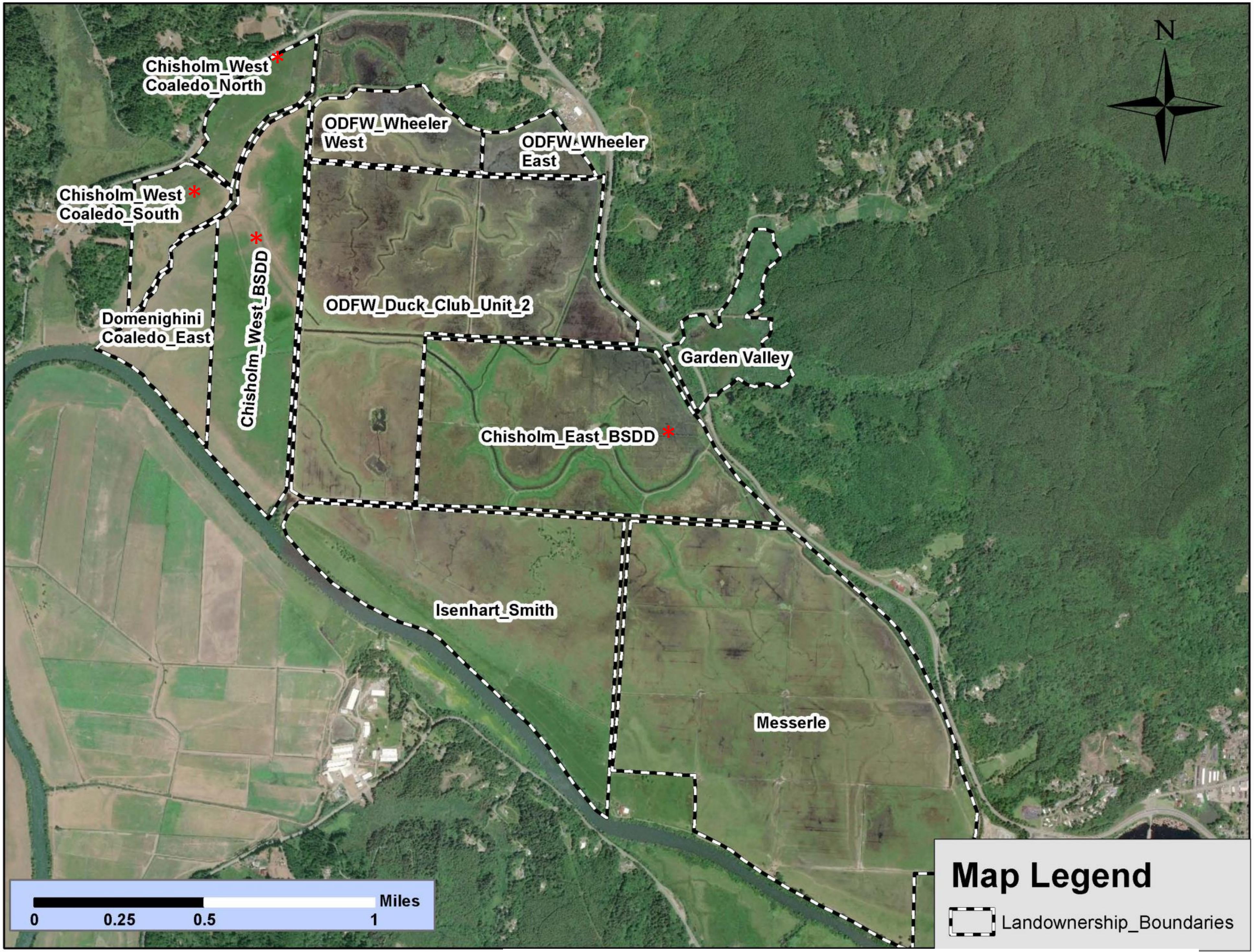


Figure 2. 1:24,000 USGS Topographic Map of Area of Project Effect (APE)

Figure 3. Taxlot ID Map



*Update 8/6/2022 Chisholm Properties now owned by The Bridges Foundation

Figure 4. Winter Lake Land Ownership Map

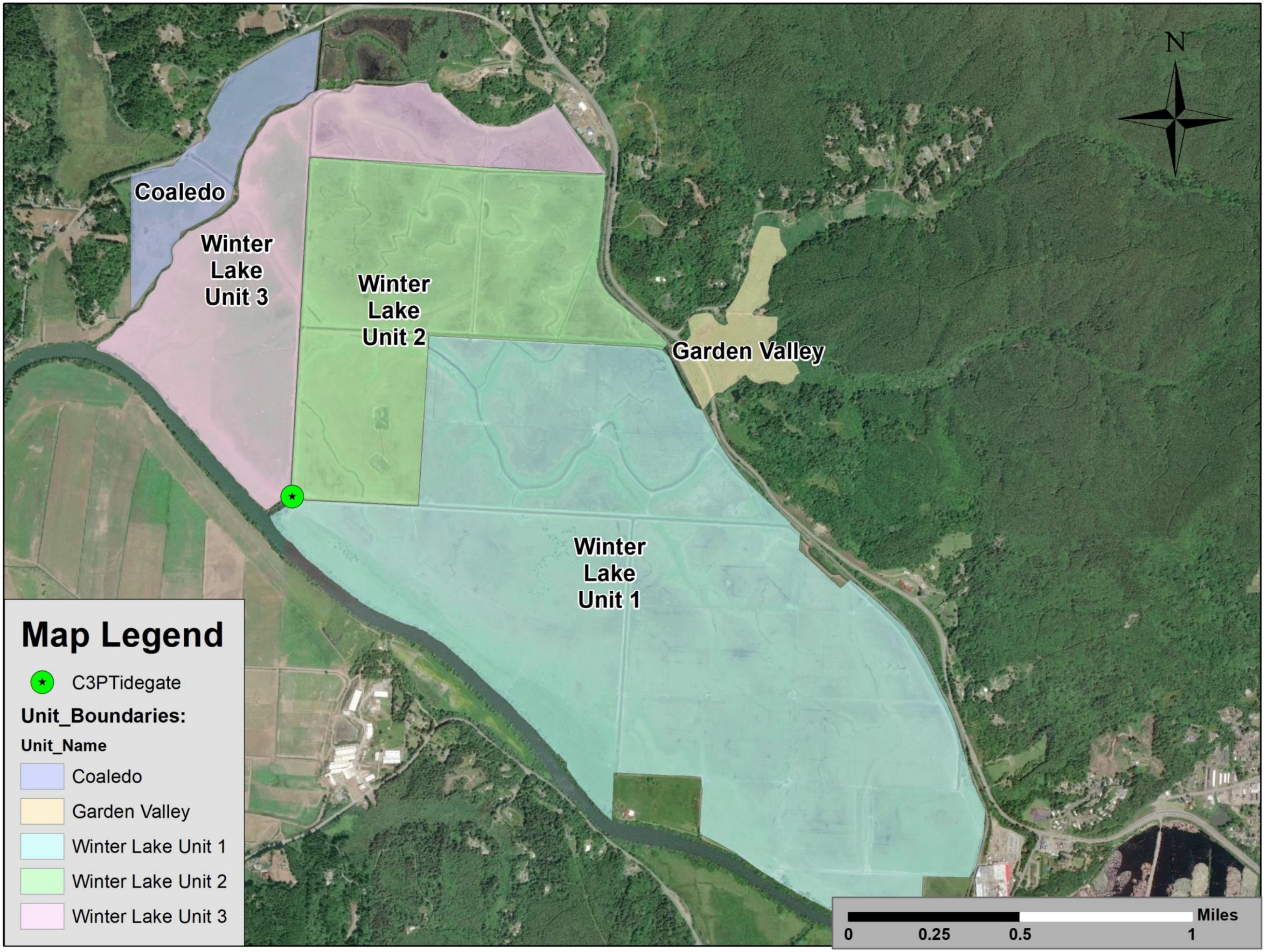


Figure 5. Winter Lake Unit Map

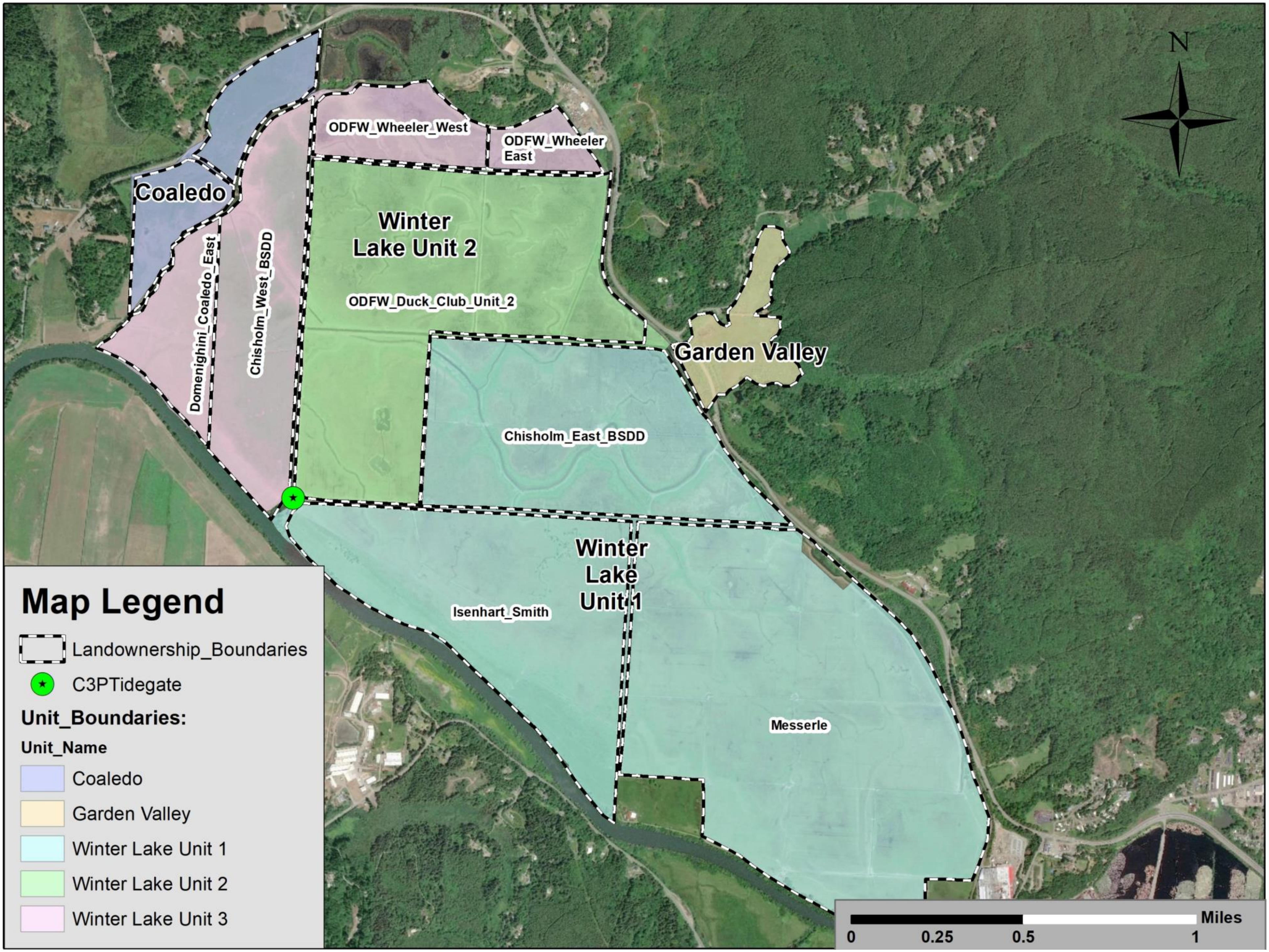


Figure 6. Winter Lake Land Ownership and Unit Map

Figure 7. Winter Lake Phase I, CP3 Tidegate

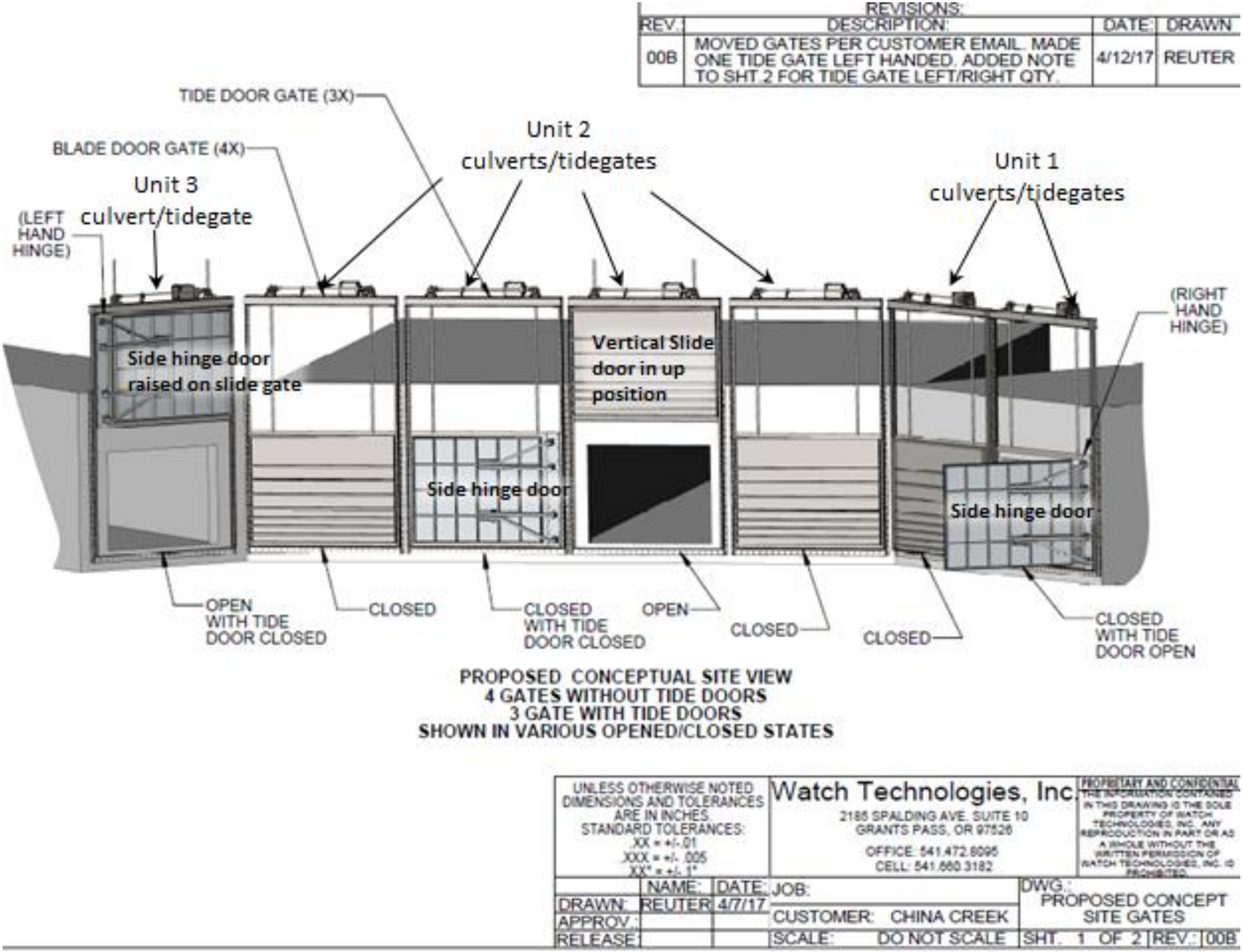


Figure 8. Winter Lake Phase I, CP3 Tidegate

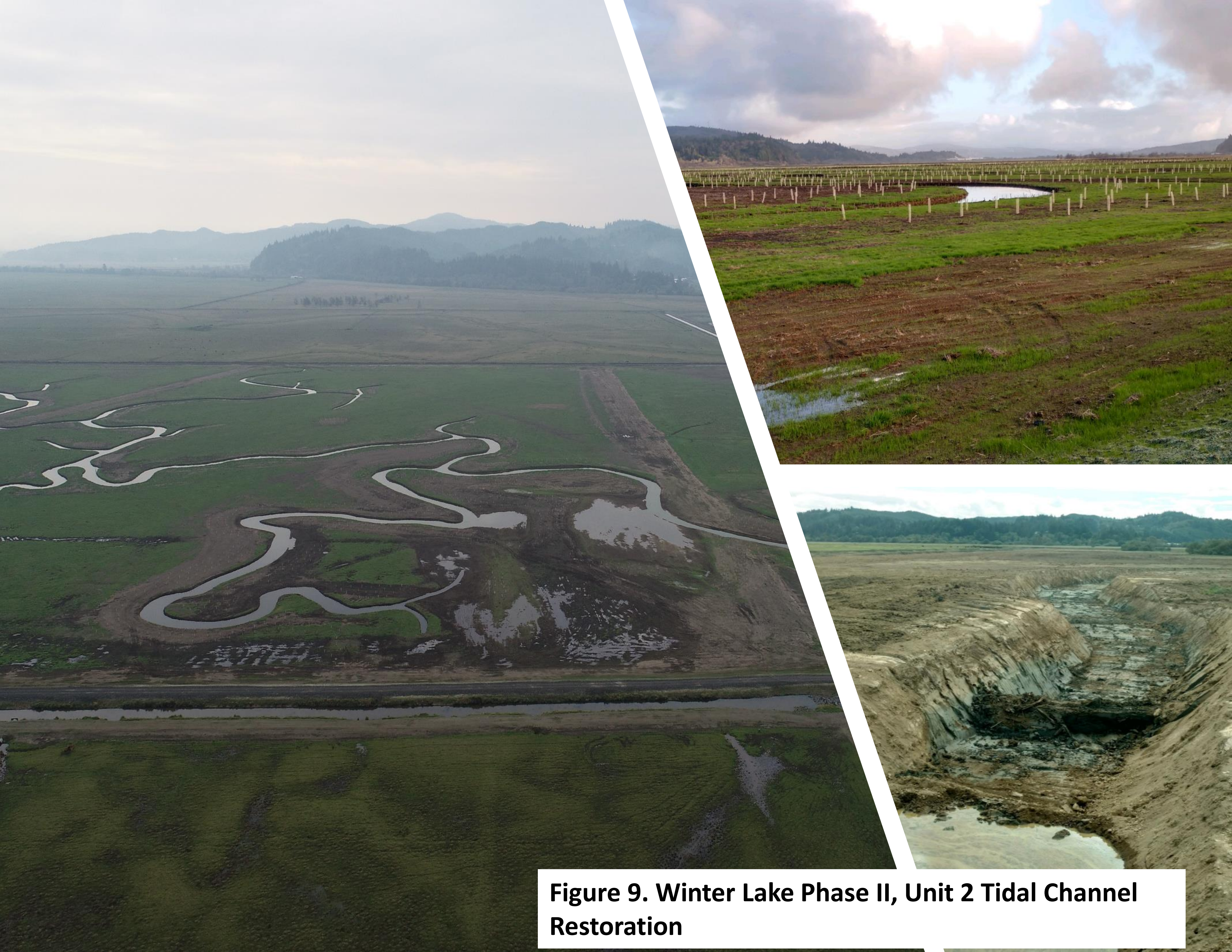


Figure 9. Winter Lake Phase II, Unit 2 Tidal Channel Restoration

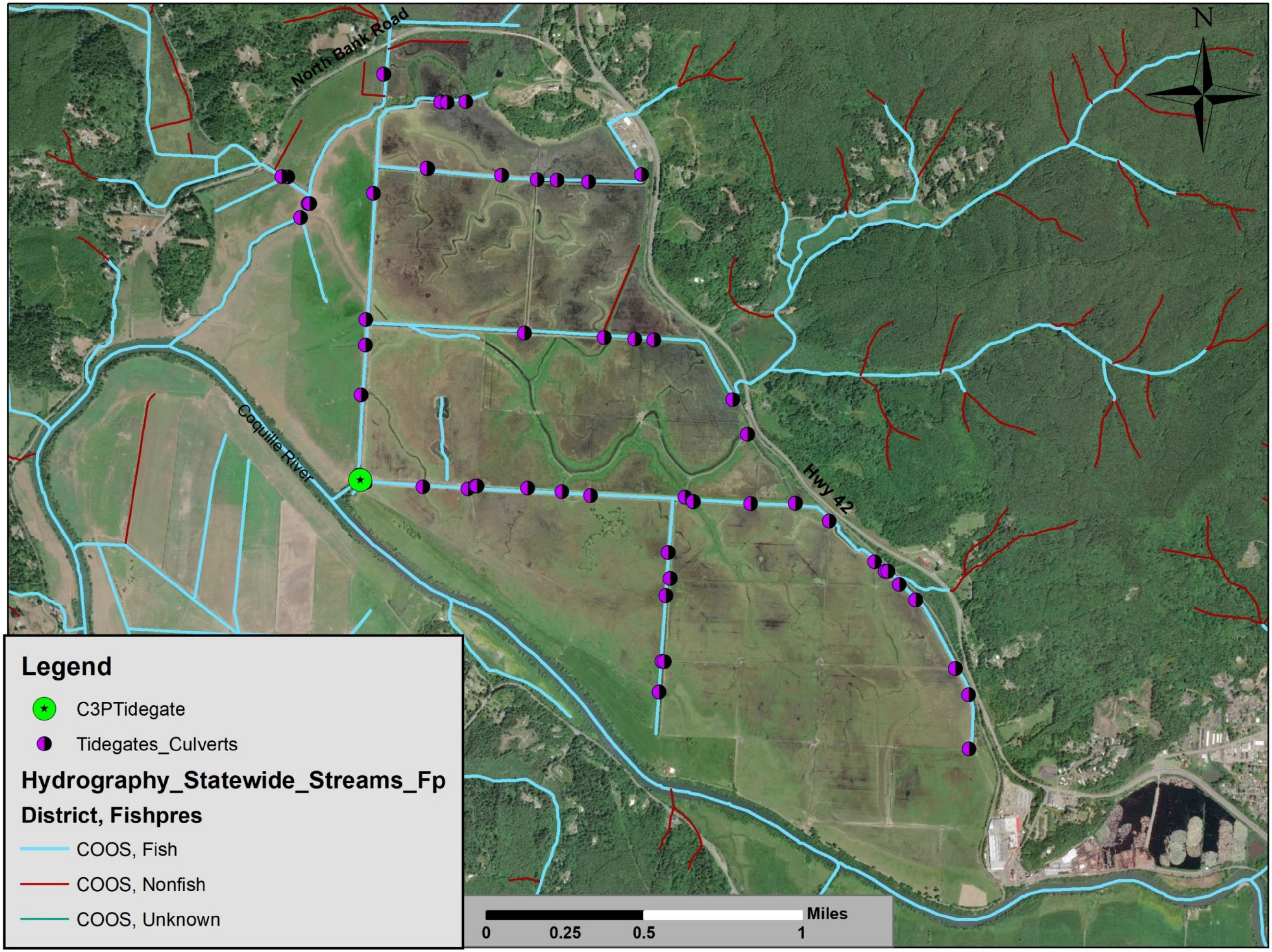


Figure 10. Winter Lake Aerial Imagery with existing linear channel network

Figure 11. “Flapper” and Top-hinge style interior tidegates

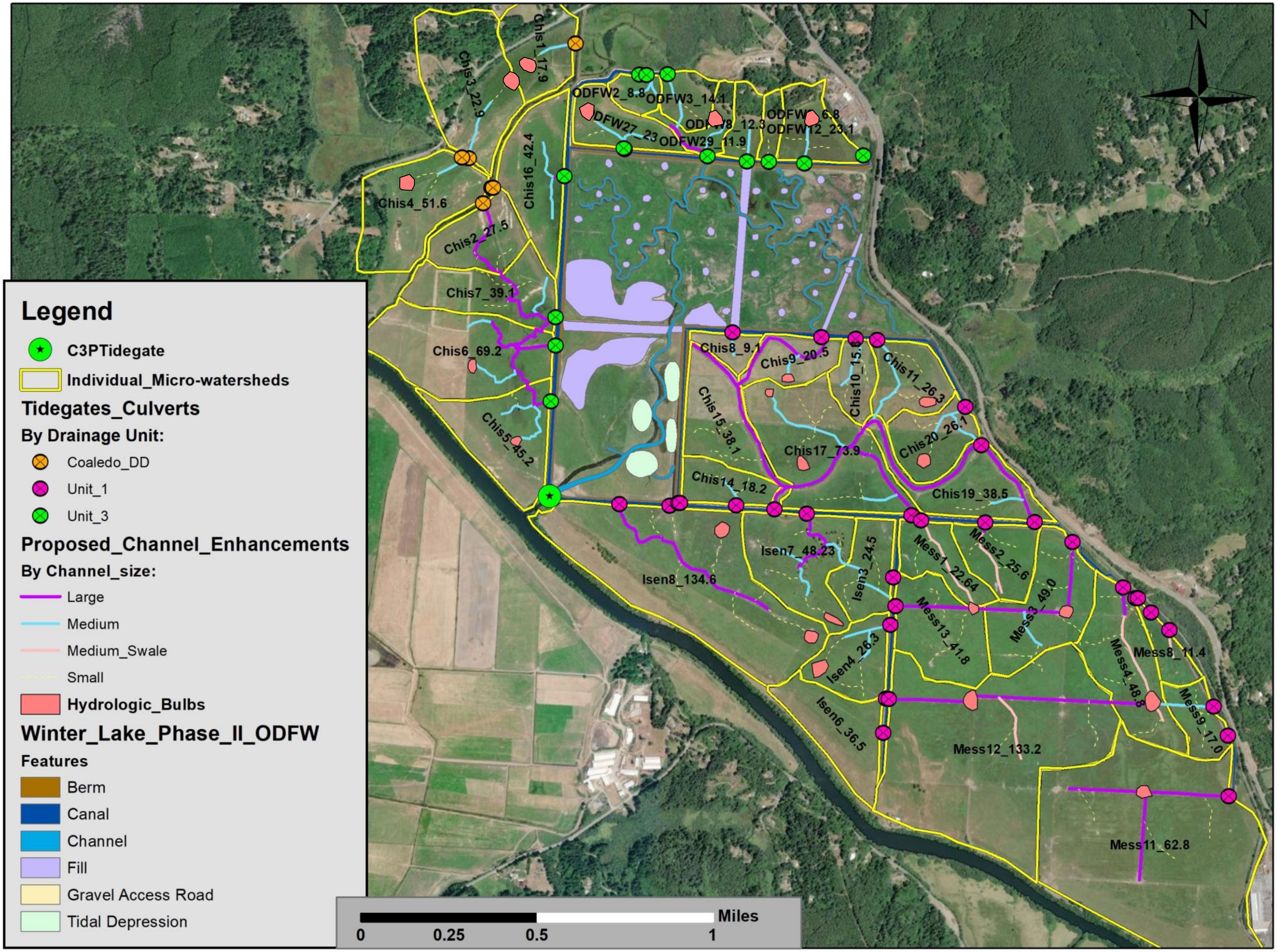


Figure 12. Individual micro-watersheds associated with culverts and proposed channel enhancements

Figure 13. Examples of a side-hinge aluminum tidegate

Aluminum Waterman Style Gate

http://www.agriexpo.online/prod/waterman-industries/product-174233-19232.html

Figure 14. Aluminum Waterman Style gate

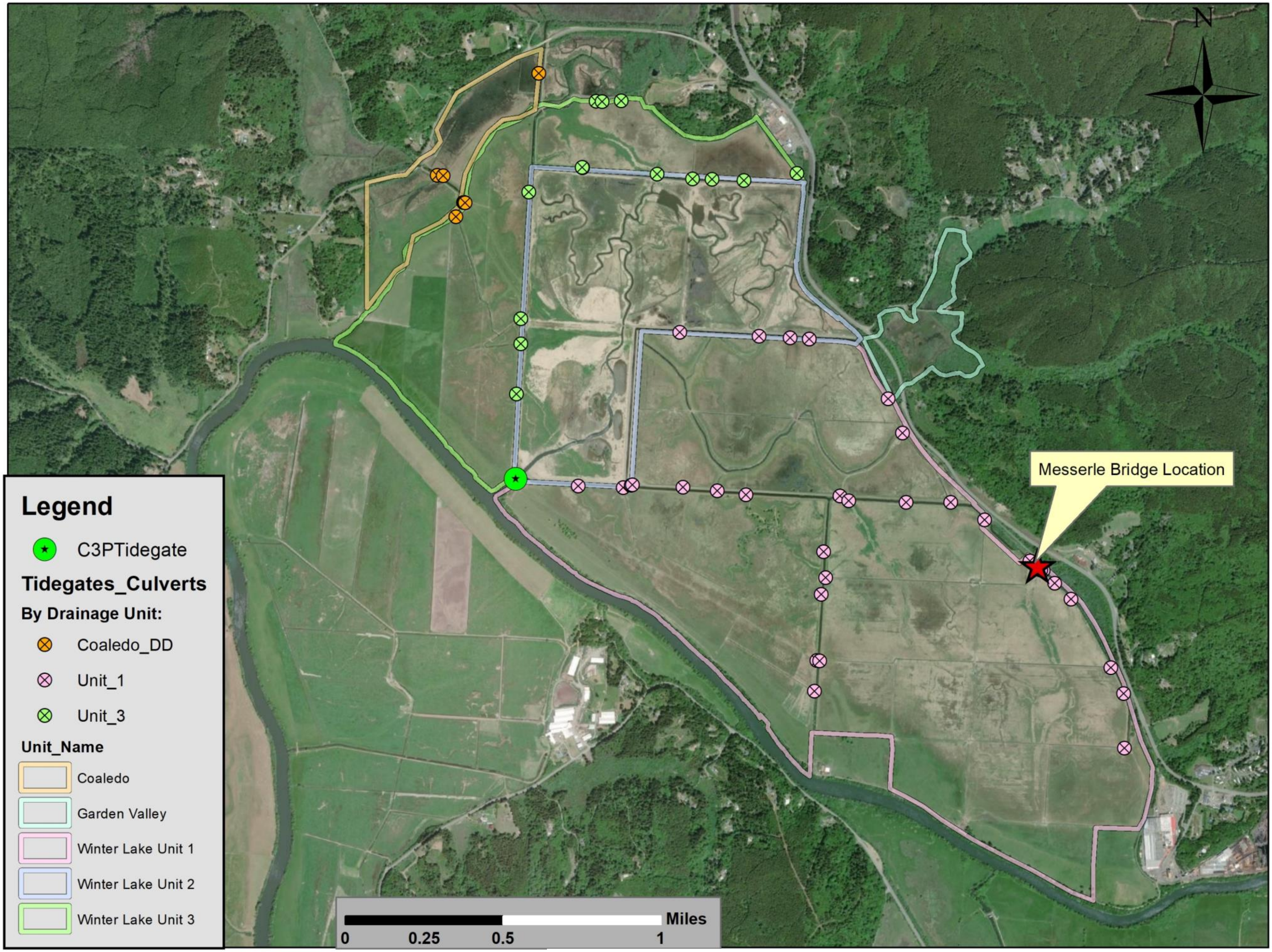


Figure 15. Messerle Bridge Location Map

Figure 16. Bridge Site Photo

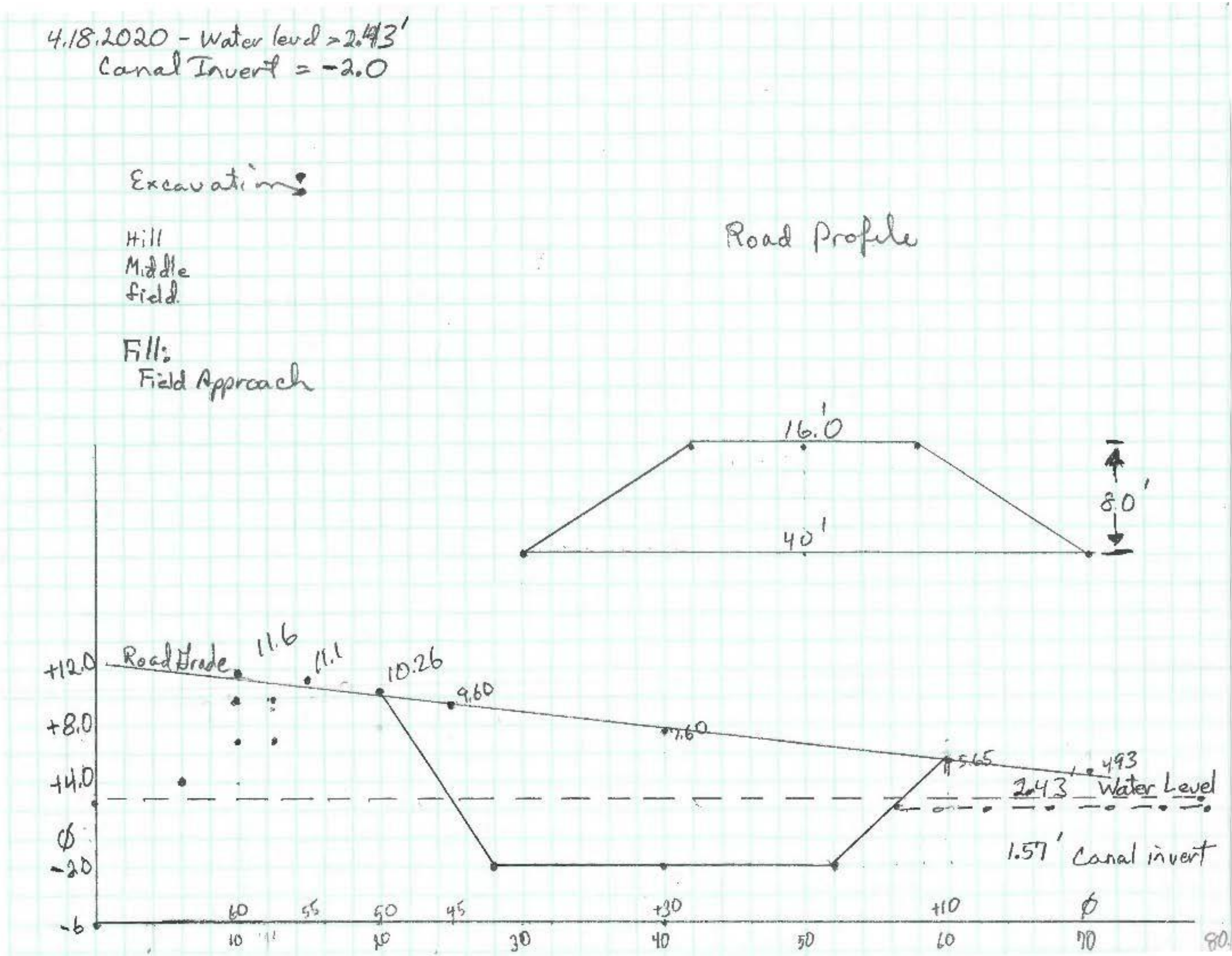


Figure 17. Bridge Design Drawing

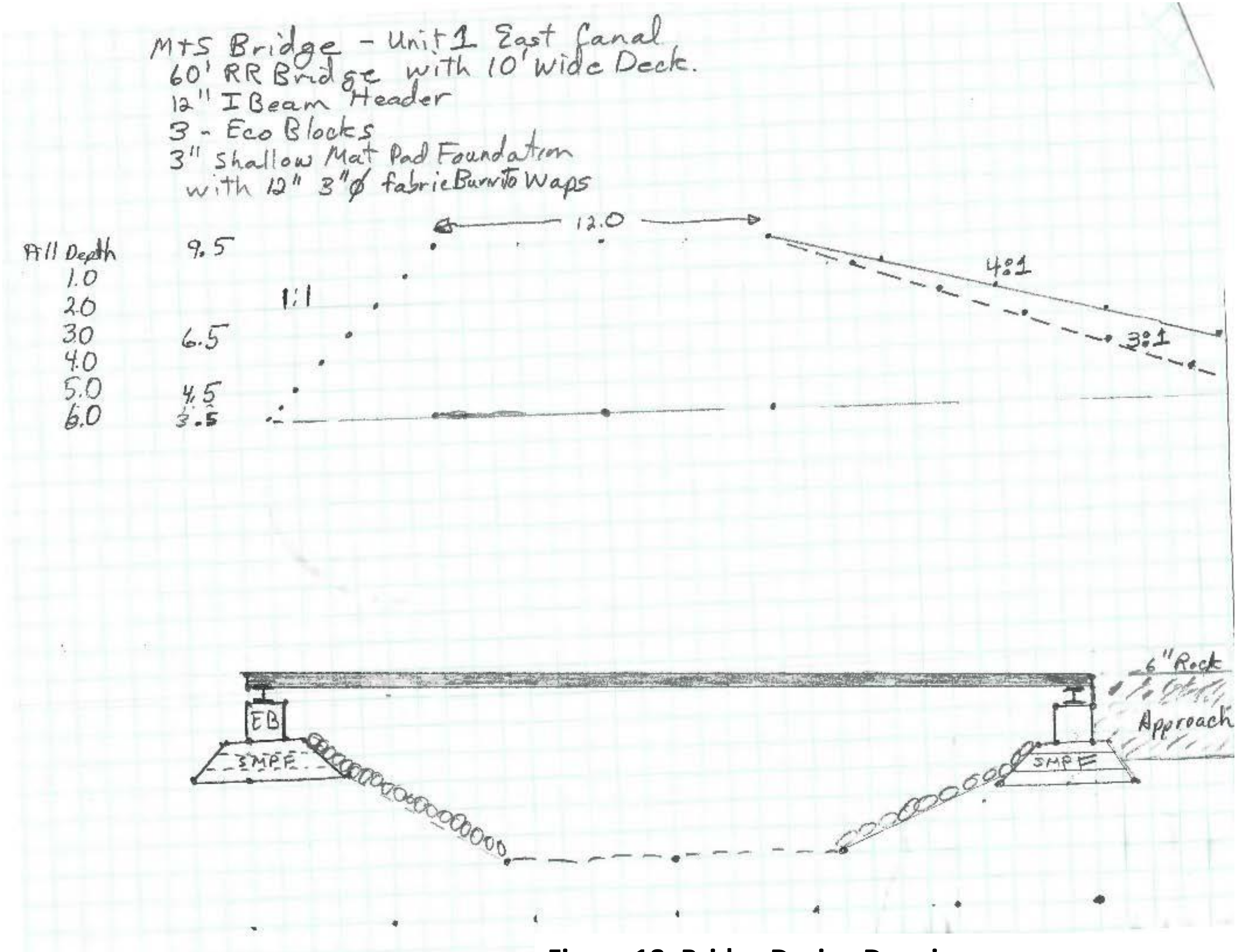


Figure 18. Bridge Design Drawing

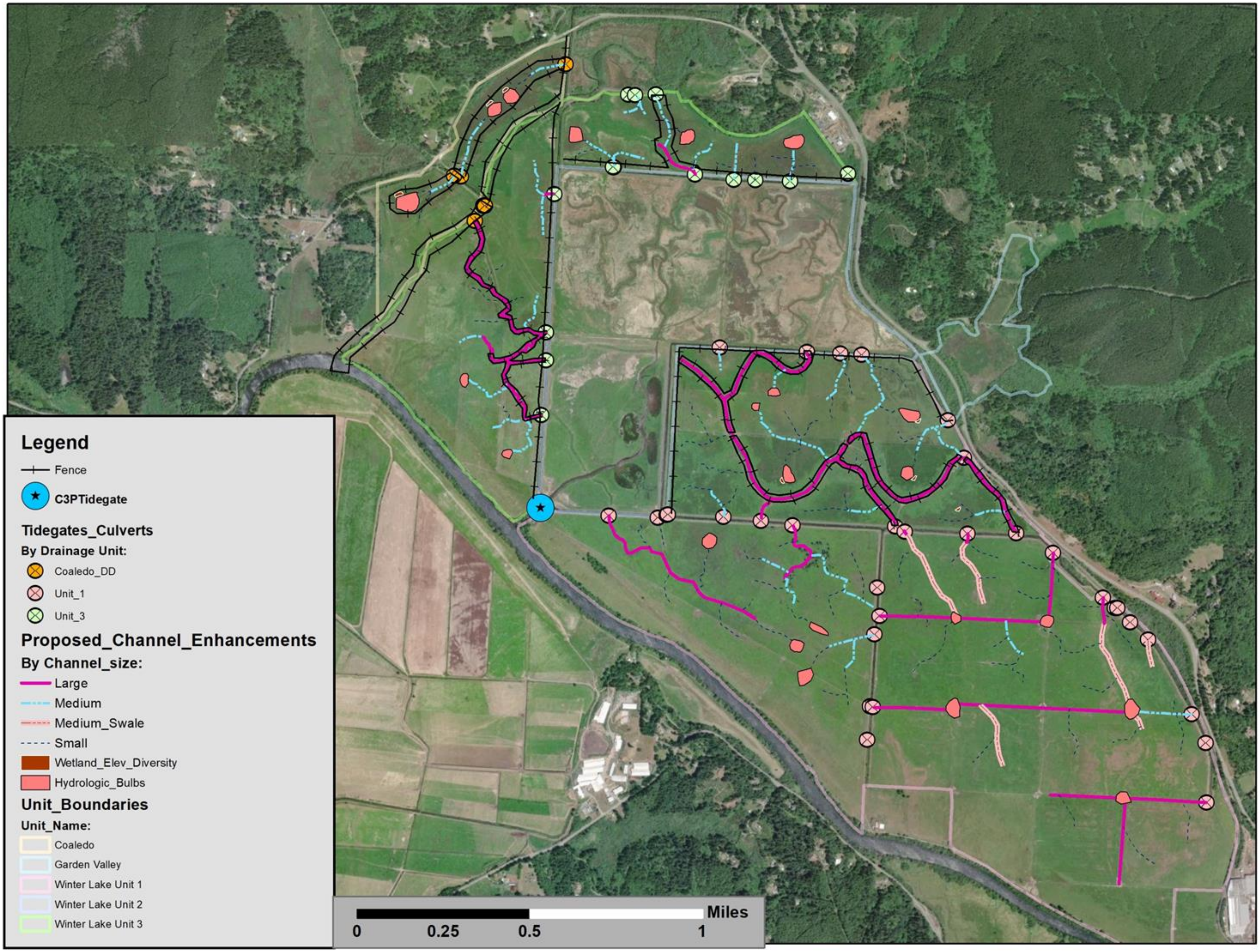


Figure 19. Winter Lake Phase III Proposed Channel Enhancements

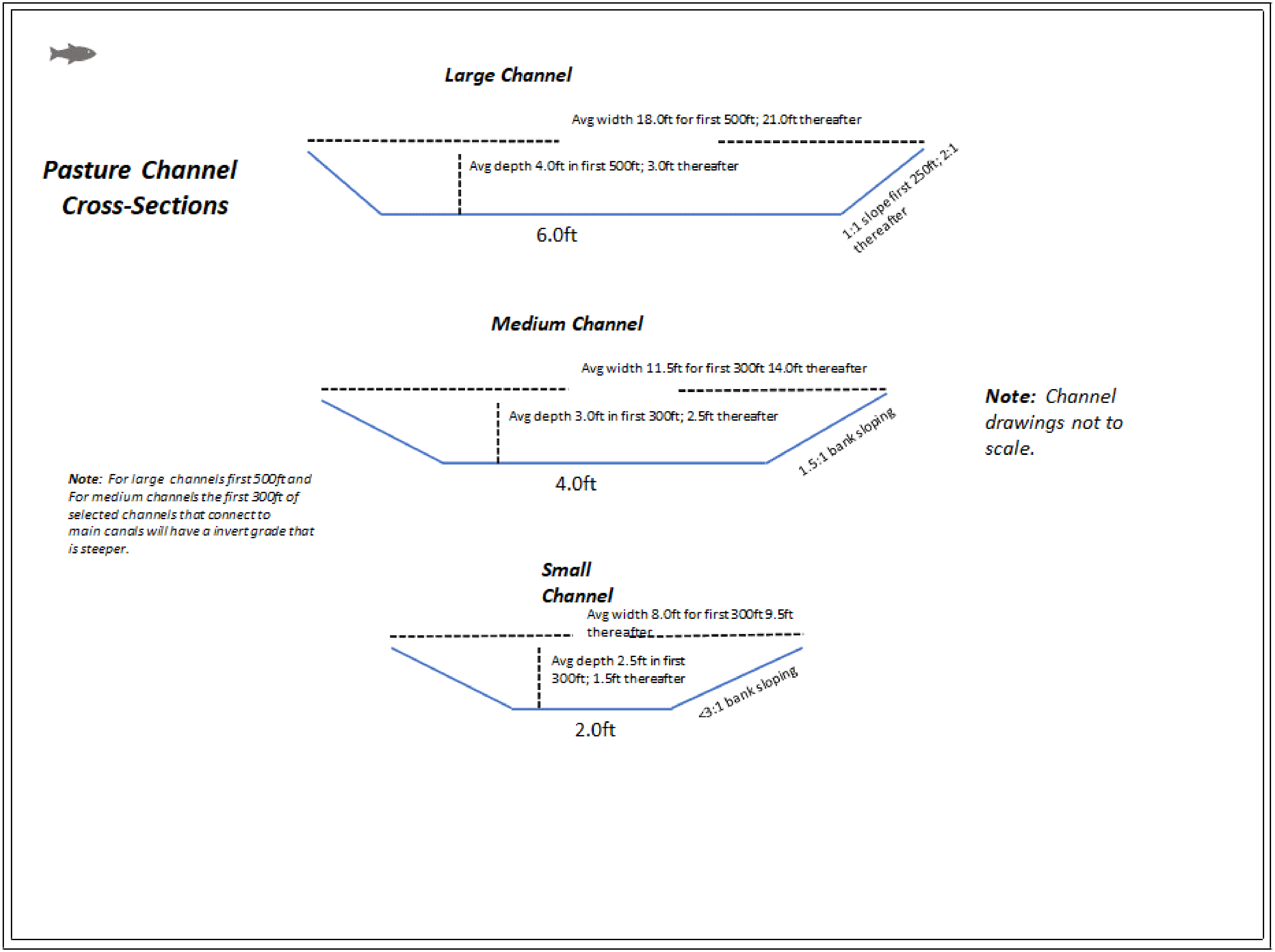


Figure 20. Pasture Channel Cross Sectional Drawings

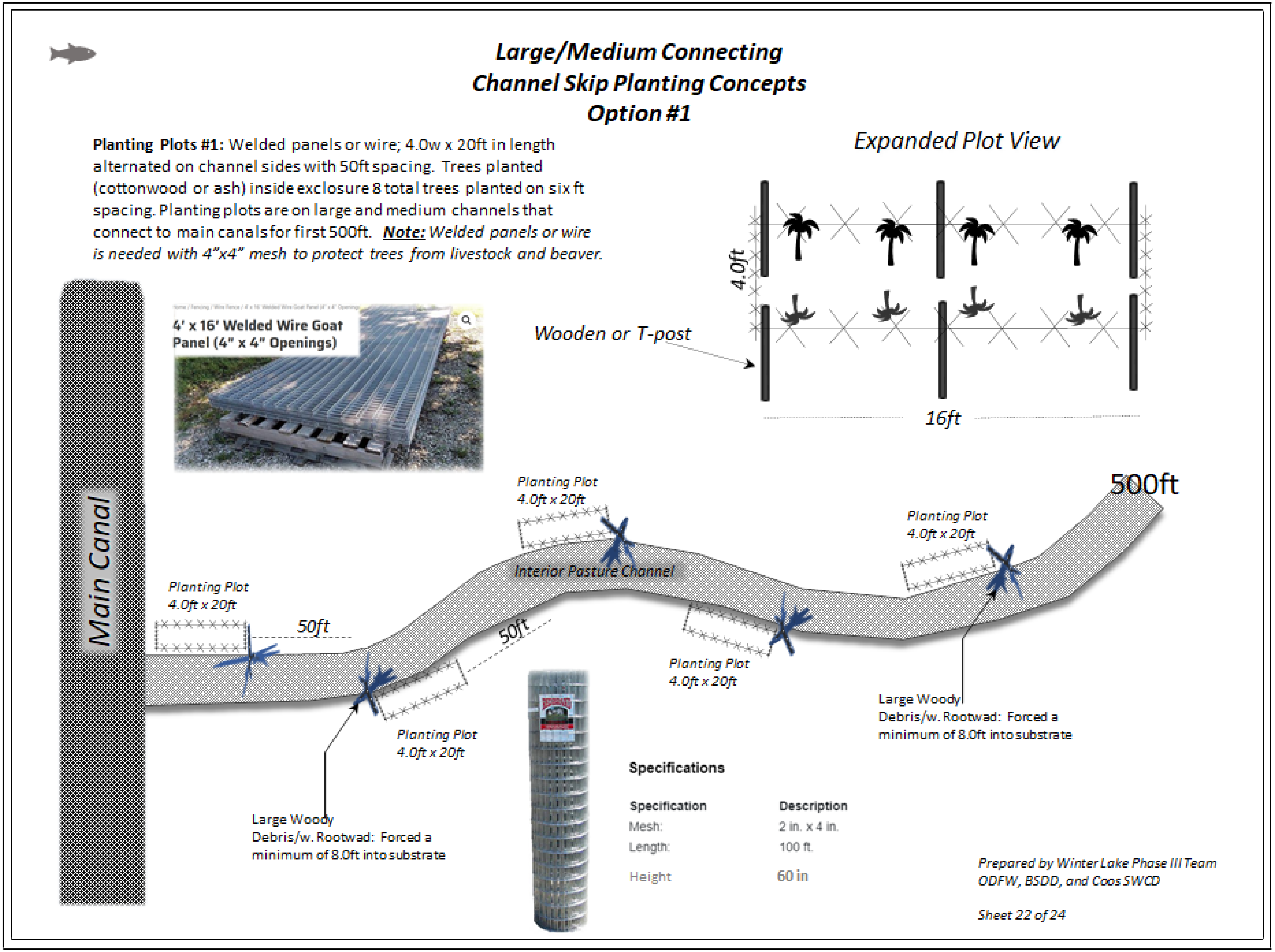


Figure 21. Photos of existing shallow swale channels

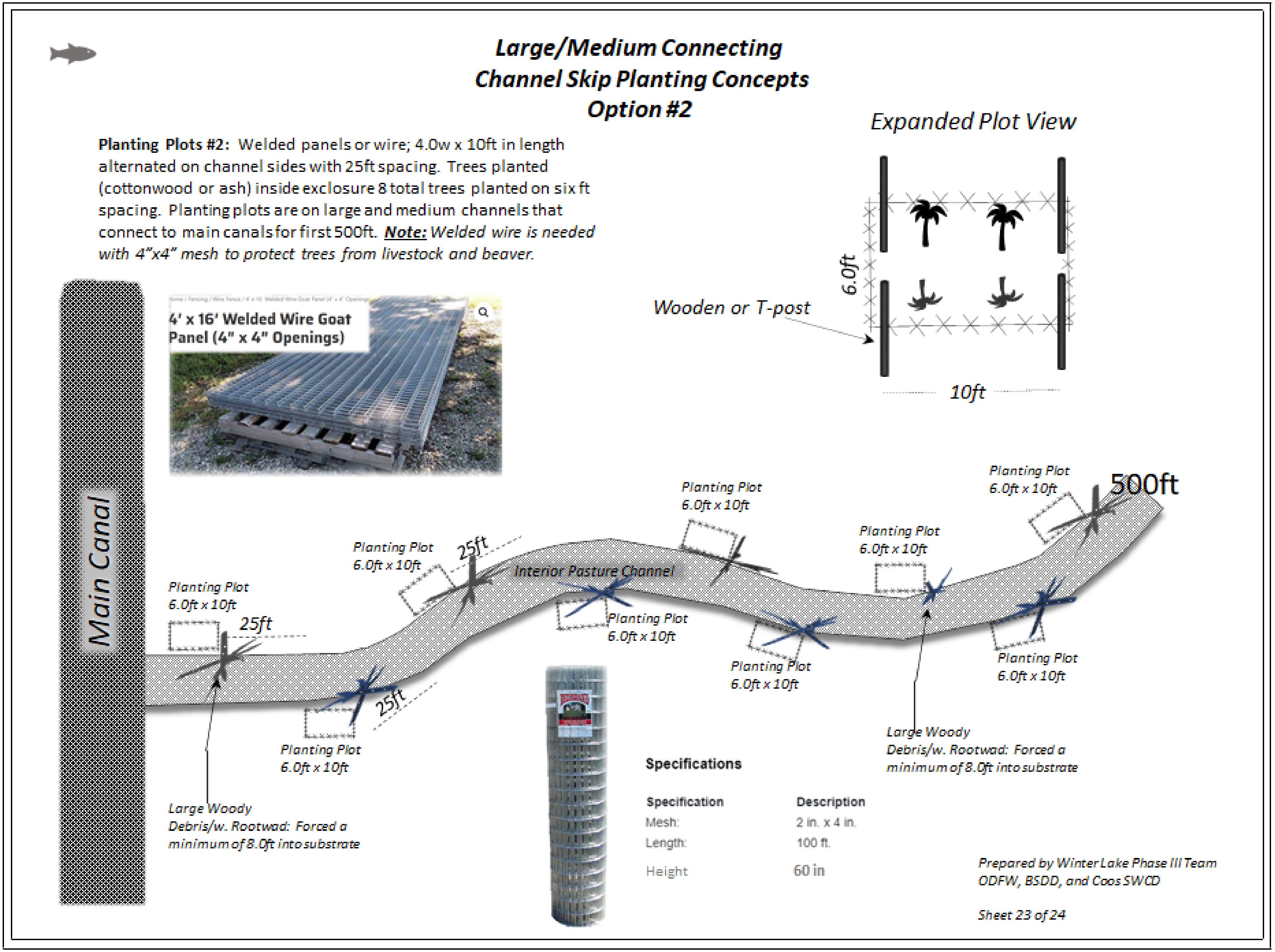


Figure 22. Photos of existing shallow swale channels

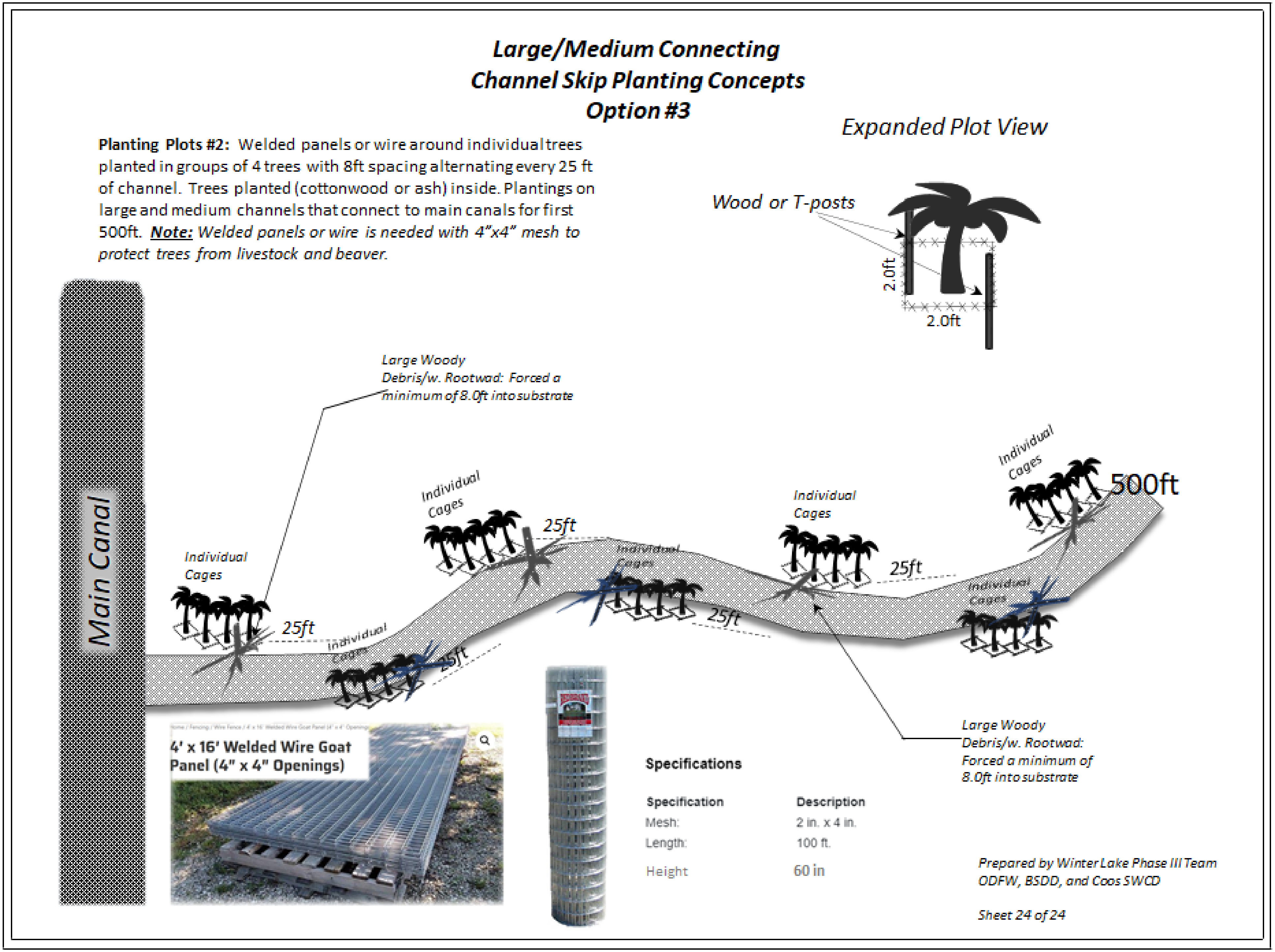


Figure 23. Photos of existing shallow swale channels

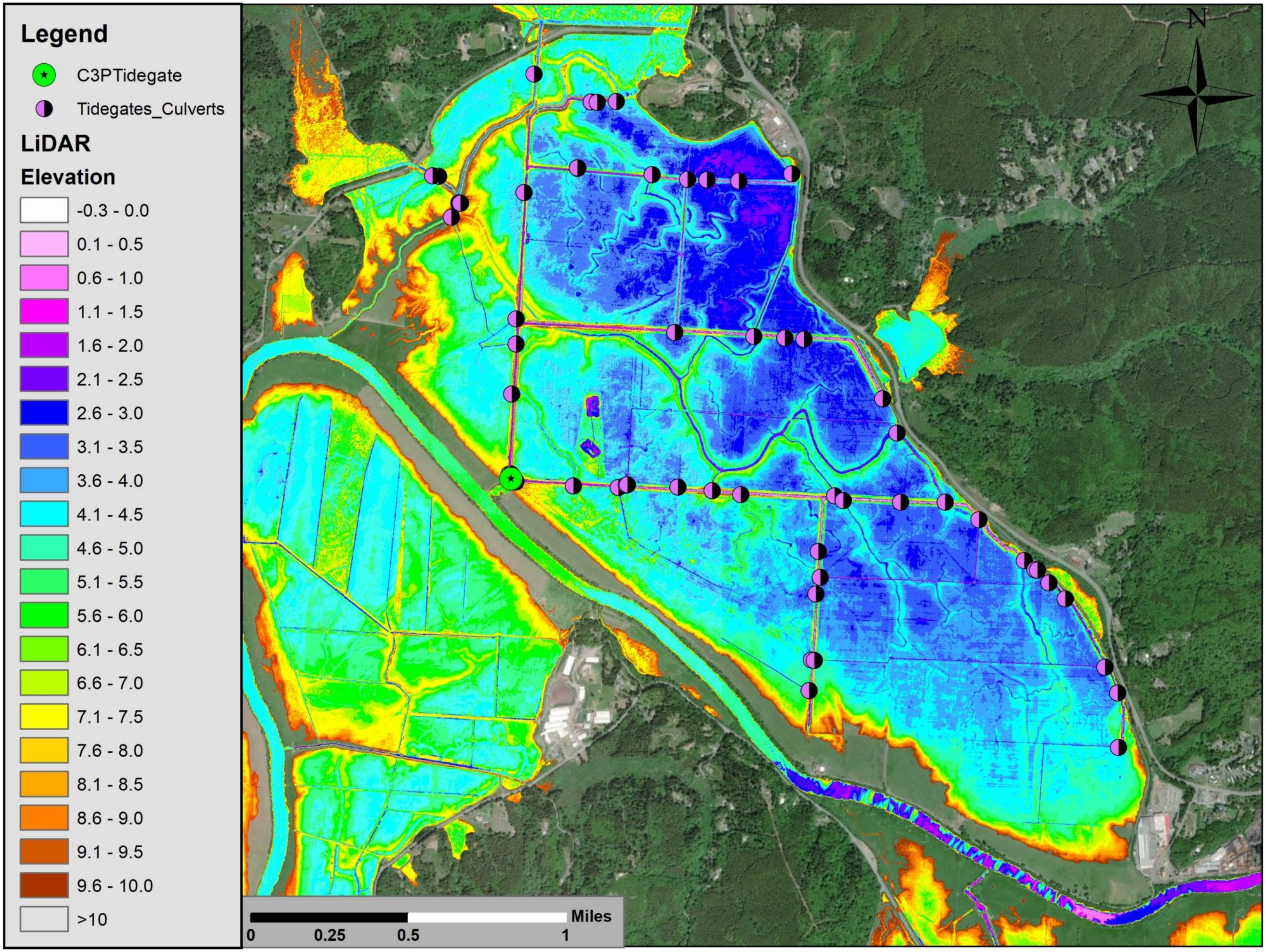


Figure 24. LiDAR color map

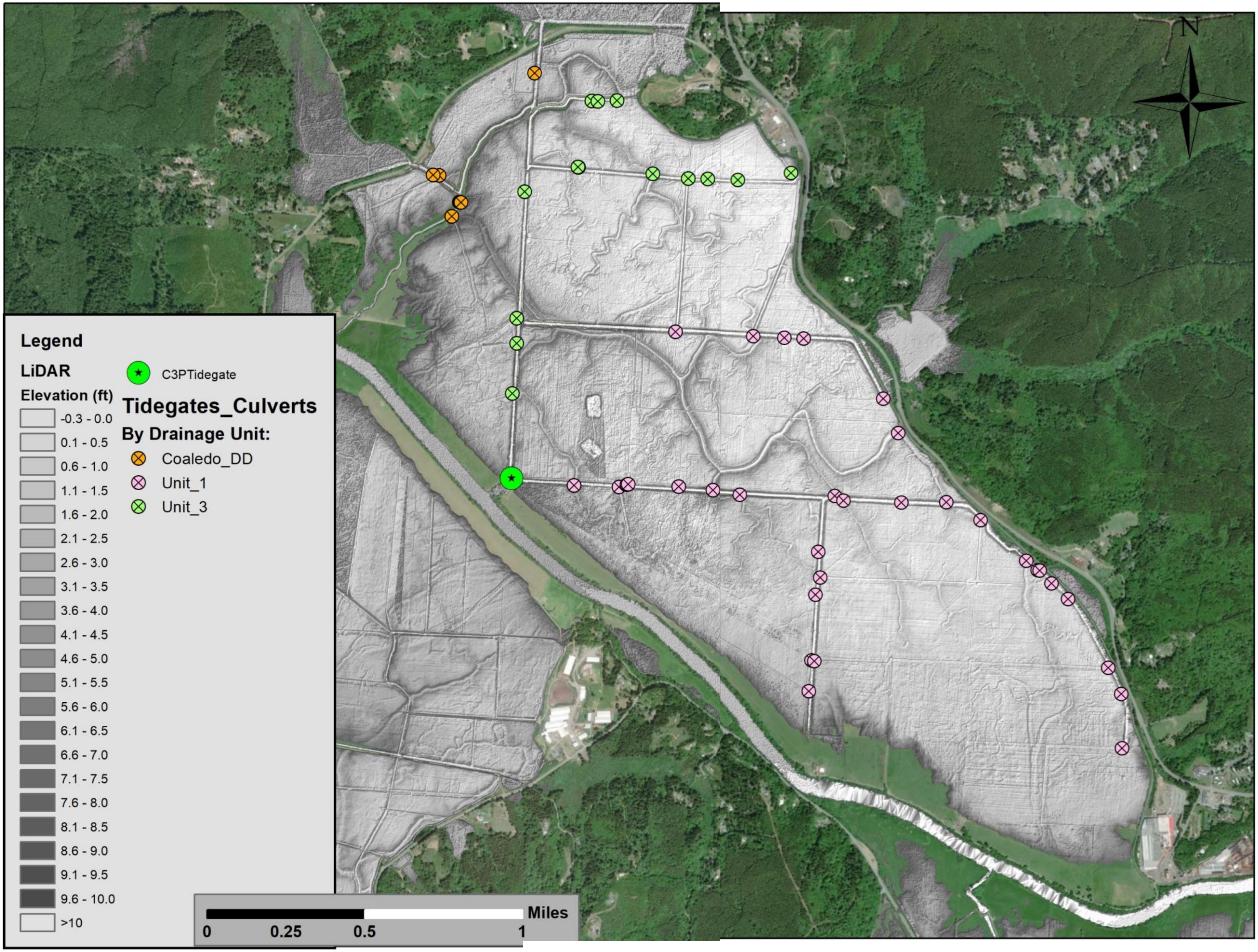


Figure 25. LiDAR Hillshade Imagery

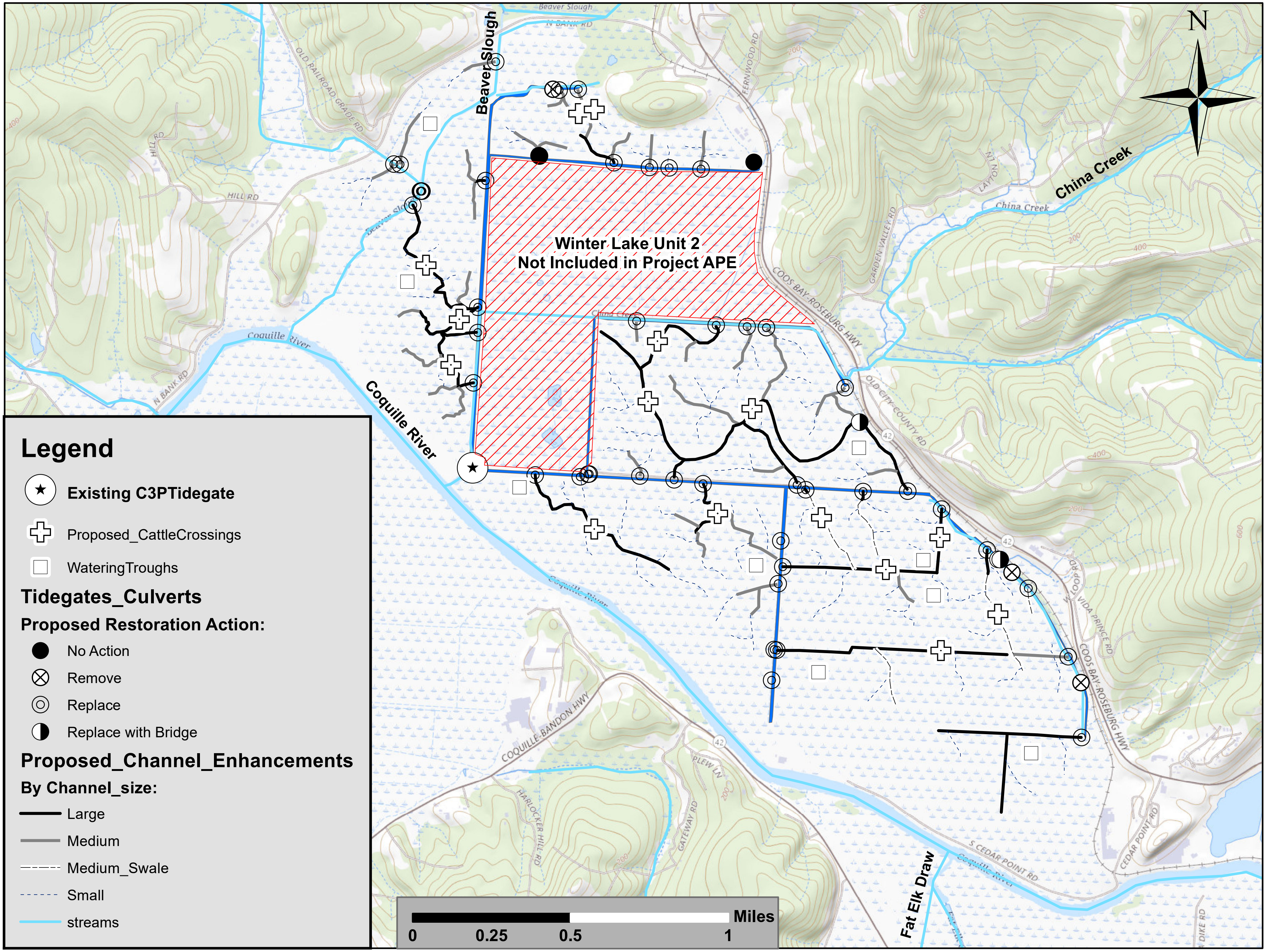


Figure 25.b (Revised): Map showing the locations of proposed Watering Troughs and Cattle Crossings.

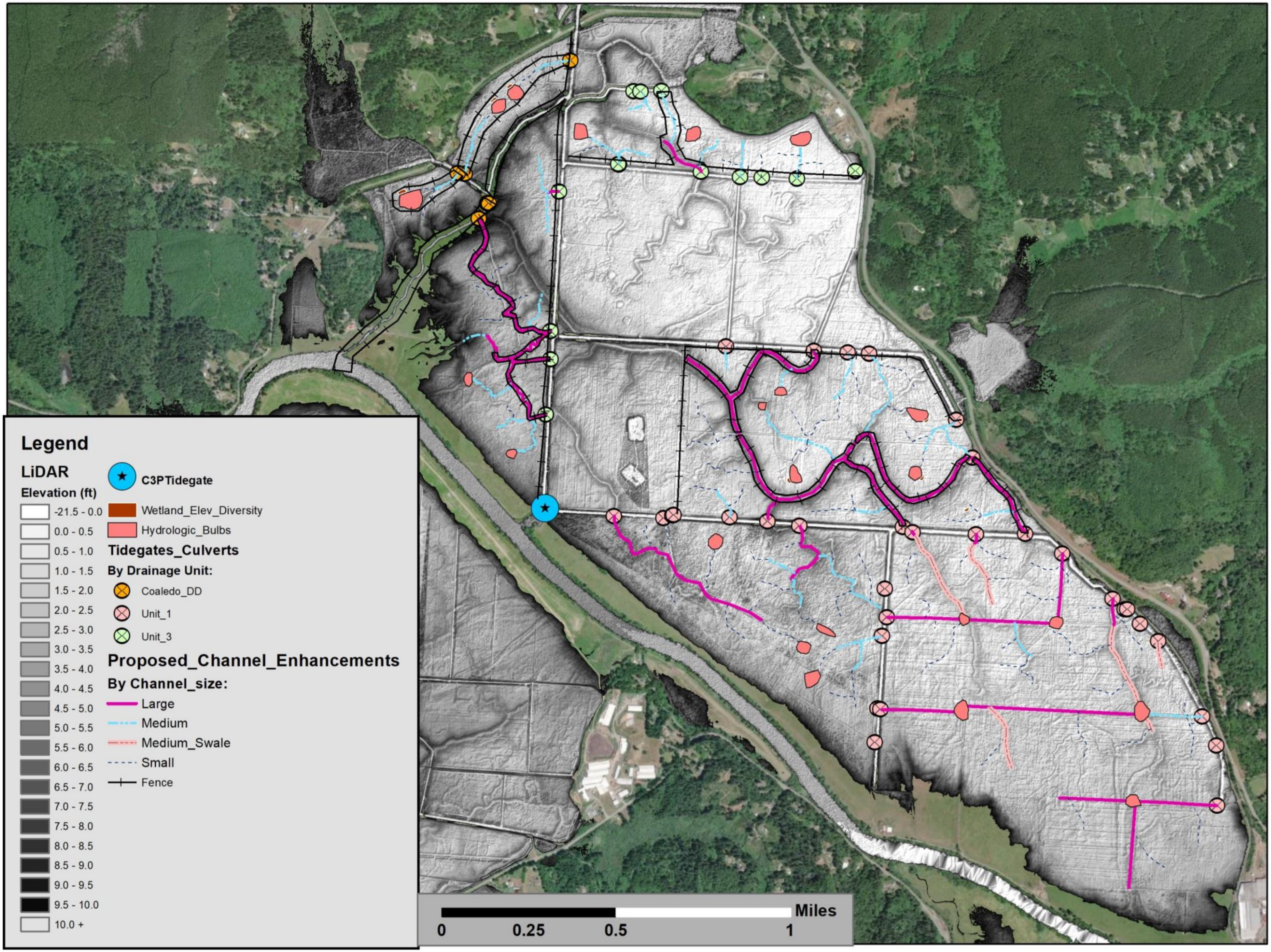


Figure 26. LiDAR Hillshade Imagery with proposed channel network

Figure 27. Photos of existing shallow swale channels

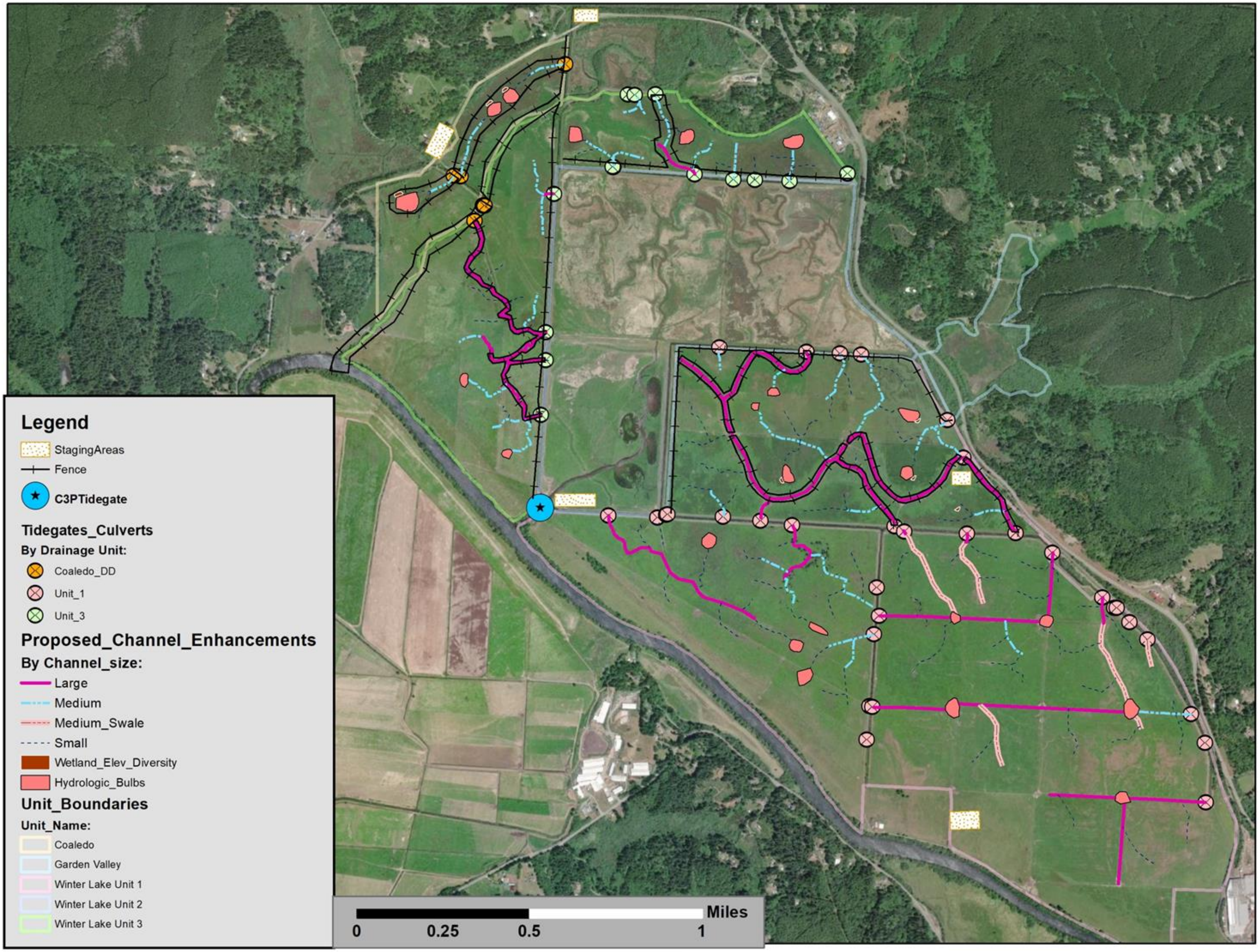


Figure 28. Map of Equipment Staging Areas

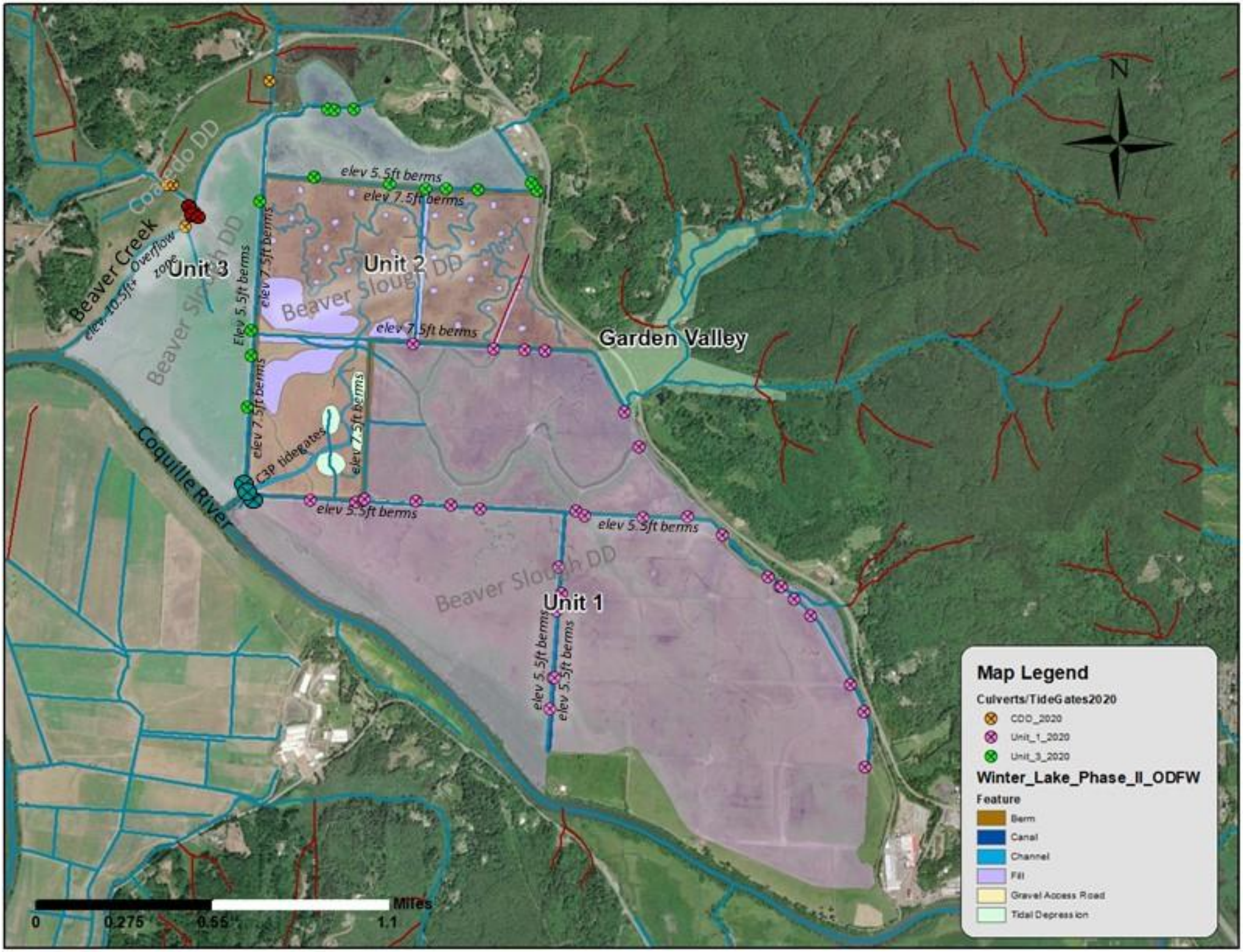


Figure 29. Berm Map

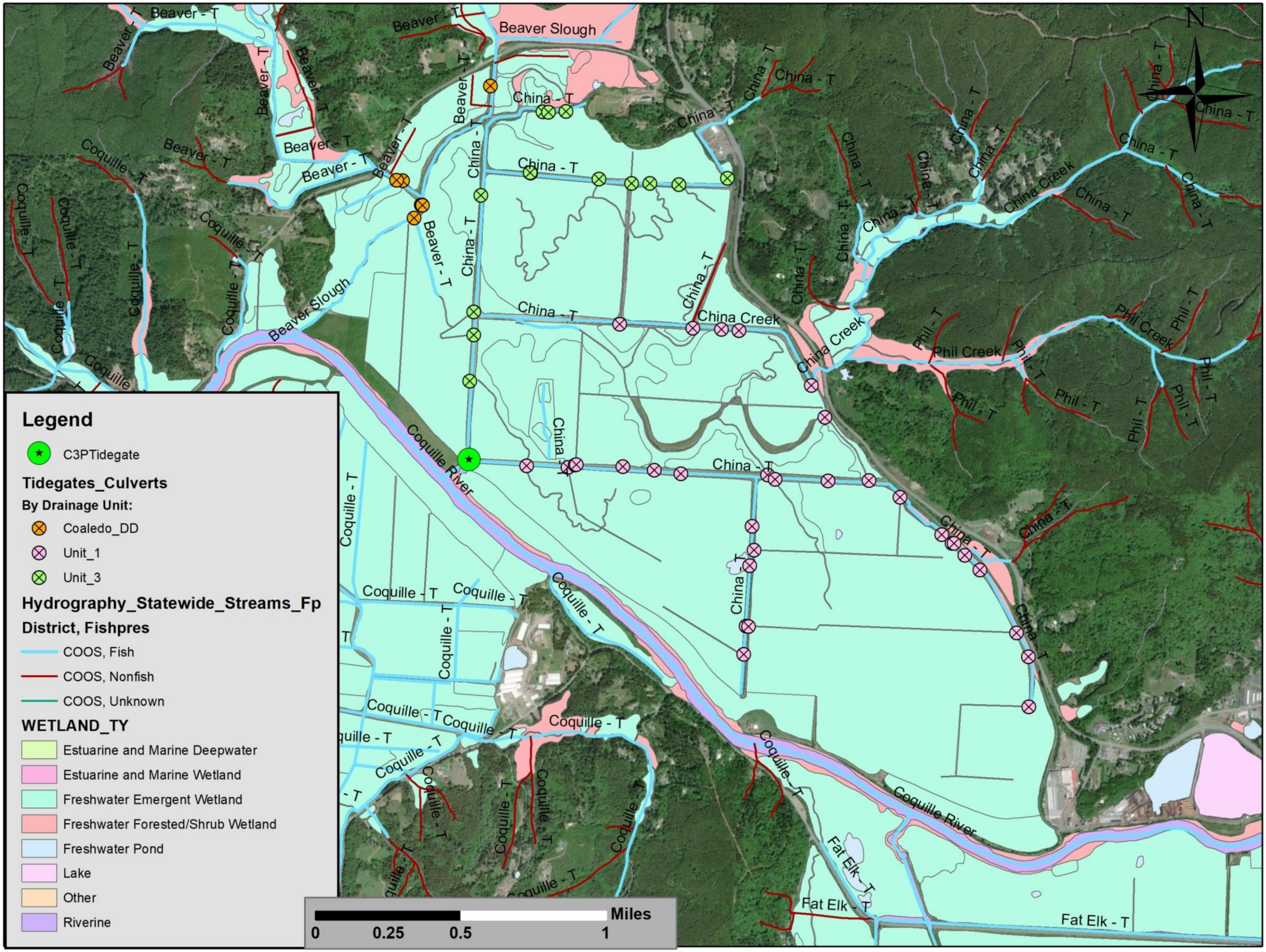
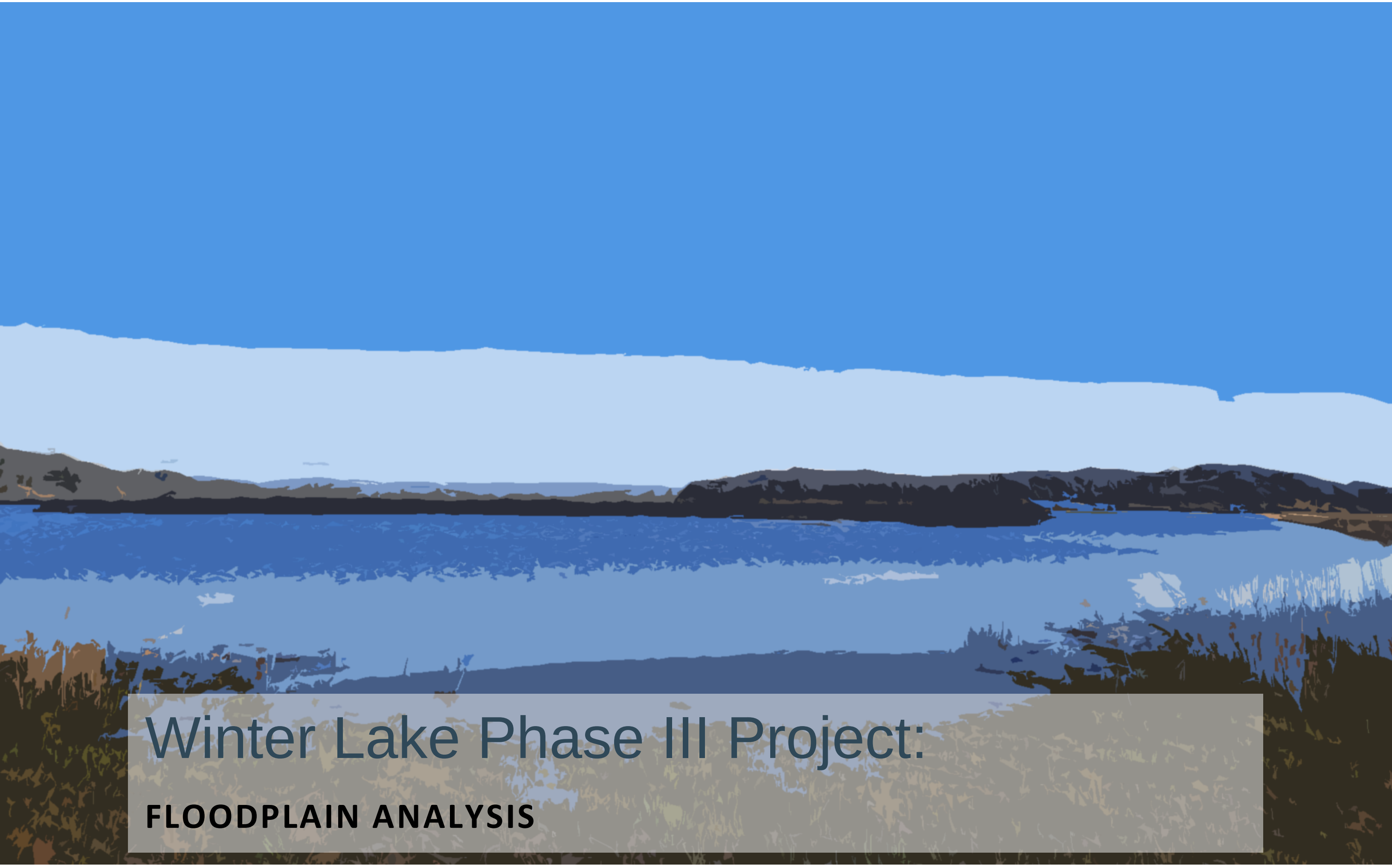


Figure 30. Wetlands Map



Winter Lake Phase III Project:

FLOODPLAIN ANALYSIS

JUNE 30, 2023

Prepared By:

Kilgren Water Resources, LLC

21 East 28th Avenue, Suite 4

Eugene, OR 97405

Prepared on Behalf of:

Coos County Soil and Water Conservation District

379 North Adams Street

Coquille, OR 97423

COOS SWCD

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1 Introduction

1.1 Background

The Winter Lake Phase III Project is being designed by Kilgren Water Resources (KWR) on behalf of the Coos County Soil and Water Conservation District (Coos SWCD). The proposed project is located within Coos County, Oregon and adjacent to the Coquille River (Figure 1 and Figure 2). The entirety of the project area is located on property within the Beaver Slough Drainage District and Coaledo Draiange District, and included tax lots are listed in Table 1.

Table 1. Tax lots included within the project area.

Township	Range	Section	Tax Lot
27S	13W	20	1503
27S	13W	27	400
27S	13W	27	500
27S	13W	28	400
27S	13W	28	600
27S	13W	28	700
27S	13W	29	101
27S	13W	29	103
27S	13W	33	100
27S	13W	33	200
27S	13W	34	800

The project area is located within the Federal Emergency Management Agency (FEMA) delineated Special Flood Hazard Area (SFHA) Zone A mapped for the Coquille River and shown on FEMA Flood Insurance Rate Map (FIRM) Map Numbers 41011C0510F, 41011C0540F, and 41011C0550F (FEMA 2018a). The SFHA Zone A is used by FEMA to identify areas likely to be inundated by the 1-percent annual chance flood, as determined by approximate methods, rather than detailed studies, and do not have specified base flood elevations (BFE's) nor designated floodways. The flood mapping from the Digital Flood Insurance Rate Map (DFIRM) database for Coos County (FEMA 2018b) is shown on Figure 3 for the proposed project area.

1.2 Proposed Project

Prior uses of the property, including for agricultural pasture grazing, resulted in degraded wetland functions and habitat quality, and have led to difficulty in maintaining optimal pasturage. The proposed project is focused on voluntary working landscape improvements that combine improved agricultural outcomes with floodplain and wetland restoration actions that benefit native plant communities and wetland conditions to enhance habitat opportunities for populations of juvenile salmonids, among other terrestrial and aquatic wildlife species.

1.3 Purpose of Analysis

This report documents hydraulic analysis demonstrating the proposed project will maintain the flood carrying capacity of the watercourse, and with no cumulative increase in the associated base flood inundation or base flood levels per Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b)

General Standards for other development. This hydraulic analysis evaluated the existing conditions and proposed conditions for the 1-percent annual chance exceedance flood event (i.e., the base flood) conditions documented in the FEMA Flood Insurance Study (FIS) for Coos County, Oregon and Incorporated Areas (FIS Number 41011CV001C with a revised date of December 7, 2018; FEMA 2018c). The analysis and this report provide documentation and support for compliance with Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other development, and the National Flood Insurance Program (NFIP) regulations governed by Title 44 of the Code of Federal Regulations (CFR) Section 60.3(d)(3). Excerpts of these provisions are provided here for reader reference:

1.3.1 Coos County Zoning and Land Development Ordinances: Chapter 4

- Section 4.11.251 General Standards, 7. Other Development

"b. Result in a cumulative increase of more than one foot during the occurrence of the base flood discharge if the development will occur within a designated flood plain outside of a designated floodway."

1.3.2 NFIP Regulations 44 CFR 60.3 (d) (3)

"prohibit encroachments, including fill, new construction, substantial improvements and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base (100-year) flood discharge."

Figure 1. Project area location map.

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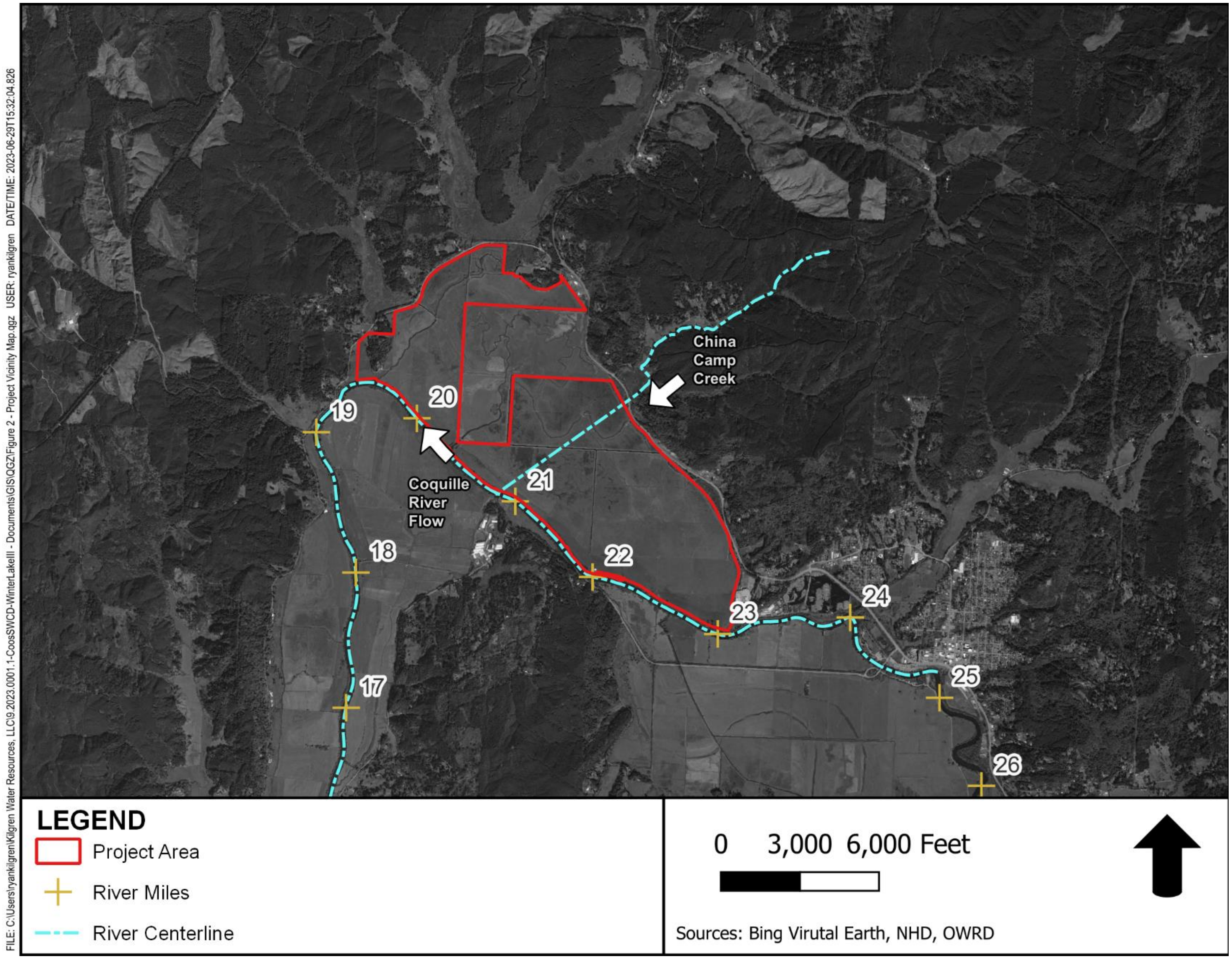

Figure 2. Project area vicinity map.

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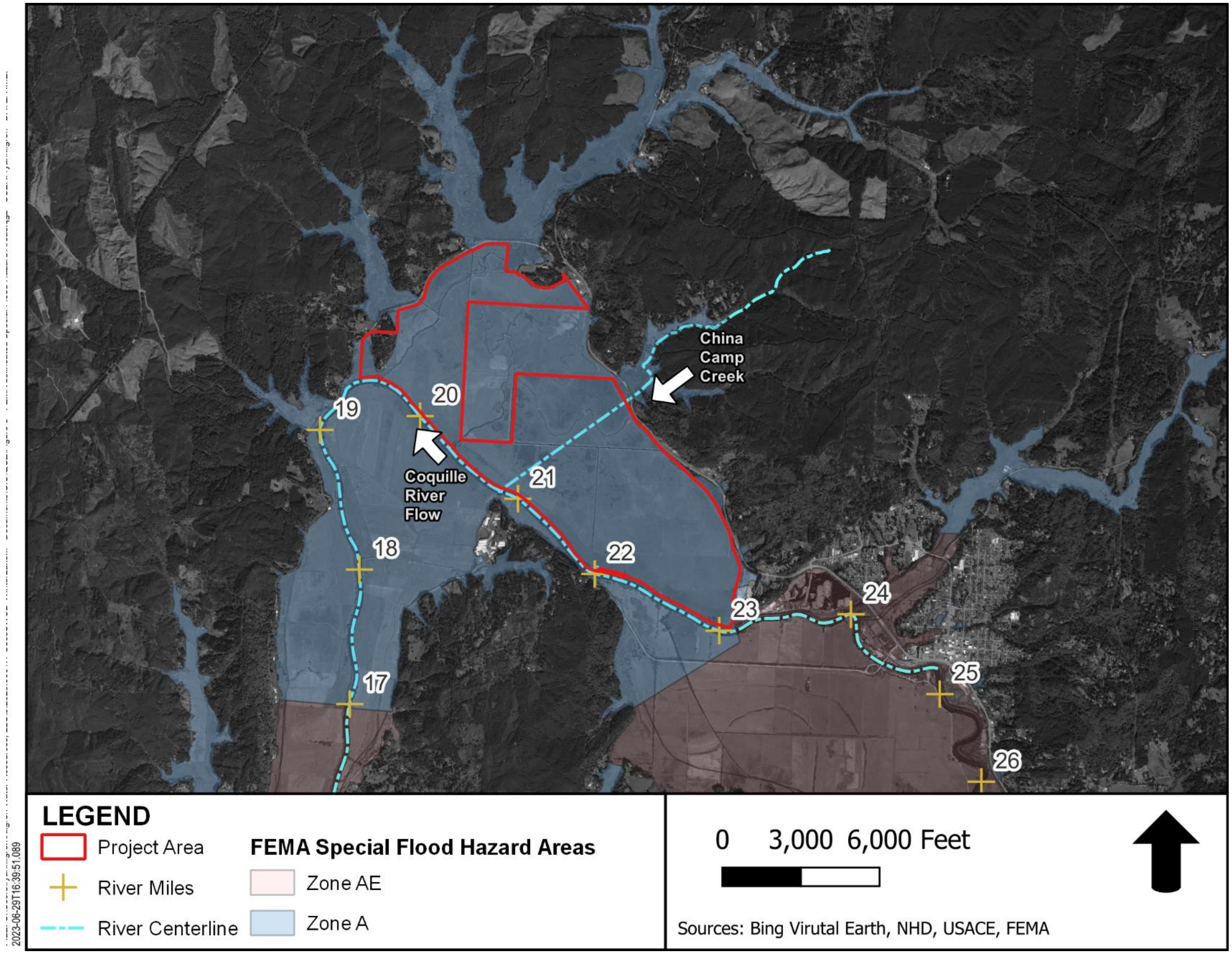

Figure 3. FEMA delineated special flood hazard areas.

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2 Hydraulic Analysis

2.1 Methodology

Hydraulic modeling analysis following FEMA guidance (FEMA 2013 and 2021b) using the U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center's River Analysis System (HEC-RAS) computer program, Version 6.3 (USACE 2022), was conducted to evaluate potential floodplain effects for the proposed project. Since the FEMA Special Flood Hazard Area delineated at the proposed project is designated as Zone A, no effective FIS HEC-RAS model is available and FEMA's floodplain area is derived by approximate methods only. For the purposes of evaluating the potential effects of the proposed project on the existing floodplain conditions, a comparative hydraulic model analysis was prepared. The existing conditions modeling was derived from a previous similar project at the Winter Lake site and which modeling was developed to assess floodplain compliance for Coos County (Tetra Tech 2014). The proposed conditions of the previous model were implemented through construction actions during 2018, and provide the existing conditions for the current analysis, in an effort to best evaluate for cumulative impacts.

The model includes a total of 80 cross sections were developed for the analysis, 17 of which transect the property of the proposed project (Figure 4). These cross-section locations were used for both the existing conditions and proposed conditions modeling. The proposed conditions geometry was updated from the proposed channel grading geometry for drainage improvements.

Similar to the previous (Tetra Tech 2014) analysis, China Camp Creek is included as a flow input to the flood conditions of the project area.

2.2 Project Datum

The effective study (FEMA 2018c) uses elevations that are relative to NAVD88 with units of feet. The analyses presented in relationship to the proposed project utilizes this same (i.e., NAVD88) datum for consistency.

2.3 Topographic Data

Topographic survey data have been collected at the project area and combined with LiDAR terrain datasets for the development of the proposed designs. These datasets are used for the analysis presented in this report, and include:

- LiDAR based bare earth elevation digital terrain model (DTM) development from the Oregon Department of Geology and Mineral Industries (DOGAMI 2009); and,
- Previous project constructed grading surface.

The Design Plans for the proposed channels are included as Appendix B of this report. Hydraulic model cross sections for the refined model were developed using the previously developed modeling for the existing conditions and then revising the cross section geometry for the proposed conditions grading.

2.4 Hydrology

The hydrologic input for the flood modeling was utilized from the previous modeling effort. The 100-year discharge of 111,000 cubic feet per second (cfs) for the detailed FEMA flood study (FEMA 2018c) upstream of the project site and for the City of Coquille, Oregon was used as the upstream boundary for the Coquille River.

The downstream boundary condition was set as a known water surface elevation of 15.2 feet for the Coquille River at Bandon from the FIS (FEMA 2018c). The 100-year discharge for China Camp Creek was computed using regional regressions (USGS 2023) as 281 cfs.

2.5 Roughness Coefficients

Manning's coefficients were used to represent the roughness characteristics associated with the river channel and overbank areas. These roughness coefficients were derived from the previous analysis (Tetra Tech 2014) and are in line with USACE (2022) recommended values corresponding to land cover types for the project area and Coquille River channel and floodplain. The values generally ranged from 0.03 – 0.1 for the channel and overbank for the studied reach.

3 Hydraulic Results

A comparison of existing and proposed water surface elevations at cross sections within the extent of study is included in Table 2. The results show that the proposed conditions **do not** cause a cumulative increase the water surface elevation for the modeled 1-percent annual chance exceedance flood above the one-foot allowance per Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other development. The proposed conditions meet the Coos County General Standards for other development and will not impact the natural flood carrying capacity. The standard summary table for the existing and proposed conditions hydraulic modeling is provided in Appendix A.

4 Conclusions

The proposed actions for the Winter Lake Phase III Project seek to restore degraded wetland functions and habitat quality and improve agricultural use conditions. The proposed project was evaluated using a hydraulic analysis for potential impacts on flooding. The results of this analysis demonstrate compliance with the requirements of the regulations referenced in Section 1.3 of this report and as summarized here:

4.1.1 Coos County Zoning and Land Development Ordinances: Chapter 4

- Section 4.11.251 General Standards, 7. Other Development

The proposed actions are located within the SFHA Zone A, only, and do not have specified BFE's or a designated floodway, as shown on FEMA FIRM Map Numbers 41011C0510F, 41011C0540F, and 41011C0550F (FEMA 2018a). The SFHA Zone A extent in the vicinity of the proposed project are depicted on Figure 3 and the proposed conditions are shown in Appendix B of this report.

Pursuant to subpart b, proposed project during the base flood discharge has no cumulative effect on the flood levels. The cumulative effect was evaluated using the best available topographic information for the project area, and which utilized previous construction grading and hydraulic modeling analysis (Tetra Tech 2014).

4.1.2 NFIP Regulations 44 CFR 60.3 (d) (3)

The proposed actions are located within designated SFHA Zone A areas, only, and **do not have specified BFE's or a floodway.** These extents are shown on the FEMA FIRM Map Numbers 41011C0510F, 41011C0540F, and 41011C0550F (FEMA 2018a).

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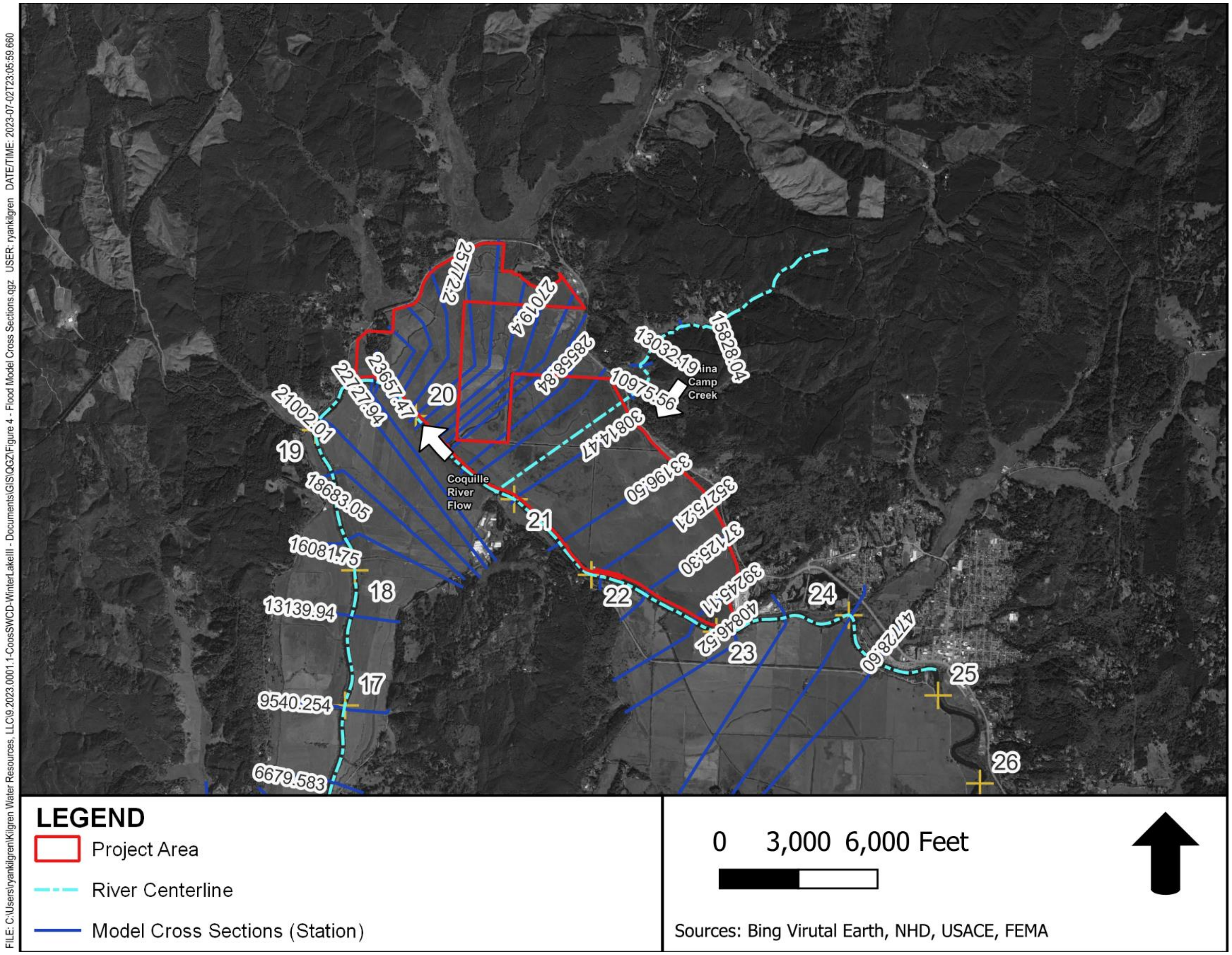

Figure 4. Hydraulic model cross sections near the project area for flood analysis.

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Table 2. A comparison of existing and proposed flood model results. Table rows with yellow highlighting correspond to flood model cross section station numbers within the property of the proposed project.

Flood model cross section station number	Water surface elevation (Feet) Existing conditions	Water surface elevation (Feet) Proposed conditions	Change in water surface elevation (proposed conditions minus existing conditions) [Feet]
45576.66	28.00	28.00	0.00
42897.18	27.99	27.99	0.00
40846.52	27.83	27.83	0.00
39245.11	27.82	27.82	0.00
37125.3	27.68	27.68	0.00
35275.21	27.55	27.55	0.00
33196.5	27.38	27.38	0.00
30814.47	27.13	27.13	0.00
29098.84	26.99	26.99	0.00
28558.84	26.94	26.94	0.00
27645.12	26.90	26.90	0.00
27331.19	26.88	26.88	0.00
27019.4	26.86	26.86	0.00
26707.6	26.83	26.83	0.00
26084	26.82	26.82	0.00
25772.2	26.78	26.78	0.00
25460.45	26.69	26.69	0.00
24820.45	26.53	26.53	0.00
24451.45	26.31	26.31	0.00
23882.51	25.39	25.39	0.00
23657.47	26.06	26.06	0.00
22727.94	26.05	26.05	0.00
21002.01	26.04	26.04	0.00

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5 State of Oregon Professional Engineer Certification

I Ryan W. Kilgren am a qualified civil engineer licensed to practice in the State of Oregon. I certify that the engineering analyses provided in this memorandum indicate compliance with the required regulations:

- Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other development; and,
- NFIP regulations governed by Title 44 of the CFR, Section 60.3(d)(3).

	June 30, 2023
Signature	**Date**
Civil & Water Resources Engineer	83634PE
Title	**License No.**

RENEWS: 6/30/2025

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6 References

Federal Emergency Management Agency (FEMA). 2013. Procedures for "No-Rise" Certification For Proposed Developments in the Regulatory Floodway. US Department of Homeland Security Region X. October 2013.

FEMA. 2018a. Flood Insurance Rate Map (FIRM) Map Number 41011C0510F, 41011C0540F, and 41011C0550F. Revised Date: December 7, 2018.

FEMA. 2018b. Digital Flood Insurance Rate Map (DFIRM) database for Coos County, Oregon and Incorporated Areas. Database Revision Date December 7, 2018.

FEMA. 2018c. Flood Insurance Study (FIS), Coos County, Oregon and Incorporated Areas. Flood Insurance Study Number 41011CV001C. Revised Date: December 7, 2018.

FEMA. 2021b. Guidance for Flood Risk Analysis and Mapping; Floodway Analysis and Mapping, Guidance Document No. 79. November 2021.

Oregon Department of Geology and Mineral Industries (DOGAMI). 2009. LiDAR Remote Sensing Data Collection; Department of Geology and Mineral Industries; South Coast, Oregon. Submitted by Watershed Sciences. May 8, 2009.

Tetra Tech. 2014. Winter Lake Restoration Project: No-Rise Analysis. November 2014.

United States Army Corps of Engineers (USACE). 2022. HEC-RAS Analysis System: Hydraulic Reference Manual. Version 6.3. Available online at: http://www.hec.usace.army.mil/software/hec-ras

United States Geological Survey (USGS). 2023. StreamStats program for Oregon. Available online at: https://streamstats.usgs.gov/ss/

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Appendix A

HEC-RAS STANDARD SUMMARY TABLE FOR EXISTING CONDITIONS AND PROPOSED CONDITIONS HYDRAULIC MODELS

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HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models.

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	47728.6	1-PCT AEP	Existing Conditions	111000	-8.25	28.08	15.64	28.09	0.000009	1.43	166023.8	8759.45	0.04
Reach 1	47728.6	1-PCT AEP	Proposed Conditions	111000	-8.25	28.08	15.64	28.09	0.000009	1.43	166029.3	8759.47	0.04
Reach 1	45576.66	1-PCT AEP	Existing Conditions	111000	-38.67	28	6.23	28.05	0.000046	3.14	96573.24	8838.1	0.09
Reach 1	45576.66	1-PCT AEP	Proposed Conditions	111000	-38.67	28	6.23	28.05	0.000046	3.14	96578.93	8838.1	0.09
Reach 1	42897.18	1-PCT AEP	Existing Conditions	111000	-12.53	27.99	13.61	28	0.000007	1.22	185361.5	9400.7	0.04
Reach 1	42897.18	1-PCT AEP	Proposed Conditions	111000	-12.53	27.99	13.61	28	0.000007	1.22	185367.4	9400.71	0.04
Reach 1	40846.52	1-PCT AEP	Existing Conditions	111000	-14.21	27.83	15.45	27.95	0.000109	4.73	64023.88	6315.26	0.15
Reach 1	40846.52	1-PCT AEP	Proposed Conditions	111000	-14.21	27.83	15.45	27.95	0.000109	4.73	64028.16	6315.26	0.15
Reach 1	39245.11	1-PCT AEP	Existing Conditions	111000	-14.11	27.82	12.99	27.85	0.000026	2.49	103291.9	6649.05	0.07
Reach 1	39245.11	1-PCT AEP	Proposed Conditions	111000	-14.11	27.82	12.99	27.85	0.000026	2.49	103296.3	6649.06	0.07
Reach 1	37125.3	1-PCT AEP	Existing Conditions	111000	-14.49	27.68	15.07	27.76	0.00008	3.79	66458.48	5255.66	0.11
Reach 1	37125.3	1-PCT AEP	Proposed Conditions	111000	-14.49	27.68	15.07	27.76	0.00008	3.79	66462.05	5255.66	0.11

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	35275.21	1-PCT AEP	Existing Conditions	111000	-9.91	27.55	12.89	27.63	0.000073	3.63	73031.66	6380.85	0.12
Reach 1	35275.21	1-PCT AEP	Proposed Conditions	111000	-9.91	27.55	12.89	27.63	0.000073	3.63	73035.77	6380.88	0.12
Reach 1	33196.5	1-PCT AEP	Existing Conditions	111000	-12.01	27.38	19.91	27.47	0.000104	4.07	64780.77	5823.55	0.12
Reach 1	33196.5	1-PCT AEP	Proposed Conditions	111000	-12.01	27.38	19.91	27.47	0.000104	4.07	64783.97	5823.55	0.13
Reach 1	30814.47	1-PCT AEP	Existing Conditions	111000	-12.41	27.13	11.71	27.23	0.000089	4.2	64891.05	5624.38	0.13
Reach 1	30814.47	1-PCT AEP	Proposed Conditions	111000	-12.41	27.13	11.71	27.23	0.000089	4.2	64892.05	5624.38	0.13
Reach 2	29098.84	1-PCT AEP	Existing Conditions	111281	-11.67	26.99	11.19	27.05	0.000064	3.39	79051.23	6737.33	0.1
Reach 2	29098.84	1-PCT AEP	Proposed Conditions	111281	-11.67	26.99	11.19	27.05	0.000064	3.39	79051.77	6737.33	0.1
Reach 2	28558.84	1-PCT AEP	Existing Conditions	111281	-11.67	26.94	11.22	27.01	0.000064	3.38	79447.67	6810.49	0.1
Reach 2	28558.84	1-PCT AEP	Proposed Conditions	111281	-11.67	26.94	11.22	27.01	0.000064	3.38	79448.25	6810.49	0.1
Reach 2	27645.12	1-PCT AEP	Existing Conditions	111281	-11.86	26.9	11.19	26.94	0.000064	2.83	85949.57	7655.25	0.09
Reach 2	27645.12	1-PCT AEP	Proposed Conditions	111281	-11.86	26.9	11.19	26.94	0.000064	2.83	85950.23	7655.25	0.09

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	27331.19	1-PCT AEP	Existing Conditions	111281	-11.86	26.88	11.21	26.92	0.000047	2.92	94399.15	8108.54	0.09
Reach 2	27331.19	1-PCT AEP	Proposed Conditions	111281	-11.86	26.88	11.21	26.92	0.000047	2.92	94399.87	8108.54	0.09
Reach 2	27019.4	1-PCT AEP	Existing Conditions	111281	-12	26.86	18.37	26.91	0.000051	3.07	89534.11	7623.44	0.09
Reach 2	27019.4	1-PCT AEP	Proposed Conditions	111281	-12	26.86	18.37	26.91	0.000051	3.07	89534.86	7623.44	0.09
Reach 2	26707.6	1-PCT AEP	Existing Conditions	111281	-12.13	26.83	18.45	26.88	0.000057	3.12	85341	7273.18	0.1
Reach 2	26707.6	1-PCT AEP	Proposed Conditions	111281	-12.13	26.83	18.45	26.88	0.000057	3.12	85341.73	7273.18	0.1
Reach 2	26084	1-PCT AEP	Existing Conditions	111281	-12.41	26.82	18.06	26.85	0.000043	2.54	100168.3	8433.14	0.08
Reach 2	26084	1-PCT AEP	Proposed Conditions	111281	-12.41	26.82	18.06	26.85	0.000043	2.54	100169	8433.14	0.08
Reach 2	25772.2	1-PCT AEP	Existing Conditions	111281	-12.54	26.78	18.04	26.82	0.000049	2.8	92124.59	7683.49	0.08
Reach 2	25772.2	1-PCT AEP	Proposed Conditions	111281	-12.54	26.78	18.04	26.82	0.000049	2.8	92124.98	7683.49	0.08
Reach 2	25460.45	1-PCT AEP	Existing Conditions	111281	-12.68	26.69	10.93	26.77	0.000067	3.85	74565.17	6189.76	0.11
Reach 2	25460.45	1-PCT AEP	Proposed Conditions	111281	-12.68	26.69	10.93	26.77	0.000067	3.85	74565.11	6189.76	0.11

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	24820.45	1-PCT AEP	Existing Conditions	111281	-12.68	26.53	10.94	26.69	0.000112	4.94	54624.75	4447.6 6	0.15
Reach 2	24820.45	1-PCT AEP	Proposed Conditions	111281	-12.68	26.53	10.94	26.69	0.000112	4.94	54624.44	4447.6 6	0.15
Reach 2	24451.45	1-PCT AEP	Existing Conditions	111281	-12.68	26.31	10.94	26.61	0.000177	6.2	40583.18	3255.6 3	0.19
Reach 2	24451.45	1-PCT AEP	Proposed Conditions	111281	-12.68	26.31	10.94	26.61	0.000177	6.2	40583.18	3255.6 3	0.19
Reach 2	23882.51	1-PCT AEP	Existing Conditions	111281	-10.52	25.39		26.36	0.000368	8.98	19747.93	1262.0 4	0.28
Reach 2	23882.51	1-PCT AEP	Proposed Conditions	111281	-10.52	25.39		26.36	0.000368	8.98	19747.93	1262.0 4	0.28
Reach 2	23657.47	1-PCT AEP	Existing Conditions	111281	-11.97	26.06	9.83	26.07	0.00001	1.52	150393.7	7842.0 3	0.05
Reach 2	23657.47	1-PCT AEP	Proposed Conditions	111281	-11.97	26.06	9.83	26.07	0.00001	1.52	150393.7	7842.0 3	0.05
Reach 2	22727.94	1-PCT AEP	Existing Conditions	111281	-18.18	26.05	11.14	26.06	0.000009	1.29	166901.4	8650.2	0.04
Reach 2	22727.94	1-PCT AEP	Proposed Conditions	111281	-18.18	26.05	11.14	26.06	0.000009	1.29	166901.4	8650.2	0.04
Reach 2	21002.01	1-PCT AEP	Existing Conditions	111281	-17.28	26.04	10.82	26.04	0.000007	1.24	190827.1	9719.5 9	0.04
Reach 2	21002.01	1-PCT AEP	Proposed Conditions	111281	-17.28	26.04	10.82	26.04	0.000007	1.24	190827.1	9719.5 9	0.04

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	18683.05	1-PCT AEP	Existing Conditions	111281	-16.71	26.01	13.59	26.02	0.000011	1.58	143947.1	7177.91	0.05
Reach 2	18683.05	1-PCT AEP	Proposed Conditions	111281	-16.71	26.01	13.59	26.02	0.000011	1.58	143947.1	7177.91	0.05
Reach 2	16081.75	1-PCT AEP	Existing Conditions	111281	-17.59	25.97	10.58	25.99	0.000017	1.8	120976.5	6427.06	0.05
Reach 2	16081.75	1-PCT AEP	Proposed Conditions	111281	-17.59	25.97	10.58	25.99	0.000017	1.8	120976.5	6427.06	0.05
Reach 2	13139.94	1-PCT AEP	Existing Conditions	111281	-15.51	25.9	8.74	25.93	0.000024	2.36	94995.25	4746.73	0.07
Reach 2	13139.94	1-PCT AEP	Proposed Conditions	111281	-15.51	25.9	8.74	25.93	0.000024	2.36	94995.25	4746.73	0.07
Reach 2	9540.254	1-PCT AEP	Existing Conditions	111281	-18.89	25.78	9.45	25.82	0.000034	2.71	83438.67	4413.66	0.08
Reach 2	9540.254	1-PCT AEP	Proposed Conditions	111281	-18.89	25.78	9.45	25.82	0.000034	2.71	83438.67	4413.66	0.08
Reach 2	6679.583	1-PCT AEP	Existing Conditions	111281	-16.2	25.59	9.84	25.68	0.00007	3.84	56920.51	3060.7	0.11
Reach 2	6679.583	1-PCT AEP	Proposed Conditions	111281	-16.2	25.59	9.84	25.68	0.00007	3.84	56920.51	3060.7	0.11
Reach 2	4448.807	1-PCT AEP	Existing Conditions	111281	-16.06	25.35	9.24	25.49	0.000097	4.63	47546.03	2638.26	0.14
Reach 2	4448.807	1-PCT AEP	Proposed Conditions	111281	-16.06	25.35	9.24	25.49	0.000097	4.63	47546.03	2638.26	0.14

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	2252.086	1-PCT AEP	Existing Conditions	111281	-11.26	24.74	9.11	25.17	0.000197	6.6	28782.55	1612.28	0.21
Reach 2	2252.086	1-PCT AEP	Proposed Conditions	111281	-11.26	24.74	9.11	25.17	0.000197	6.6	28782.55	1612.28	0.21
Reach 2	2193.92*	1-PCT AEP	Existing Conditions	111281	-11.52	24.31		24.77	0.000203	6.66	27867.01	1597.95	0.21
Reach 2	2193.92*	1-PCT AEP	Proposed Conditions	111281	-11.52	24.31		24.77	0.000203	6.66	27867.01	1597.95	0.21
Reach 2	2135.75*	1-PCT AEP	Existing Conditions	111281	-11.79	23.87		24.36	0.000208	6.71	26991.75	1582.24	0.21
Reach 2	2135.75*	1-PCT AEP	Proposed Conditions	111281	-11.79	23.87		24.36	0.000208	6.71	26991.75	1582.24	0.21
Reach 2	2077.59*	1-PCT AEP	Existing Conditions	111281	-12.05	23.42		23.94	0.000212	6.74	26160.7	1565.66	0.21
Reach 2	2077.59*	1-PCT AEP	Proposed Conditions	111281	-12.05	23.42		23.94	0.000212	6.74	26160.7	1565.66	0.21
Reach 2	2019.42*	1-PCT AEP	Existing Conditions	111281	-12.31	22.97		23.51	0.000215	6.76	25376.55	1551.9	0.22
Reach 2	2019.42*	1-PCT AEP	Proposed Conditions	111281	-12.31	22.97		23.51	0.000215	6.76	25376.55	1551.9	0.22
Reach 2	1961.26*	1-PCT AEP	Existing Conditions	111281	-12.58	22.52		23.08	0.000217	6.76	24647.7	1538.89	0.22
Reach 2	1961.26*	1-PCT AEP	Proposed Conditions	111281	-12.58	22.52		23.08	0.000217	6.76	24647.7	1538.89	0.22

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	1903.09*	1-PCT AEP	Existing Conditions	111281	-12.84	22.07		22.65	0.000218	6.75	23973.63	1525.26	0.22
Reach 2	1903.09*	1-PCT AEP	Proposed Conditions	111281	-12.84	22.07		22.65	0.000218	6.75	23973.63	1525.26	0.22
Reach 2	1844.93*	1-PCT AEP	Existing Conditions	111281	-13.1	21.62		22.22	0.000217	6.7	23366.24	1509.1	0.22
Reach 2	1844.93*	1-PCT AEP	Proposed Conditions	111281	-13.1	21.62		22.22	0.000217	6.7	23366.24	1509.1	0.22
Reach 2	1786.77*	1-PCT AEP	Existing Conditions	111281	-13.37	21.19		21.79	0.000214	6.64	22829.79	1494.21	0.21
Reach 2	1786.77*	1-PCT AEP	Proposed Conditions	111281	-13.37	21.19		21.79	0.000214	6.64	22829.79	1494.21	0.21
Reach 2	1728.60*	1-PCT AEP	Existing Conditions	111281	-13.63	20.76		21.37	0.000211	6.57	22362.02	1480.71	0.21
Reach 2	1728.60*	1-PCT AEP	Proposed Conditions	111281	-13.63	20.76		21.37	0.000211	6.57	22362.02	1480.71	0.21
Reach 2	1670.44*	1-PCT AEP	Existing Conditions	111281	-13.89	20.35		20.95	0.000205	6.47	21968.11	1466.86	0.21
Reach 2	1670.44*	1-PCT AEP	Proposed Conditions	111281	-13.89	20.35		20.95	0.000205	6.47	21968.11	1466.86	0.21
Reach 2	1612.27*	1-PCT AEP	Existing Conditions	111281	-14.16	19.96		20.55	0.000199	6.35	21656.38	1445.75	0.21
Reach 2	1612.27*	1-PCT AEP	Proposed Conditions	111281	-14.16	19.96		20.55	0.000199	6.35	21656.38	1445.75	0.21

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	1554.11*	1-PCT AEP	Existing Conditions	111281	-14.42	19.58		20.16	0.000192	6.23	21417.79	1433.76	0.2
Reach 2	1554.11*	1-PCT AEP	Proposed Conditions	111281	-14.42	19.58		20.16	0.000192	6.23	21417.79	1433.76	0.2
Reach 2	1495.94*	1-PCT AEP	Existing Conditions	111281	-14.68	19.22		19.78	0.000184	6.09	21257.13	1419.02	0.2
Reach 2	1495.94*	1-PCT AEP	Proposed Conditions	111281	-14.68	19.22		19.78	0.000184	6.09	21257.13	1419.02	0.2
Reach 2	1437.78*	1-PCT AEP	Existing Conditions	111281	-14.95	18.88		19.42	0.000175	5.94	21179.71	1403.56	0.19
Reach 2	1437.78*	1-PCT AEP	Proposed Conditions	111281	-14.95	18.88		19.42	0.000175	5.94	21179.71	1403.56	0.19
Reach 2	1379.61*	1-PCT AEP	Existing Conditions	111281	-15.21	18.56		19.07	0.000166	5.78	21178.17	1388.08	0.19
Reach 2	1379.61*	1-PCT AEP	Proposed Conditions	111281	-15.21	18.56		19.07	0.000166	5.78	21178.17	1388.08	0.19
Reach 2	1321.45*	1-PCT AEP	Existing Conditions	111281	-15.47	18.26		18.74	0.000157	5.62	21255.63	1372.92	0.18
Reach 2	1321.45*	1-PCT AEP	Proposed Conditions	111281	-15.47	18.26		18.74	0.000157	5.62	21255.63	1372.92	0.18
Reach 2	1263.29*	1-PCT AEP	Existing Conditions	111281	-15.74	17.97		18.43	0.000147	5.45	21429.26	1311.11	0.18
Reach 2	1263.29*	1-PCT AEP	Proposed Conditions	111281	-15.74	17.97		18.43	0.000147	5.45	21429.26	1311.11	0.18

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	1205.12*	1-PCT AEP	Existing Conditions	111281	-16	17.71		18.14	0.000138	5.29	21690.75	1275.85	0.17
Reach 2	1205.12*	1-PCT AEP	Proposed Conditions	111281	-16	17.71		18.14	0.000138	5.29	21690.75	1275.85	0.17
Reach 2	1146.96*	1-PCT AEP	Existing Conditions	111281	-16.26	17.46		17.87	0.000129	5.12	22047.07	1191.01	0.17
Reach 2	1146.96*	1-PCT AEP	Proposed Conditions	111281	-16.26	17.46		17.87	0.000129	5.12	22047.07	1191.01	0.17
Reach 2	1088.79*	1-PCT AEP	Existing Conditions	111281	-16.52	17.24		17.62	0.00012	4.95	22586.14	951.08	0.16
Reach 2	1088.79*	1-PCT AEP	Proposed Conditions	111281	-16.52	17.24		17.62	0.00012	4.95	22586.14	951.08	0.16
Reach 2	1030.63*	1-PCT AEP	Existing Conditions	111281	-16.79	17.02		17.38	0.000111	4.79	23264.92	822.32	0.16
Reach 2	1030.63*	1-PCT AEP	Proposed Conditions	111281	-16.79	17.02		17.38	0.000111	4.79	23264.92	822.32	0.16
Reach 2	972.467*	1-PCT AEP	Existing Conditions	111281	-17.05	16.83		17.16	0.000103	4.63	24030.32	822.36	0.15
Reach 2	972.467*	1-PCT AEP	Proposed Conditions	111281	-17.05	16.83		17.16	0.000103	4.63	24030.32	822.36	0.15
Reach 2	914.302*	1-PCT AEP	Existing Conditions	111281	-17.31	16.64		16.96	0.000096	4.48	24823.66	836.2	0.14
Reach 2	914.302*	1-PCT AEP	Proposed Conditions	111281	-17.31	16.64		16.96	0.000096	4.48	24823.66	836.2	0.14

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	856.138*	1-PCT AEP	Existing Conditions	111281	-17.58	16.48		16.77	0.000089	4.34	25650.94	847.52	0.14
Reach 2	856.138*	1-PCT AEP	Proposed Conditions	111281	-17.58	16.48		16.77	0.000089	4.34	25650.94	847.52	0.14
Reach 2	797.973*	1-PCT AEP	Existing Conditions	111281	-17.84	16.32		16.59	0.000082	4.2	26497.26	867.74	0.13
Reach 2	797.973*	1-PCT AEP	Proposed Conditions	111281	-17.84	16.32		16.59	0.000082	4.2	26497.26	867.74	0.13
Reach 2	739.809*	1-PCT AEP	Existing Conditions	111281	-18.1	16.17		16.43	0.000076	4.07	27364.93	888.07	0.13
Reach 2	739.809*	1-PCT AEP	Proposed Conditions	111281	-18.1	16.17		16.43	0.000076	4.07	27364.93	888.07	0.13
Reach 2	681.644*	1-PCT AEP	Existing Conditions	111281	-18.37	16.04		16.28	0.00007	3.94	28262.42	908.5	0.12
Reach 2	681.644*	1-PCT AEP	Proposed Conditions	111281	-18.37	16.04		16.28	0.00007	3.94	28262.42	908.5	0.12
Reach 2	623.480*	1-PCT AEP	Existing Conditions	111281	-18.63	15.92		16.14	0.000065	3.81	29172.81	929.08	0.12
Reach 2	623.480*	1-PCT AEP	Proposed Conditions	111281	-18.63	15.92		16.14	0.000065	3.81	29172.81	929.08	0.12
Reach 2	565.316*	1-PCT AEP	Existing Conditions	111281	-18.89	15.8		16.01	0.00006	3.7	30104.43	949.79	0.12
Reach 2	565.316*	1-PCT AEP	Proposed Conditions	111281	-18.89	15.8		16.01	0.00006	3.7	30104.43	949.79	0.12

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	507.151*	1-PCT AEP	Existing Conditions	111281	-19.16	15.69		15.89	0.000056	3.58	31065.21	970.62	0.11
Reach 2	507.151*	1-PCT AEP	Proposed Conditions	111281	-19.16	15.69		15.89	0.000056	3.58	31065.21	970.62	0.11
Reach 2	448.987*	1-PCT AEP	Existing Conditions	111281	-19.42	15.6		15.78	0.000052	3.47	32037.96	991.59	0.11
Reach 2	448.987*	1-PCT AEP	Proposed Conditions	111281	-19.42	15.6		15.78	0.000052	3.47	32037.96	991.59	0.11
Reach 2	390.822*	1-PCT AEP	Existing Conditions	111281	-19.68	15.5		15.68	0.000048	3.37	33030.95	1012.69	0.1
Reach 2	390.822*	1-PCT AEP	Proposed Conditions	111281	-19.68	15.5		15.68	0.000048	3.37	33030.95	1012.69	0.1
Reach 2	332.657*	1-PCT AEP	Existing Conditions	111281	-19.95	15.42		15.58	0.000045	3.27	34053	1033.92	0.1
Reach 2	332.657*	1-PCT AEP	Proposed Conditions	111281	-19.95	15.42		15.58	0.000045	3.27	34053	1033.92	0.1
Reach 2	274.493*	1-PCT AEP	Existing Conditions	111281	-20.21	15.34		15.5	0.000042	3.17	35085.63	1055.19	0.1
Reach 2	274.493*	1-PCT AEP	Proposed Conditions	111281	-20.21	15.34		15.5	0.000042	3.17	35085.63	1055.19	0.1
Reach 2	216.328*	1-PCT AEP	Existing Conditions	111281	-20.47	15.27		15.41	0.000039	3.08	36137.5	1076.68	0.09
Reach 2	216.328*	1-PCT AEP	Proposed Conditions	111281	-20.47	15.27		15.41	0.000039	3.08	36137.5	1076.68	0.09

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	158.164*	1-PCT AEP	Existing Conditions	111281	-20.74	15.2		15.34	0.000036	2.99	37218.54	1098.43	0.09
Reach 2	158.164*	1-PCT AEP	Proposed Conditions	111281	-20.74	15.2		15.34	0.000036	2.99	37218.54	1098.43	0.09
Reach 2	100	1-PCT AEP	Existing Conditions	111281	-21	15.13		15.26	0.000034	2.9	38308.04	1120.44	0.09
Reach 2	100	1-PCT AEP	Proposed Conditions	111281	-21	15.13		15.26	0.000034	2.9	38308.04	1120.44	0.09
Reach 2	85.*	1-PCT AEP	Existing Conditions	111281	-25.83	15.18		15.22	0.000008	1.58	70454.69	1769.3	0.04
Reach 2	85.*	1-PCT AEP	Proposed Conditions	111281	-25.83	15.18		15.22	0.000008	1.58	70454.69	1769.3	0.04
Reach 2	70.*	1-PCT AEP	Existing Conditions	111281	-30.67	15.19		15.21	0.000003	1.02	108924.2	2416.95	0.03
Reach 2	70.*	1-PCT AEP	Proposed Conditions	111281	-30.67	15.19		15.21	0.000003	1.02	108924.2	2416.95	0.03
Reach 2	55.*	1-PCT AEP	Existing Conditions	111281	-35.5	15.2		15.21	0.000001	0.72	153693.9	3063.72	0.02
Reach 2	55.*	1-PCT AEP	Proposed Conditions	111281	-35.5	15.2		15.21	0.000001	0.72	153693.9	3063.72	0.02
Reach 2	40.*	1-PCT AEP	Existing Conditions	111281	-40.33	15.2		15.2	0.000001	0.54	204785.9	3709.85	0.01
Reach 2	40.*	1-PCT AEP	Proposed Conditions	111281	-40.33	15.2		15.2	0.000001	0.54	204785.9	3709.85	0.01

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 2	25.*	1-PCT AEP	Existing Conditions	111281	-45.17	15.2		15.2	0	0.42	262245.4	4355.5	0.01
Reach 2	25.*	1-PCT AEP	Proposed Conditions	111281	-45.17	15.2		15.2	0	0.42	262245.4	4355.5	0.01
Reach 2	10	1-PCT AEP	Existing Conditions	111281	-50	15.2	-47.52	15.2	0	0.34	325991.5	5000.74	0.01
Reach 2	10	1-PCT AEP	Proposed Conditions	111281	-50	15.2	-47.52	15.2	0	0.34	325991.5	5000.74	0.01

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Appendix B

SITE DESIGN PLAN

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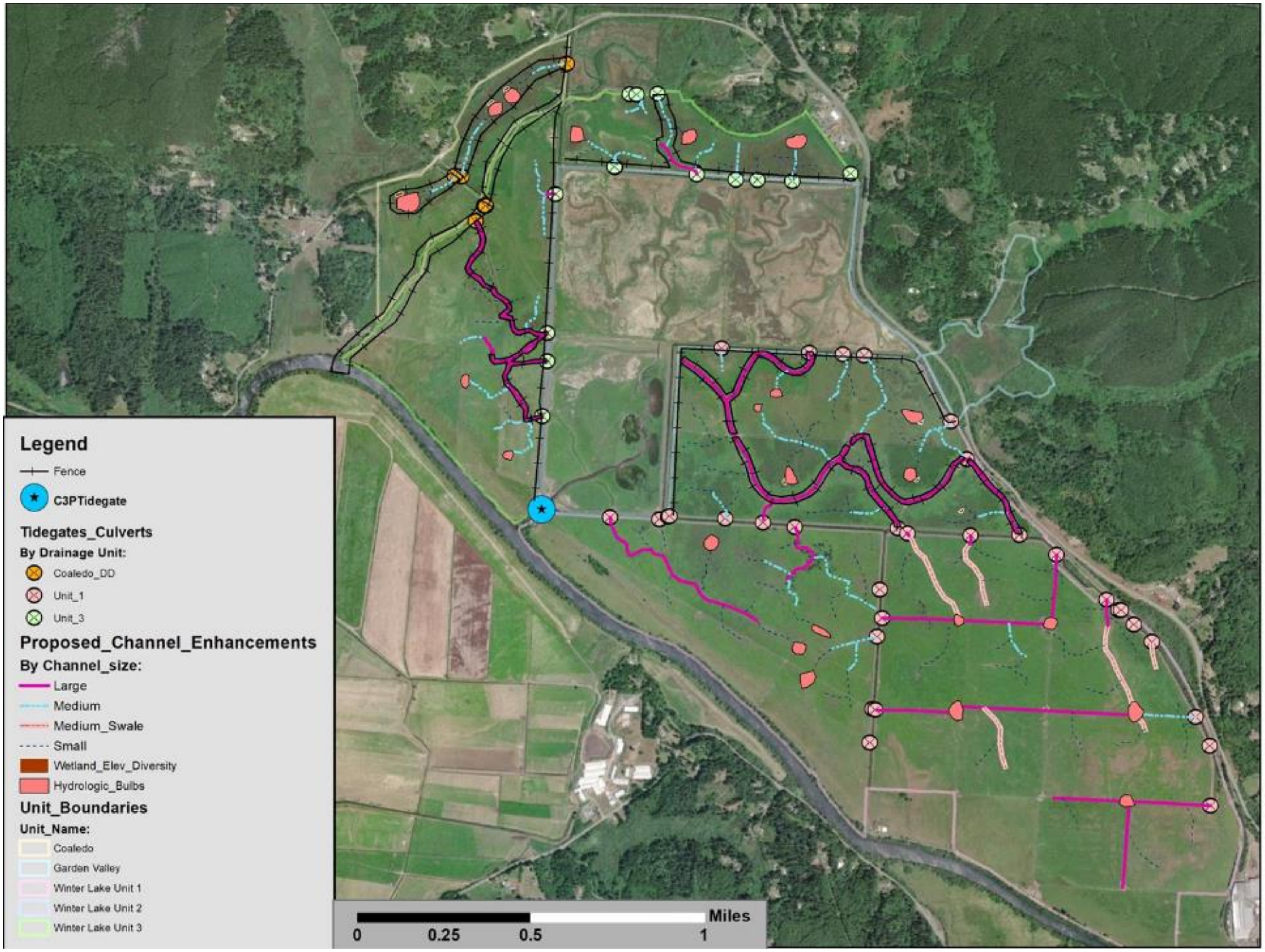
Legend
Fence
C3PTidegate
Tidegates_Culverts
By Drainage Unit:
Coaledo_DD
Unit_1
Unit_3
Proposed_Channel_Enhancements
By Channel_size:
Large
Medium
Medium_Swale
Small
Wetland_Elev_Diversity
Hydrologic_Bulbs
Unit_Boundaries
Unit_Name:
Coaledo
Garden Valley
Winter Lake Unit 1
Winter Lake Unit 2
Winter Lake Unit 3
Miles
0
0.25
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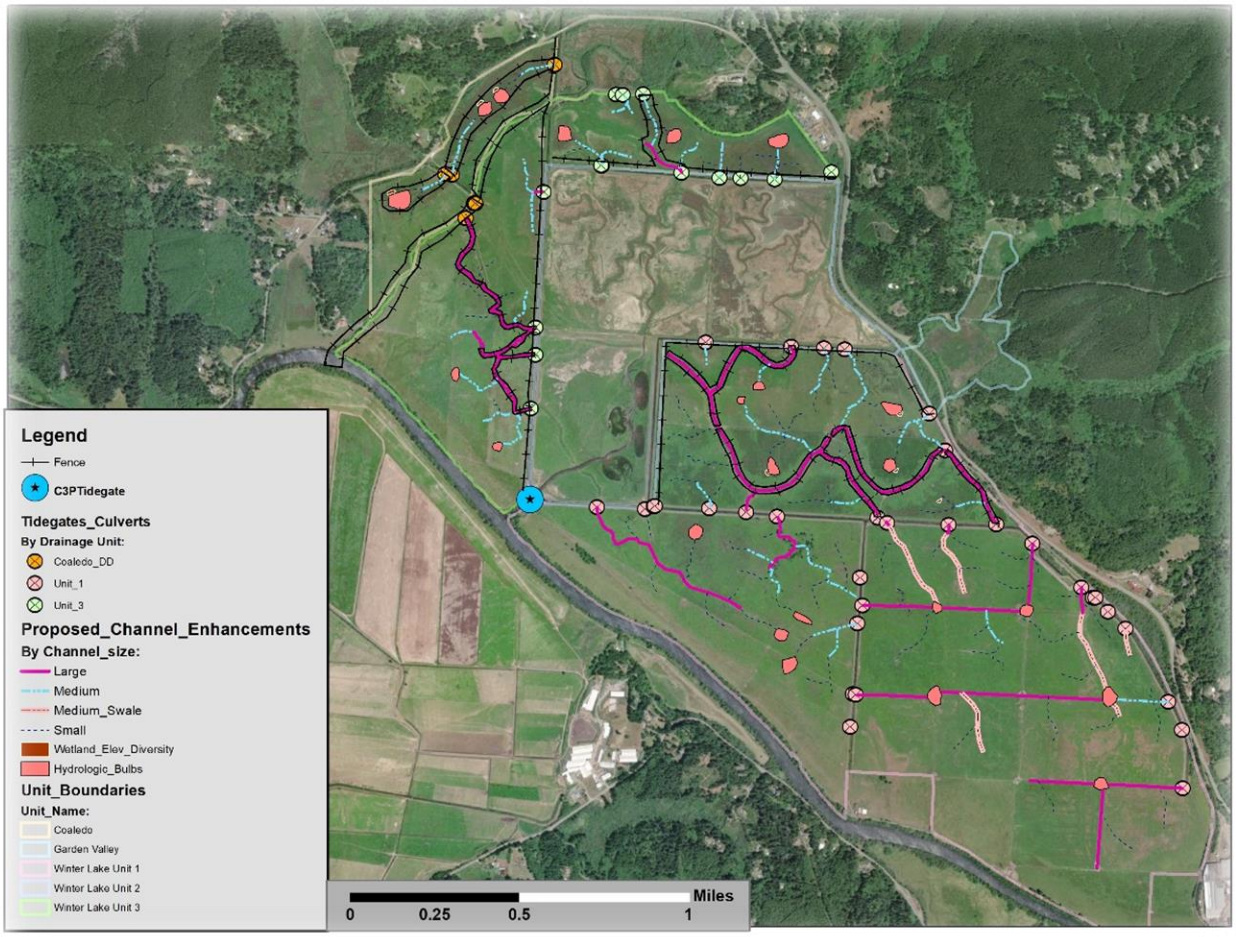
1

Winter Lake Phase III Project Phase III
County Planning Zoning Impacts Analysis
File #ACU-23-074/FP-23-012

March 18th, 2024



Caley Sowers
District Manager, Coos Soil & Water Conservation District
Authorized Agent
for the Beaver Slough Drainage District

and

Christopher W. Claire
Habitat Protection Biologist
ODFW Charleston, OR

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I. Introduction

The Winter Lake Phase III Team has developed a wholistic approach to restoring functional hydrology within the Winter Lake floodplain. Proposed modifications to channels have been designed to provide tidal inflow access as well as improve drainage from interior pasture locations. All proposed new channels and any modifications to existing channel networks have been engineered on-grade to fully accommodate proper drain out and to address habitats where water could otherwise pond and develop conditions where there was potential for mosquito production. The overall Winter Lake Phase III project goals include:

- substantively increasing pasture grass production through maintenance and enhancement of existing agricultural drainage infrastructure
- Substantively increasing capability of the project area to facilitate salmonid (specifically juvenile coho) access to and use of overwintering and rearing habitats
- Implementing generally accepted best management practices for the protection of agricultural water quality and reducing non-point source pollution.

This Impacts analysis has been developed in regard to the project need to align with Coquille River Estuary Management Plan Exclusive Farm Use (CREMP-EFU) under Section 3.3.710 and Chapter IV of the County Planning Zone Overlays and Special Consideration; Section 4.6.200, 4.11.243 and 4.11.251. This analysis provides additional information for the originally submitted County Zoning assessment completed and submitted as part of the compliance process. The original 404 Fill and Removal Permit application and County Planning Zoning Criteria assessment was submitted the second quarter of 2023. This was updated with additional information in December 2023, including the FEMA Floodplain certification and Conditional Use Application forms.

II. Background

The project area is located primarily within the Beaver Slough Drainage District (BSDD), encompassing lands that were diked and tidegated since 1908. A small portion of proposed project actions lies within the adjacent Coaledo Drainage District (CDD). All lands within the direct project action area (other than equipment staging areas) are under elevation 8.0ft NAVDD88. This is significant in the understanding of water management/control and the inability of the project to deliver or have tidal-associated effects. The average high-tide elevation at Coquille during non-flood stage or storm conditions is under 8.0ft. The main BSDD C3P tidegate controls water within the 1,295 acres of the project land area under that jurisdiction. Two pastures in the CDD comprising 99 acres are also within proposed action areas.

The proposed project actions are:
1). Construction/reconstruction of tidal floodplain channels to deliver and drain water from the project area more similar to natural historical conditions;
2). Install new culverts and tidegates to facilitate channel hydrology inflow/outflow; with the goals of
   a). Address poor pasture production due to dysfunctional hydrology;
   b). Provide fish access to highly productive floodplain habitats in winter/spring months; and
   c). Increase suitability for waterfowl overwintering.
3). Implement Agricultural Best Management Practices to protect water quality, including
   a). Off-channel watering systems to provide livestock with alternatives to watering directly in channels and canals;
   b). Hardened-surface livestock heavy-use areas to reduce soil erosion and mud at feeding/watering locations;
   c). Fencing to exclude livestock from sensitive riparian areas.

All landowners within the proposed action area are project collaborators and have signed cooperative partnership agreements with Coos Soil and Water District. No monies for the project have come from County Sources to-date, and the Team does not anticipate that any County funds will be used to fund the project. Of adjacent properties, only a small portion of 5 parcels in the BSDD are under elevation 8.0ft. In the CDD the main Coaledo tidegate controls water to Beaver Slough. Several properties in that watershed, not associated with the project are under elevation 8.0ft, however, water management at Coaledo tide gate is designed to accommodate drain out only, with no ability to deliver tidal inflow.

The Project Team has designed the project to eliminate conditions that would support production of mosquitoes. Mosquitoes are produced by two factors that the Winter Lake Phase III project will address:

a). In locations where water ponds and remains unmoving for a minimum of 8 days;

b). Locations where fish are not present and don't have access channels; and

c). Water must be on the landscape in the noted areas where mosquitoes would potentially be produced in the warmer months of the year (primarily mid-May through September).

The project will install new/reconstructed channels to these locations and strongly address these conditions in a manner that limits potential for production of mosquitoes. The Team has incorporated strong actions to address potential for mosquito production, although noting that County Planning and Zoning code addressing mosquito production are not listed as a criterion.

III. Methodology

The Project Team has been asked to analyze the project's potential impacts to surrounding farm and forest lands. The following methodology was employed in the analysis to determine the proposed project actions' potential to impact surrounding farm and forest lands in accordance with Section 3.3.730.

Geographic Scope

The Geographic Scope of this analysis includes all parcels within an approximate 1-mile radius of the project area (see Figure 1.). For this analysis, only lands zoned for farm and/or forestry practices were considered. Properties with industrial, commercial, rural residential, or other zoning were not evaluated for impacts unless combined with a farm or forest plan zoning. It should be noted here that most of the Garden Valley area parcels are zoned RR5 and therefore not analyzed according to the selected evaluation criteria. This resulted in a total of 234 parcels for consideration, 15 of which are already included in the proposed project area. Project Area parcels were evaluated separately (see Appendix A. Winter Lake Phase III Project Area and Surrounding Lands Impacts Analysis Tables 1. And 2.) as well as in combination with surrounding land parcels.

Evaluation Criteria

Criteria used in this analysis include:

- Plan Zoning (only zonings that included Exclusive Farm Use - EFU or Forest -F were considered)
- Whether the parcel includes Proposed Project Actions
- The apparent current on-ground usage of the parcel
- Whether the parcel contains lands above elevation 8.0ft (NAVDD 88)
- Whether the parcel is hydrologically connected to the project area
- Whether the Winter Lake Phase III Project has capacity or potential to cause additional water on the parcel
- Whether the Winter Lake Phase III Project has capacity or potential to inhibit drainage of water from the parcel
- Whether the Winter Lake Phase III Project has potential to reduce mosquito effects on a parcel
- Whether the Winter Lake Phase III Project has potential to significantly increase the cost of accepted farm

or forest practices on a parcel

- Whether the Winter Lake Phase III Project proposes to modify or construct additional access roads on a parcel
- Whether the Winter Lake Phase III Project will remove any farm or forest land from production on a parcel
- Whether the Winter Lake Phase III Project has capacity or potential to economically impact farm or forest uses on a parcel
- Whether the Winter Lake Phase III Project as proposed will result in net ecological benefits on a parcel

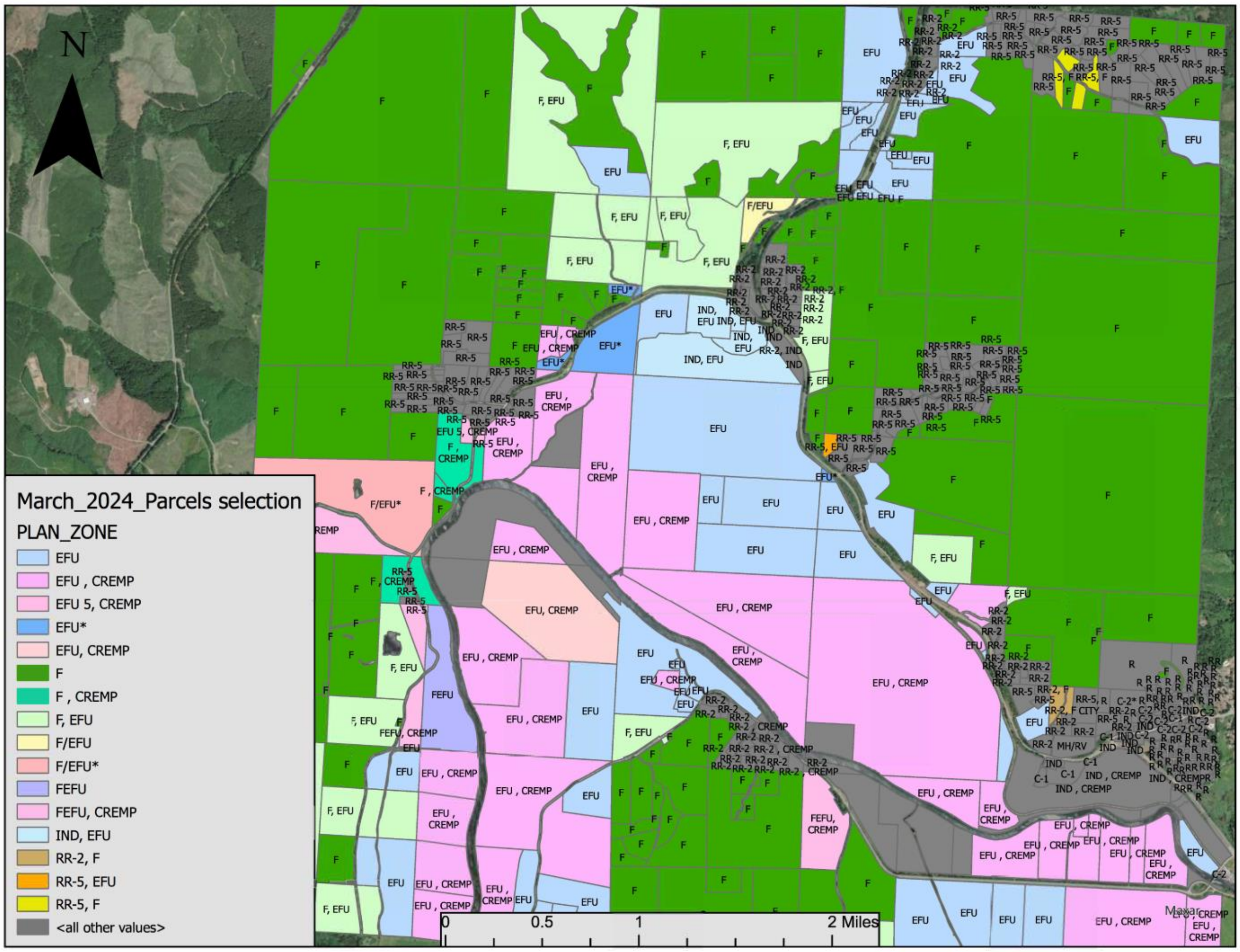

Figure 1. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis Geographic Extent and Zoning Map

Analysis

Utilizing ArcGIS Pro Software and importing the most recent publicly available parcel data (March 2024), the Project Team was able to measure and select parcels for up to an approximate 1-mile radius surrounding the project area. There was a total of 786 parcels in this selection (see Figure 1.). The attributes for these 786 parcels were then copied and exported to an excel spreadsheet, where they were sorted alphabetically and filtered to remove any plan zonings that did not include either EFU or F. This reduced the selection to a total of 234 remaining parcels. Those 234 parcels were then evaluated according to each of the criteria listed above.

LiDAR elevation data up to 8.0ft NAVDD 88 was imported into GIS and overlaid with the selected parcel layer data to determine which parcels contain lands that are above elevation 8.0ft NAVDD 88. The project Team determined there to be 125 parcels out of the 234 that are entirely above elevation 8.0ft NAVDD88. The project team considers this to be a highly important criterion because 8.0ft NAVDD 88 is a higher elevation than would ever be purposely administered under water management of the Beaver Slough Drainage District. All parcels above elevation 8.0ft are above the highest average high tide. This criterion was the primary factor in determining whether the Winter Lake Phase III project has capacity or potential to cause additional water on a particular parcel, or to inhibit drainage of a particular parcel.

Out of the remaining 109 parcels located within a 1-mile radius of the proposed project area, zoned and used for farming and/or forestry, and containing lands lower than elevation 8.0ft NAVDD 88, only 22 were identified as being hydrologically connected to the project area. These 22 parcels were each evaluated and analyzed to determine the Winter Lake Phase III project's potential capacity to impact their farm or forest uses. Individual findings for each of those parcels are provided in Table 2. Under Column U. Notes.

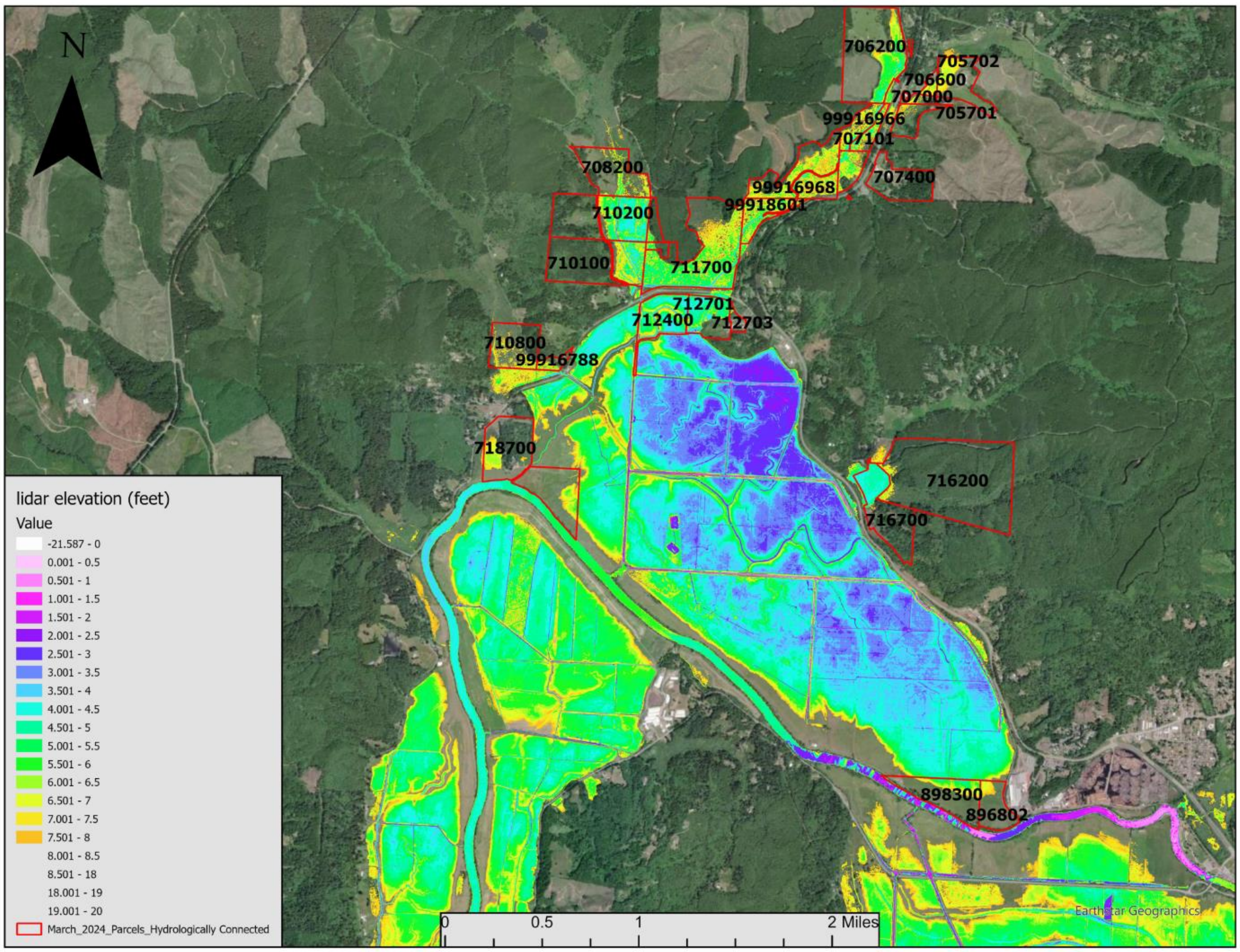

Figure 2. Winter Lake Phase III surrounding lands zoned for farm or forest use, below elevation 8.0' NAVDD 88, and hydrologically connected to the project area.

IV. Summary and Conclusion

The Proposed Winter Lake Phase III Project area includes 15 unique parcels, privately owned by 7 different landowners. The combined project parcel area is 1,563.3 acres, nearly all of which is below elevation 8.0' NAVDD

88. Out of the total 1,563.3-acre project area, only 400.67 or roughly 25% of the project area is within the Coquille River Estuary Management Plan (CREMP) shoreland zone and the remainder are zoned Exclusive Farm Use (EFU).

The lands surrounding the Winter Lake Project Area are diverse and comprised of a mixture of plan zonings, but larger acreage parcels are primarily zoned for farm or forest use, while the smaller acreage parcels are predominantly rural residential, commercial, or industrial zones.

- The Winter Lake Phase III project area is bordered on the northern side by Oregon State Highway 42, which is entirely above elevation 8.0ft NAVDD 88. The rural unincorporated community of Garden Valley is located to the north of the project area on the north side of highway 42 and is hydrologically connected to the project area by China Creek. However, most of Garden Valley is zoned RR5. Lands on the hillslopes surrounding Garden Valley are zoned F and used for forestry but are all above elevation 8.0ft NAVDD 88 and will not be affected by proposed project actions. Two parcels (Tax accounts 716200 and 716700) at the lower reaches of Garden Valley are zoned EFU and F, and any potential impacts from the proposed project actions have been evaluated in Table 2. Rows 193 and 231.
- The Winter Lake Phase III project area is bordered to the north and western sides by the Coaledo Drainage District and Beaver Slough/Beaver Creek subbasin. A subset of 20 parcels within the Coaledo Drainage were identified through this analysis as having lands both below elevation 8.0ft NAVDD 88, AND hydrologically connected to the project area by Beaver Creek. These have each been individually assessed and evaluated for potential impacts in Table 2., rows 3, 6, 13, 39, 47, 50, 78, 89, 91, 94, 99, 158, 162, 163, 165, 166, 168, 201, 210, 222. The Project is designed to be implemented independently, without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. These parcels will not be directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Reduction of any potential mosquito breeding habitats will be addressed on the project area parcels directly by proposed project actions, with the effects of any mosquito habitat reduction extending beyond into surrounding parcels.
- The Winter Lake Phase III project area is bordered on the southern edge by the Coquille River, meaning that any farm and forest lands located to the south of Winter Lake are separated by the Coquille River and are not hydrologically connected. The surrounding lands impacts analysis finds no effects to farm or forest uses on these lands by any proposed Winter Lake project actions.
- The project area is bordered on the eastern side by the Roseburg Forest Products Lumber and Sawmill. These lands are not zoned or used for farming or forestry, are entirely above elevation 8.0ft NAVDD 88, and are not hydrologically connected to the project area.
- All other surrounding lands above elevation 8.0ft NAVDD 88 and not hydrologically connected to the project area will also not be affected by any of the proposed project actions (see Appendix A. Table 2. Winter Lake Surrounding Lands Impacts Analysis).

Appendix A. Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 1. Winter Lake Phase III Project Area Parcels

	A. Owner Name	B. TLID	C. Tax Account #	D. Plan Zoning	E. Parcel Acres	F. Parcel acres in CREMP	G. Parcel % in CREMP	H. Parcel contains proposed project actions, Y/N	I. Apparent current on-ground usage	J. Above Elevation 8.0ft NAVDD 88[1]	K. Parcel is hydrologically connected to the Winter Lake Phase III Project Area	L. Will Phase III Cause Additonal Water on Property Y/N	M. Will Phase III Inhibit Drainage of Water on Property Y/N	N. Will Phase III Project Reduce Potential Mosquito Effects on Parcel Y/N?	Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel Y/N?	P. Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Q. Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	R. Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	S. Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	T. Will Winter Lake Phase III Project result in ecological/fish /wildlife benefits on parcel	U. Notes
1	BRIDGES FOUNDATION	27S13W29TL0010300	99916787	EFU , CREMP	47.3	44.13	93%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
2	BRIDGES FOUNDATION	27S13W20TL0150300	99916790	EFU*	52.2	10.68	20%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
3	BRIDGES FOUNDATION	27S13W29TL0010100	717600	EFU , CREMP	148.5	72.11	49%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
4	BRIDGES FOUNDATION	27S13W28TL0040000	717402	EFU	20.0	0.00	0%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
5	BRIDGES FOUNDATION	27S13W28TL0060000	717401	EFU	80.0	0.00	0%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
6	BRIDGES FOUNDATION	27S13W27TL0040000	716702	EFU	23.6	0.00	0%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
7	BRIDGES FOUNDATION	27S13W27TL0050000	716800	EFU	54.4	0.00	0%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
8	BRIDGES FOUNDATION	27S13W28TL0070000	717500	EFU	100.0	0.00	0%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 1. Winter Lake Phase III Project Area Parcels

	A. Owner Name	B. TLID	C. Tax Account #	D. Plan Zoning	E. Parcel Acres	F. Parcel acres in CREMP	G. Parcel % in CREMP	H. Parcel contains proposed project actions, Y/N	I. Apparent current on-ground usage	J. Above Elevation 8.0ft NAVDD 88[1]	K. Parcel is hydrologically connected to the Winter Lake Phase III Project Area	L. Will Phase III Cause Additonal Water on Property Y/N	M. Will Phase III Inhibit Drainage of Water on Property Y/N	N. Will Phase III Project Reduce Potential Mosquito Effects on Parcel Y/N?	Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel Y/N?	P. Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Q. Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	R. Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	S. Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	T. Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	U. Notes
9	EVERETT-ONA ISENHART RANCH,INC; ETAL	27S13W33TL0010000	721202	EFU , CREMP	175.7	39.95	22%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
10	ISENHART, JOHN & LAURA J TTEE	27S13W33TL0020000	721200	EFU , CREMP	120.6	116.49	97%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
11	FRED MESSERLE & SONS, INC.	27S13W34TL0080000	722300	EFU , CREMP	554.5	52.53	9%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
12	FRED MESSERLE & SONS, INC.	28S13W03TL0010000	898300	EFU , CREMP	46.2	37.78	82%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
13	FRED MESSERLE & SONS, INC.	27S13W35CTL0090000	724600	EFU	27.0	27.00	100%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
14	OREGON DEPARTMENT OF FISH/WILDLIFE	27S13W21TL0240500	712904	IND, EFU	109.2	0.00	0%	Yes	MISCELLANEOUS	No	Yes	No	No	Yes	No	No	No	No	N/A	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.
15	STATE OF OREGON (ODOT)	27S13W34TL0089900	7715000	EFU	4.1	0.00	0%	Yes	MISCELLANEOUS	No	Yes	No	No	Yes	No	No	No	No	N/A	Yes	Strong project benefits for pasture grass/increase in economic output. Ecological uplift inrease for winter/spring rearing of salmonids. Channel designs/layout developed to: 1). Connect low-lying areas of fish stranding & mosquito risk addressing this concern; 2). Channels provide fish access, benefitting fish and elimination of mosquito larva.

1). 8.0ft NAVDD88 is a higher elevation than would ever be purposely adminstered under water management of the Beaver Slough Drainage District Water Management Plan or Irrigation Strategies. All parcels above elevation 8.0ft are above the highest average high tide.

2). Where Winter Lake Phase III Proposed Project Actions include creation/restoration of new channels, a select percentage will have riparian corridor fencing and vegetation planting in accordance with CREMP Policy #23. CCZLDO Section 3.2.180 (OR 92-05-009PL)

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	Notes
1	ALAN & NANCY BANGERT TRUST	28S13W03TL0100000	899200	EFU	10.8	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	
2	BACKMAN, DENNIS L. & TERESA A.	27S13W33TL0120000	721701	EFU	3.32	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
3	BALDRIDGE, LONNIE & SHARON	27S13W15ATL0090000	705800	EFU	19.05	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
4	BARNARD, KENNETH J & MACKEY, CHRISTA N	27S13W29TL0050000	718801	F	5.86	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
5	BEAVER HILL RANCH, INC.	27S13W30TL0070000	719400	F	165.32	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
6	BEAVERHILL INDUSTRIAL PARK LLC	27S13W21DBTL0140100	712703	IND, EFU	4.46	N/A	N/A	No	INDUSTRIAL LAND W/IMPROVEMENTS	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
7	BILLIE J. PULVERMACHER TRUST; ETAL	27S13W29TL0030000	718800	F , CREMP	50.34	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
8	BILLIE J. PULVERMACHER TRUST; ETAL	27S13W30TL0060000	719200	F	40	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
9	BOLDEN, PARKER TULLOCH ET AL	28S13W05TL0090000	900600	EFU	10.88	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

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Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
10	BONITA W CLARKE LIVING TRUST	28S13W04TL0080000	899703	F	12.57	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
11	BREITKREUTZ, MARK	28S13W04TL0010200	899604	F	9.62	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
12	BREUER, JOHN D.	27S13W35ATL0010000	723903	F	80	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
13	C & S WATERMAN RANCH LLC	27S13W20TL0150200	99916788	EFU*	11.28	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
14	CARNAHAN, ELENA	28S13W04TL0040000	899702	F	21.23	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
15	CHARD, MICHAEL R. & KATHI J.	27S13W21TL0010000	711500	F	9.79	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
16	CHARLES T BATES AND INGRID I BATES TRUST	28S13W06TL0050000	901400	F	30.17	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
17	CHINA CAMP GUN CLUB, INC.	27S13W28TL0030000	717300	EFU , CREMP	121.59	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
18	CITY OF COQUILLE	27S13W27TL0060000	716901	F, EFU	47.7	N/A	N/A	No	MISCELLANEOUS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

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19	**CITY OF COQUILLE**	27S13W35ATL0030000	723901	F	2.87	N/A	N/A	No	MISCELLANEOUS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
20	**CITY OF COQUILLE**	28S13W01BTL0040000	887900	EFU	15	N/A	N/A	No	MISCELLANEOUS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
21	**CLARK, SHARON L**	27S13W33DTL0120000	722103	F	14.76	N/A	N/A	No	TRACT LAND W/IMPROVEMENTS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
22	**CLAUSEN, JULIANNA**	28S13W04TL0110000	899803	F	40	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
23	**COLFAX, DOUGLAS**	27S13W14ATL0020000	705312	F	19.68	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
24	**COOS COUNTY**	27S13W16TL0020000	707900	F	160	N/A	N/A	No	MISCELLANEOUS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
25	**COOS COUNTY**	27S13W17TL0050000	708501	F	160	N/A	N/A	No	MISCELLANEOUS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
26	**COOS COUNTY**	27S13W18TL0010000	709000	F	610.55	N/A	N/A	No	MISCELLANEOUS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
27	**COOS COUNTY**	27S13W30TL0090000	719500	F	65.2	N/A	N/A	No	MISCELLANEOUS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
28	**COPLIN, WILLIAM E. & JILL E.**	28S13W04TL0010100	899603	F	9.39	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

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29	COQUILLE RIVER BROADCASTERS, INC	28S13W01CTL01100A1	890910	EFU , CREMP	0	N/A	N/A	No	INDUSTRIAL LAND W/IMPROVEMENTS	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
30	CRANE, DOUGLAS	27S13W31TL0060100	719909	F	1.23	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
31	CRANE, DOUGLAS	27S13W31TL0070200	719907	F	1.2	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
32	CRANE, DOUGLAS	27S13W31TL0090000	720100	F	1	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
33	CRANE, DOUGLAS	27S13W31TL0100000	720200	F	37.95	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
34	CRANE, DOUGLAS G. & CAROLYN M.	27S13W31TL0010000	719900	F , CREMP	32.82	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
35	CRANE, DOUGLAS G. & CAROLYN M.	27S13W31TL0110000	720001	F	60	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
36	CRANE, DOUGLAS G. & CAROLYN M.	27S13W31TL0120000	719800	F, EFU	62.25	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
37	CRANE, DOUGLAS G. & CAROLYN M.	27S13W31TL0120300	719804	F, EFU	55.12	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
38	CRANE, DOUGLAS G. & CAROLYN M.	28S13W06TL0010000	900900	F	32.98	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
39	CRAWFORD, TREVOR & STACY	27S13W20TL0070000	710100	F, EFU	78.62	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
40	CRYSTAL M. COX LIVING TRUST	27S13W33TL0110000	721912	F	34	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
41	DARREL AND ANN MULKEY TRUST	27S13W27BTL0090000	716501	F	39.37	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
42	DARREL AND ANN MULKEY TRUST	27S13W28TL0010000	717001	F	13.1	N/A	N/A	No	TRACT LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
43	DARREL AND ANN MULKEY TRUST	27S13W28TL0020200	717003	F	3.76	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
44	DAVIDSON, ALISTAIRN & KELLY E	27S13W20TL0150000	710900	EFU , CREMP	10.74	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
45	DENNIS. JAMES G & DEBORAH L	28S13W04TL0030000	899700	F	9.05	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
46	DENNIS. JAMES G & DEBORAH L	28S13W04TL0030000	899700	F	9.05	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
47	**DIAMOND BAR Z LLC**	27S13W15TL0030000	707101	EFU	10.36	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
48	**DIAMOND BAR Z LLC**	27S13W15TL0040000	707400	EFU	50.43	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
49	**DIAMOND BAR Z LLC**	27S13W22TL0030000	713602	F	0.26	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
50	**DOMENIGHINI FAMILY LTD PARTNERSHIP**	27S13W29TL0020100	718700	EFU , CREMP	88.26	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the culverts or channels being installed. The main BSDD tidegate is the water managment control point with the interior culverts/channels being replaced being subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).
51	**DONALDSON, CYNTHIA E ET AL**	27S13W15TL0100000	707402	EFU	3.48	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
52	**DOROTHY E. FOSTER REV TRUST ET AL**	27S13W32TL0030000	720800	EFU , CREMP	95.04	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
53	**DOROTHY E. FOSTER REV TRUST ET AL**	27S13W32TL0050000	721000	EFU , CREMP	111.6	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
54	**DOROTHY E. FOSTER REV TRUST ET AL**	27S13W32TL0060000	721001	EFU	80	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
55	DOROTHY E. FOSTER REV TRUST ET AL	27S13W33TL0070200	721704	EFU	128.45	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
56	DOROTHY E. FOSTER REV TRUST ET AL	27S13W33TL0070500	721709	EFU	5.52	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
57	DOROTHY E. FOSTER REV TRUST ET AL	27S13W33TL0070600	721710	EFU , CREMP	8	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
58	DOROTHY E. FOSTER REV TRUST ET AL	27S13W33TL0080000	721801	F, EFU	34.3	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
59	DOROTHY E. FOSTER REV TRUST ET AL	27S13W33TL0130000	721700	EFU	2.11	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
60	DOROTHY E. FOSTER REV TRUST ET AL	28S13W04TL0070000	899802	F	0.23	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
61	DOROTHY E. FOSTER REV TRUST ET AL	28S13W05TL0020000	900100	EFU , CREMP	199.92	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
62	DOROTHY E. FOSTER REV TRUST ET AL	28S13W05TL0070000	900602	EFU , CREMP	69	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
63	DURRER, RAY SCOTT & RHONDA LEIGH	28S13W02TL0110000	895600	EFU , CREMP	14	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
64	ELLIS F. FOSTER TRUST; ETAL	27S13W29TL0060100	718901	EFU , CREMP	39.42	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
65	ELLIS F. FOSTER TRUST; ETAL	27S13W32TL0020100	719002	EFU, CREMP	169.68	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
66	ELLIS F. FOSTER TRUST; ETAL	28S13W05TL0010000	900101	EFU	32.84	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
67	ENYEART, ALBERT S.	27S13W27BTL0110000	716701	RR-5, EFU	5.07	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
68	EVANS, JAMES P & ERIKA NICOLE	27S13W20TL0080500	99917746	EFU*	5.33	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
69	**EVERETT-ONA ISENHART RANCH,INC; ETAL**	**27S13W33TL0010000**	**721202**	**EFU , CREMP**	**175.68**	**39.95**	**23%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	**Yes**	**No**	**No**	**yes**	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.
70	FAIRVIEW TIMBER LLC	28S13W04TL0020000	899601	F	132.05	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
71	FAIRVIEW TIMBER LLC	28S13W04TL0100000	899901	F	145	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
72	FAIRVIEW TIMBER LLC	28S13W04TL0120000	899801	F	40	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
73	FAIRVIEW TIMBER LLC	28S13W04TL0130000	900000	F	80	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
74	FLINN, DAMON & GINA Y	27S13W15TL0050000	707500	EFU	0.2	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).

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75	FLINN, DAMON & GINA Y	27S13W15TL0060000	707501	EFU	1	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
76	FLINN, DAMON & GINA Y	27S13W15TL0070000	707470	EFU	0.44	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
77	FOGARTY, THOMAS M. & ANITA	28S13W05TL0090300	900607	EFU	15.29	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
78	FRED MESSERLE & SONS, INC.	27S13W15TL0010000	706200	EFU	92.8	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).
79	FRED MESSERLE & SONS, INC.	27S13W16TL0010000	707800	F	43.5	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
80	FRED MESSERLE & SONS, INC.	27S13W16TL0010100	99917070	F	38.71	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
81	FRED MESSERLE & SONS, INC.	27S13W16TL0010200	99917071	F	77.79	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
82	**FRED MESSERLE & SONS, INC.**	**27S13W34TL0080000**	**722300**	**EFU , CREMP**	**554.5**	**52.53**	**9%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	Yes	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.
83	**FRED MESSERLE & SONS, INC.**	**27S13W35CTL0090000**	**724600**	**EFU**	**27.0**	**27.00**	**100%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	Yes	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.
84	**FRED MESSERLE & SONS, INC.**	**28S13W03TL0010000**	**898300**	**EFU , CREMP**	**46.2**	**37.78**	**82%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	Yes	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
85	GILL, GEORGE D. & PATRICIA L.	27S13W20TL0110100	710502	F	13.92	N/A	N/A	No	TRACT LAND W/IMPROVEMENTS	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
86	GOETTE, JOSEPH ETAL	27S13W15BDTL0140000	707000	EFU	5.49	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
87	GOSLIN, DANIEL B & SUSAN M	27S13W21TL0030000	711800	F	10.27	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
88	GRABOWSKI, DEBRA	28S13W05TL0100000	902700	EFU	10.05	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
89	GRAMI, WILLIAM E. & SUZANNE M.	27S13W17TL0030000	708200	EFU	44.84	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
90	GRAMI, WILLIAM E.; ETAL	27S13W17TL0030200	708202	F	133.32	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
91	HACKETT INVESTMENTS LLC	27S13W21TL0230000	712701	IND, EFU	30.15	N/A	N/A	No	INDUSTRIAL LAND W/IMPROVEMENTS	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevaotion 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

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92	HANNA HART SEPARATE SHARE TRUST	27S13W20TL0160000	711000	EFU , CREMP	8.9	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
93	HARLESS, BONNIE	28S13W02TL0100000	895700	EFU , CREMP	30.68	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
94	HEROLD FAMILY LIVING TRUST	27S13W15ATL0160000	705702	EFU	30.2	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevaotion 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).
95	HEROLD FAMILY LIVING TRUST	28S13W04TL0010000	899600	F	10.81	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
96	HIDDEN CANYON RANCH	28S13W06TL0020000	901000	F, EFU	276.4	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
97	HOMOLAC FAMILY PARTNERSHIP	27S13W31TL0070000	719902	F	244.67	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
98	HOOK, MAREY ET AL	28S13W04TL0060200	899806	F	10.22	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
99	HUGH M. HOYT JR. TRUST; ETAL	27S13W20TL0140000	710800	F	40	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevaotion 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).

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100	**ISENHART, JOHN & LAURA J TTEE**	**27S13W33TL0020000**	**721200**	**EFU , CREMP**	**120.6**	**116.49**	**97%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	**Yes**	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.
101	**JACKSON, MADELYN DOLORES ET AL**	28S13W01CTL0110000	890902	EFU , CREMP	52.7	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
102	**JACKSON, MADELYN DOLORES ET AL**	28S13W02TL0130000	898000	EFU , CREMP	190.75	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
103	**JEAN-CLAUDE HOOK REV LIVING TRUST ET AL**	28S13W04TL0060000	899804	F	13.65	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
104	**JONES, CARY & ARIUNKHISHIG**	27S13W20TL0050000	710401	F	1	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
105	**JONES, STANLEY K.**	27S13W31TL0120100	719801	F	0.77	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
106	**KARL P SODERBERG REVOCABLE LIVING TRUST**	27S13W34TL0060000	722302	EFU	1.24	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
107	**KARL P SODERBERG REVOCABLE LIVING TRUST**	27S13W35BCTL0010000	724200	F	20	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
108	**KARL P SODERBERG REVOCABLE LIVING TRUST**	27S13W35CTL0060000	725001	RR-2, F	1.02	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
109	**KARL P SODERBERG REVOCABLE LIVING TRUST**	27S13W35TL0030000	724000	F	114.48	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

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	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
110	KARL P SODERBERG REVOCABLE LIVING TRUST	27S13W35TL00302Z1	724002	F	0.23	N/A	N/A	No	INDUSTRIAL LAND W/IMPROVEMENTS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
111	KARL P SODERBERG REVOCABLE LIVING TRUST	27S13W35TL00303Z1	724005	F	0.23	N/A	N/A	No	INDUSTRIAL LAND W/IMPROVEMENTS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
112	KIRBY, DEBORAH	28S13W05TL0090200	900606	EFU	10.64	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
113	KRALL, JOHN	27S13W35TL0030100	724001	F, EFU	5	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
114	LAFRANCHI, RON	27S13W31TL0120200	719802	EFU	1.16	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
115	LAFRANCHI, RON	27S13W31TL0130000	720900	FEFU, CREMP	37.12	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
116	LAFRANCHI, RON	27S13W32TL0040000	720901	FEFU	83.46	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
117	LAFRANCHI, RON	28S13W02TL0070000	897200	EFU , CREMP	46.31	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
118	LAFRANCHI, RON	28S13W02TL0080000	896000	EFU , CREMP	55.71	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
119	LAFRANCHI, RON	28S13W02TL0090000	896001	EFU , CREMP	6.8	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

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120	LAFRANCHI, RON	28S13W05TL0030000	900200	EFU , CREMP	41.5	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
121	LAFRANCHI, RON	28S13W05TL0050000	900400	EFU , CREMP	42.22	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
122	LAFRANCHI, RON	28S13W05TL0060000	900500	EFU , CREMP	42.1	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
123	LAFRANCHI, RON	28S13W06TL0010100	900901	EFU	35.8	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
124	LAFRANCHI, RON	28S13W06TL0040000	901401	EFU	73.19	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
125	LAFRANCHI, RON	28S13W06TL0060000	901300	F, EFU	50.56	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
126	LAFRANCHI, RONALD C.	28S13W05TL0040000	900300	EFU , CREMP	42.07	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
127	LAFRANCHI, RONALD C.	28S13W06TL0030000	900800	F, EFU	78.14	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
128	LEMKE, BARRY J & SHIRLEY L	27S13W14BTL0170000	705408	RR-5, F	10.99	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
129	LESLIE FAMILY, LLC	27S13W30TL0070100	719600	FEFU, CREMP	110.42	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
130	LESLIE FAMILY, LLC	27S13W30TL0070300	99919394	F/EFU*	178.58	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
131	LONE ROCK TT LANDCO LLC	27S13W14TL0030000	705602	F	115.52	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
132	LONE ROCK TT LANDCO LLC	27S13W14TL0040000	705500	F	166	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
133	LONE ROCK TT LANDCO LLC	27S13W15ATL0070000	705803	F	16.65	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
134	LONE ROCK TT LANDCO LLC	27S13W15TL0130000	705700	F	224.58	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
135	LONE ROCK TT LANDCO LLC	27S13W21TL0050000	711403	F	33.01	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
136	LONE ROCK TT LANDCO LLC	27S13W21TL0240100	711300	RR-2, F	0.65	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
137	LONE ROCK TT LANDCO LLC	27S13W23TL0010000	714101	F	160	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
138	LOWELL J BOYER & JEANETTE M BOYER TRUST	27S13W33TL0090100	721803	F	6.07	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
139	LOWELL J BOYER & JEANETTE M BOYER TRUST	28S13W04TL0030100	899704	F	34.93	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

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140	LUCAS, DAVID B.	27S13W14ATL0010000	705301	F	10.22	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
141	LUCAS, MARK L. & JUDITH M.	27S13W14ATL0010100	705315	F	10.09	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
142	LUCKMAN, EVERETT L. & LORRAINE	27S13W20TL0090000	711101	F	5.49	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
143	LUCKMAN, HEIDI Y.	27S13W20TL0080200	711103	F	3.74	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
144	MALLICK, M JOAN ET AL	27S13W21TL0020000	711600	F	12.53	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
145	MANNING, JOHN	27S13W14ATL0160000	705316	F	31.5	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
146	MARTIN, ALEXANDER TROY	27S13W20TL0020000	710302	F	80	N/A	N/A	No	TRACT LAND W/IMPROVEMENTS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
147	MASON, LOGAN	27S13W20TL0110000	710500	F	15	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
148	MAUSETH FAMILY TRUST	27S13W14BTL0160000	705409	F	7.74	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
149	MCALLISTER, WALTER	27S13W15TL0040100	707403	EFU	10.1	N/A	N/A	No	TRACT LAND W/IMPROVEMENTS	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

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150	MCDONALD, IMOGENE	28S13W03TL0050000	898700	FEFU, CREMP	61.16	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
151	MCGILVERY, KEITH & RANDILEE	28S13W04TL0050000	899701	F	20.7	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
152	MCNEELY, CSAGGE WHYATT	28S13W02TL0140000	897901	EFU	63.09	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
153	MCNEELY, CSAGGE WHYATT	28S13W02TL0150000	897902	EFU	51.49	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
154	MCNEELY, CSAGGE WHYATT	28S13W03TL0090000	899302	EFU	61.15	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
155	MCWILLIAMS, MICHAEL KEVIN & KOREN RENEE	27S13W21TL0160000	711802	F	3.4	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
156	MILLET, BROCK WILLIAM & MELINDA ANN	27S13W20TL0080100	711102	F	30.02	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
157	MORGAN, LANCE ET AL	27S13W29TL0040000	718803	F , CREMP	5.62	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
158	MYERS, STANLEY J. & NANCY E.R.	27S13W15TL0120000	705701	EFU	16.72	N/A	N/A	No	TRACT LAND W/IMPROVEMENTS	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevaotion 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .

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159	MYERS, STANLEY J. & NANCY E.R.	27S13W15TL0120100	705710	EFU	0.98	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
160	NELSON, ROBERT E.	28S13W03TL0070000	898900	F, EFU	77.51	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
161	NICHOLS, STEVEN D. & MELANIE C.	28S13W04TL0090000	899900	F	15	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
162	OREGON DEPARTMENT OF FISH & WILDLIFE	27S13W21TL0190300	99918601	F/EFU	21.44	N/A	N/A	No	MISCELLANEOUS	No	Yes	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevaotion 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. ODFW lands, never used for pasture grazing. Mosquito production habitats will be addressed on the project area (see footnote #2). .
163	OREGON DEPARTMENT OF FISH AND WILDLIFE	27S13W15TL0020100	99916966	EFU	18.07	N/A	N/A	No	MISCELLANEOUS	No	Yes	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevaotion 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. ODFW lands, never used for pasture grazing. Mosquito production habitats will be addressed on the project area (see footnote #2). .
164	OREGON DEPARTMENT OF FISH AND WILDLIFE	27S13W16TL0030100	99916967	F	17.1	N/A	N/A	No	MISCELLANEOUS	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

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Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish /wildlife benefits on parcel	
165	OREGON DEPARTMENT OF FISH AND WILDLIFE	27S13W16TL0030200	99916968	F	74.08	N/A	N/A	No	MISCELLANEOUS	No	Yes	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevaotion 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. ODFW lands, never used for pasture grazing. Mosquito production habitats will be addressed on the project area (see footnote #2). .
166	OREGON DEPARTMENT OF FISH AND WILDLIFE	27S13W21TL0190000	711700	F, EFU	128.83	N/A	N/A	No	MISCELLANEOUS	No	Yes	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
167	**OREGON DEPARTMENT OF FISH/WILDLIFE**	**27S13W21TL0240500**	**712904**	**IND, EFU**	**109.2**	**0.00**	**0%**	**Yes**	**MISCELLANEOUS**	**No**	**Yes**	**No**	**No**	**Yes**	**No**	**No**	**No**	**No**	**N/A**	**Yes**	Project area parcel; see comment in Table 1.
168	OREGON DEPARTMENT OF FISH AND WILDLIFE	27S13W28TL0020100	717002	EFU	285.97	N/A	N/A	No	TRACT LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
169	OTTERBACH, PATRICIA L.	27S13W33TL0140000	720400	EFU	1.27	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
170	PUSCHEL, MICHAEL & TONI	27S13W14BTL0120000	705415	F	2.6	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
171	R & R HOFFINE FAMILY TRUST	27S13W14TL0010000	705601	EFU	39.85	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
172	R & R HOFFINE FAMILY TRUST	27S13W14TL0020000	705600	F	2.33	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
173	REYNOLDS, JOHN W JR & KATE MARIE ROSE	27S13W20TL0030000	710300	F	20	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
174	REYNOLDS, JOHN W JR & KATE MARIE ROSE	27S13W20TL0040000	710301	F	90	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
175	ROSE CITY WOOD PRODUCTS	27S13W27TL0070000	716900	F	52.3	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
176	ROSE, RONNIE R.; ETAL	27S13W35CTL0070000	724900	RR-2, F	13.66	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
177	ROSEBURG FOREST PRODUCTS CO.	28S13W02TL0060000	896802	EFU , CREMP	24.17	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the culverts or channels being installed. The main BSDD tidegate is the water managment control point with the interior culverts/channels being replaced being subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).
178	ROSEBURG RESOURCES CO	27S13W15TL0020000	707300	EFU	4.73	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
179	ROSEBURG RESOURCES CO	27S13W15TL0090000	707401	EFU	0.03	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
180	ROSEBURG RESOURCES CO	27S13W16TL0030000	708000	F, EFU	228.37	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).

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181	ROSEBURG RESOURCES CO	27S13W17TL0030100	708201	F, EFU	296.12	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
182	ROSEBURG RESOURCES CO	27S13W19TL0010000	709500	F	279.74	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
183	ROSEBURG RESOURCES CO	27S13W19TL0020000	709600	F	344.52	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
184	ROSEBURG RESOURCES CO	27S13W21TL0190100	99916969	F, EFU	29.9	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
185	ROSEBURG RESOURCES CO	27S13W22TL0010000	713500	F	160	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
186	ROSEBURG RESOURCES CO	27S13W22TL0020000	713601	F	79.74	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
187	ROSEBURG RESOURCES CO	27S13W22TL0040000	713600	F	198.19	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
188	ROSEBURG RESOURCES CO	27S13W22TL0060000	714000	F	80	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
189	ROSEBURG RESOURCES CO	27S13W23TL0020000	714100	F	480	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).

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190	ROSEBURG RESOURCES CO	27S13W26TL0010000	715800	F	640	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
191	ROSEBURG RESOURCES CO	27S13W27ATL0010000	716308	F	54.4	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
192	ROSEBURG RESOURCES CO	27S13W27ATL0010100	99919879	F	0.62	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
193	ROSEBURG RESOURCES CO	27S13W27TL0010000	716200	F	169	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	Yes	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the culverts or channels being installed. The main BSDD tidegate is the water managment control point with the interior culverts/channels being replaced being subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).
194	ROSEBURG RESOURCES CO	27S13W27TL0020000	716400	F	3.63	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
195	SIMPSON COLLEGE FOUNDATION	27S13W21TL0180000	711904	F	0.92	N/A	N/A	No	RESIDENTIAL - UNIMPROVED	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
196	SMITH FAMILY REVOCABLE LIVING TRU	28S13W03TL0080000	899000	EFU	79.28	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
197	SOLOMON, WALTER A. & JOYCE L.	27S13W29BTL0210000	718802	EFU 5, CREMP	5.68	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
198	SPRINGTIME INVESTMENTS LLC	27S13W31TL0060000	719906	F	60.83	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).

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199	**STAPERT, JOHN R.; ETAL**	27S13W14BTL0180000	705407	F	5.62	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	**Yes**	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
200	**STATE OF OR - OR DEPT OF FISH & WILDLIFE**	27S13W21TL0200000	712100	F	4.01	N/A	N/A	No	MISCELLANEOUS	No	No	No	No	**Yes**	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
201	**STATE OF OR - OR DEPT OF FISH & WILDLIFE**	27S13W21TL0210000	712400	EFU	37.35	N/A	N/A	No	MISCELLANEOUS	No	Yes	No	No	**Yes**	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevaotion 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. ODFW lands, never used for pasture grazing. Mosquito production habitats will be addressed on the project area (see footnote #2). .
202	**STATE OF OREGON**	27S13W15ATL0080000	705802	F	2.94	N/A	N/A	No	MISCELLANEOUS	No	No	No	No	**Yes**	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
203	**STATE OF OREGON**	27S13W15TL0080000	707405	EFU	4.1	N/A	N/A	No	MISCELLANEOUS	No	No	No	No	**Yes**	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
204	**STATE OF OREGON**	27S13W18TL0020000	709101	F	5.17	N/A	N/A	No	MISCELLANEOUS	No	No	No	No	**Yes**	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
205	**STATE OF OREGON**	27S13W33TL0100000	721802	F	0.52	N/A	N/A	No	MISCELLANEOUS	No	No	No	No	**Yes**	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
206	**STATE OF OREGON**	27S13W34TL0070000	722603	EFU	7.48	N/A	N/A	No	MISCELLANEOUS	No	No	No	No	**Yes**	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).

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	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
207	STATE OF OREGON	27S13W34TL0089900	7715000	EFU	4.06	0.00	0%	No	MISCELLANEOUS	No	Yes	No	No	Yes	No	No	No	No	No Effect	Yes	Project area parcel; see comment in Table 1.
208	STATE OF OREGON DEPT OF FISH & WILDLIFE	27S13W27BTL0110400	99920212	EFU*	2.05	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
209	STENGAR, ELLEN V.; ETAL	28S13W03TL0060000	898701	F	97.54	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
210	STRADER, TRACY ET AL	27S13W15BDTL0130000	706600	EFU	4.66	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2). .
211	SUTPHIN, STEVEN CRAIG	28S13W02TL0120000	895300	EFU , CREMP	36.55	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
212	BRIDGES FOUNDATION	27S13W20TL0150300	99916790	EFU*	52.2	10.68	20%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Project area parcel; see comment in Table 1.
213	BRIDGES FOUNDATION	27S13W27TL0040000	716702	EFU	23.6	0.00	0%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Project area parcel; see comment in Table 1.
214	BRIDGES FOUNDATION	27S13W27TL0050000	716800	EFU	54.4	0.00	0%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Project area parcel; see comment in Table 1.
215	BRIDGES FOUNDATION	27S13W28TL0040000	717402	EFU	20.0	0.00	0%	Yes	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	Improve	Yes	Project area parcel; see comment in Table 1.

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

	Owner Name	TLID	Tax Account #	Plan Zoning	Parcel Acres	Parcel acres in CREMP	Parcel % in CREMP	Parcel contains proposed project actions, Y/N	Apparent current on-ground usage	Above Elevation 8.0ft NAVDD 88[1]	Parcel is hydrologically connected to the Winter Lake Phase III Project Area	Will Phase III Cause Additonal Water on Property Y/N	Will Phase III Inhibit Drainage of Water on Property Y/N	Will Phase III Project Reduce Potential Mosquito Habitat/Effects on Parcel Y/N?	Will Phase III Project Force a Significant Change in Farm or Forest Practices on Parcel	Will Phase III Project Significantly Increase Cost of Farm or Forest Practices on Parcel, Y/N?	Will Phase III Project Modify Existing or Require New Access Roads, Y/N?	Will Phase III Project Result in the Removal of Productive Farm or Forest Land, Y/N?[2]	Will Phase III Project have Economic Effect On farm/forest uses on Parcel: Improve/Decline/No Effect	Will Winter Lake Phase III Project result in ecological/fish/wildlife benefits on parcel	
216	**BRIDGES FOUNDATION**	**27S13W28TL0060000**	**717401**	**EFU**	**80.0**	**0.00**	**0%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	**Yes**	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.
217	**BRIDGES FOUNDATION**	**27S13W28TL0070000**	**717500**	**EFU**	**100.0**	**0.00**	**0%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	**Yes**	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.
218	**BRIDGES FOUNDATION**	**27S13W29TL0010100**	**717600**	**EFU , CREMP**	**148.5**	**72.11**	**49%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	**Yes**	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.
219	**BRIDGES FOUNDATION**	**27S13W29TL0010300**	**99916787**	**EFU , CREMP**	**47.3**	**44.13**	**93%**	**Yes**	**HIGH AND BEST USE FARM LAND**	**No**	**Yes**	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**Improve**	**Yes**	Project area parcel; see comment in Table 1.
220	**TICE, TERRY R. & TAMMY F.**	27S13W14BTL0200000	705406	RR-5, F	10.07	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
221	**TRIGG, KIRK R & JUANICE M**	28S13W05TL0080000	900601	EFU	31.4	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	No	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
222	**VAN BURGER, SUSANNE L**	27S13W20TL0010000	710200	F, EFU	78.8	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	Yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).
223	**VOTAW, UTIS G.**	27S13W15TL0110000	707200	EFU	2.1	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
224	**WAKKINEN, MICHAEL & MEE, MOLLY**	28S13W05TL0090600	99920035	EFU	56.82	N/A	N/A	No	HIGH AND BEST USE FOREST LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
225	**WALTER, RUBY A ET AL**	27S13W20TL0100000	710501	F	10	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .

Winter Lake Phase III Project Area and Surrounding Land Impacts Analysis

Table 2. Winter Lake Phase III Project Area Surrounding Lands Impacts Analysis

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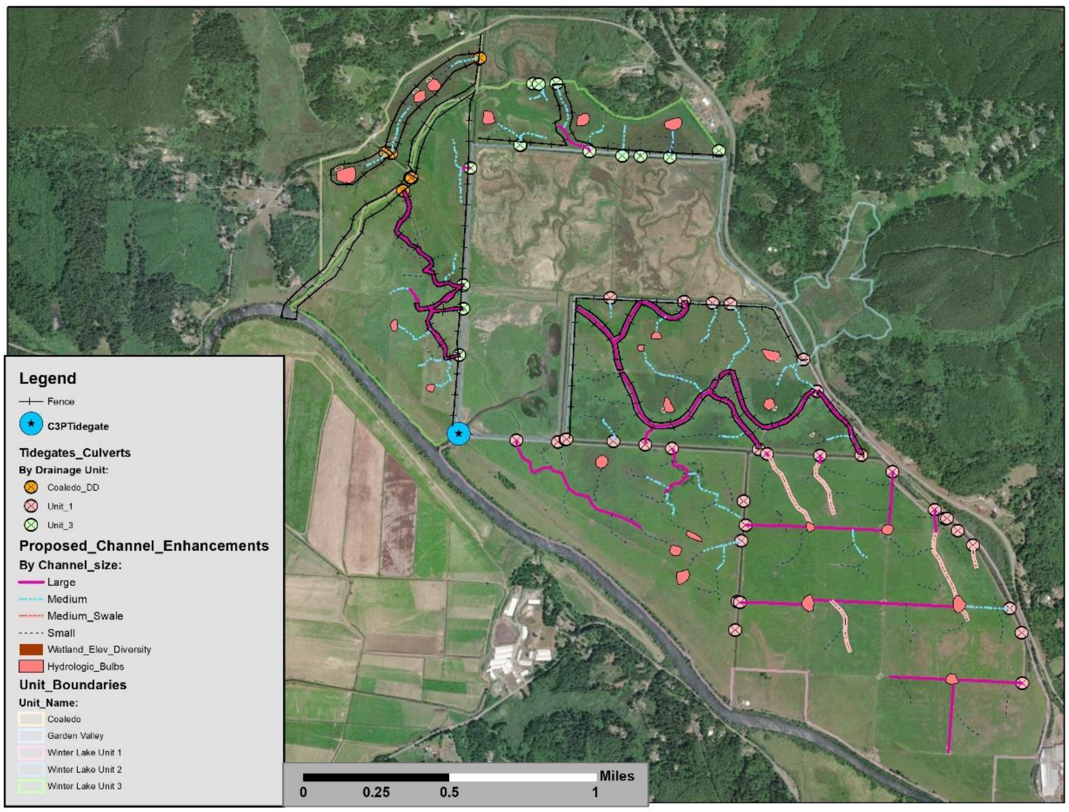
226	WARD, CASEY L & DELORES J	28S13W04TL0060100	899805	F	10.13	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
227	WHEELER, RAYMOND C	27S13W21TL0230100	712704	IND, EFU	17.39	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
228	WILLIARD, MARY ELIZABETH	27S13W20TL0060000	710400	F	8.12	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
229	WILSON, CLARK E. & SHEILA F.	27S13W21TL0240000	712900	F, EFU	6.6	N/A	N/A	No	RESIDENTIAL - IMPROVED	No	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
230	WIRT, CASEY & DANIELLE	27S13W20TL0080000	711100	F	9.67	N/A	N/A	No	HIGH/BEST USE FOREST W/IMPROV	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2). .
231	WISELY, BRETT	27S13W27TL0030000	716700	EFU	51.58	N/A	N/A	No	HIGH AND BEST USE FARM LAND	No	Yes	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. This parcel is below elevation 8.0ft and hydrologically connected to waters within the project area. However, this parcel is not directly impacted by the three interior culverts that will be installed in the Coaledo Drainage District. The main Coaledo Tidegate is the control point for water management in the CDD as the interior tidegates are subservient. Mosquito production habitats will be addressed on the project area (see footnote #2).
232	YATES, CHARLES L & JOHANNA	27S13W21TL0240400	712903	F, EFU	38.4	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
233	YATES, CHARLES L & JOHANNA	27S13W22TL0050000	713700	F	41.8	N/A	N/A	No	HIGH AND BEST USE FARM LAND	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).
234	YEAGER, KEVIN S.	27S13W15BATL0020000	705900	F	7.1	N/A	N/A	No	RESIDENTIAL - IMPROVED	Yes	No	No	No	yes	No	No	No	No	No Effect	No	Project is designed independantly without need for roads or change to neighboring land use actions or increase costs of use on neighbor lands. Adjacent lands are predominatly above elevation 8.0ft, the highest level of tide. Mosquito production habitats will be addressed on the project area (see footnote #2).

SPECIFIC EXERPTS FROM THE WINTER LAKE PHASE III
404 FILL AND REMOVAL APPLICATION
to the
USACE, DSL, and COOS County Planning Dept.

ADDRESSING HYDROLOGY RELATED TO POTENTIAL FOR MOSQUITO PRODUCTION

March 12th, 2024



Caley Sowers
Authorized Agent
for the Beaver Slough Drainage District

and

Christopher W. Claire
Habitat Protection Biologist
ODFW Charleston, OR

Excerpts from the Winter Lake Phase III 404 Permit App.

Note: *Additional important information, has been added on 03/11/24 (highlighted) in several short sections of this document to clarify hydrology/geomorphic conditions on site and project effects to address fish stranding and the potential for mosquito production.*

Date Stamp

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.

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

(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	Caley Sowers/ Coos SWCD District Manager
Business Name	Beaver Slough Drainage District	Everett-Ona Isenhart ranch, Inc.	
Mailing Address 1 **City, State, Zip**	60196 Old Wagon Rd. Coos Bay, OR 97420	Laura Isenhart	379 N Adams St, Coquille, OR 97423
Business Phone **Cell Phone** **Fax** **email**	541-404-6105 bsddbos@gmail.com		541-396-6879 971-645-6634 541-824-0356 info@coosswcd.org

(3) PROJECT INFORMATION

A. Provide the project location.

Project Name *Winter Lake Phase III*				Latitude & Longitude*
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)			

* 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”).

Key Textual Excerpts on Project Need and Goals
From Phase III 404 Fill and Removal Application Submitted
to DSL, USACE, and Coos County Planning Dept.

Note: *Additional important information, has been added on 03/11/24 (highlighted) in several short sections of this document to clarify hydrology/geomorphic conditions on site and project effects to address fish stranding and the potential for mosquito production.*

From pg 2

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. <u>The proposed Phase III project does not include any actions within Unit 2.</u> 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 <u>no internal restorative actions to date upstream of C3P,</u> 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.

From pg 4-6

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

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.

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***).

From pgs 13-14

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. ***Note in addition to 404 permit info; 01/10/24:*** *Linear channels constructed historically traversed across and disconnected low spots that can be visually identified on site and from the LIDAR. These low spots now struggle to drain during lower tidal conditions and if irrigation water is delivered to an elevation to fill these locations. Resultantly, there currently are numerous locations where mosquito production can occur if water is delivered into these locations during the warmer months of the year (June-September). These areas represent locations where salmonids tend to feed as they are slightly deeper (1-3ft deeper) than the surrounding pasture area. As the water recedes fish can become stranded and eventually die during late spring from warmer temperatures and predation. This project specifically used a new and hybrid channel layout to develop channel networks that enter these low lying stranding and potential mosquito production areas to ensure they will drain as waters recede in late spring and on low tide drainout following irrigation events. Project actions will address ponding water locations that currently serve as fish stranding and mosquito production risk locations.*

• *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. ***Note in addition to 404 permit info 01/10/24:*** *Installation of this water control infrastructure will provide greater ability to drain low-lying areas that have potential for mosquito production.*

• *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. ***Note in addition to 404 permit info 01/10/24:*** *Installation of redesigned and new channels will provide greater ability to drain low-lying areas that have potential for mosquito production.*

• *__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. ***Note in addition to 404 permit info 01/10/24:*** *Installation of redesigned and new channels in elevationally appropriate paths will provide greater ability to drain low-lying areas that have potential for mosquito production.*

(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.

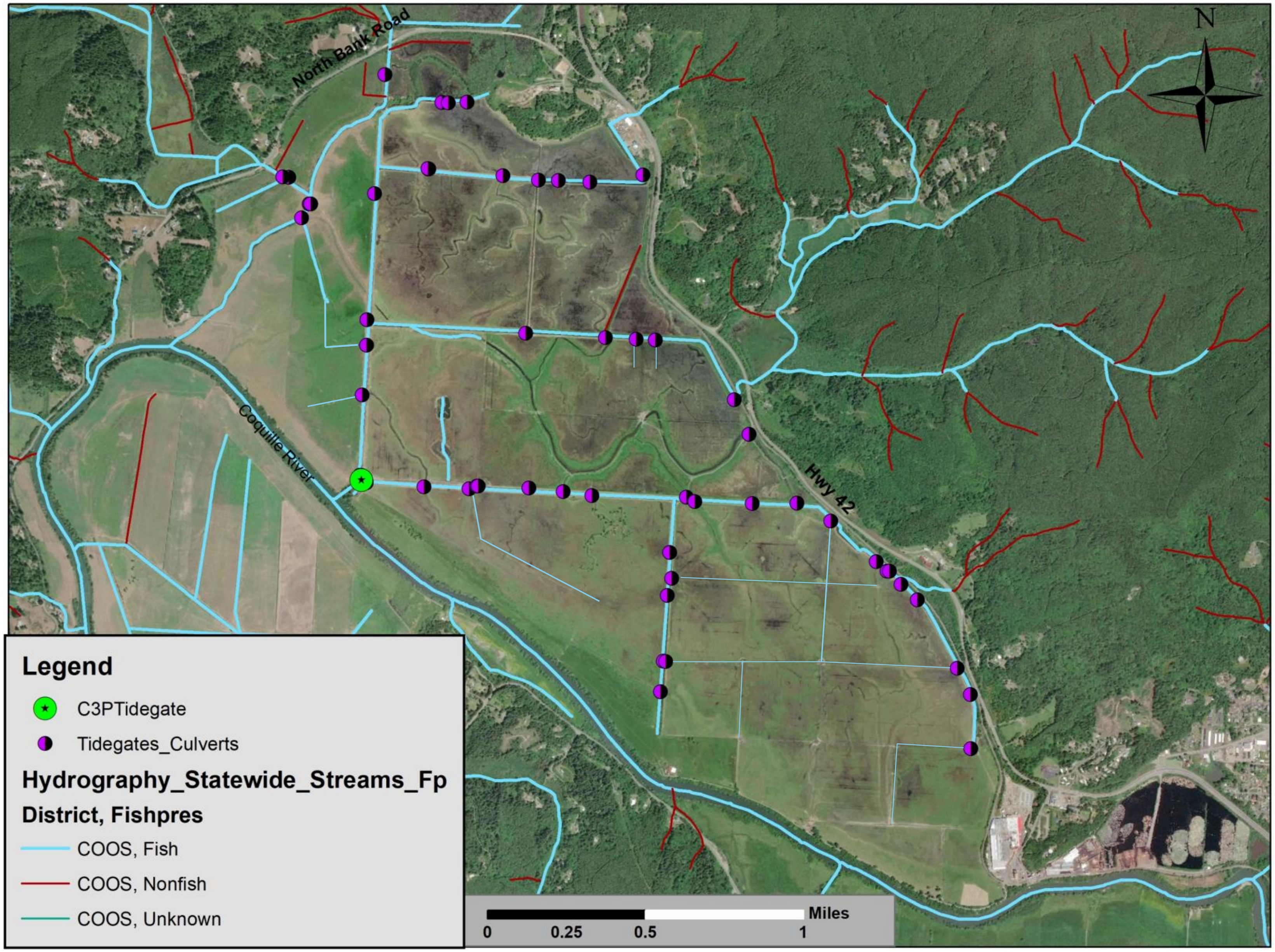


Figure 1. Winter Lake Phase III project area tidal channel *existing* layout (w. aerial imagery) with largely linear configuration and traverse connections without penetrating small channels across and disconnecting low-lying swales where water can collect.

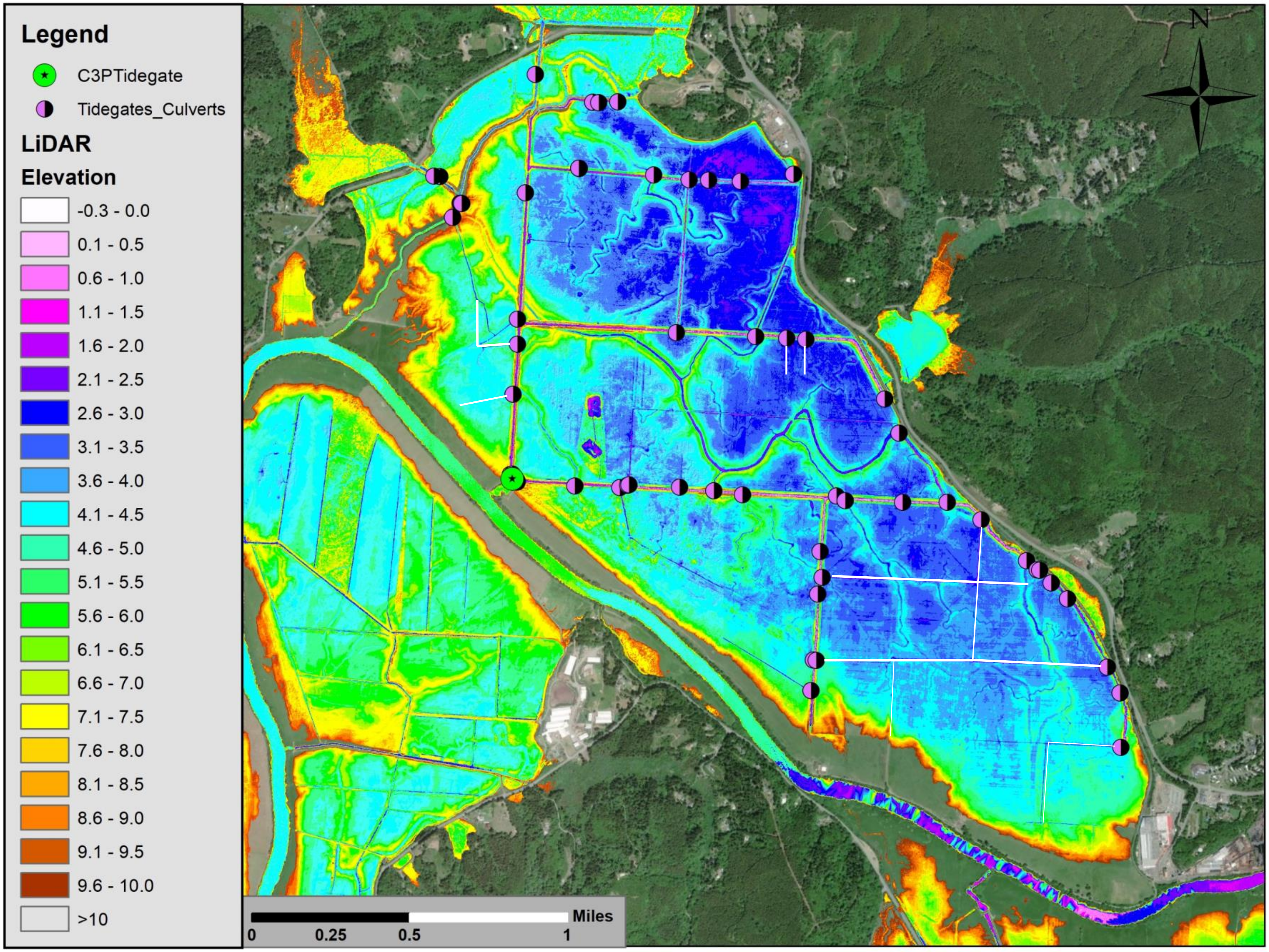


Figure 2. Winter Lake Phase III project area tidal channel *existing* layout (w. LiDAR imagery) with largely linear configuration and traverse connections without penetrating small channels across and disconnecting low-lying swales where water can collect.

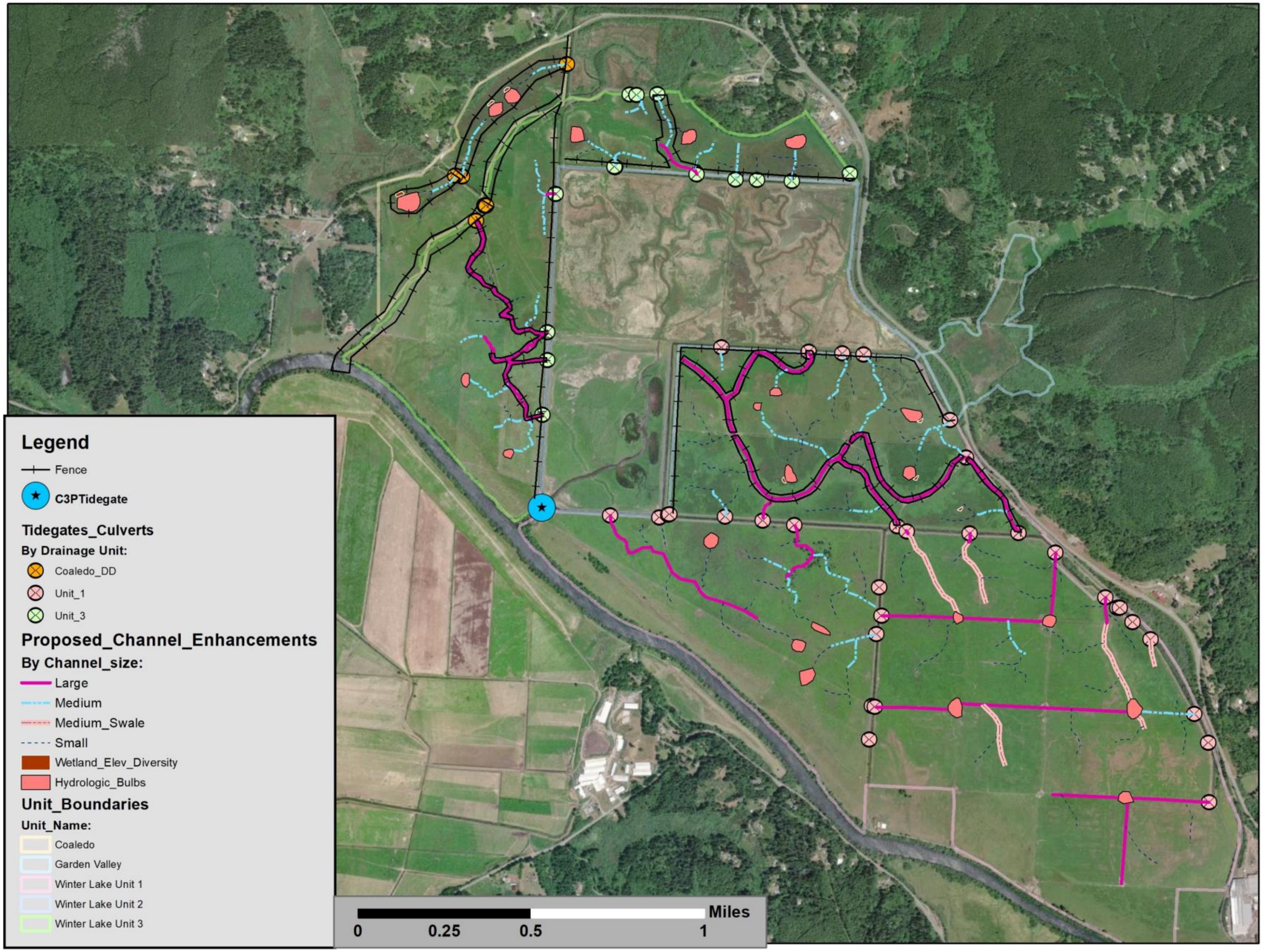


Figure 3. Winter Lake Phase III project area tidal project proposed reconstructed channel layout (w. aerial imagery) designed to develop channels traversing to enter low-lying swale areas to facilitate drain-out in spring and during low tide elevations. ***Note:** Hydrologic bulbs are sloped to drain fully into channels.*

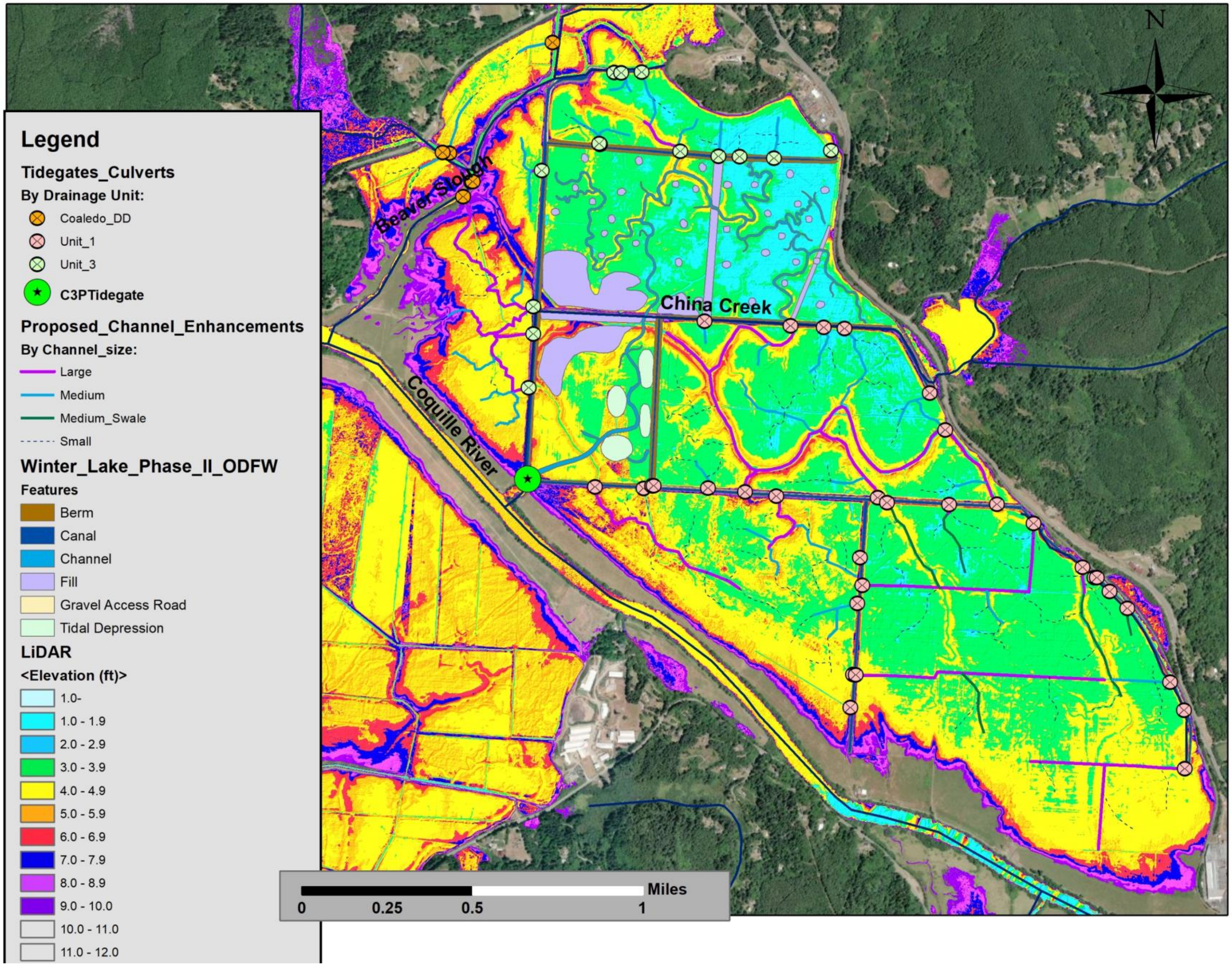


Figure 3. Winter Lake Phase III project area tidal project proposed reconstructed channel layout (w. LiDAR imagery) designed to develop channels traversing to enter low-lying swale areas to facilitate drainout in spring and on and low tide elevations.

Coos County Board of Commissioners

ACU-23-074-FP-23-012 Work Session

Tuesday, March 5, 2024

1:30-3:30 p.m.

Owens Building Conference Room

201 North Adams Street

Coquille, Oregon 97423

Work Session Opening

- Jill Rolfe
- opening comments
- process & protocols


BEAVER SLOUGH
DRAINAGE DISTRICT

Today's Presentation

BSDD – Fred Messerle, District Manager

Agriculture - Mark Isenhart, Jeff Messerle – Landowners

Biological – Mike Gray, ODFW, Helena Linnell, CIT

Coquille Valley Wildlife Area – Stuart Love, CVWA Manager

Monitoring Project Results – CoqWA – Julie Huff

Project Facilitators – Coos SWCD - Caley Sowers

Stakeholder Perspective – Steve Denney

BSDD Role

Manage & Maintain District Infrastructure

Administrate the District Water Management Plan (DWMP)

Facilitate and coordinate with landowners and other stakeholders to meet goals and objectives for individual parcels

Focus Point:

Managing/Moving

Water

On the

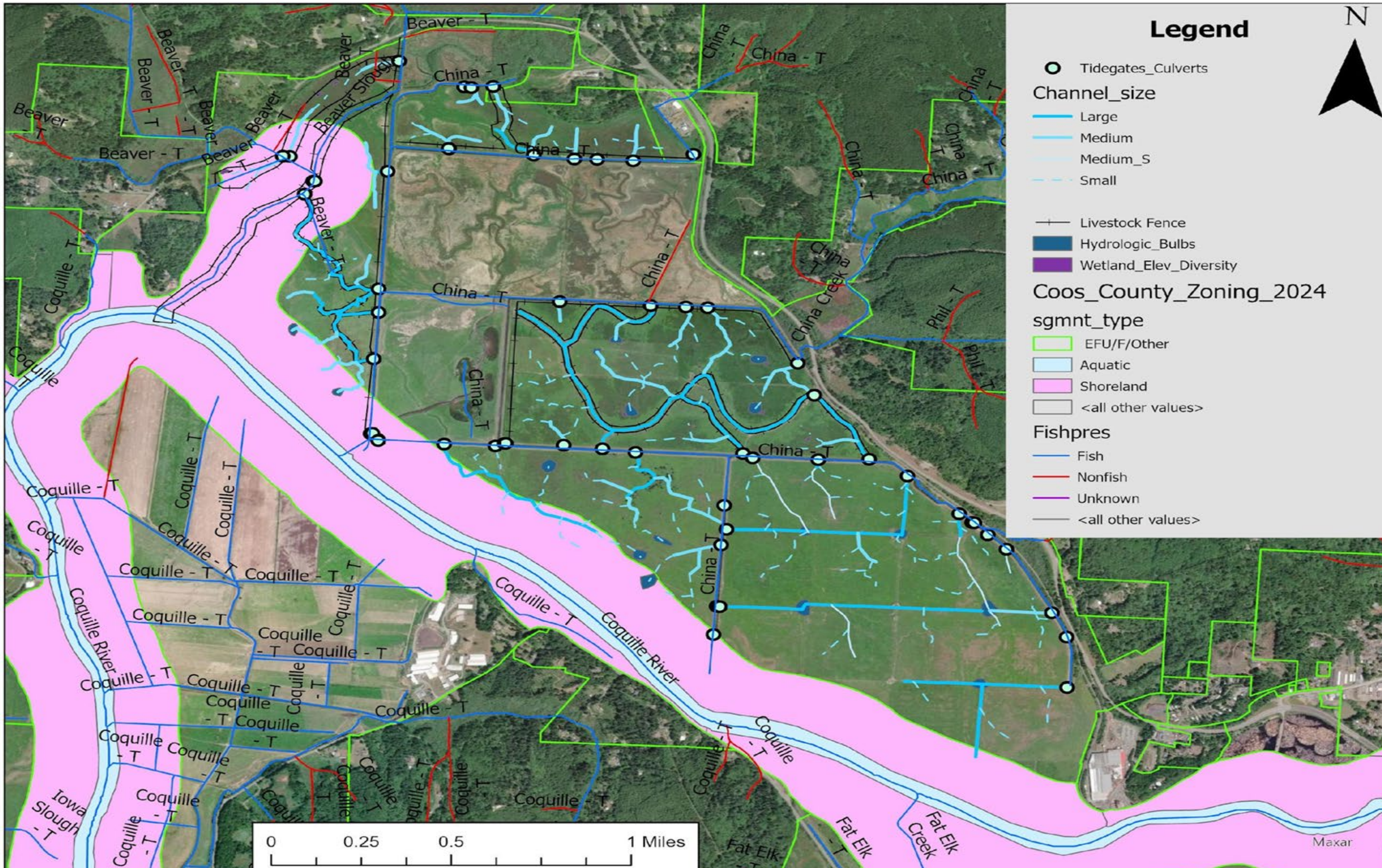
Landscape


Winter Lake Phase III
Working Lands Implementation
System Infrastructure Maintenance & Improvements

1848 ------- 1948 ----------2048

1848 - Oregon became a territory. Section 12 of the Territorial Constitution declared that rivers and streams supporting salmon shall not be dammed or otherwise obstructed unless fish passage is provided.

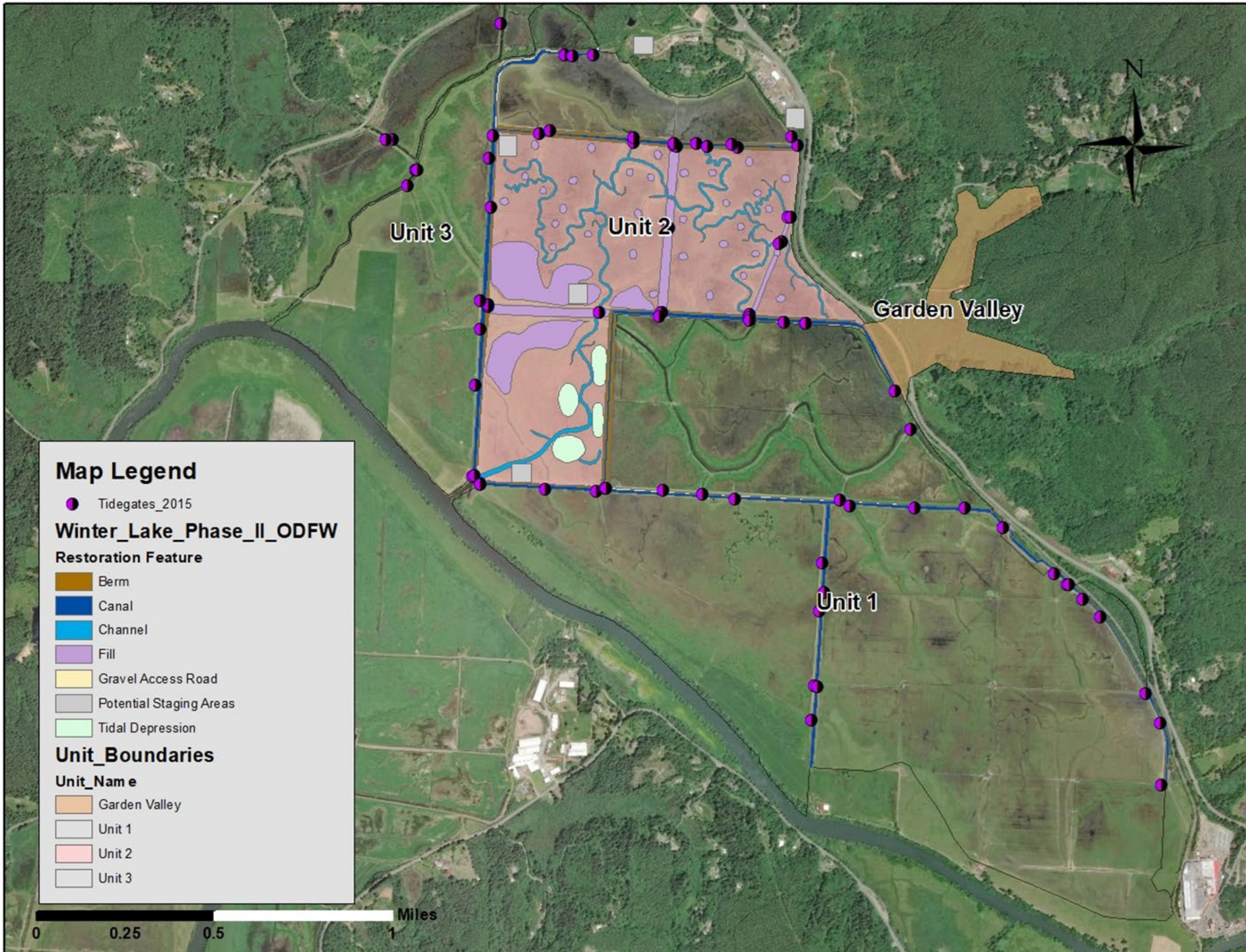
EFU/CREMP


Legend
N
Tidegates_Culverts
Channel_size
Large
Medium
Medium_S
Small
Livestock Fence
Hydrologic_Bulbs
Wetland_Elev_Diversity
Coos_County_Zoning_2024
sgmnt_type
EFU/F/Other
Aquatic
Shoreland
<all other values>
Fishpres
Fish
Nonfish
Unknown
<all other values>
0 0.25 0.5 1 Miles
Coquille River
China Creek
Beaver Slough
Fat Elk Creek
Iowa Slough
Maxar

ECONOMICS 101

i. Significant impact of natural resources to the local economy

i. Agricultural operations will not generate enough income to pay for the infrastructure necessary to meet statutory fish passage and habitat requirements.



N
Unit 3
Unit 2
Garden Valley
Unit 1
Map Legend
Tidegates_2015
Winter_Lake_Phase_II_ODFW
Restoration Feature
Berm
Canal
Channel
Fill
Gravel Access Road
Potential Staging Areas
Tidal Depression
Unit_Boundaries
Unit_Name
Garden Valley
Unit 1
Unit 2
Unit 3
0
0.25
0.5
1
Miles

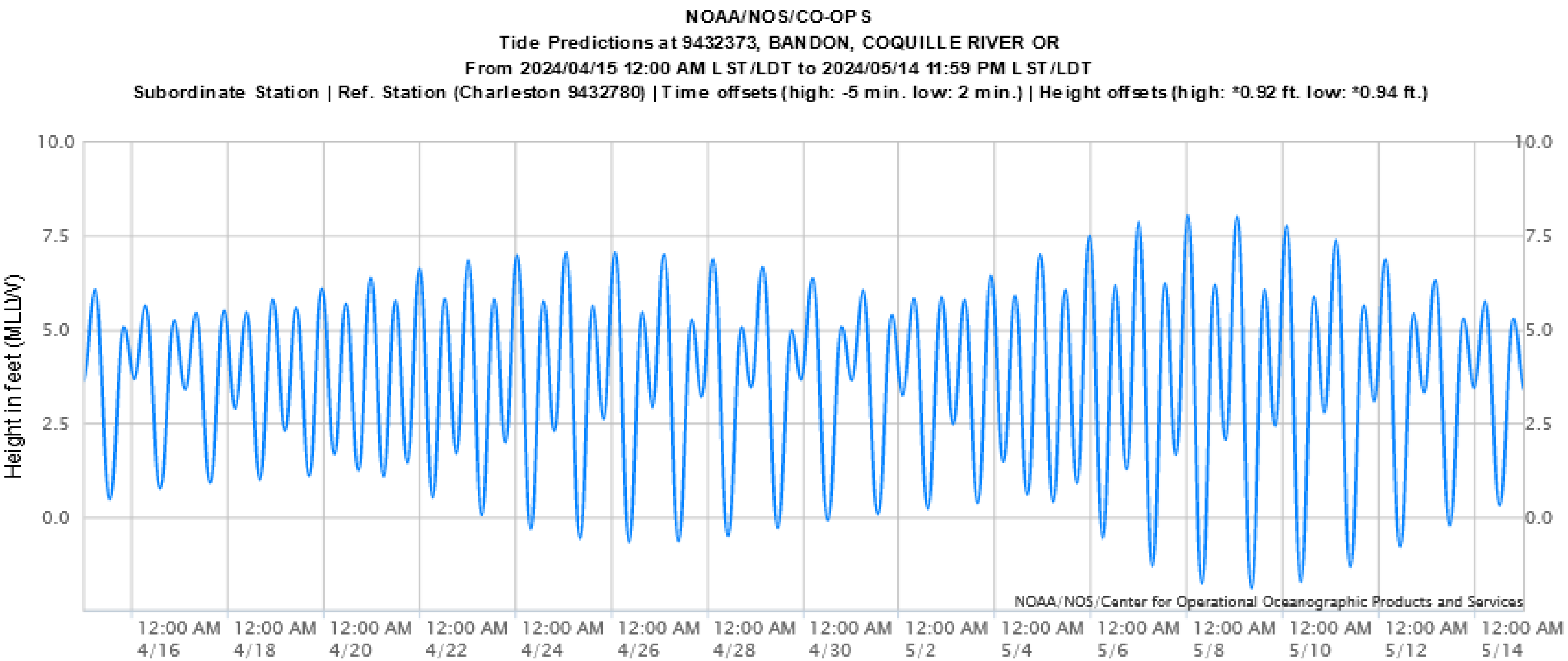
Infrastructure completed.

BEAVER SLOUGH DRAINAGE DISTRICT

OREGON Fish & Wildlife

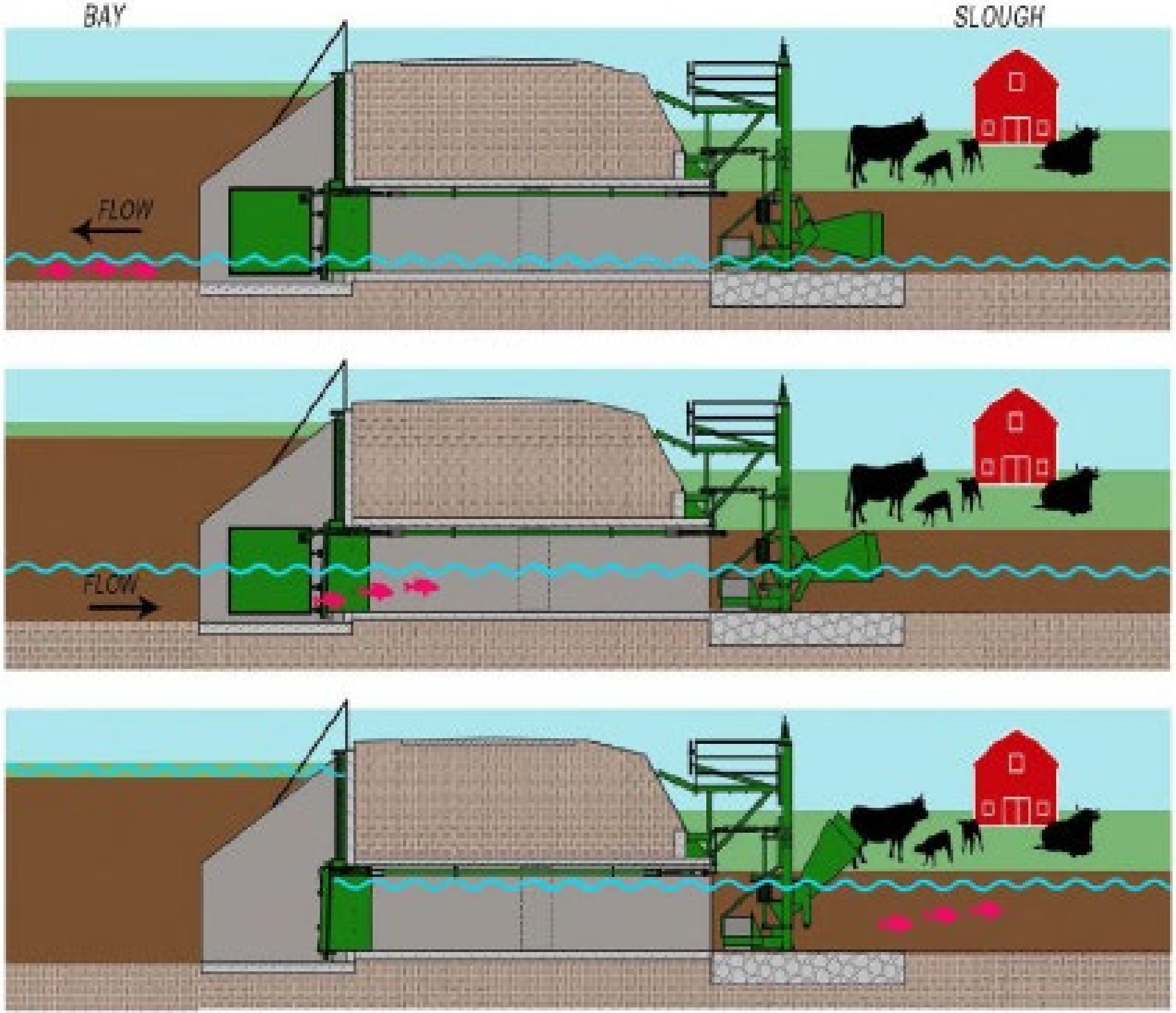
Coquille Watershed Association

Time & Tides

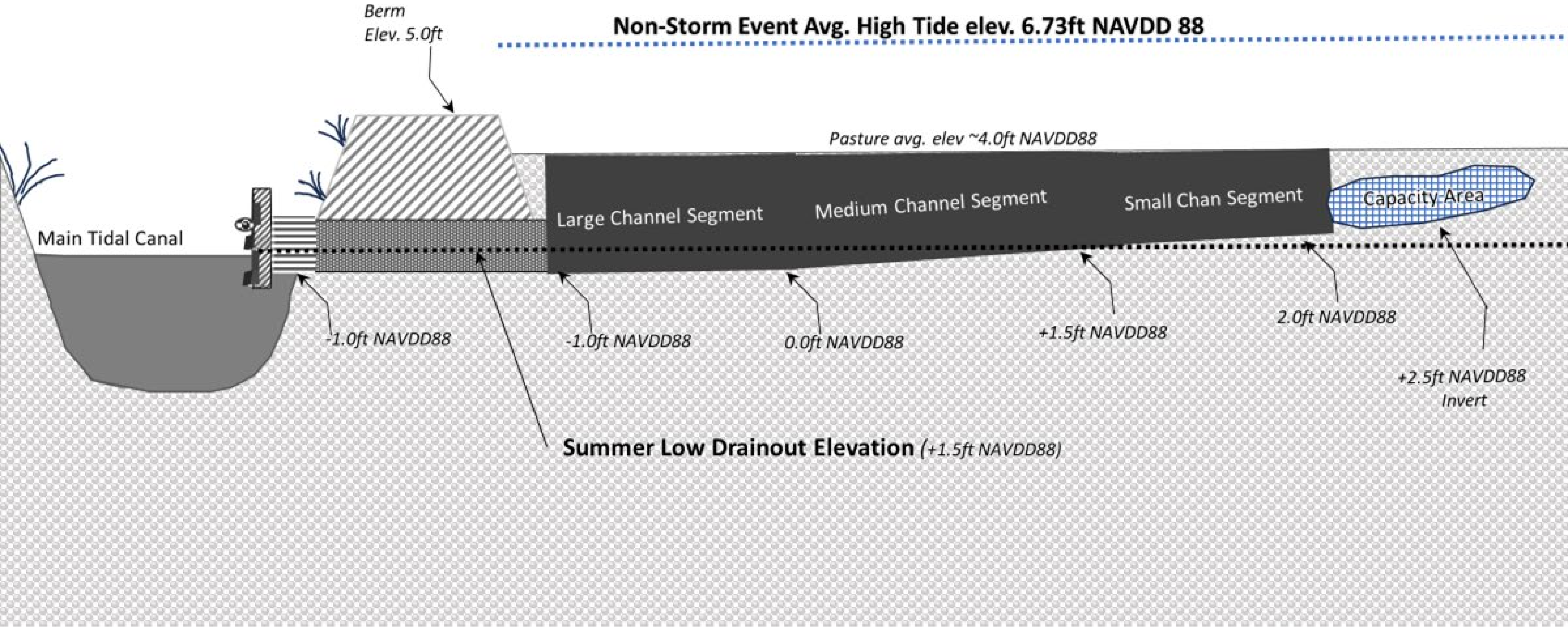


Note: The interval is High/Low, the solid blue line depicts a curve fit between the high and low values and approximates the segments between.
Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

MUTED TIDE



Winter Lake Phase III
Channel Rise/Slope Cross-Section



404 JPA permit, ATTACHMENTS ENGINEERING

i. Attachments
   1. A_Figures and Photos
   2. B_Project Actions_Design_Yardages
   3. C_WinterLakeIII_HydroAssess
ii. Mimic natural conditions
iii. Engineered project components
iv. Eliminate ponding
v. Enhance water quality

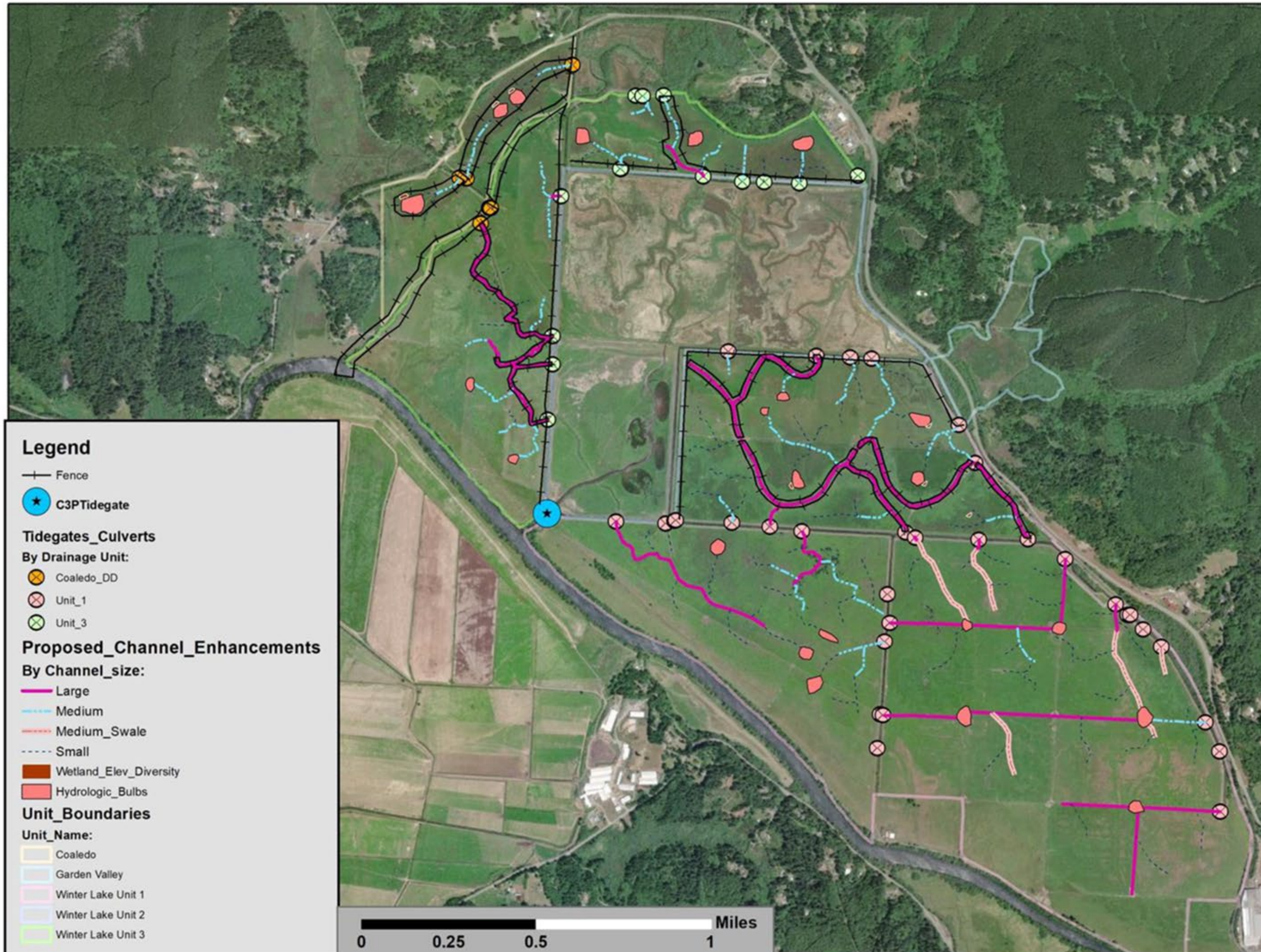


Figure 19. Winter Lake Phase III Proposed Channel Enhancements

Project Activites

a. Rebuild the interior infrastructure to maximize capacity and management of water over the landscape.

   i. Canals,
   ii. Culverts
   iii. Bridge
   iv. Water control gates
   v. Side Channels
      1. Type 1
      2. Type 2
      3. Type 3
      4. Hydrologic bulbs
   vi. Berm Repair
   vii. Off channel watering system
   viii. Cattle Crossings
   ix. Dredge spoils distribution.
   x. Vegetation
   xi. Other

Post Project

a. Provide for system maintenance over time.

a. Adaptive Management

-

AGRICULTURAL IMPACT

- These are legacy operations that contribute to the local economy
- Our investment is at risk
- System is plugged and not functioning
- Drainage is negatively impacted
- Irrigation is inefficient
- Access is restricted (for livestock and farm equipment)


PLUGGED CHANNEL


CROSSING

PERCHED CULVERT

BERM REPAIR

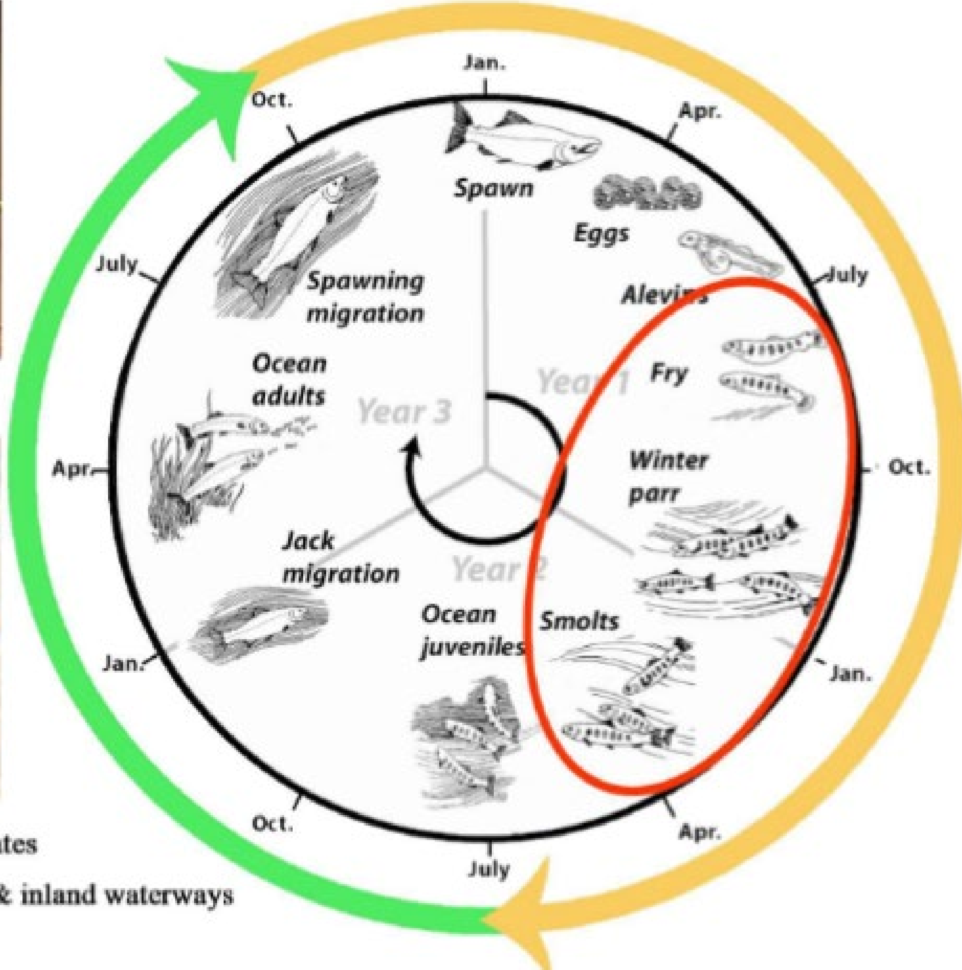
Coquille Valley Wildlife Area

-Stuart Love

Oregon Dept. of Fish & Wildlife/ Coquille Indian Tribe

-Mike Gray, District Fish Biologist (ODFW)
-Helena Linnell, Environmental Biologist and Planner (CIT)

Coho Salmon Life Cycle

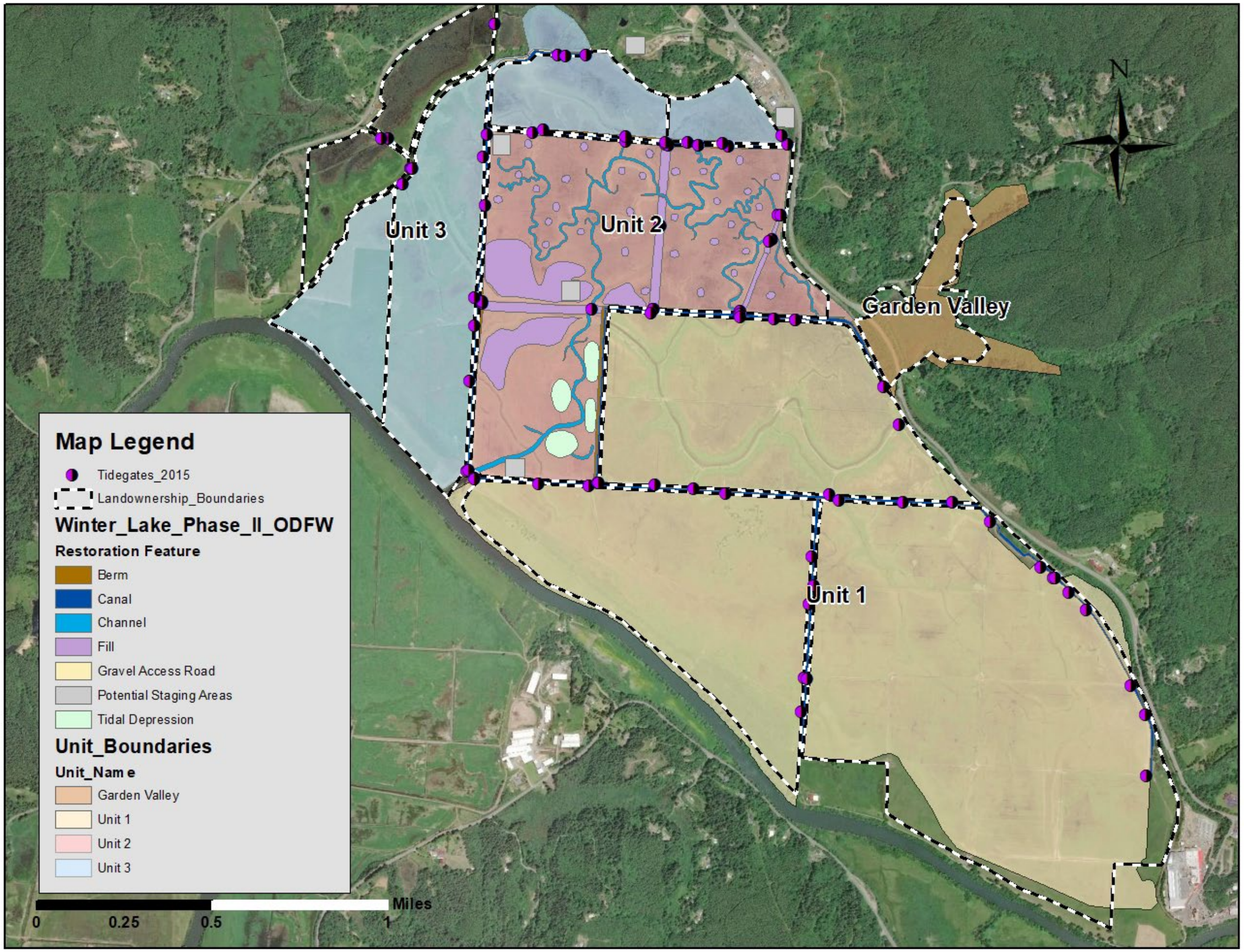


- Lifecycle time spent within tidegates
- Lifecycle time spent in estuaries & inland waterways
- Lifecycle time spent in the ocean

*** Courtesy of Art Bass

Coho—Winter Lake residence

Coho—River captured



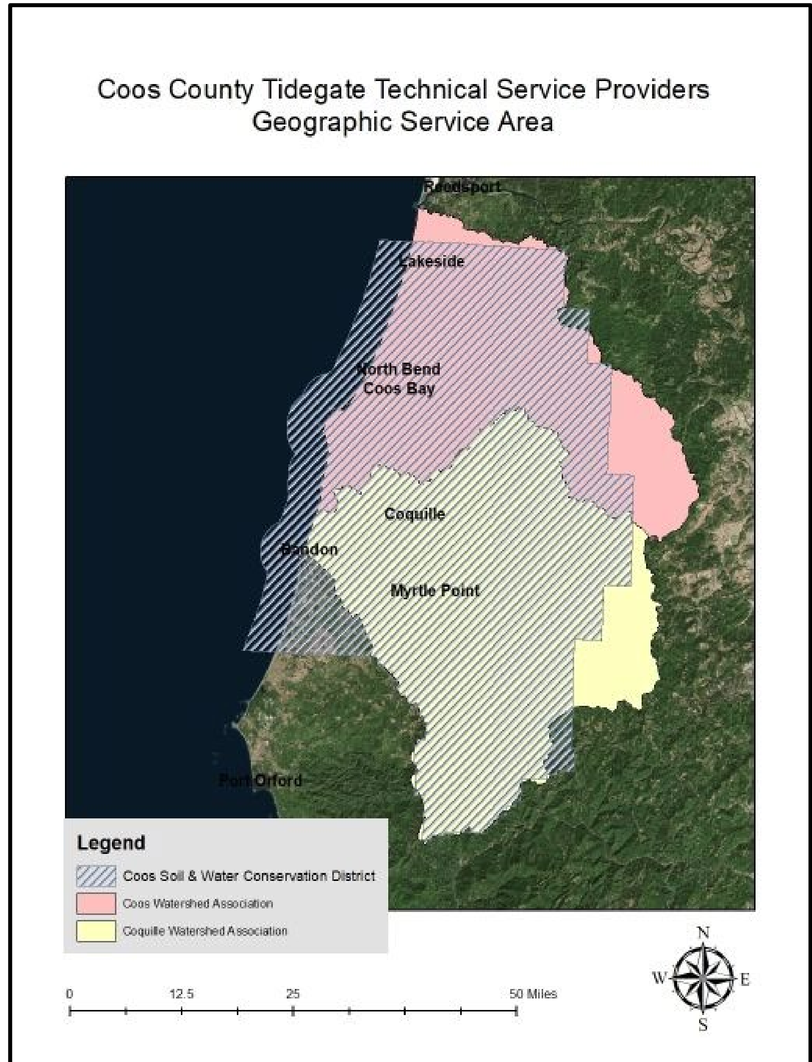
Unit 3
Unit 2
Garden Valley
Unit 1
N
Map Legend
Tidegates_2015
Landownership_Boundaries
Winter_Lake_Phase_II_ODFW
Restoration Feature
Berm
Canal
Channel
Fill
Gravel Access Road
Potential Staging Areas
Tidal Depression
Unit_Boundaries
Unit_Name
Garden Valley
Unit 1
Unit 2
Unit 3
0
0.25
0.5
1
Miles

Coos & Coquille Basins Technical Support Organizations

Caley Sowers
District Manager
Coos Soil & Water Conservation District
(541) 396-6879
info@coosswcd.org

Leah Corral
Executive Director
Coquille Watershed Association
(541) 396-2541
director@coquillewatershed.org

Haley Lutz
Executive Director
Coos Watershed Association
(541) 888-5922 Ext 302
hlutz@cooswatershed.org



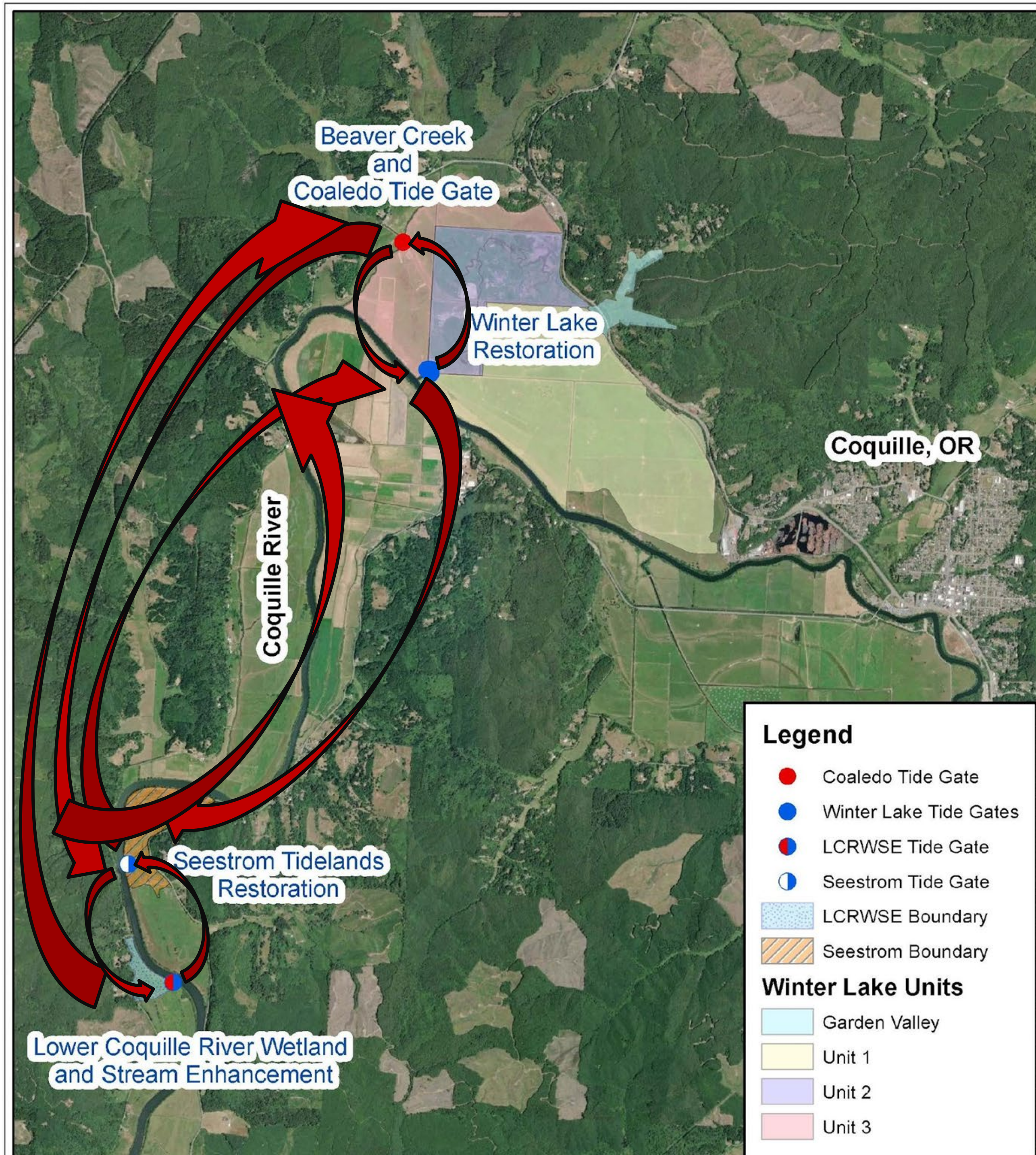
Winter Lake Water Quality Monitoring

-Julie Huff, Monitoring Coordinator,
Coquille Watershed Association

- <u>Water Quality</u>
  - Excess nutrients, pathogens (E. coli) from manure in surface water
  - Dissolved Oxygen

Juvenile coho usage

- 25% of tagged juvenile coho are detected at multiple sites
- Juvenile coho are highly mobile!
- Agricultural land with improved fish habitat is beneficial for our county



Stakeholder Perspective:

Steve Denney

In Conclusion

a. Thank You for opportunity to present project information.
b. Stewardship Importance
c. Request for ACU approval by staff
d. Is this the best use of limited resources for the community as a whole?
e. Request support in future for projects, permitting reform, etc.

Questions & Clarifications

BEAVER SLOUGH
DRAINAGE DISTRICT

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Coos Bay, OR 97420
541-404-6105
bsdd.bos@gmail.com

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Regulatory Project Manager
USACE Portland District
2201 Broadway Suite C
North Bend, Oregon 97459
E-mail: Tyler.J.Krug@usace.army.mil
Office: 541-756-2097 |Mobile: 541-520-6278

Bryan Gillooly
Aquatic Resource Coordinator
Oregon Department of State Lands
Bryan.gillooly@dsl.oregon.gov
Cell # 503-871-3031

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.*

60196 Old Wagon Road
Coos Bay, OR 97420
541-404-6105
bsdd.bos@gmail.com

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.

60196 Old Wagon Road
Coos Bay, OR 97420
541-404-6105
bsdd.bos@gmail.com

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

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.
<u>NOTE</u>*: 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 fi ll is permanent or, if you are proposing temporary impacts, specify the days, months or years the f ill 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 <u>subservient</u> 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.

<u>Note:</u> *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.

<u>Culverts/tidegates</u>
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.
<u>Note</u>**:** *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.*

<u>Channels</u>
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.

- <u>Hydrologic Regimes/natural hydrology:</u> 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.
- <u>Riparian condition:</u> 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
								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
								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
								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	**Date**
Fred R Messerle	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 Fred R. Messerle	Title District Manager
Signature Fred R. Messerle	Date 06/01/2022
Authorized Agent Signature	
Print Name Caley Sowers	Title District Manager
Signature Caley Sowers	Date 02/09/2023

Landowner Signature(s)*	
Landowner of the Project Site (if different from applicant)	
Print Name Fred Messerle & Sons, Inc.	Title Secretary-Treasurer
Signature Fred R. Messerle	Date 6/10/2022
Landowner of the Project Site (if different from applicant)	
Print Name Everett-Ona Isenhart Ranch, Inc.	Title President
Signature Cynthia Henson	Date 06/02/2022
Landowner of the Project Site (if different from applicant)	
Print Name Laura Isenhart	Title ~~Owner~~ Trustee, Isenhart Living Trust
Signature Laura J. Isenhart	Date 6.10.22
Landowner of the Project Site (if different from applicant)	
Print Name John Isenhart	Title 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	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:

Attachment A: FIGURES AND PHOTOS

WINTER LAKE PHASE III

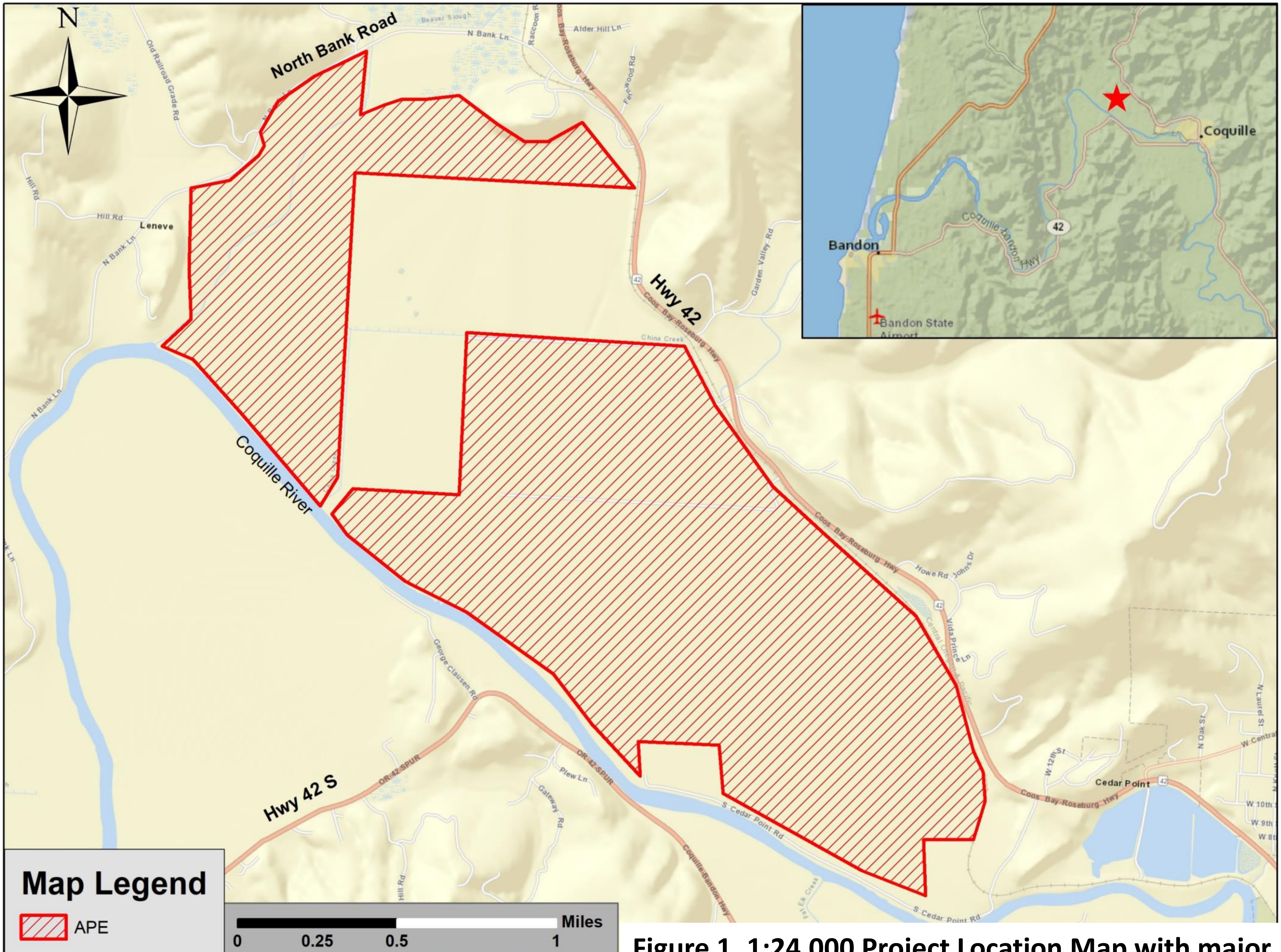


Figure 1. 1:24,000 Project Location Map with major roads/highways identified

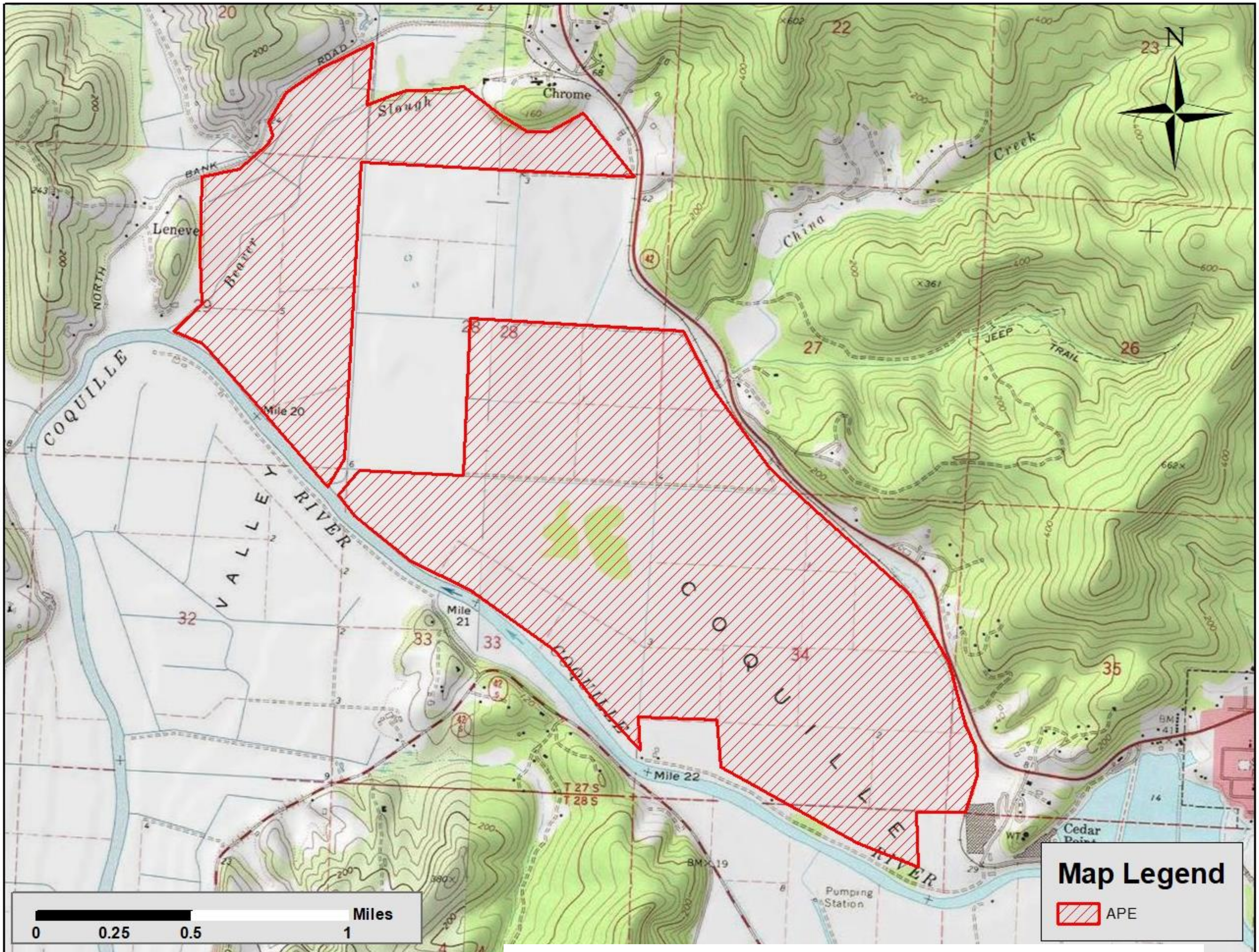
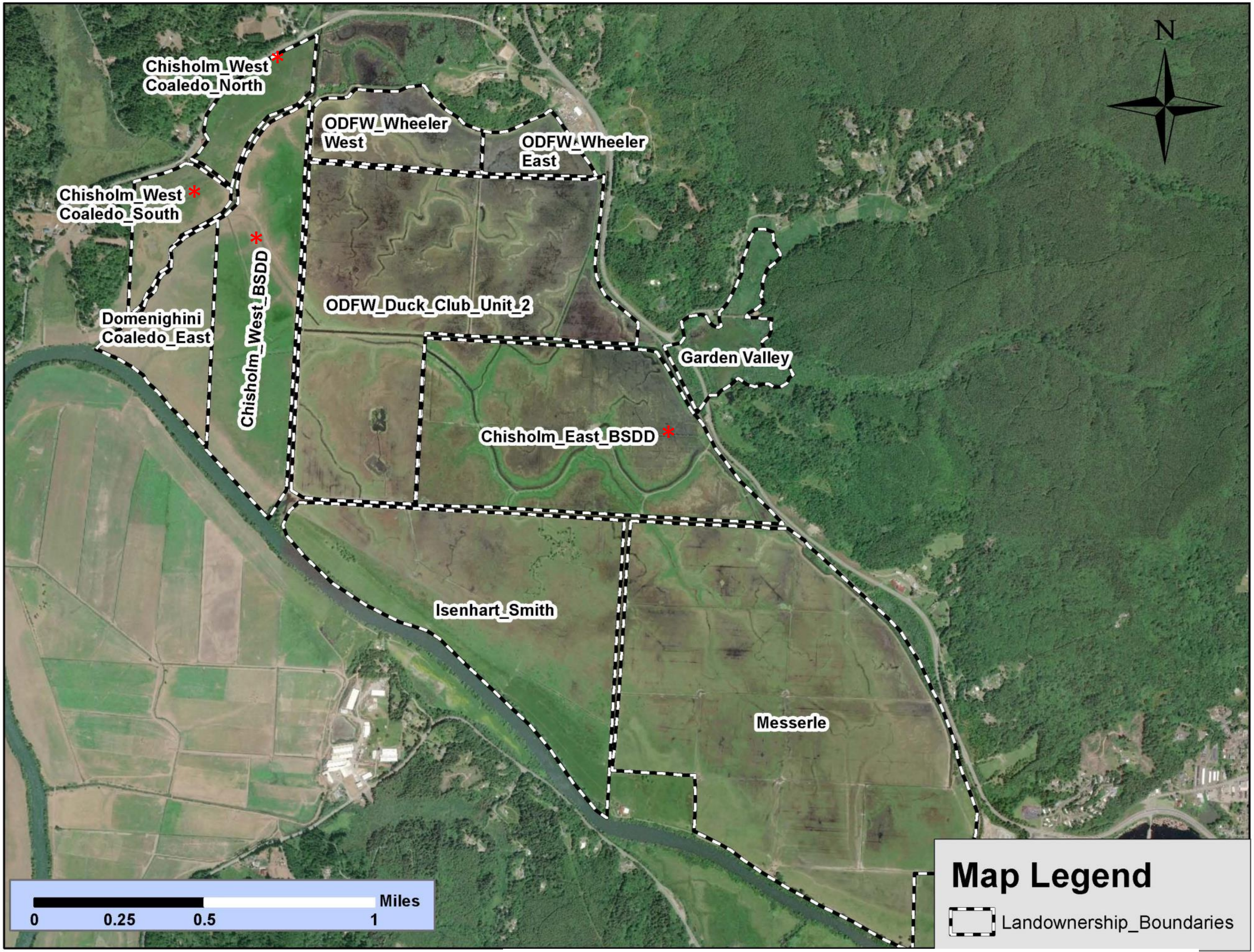


Figure 2. 1:24,000 USGS Topographic Map of Area of Project Effect (APE)

Figure 3. Taxlot ID Map



*Update 8/6/2022 Chisholm Properties now owned by The Bridges Foundation

Figure 4. Winter Lake Land Ownership Map

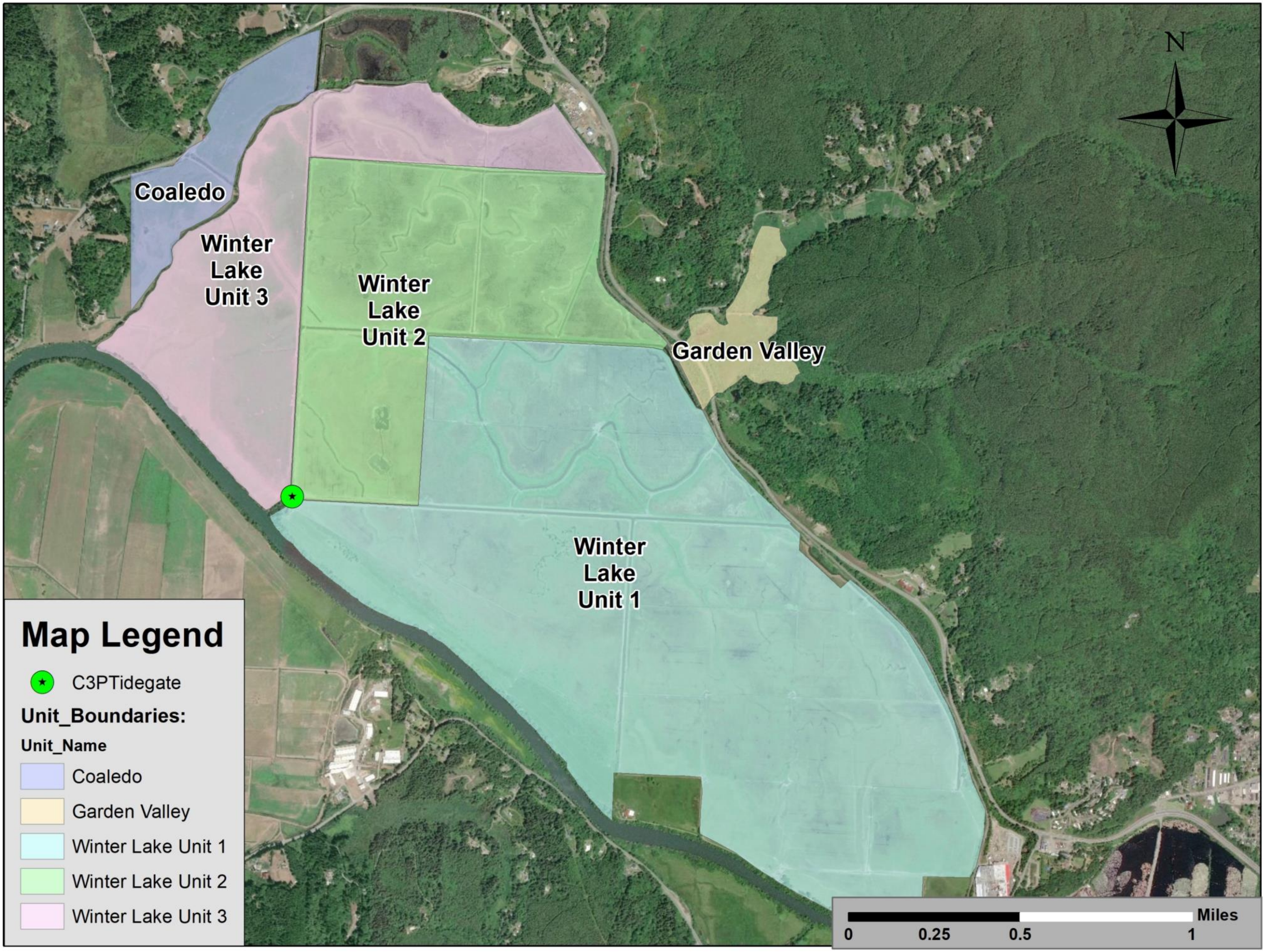


Figure 5. Winter Lake Unit Map

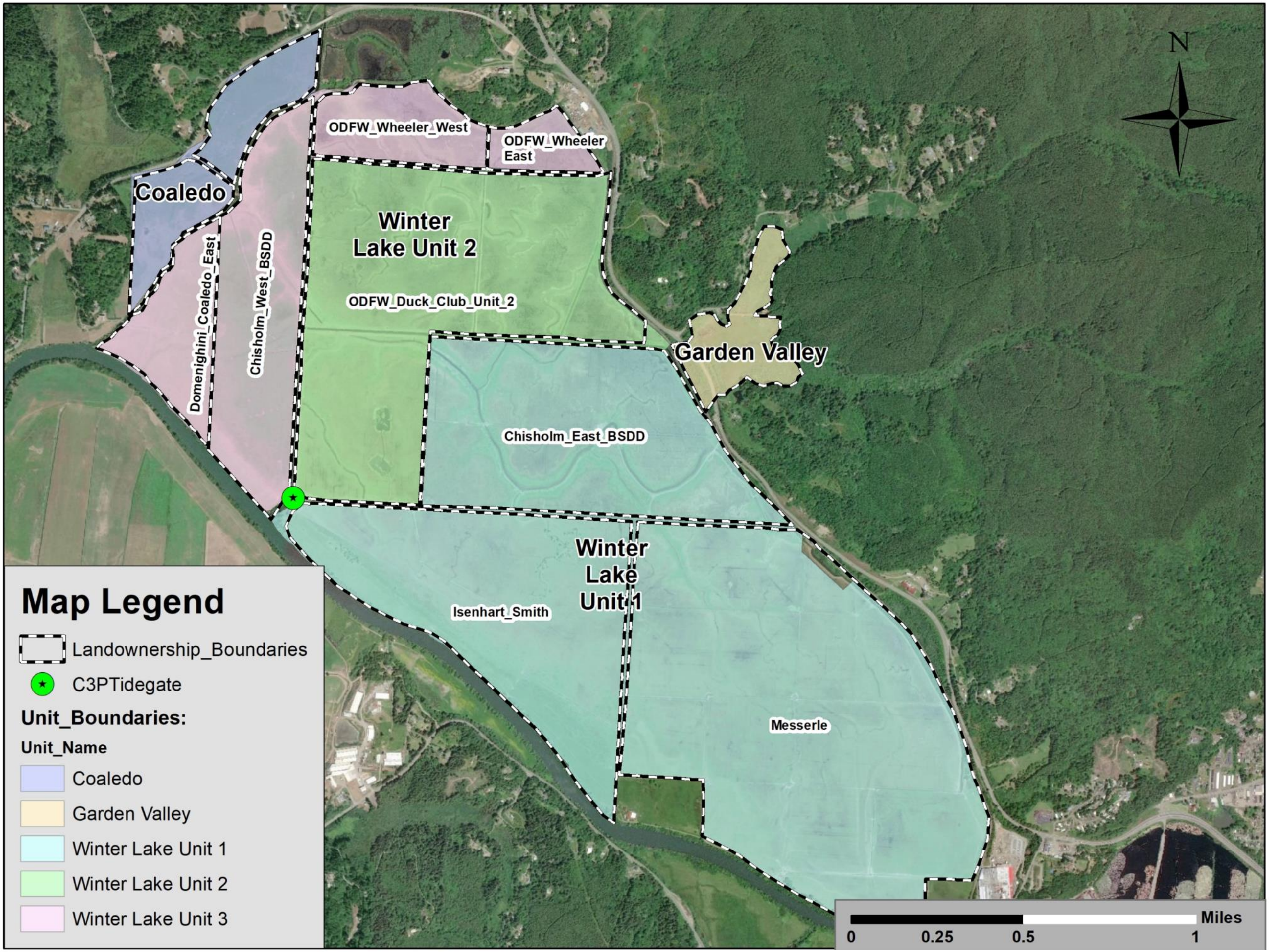


Figure 6. Winter Lake Land Ownership and Unit Map

Figure 7. Winter Lake Phase I, CP3 Tidegate

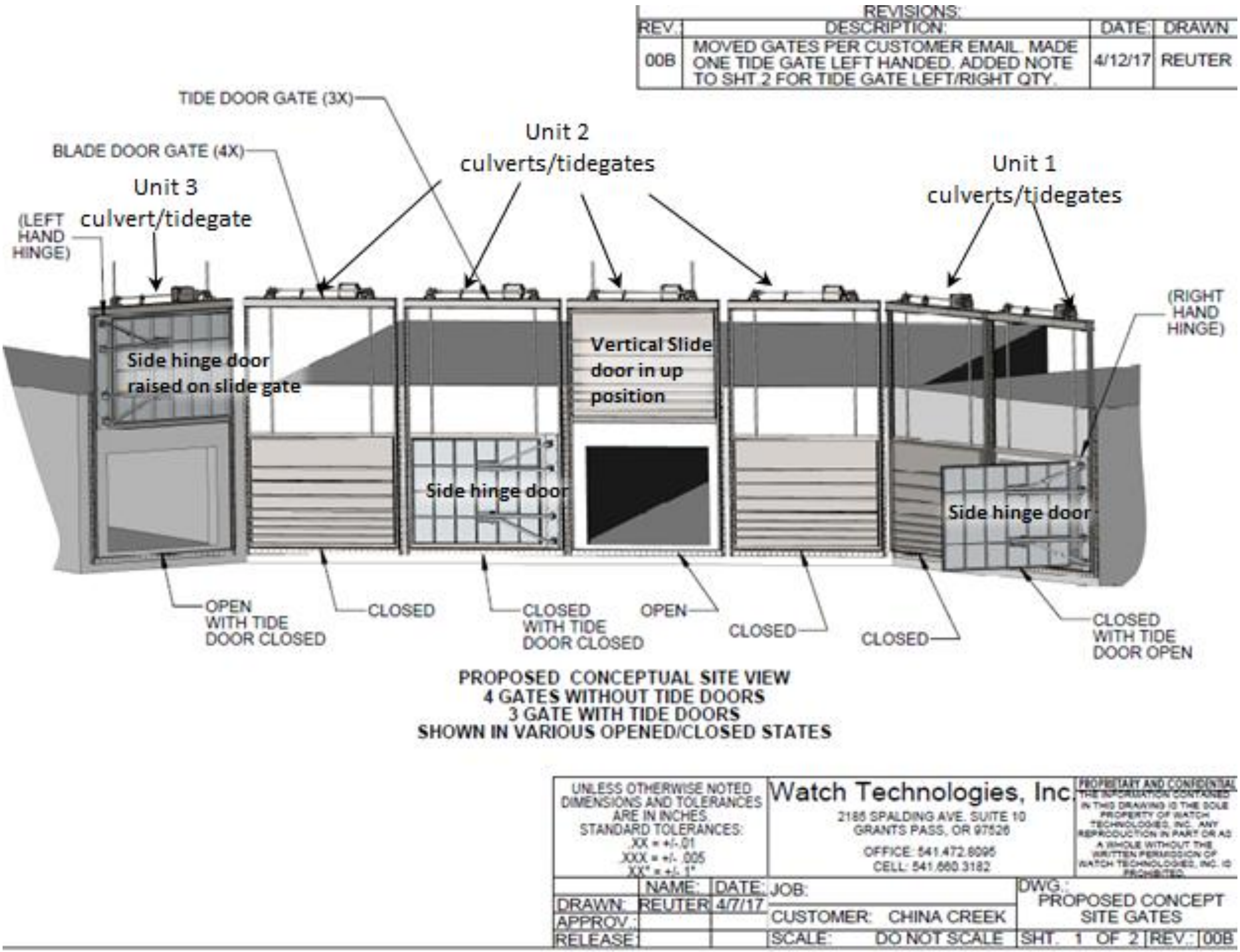


Figure 8. Winter Lake Phase I, CP3 Tidegate

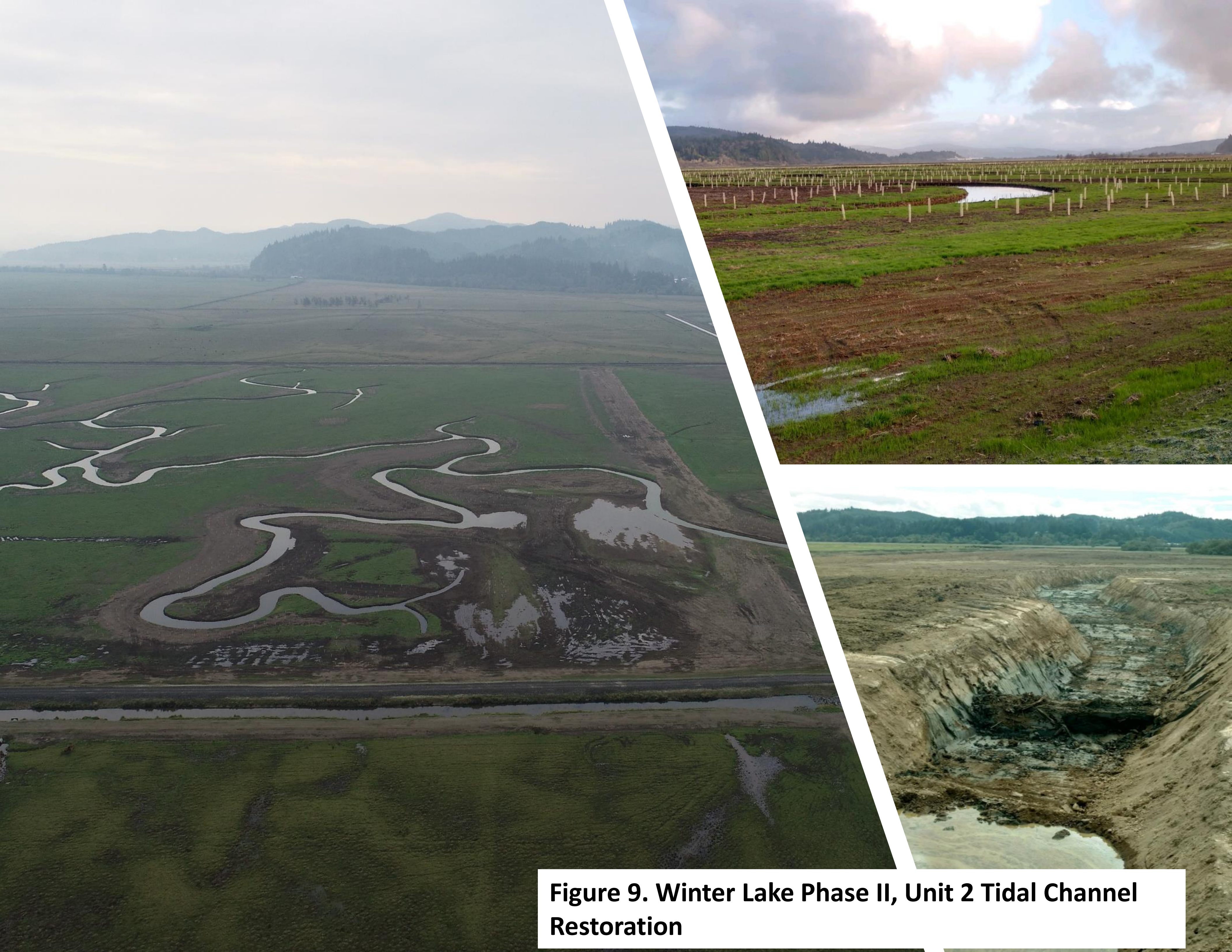


Figure 9. Winter Lake Phase II, Unit 2 Tidal Channel Restoration

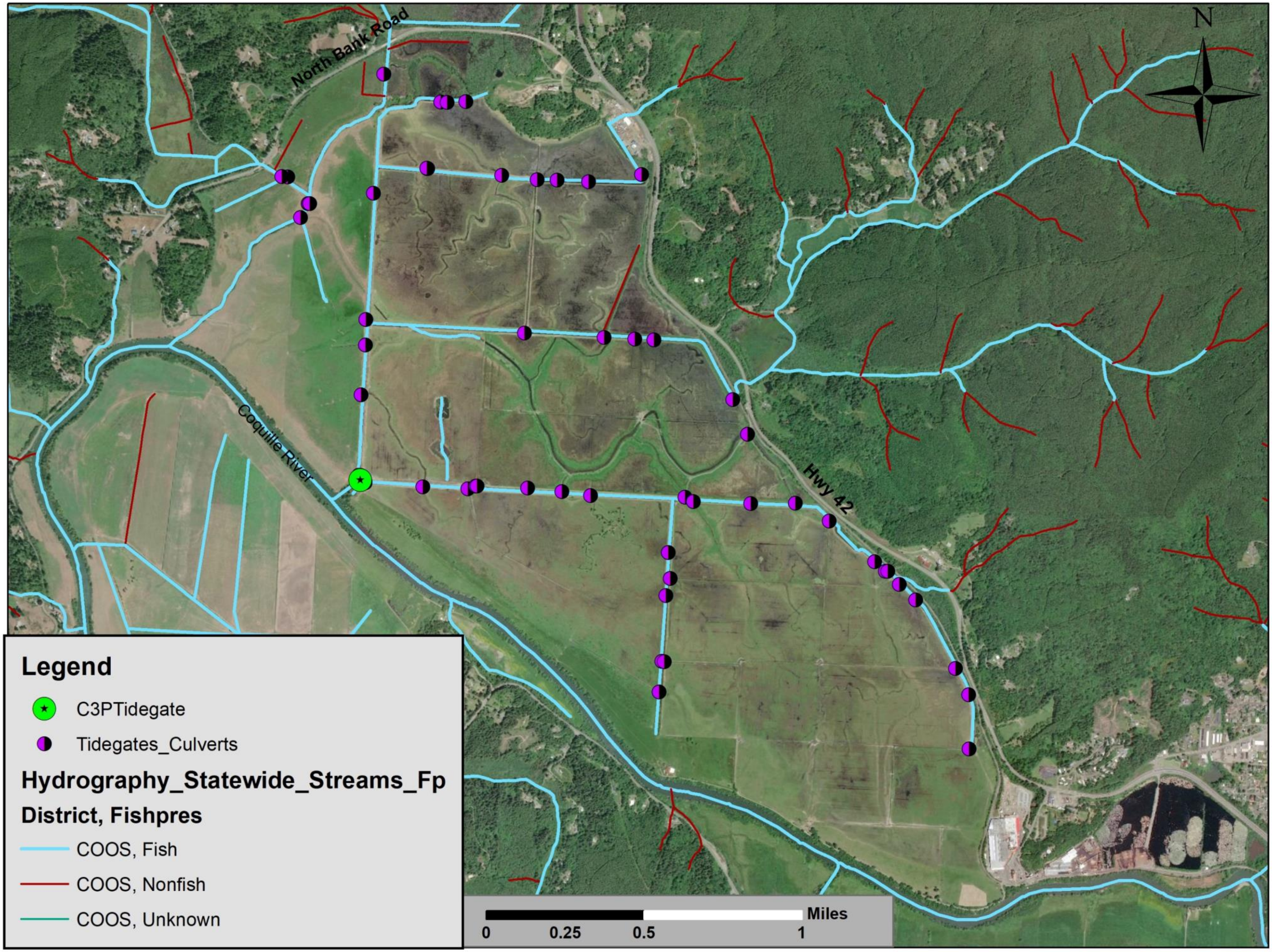


Figure 10. Winter Lake Aerial Imagery with existing linear channel network

Figure 11. “Flapper” and Top-hinge style interior tidegates

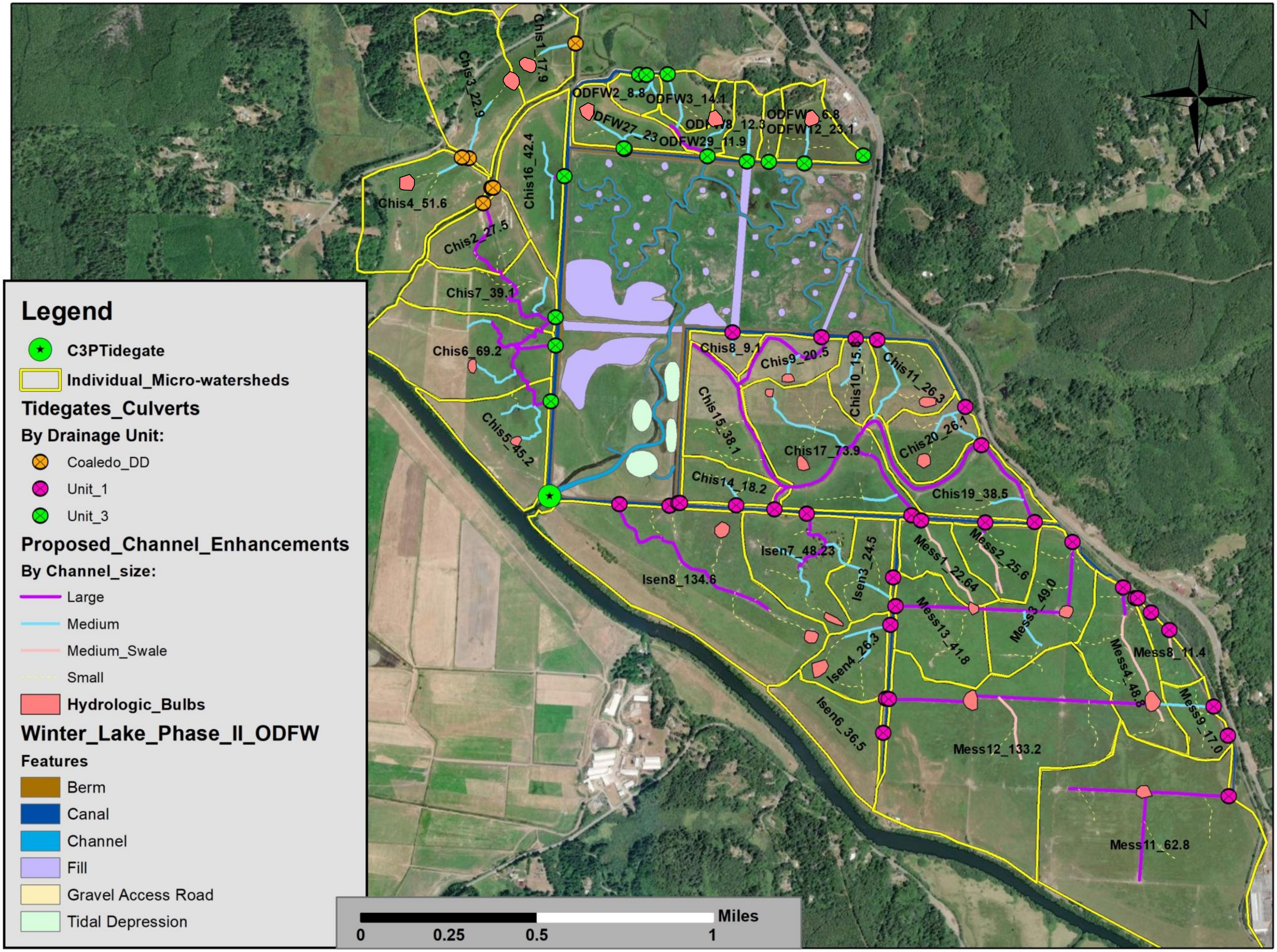


Figure 12. Individual micro-watersheds associated with culverts and proposed channel enhancements

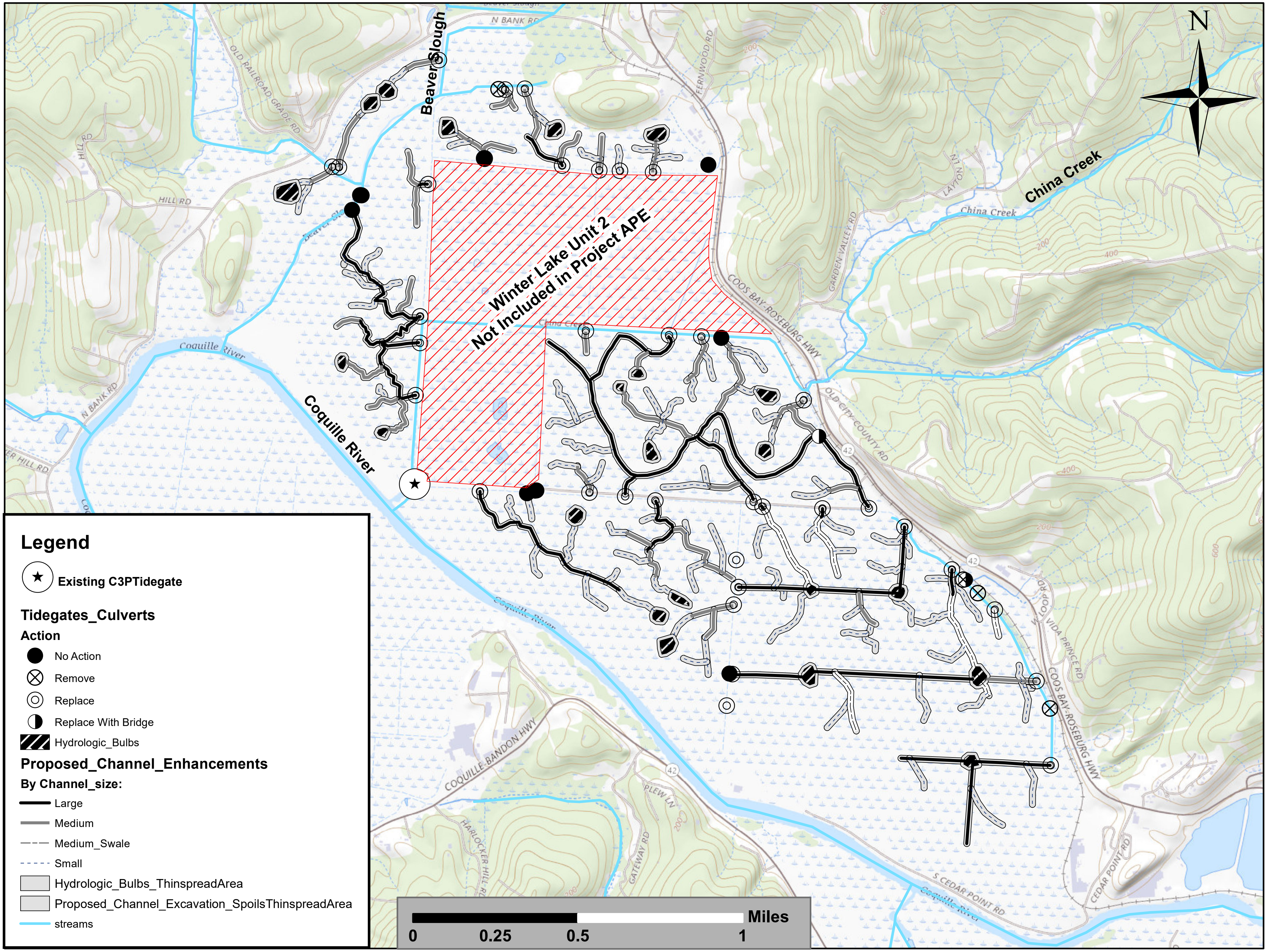


Figure 12.b Geographic Extent of Excavated Spoils

Figure 13. Examples of a side-hinge aluminum tidegate

Aluminum Waterman Style Gate

http://www.agriexpo.online/prod/waterman-industries/product-174233-19232.html

Figure 14. Aluminum Waterman Style gate

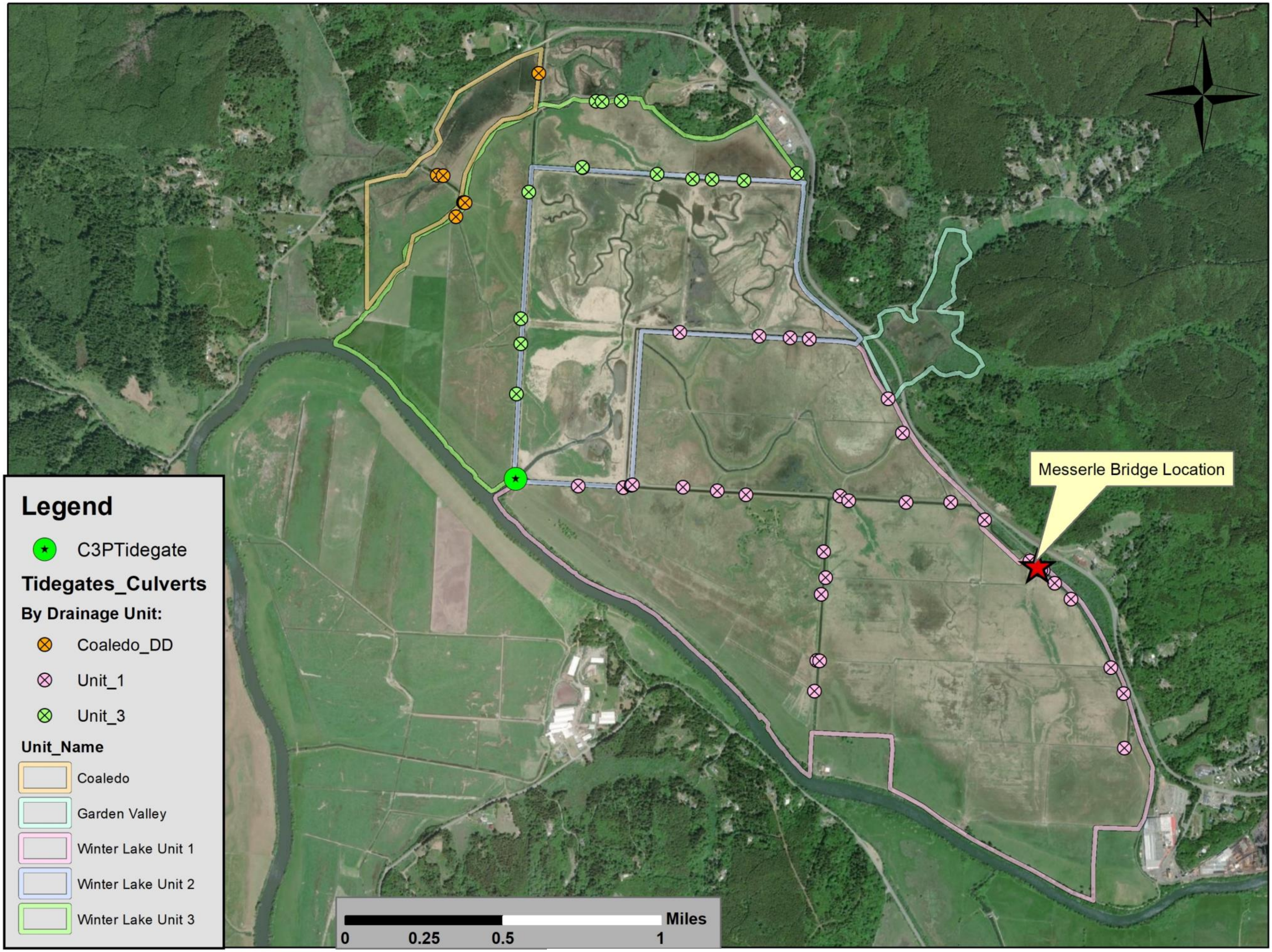


Figure 15. Messerle Bridge Location Map

Figure 16. Bridge Site Photo

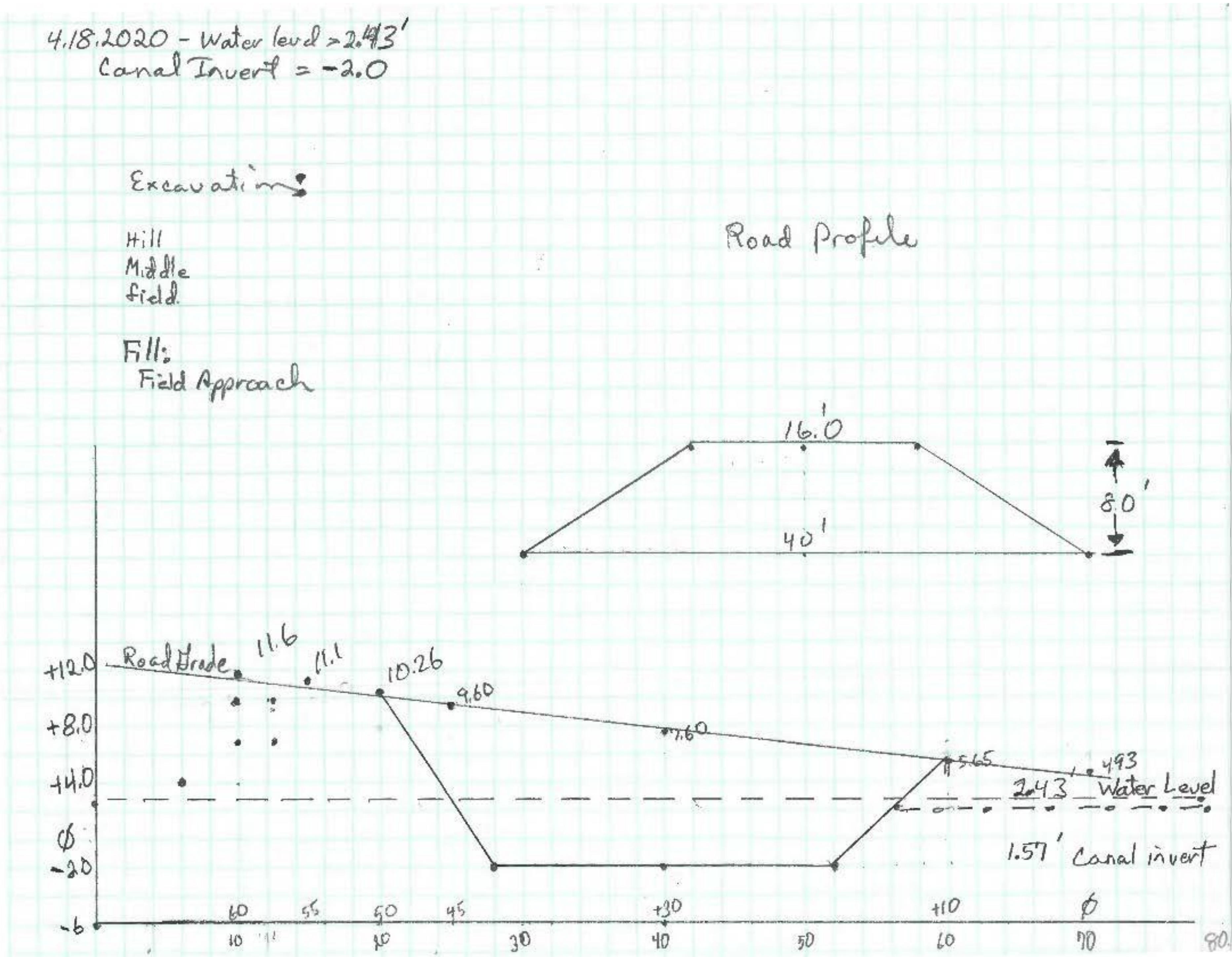


Figure 17. Bridge Design Drawing

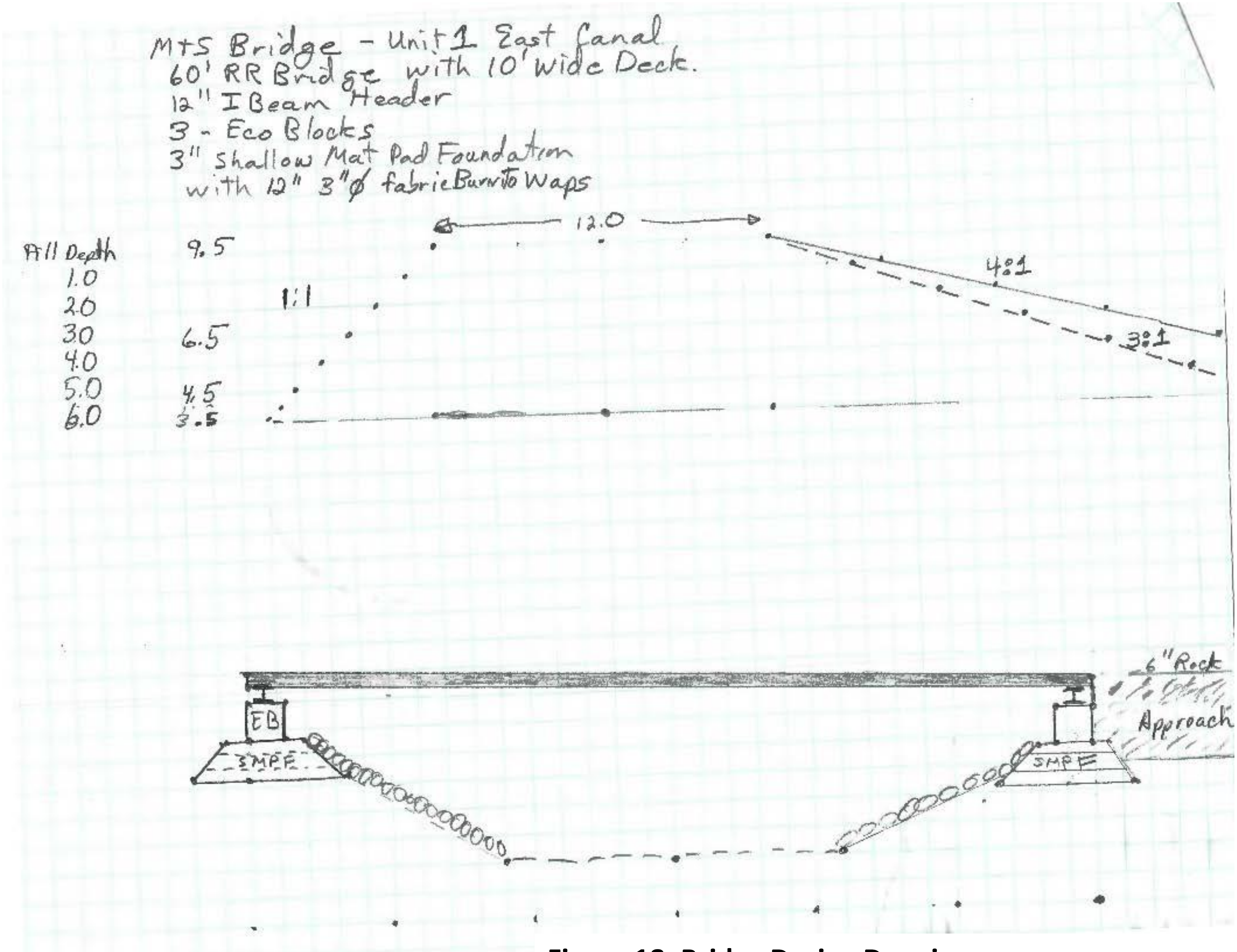


Figure 18. Bridge Design Drawing

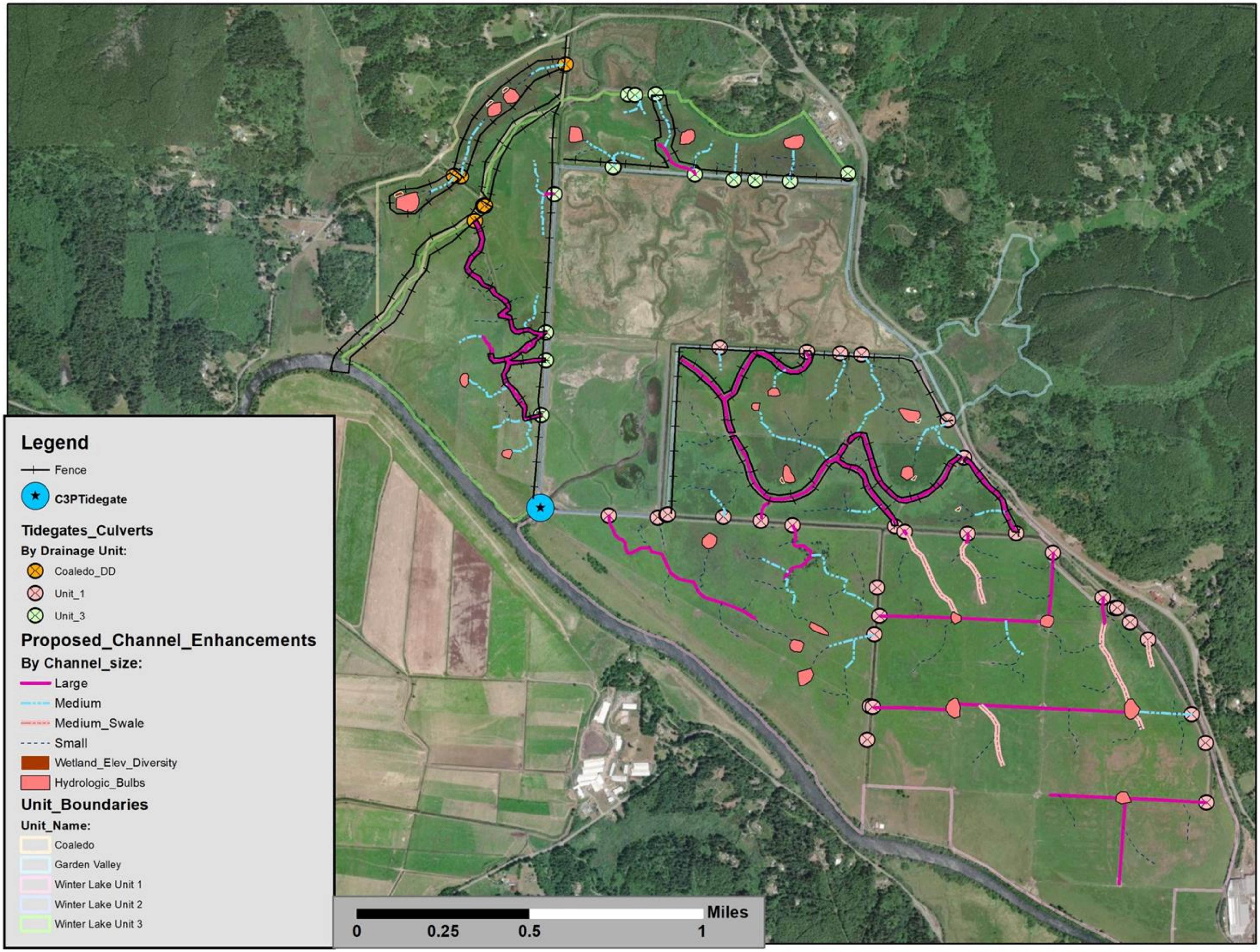


Figure 19. Winter Lake Phase III Proposed Channel Enhancements

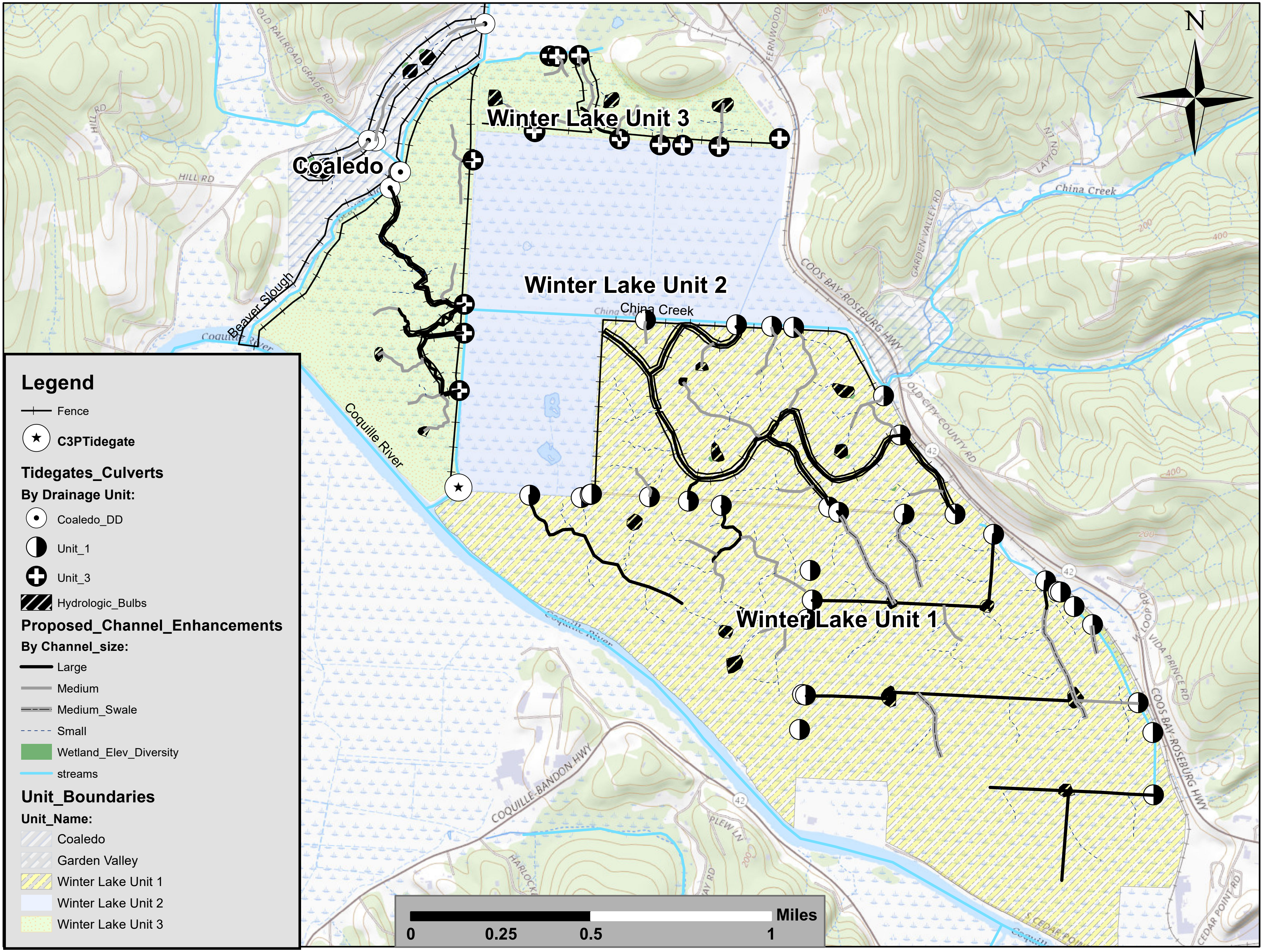


Figure 19.b (Revised) Winter Lake Phase III Proposed Channel Enhancements

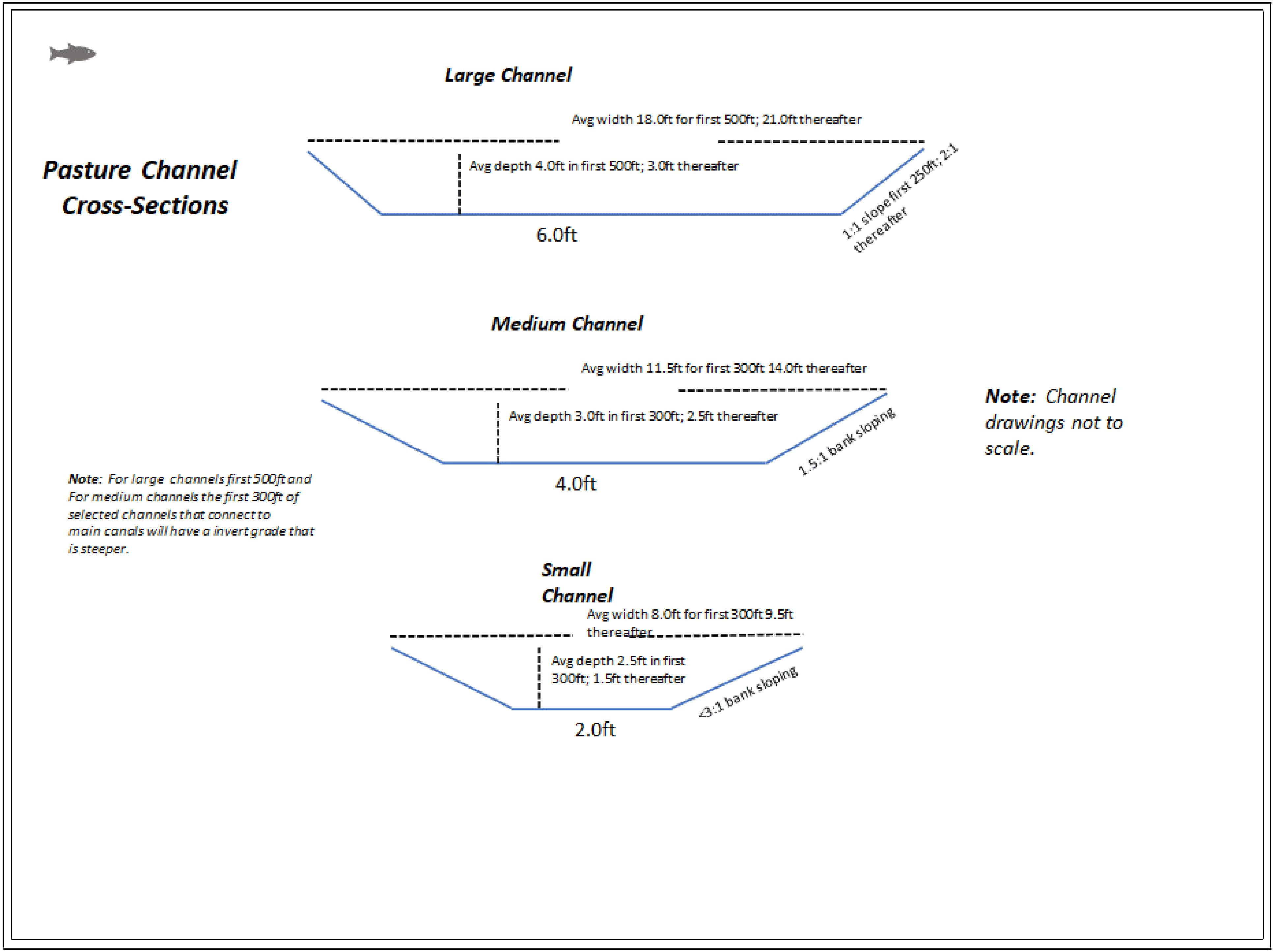


Figure 20. Pasture Channel Cross Sectional Drawings

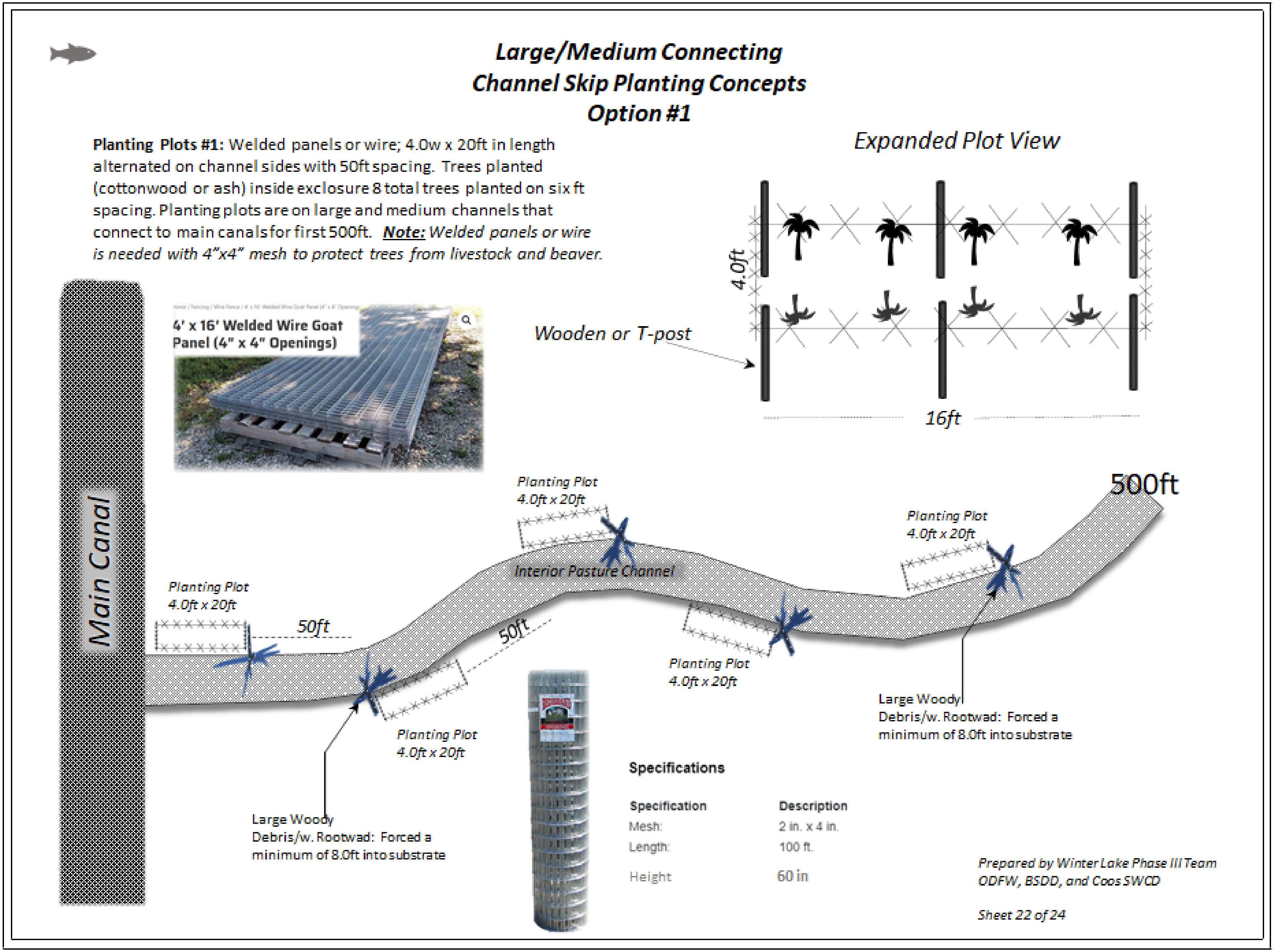


Figure 21. Photos of existing shallow swale channels

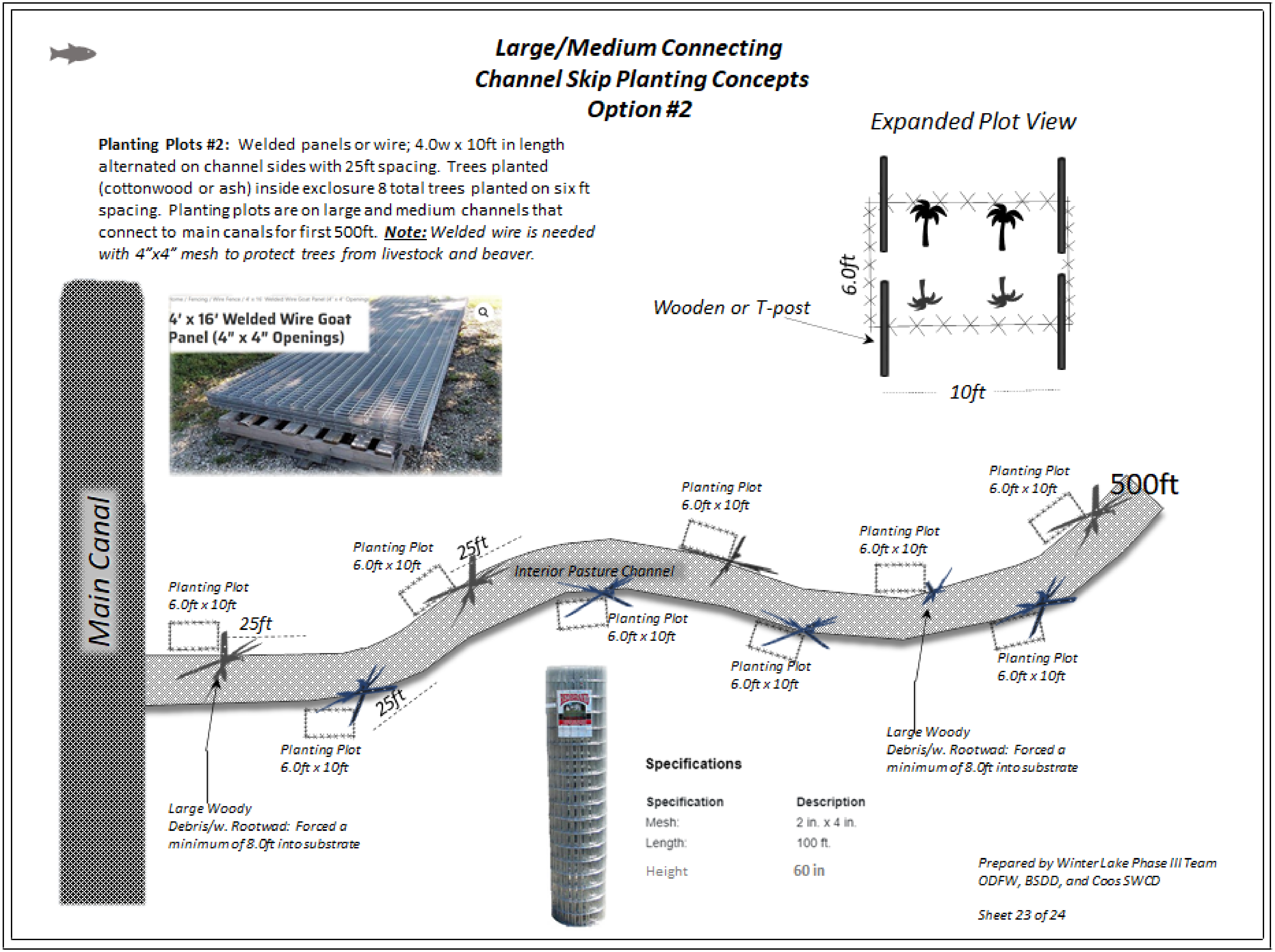


Figure 22. Photos of existing shallow swale channels

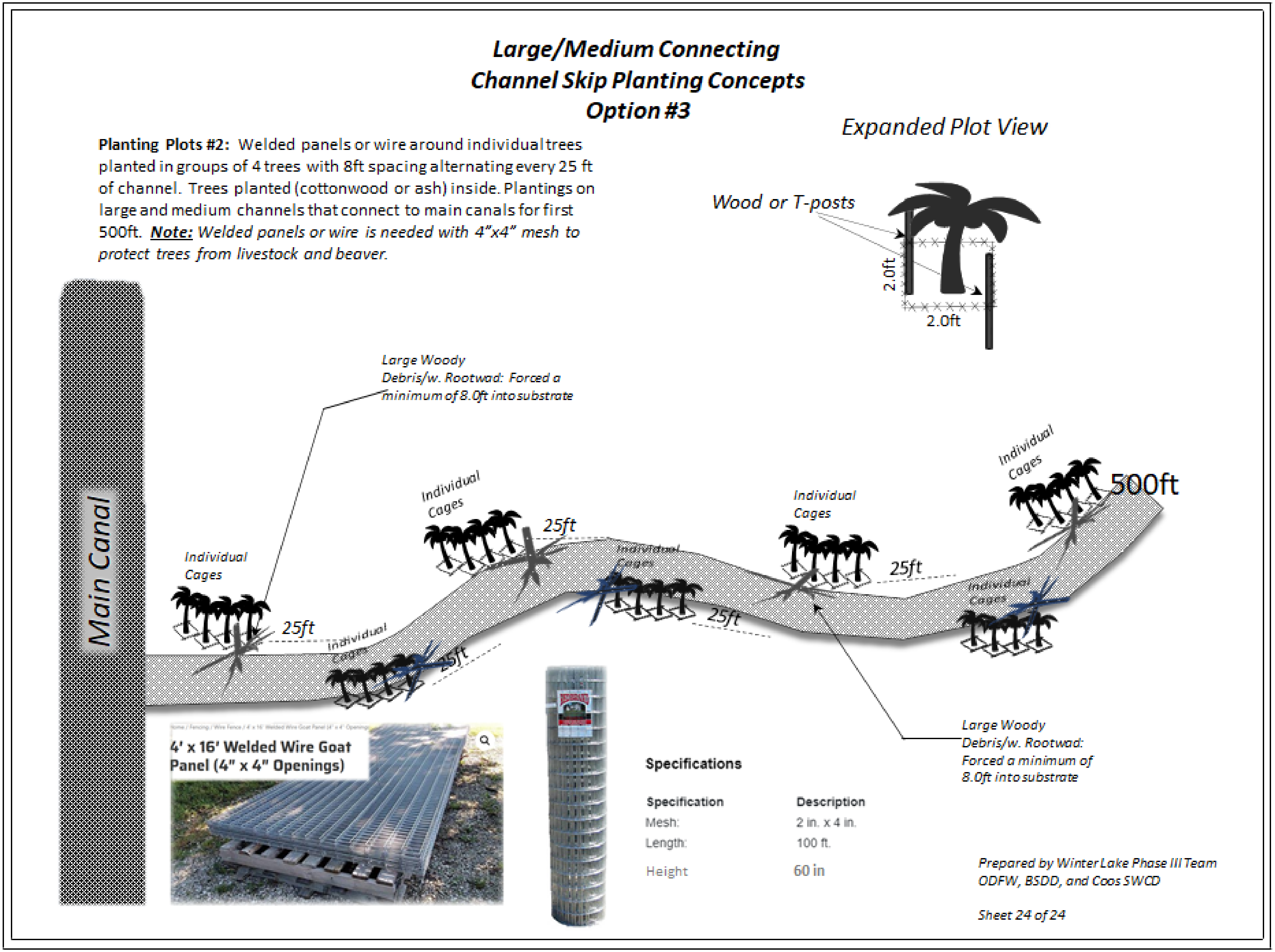


Figure 23. Photos of existing shallow swale channels

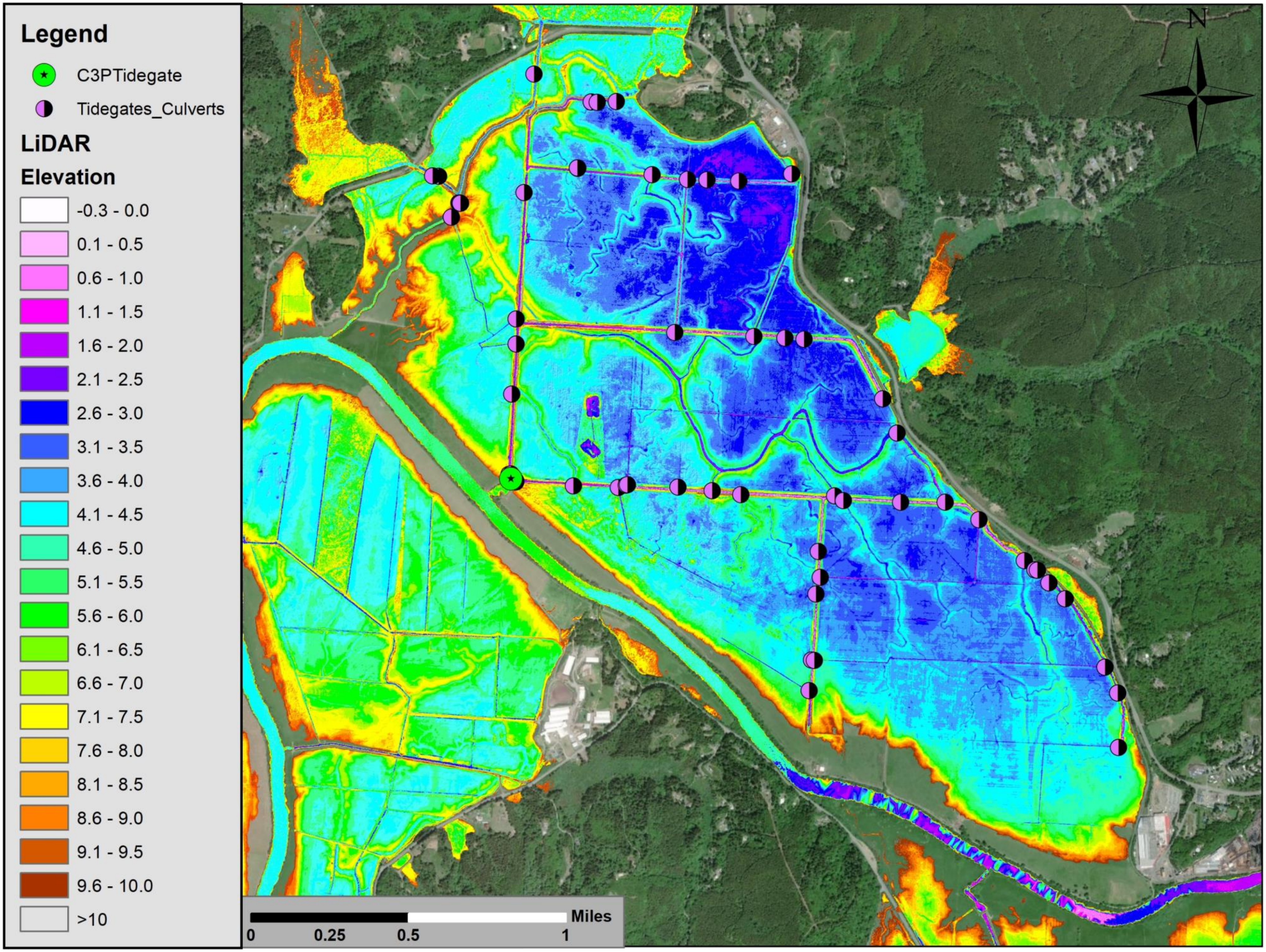


Figure 24. LiDAR color map

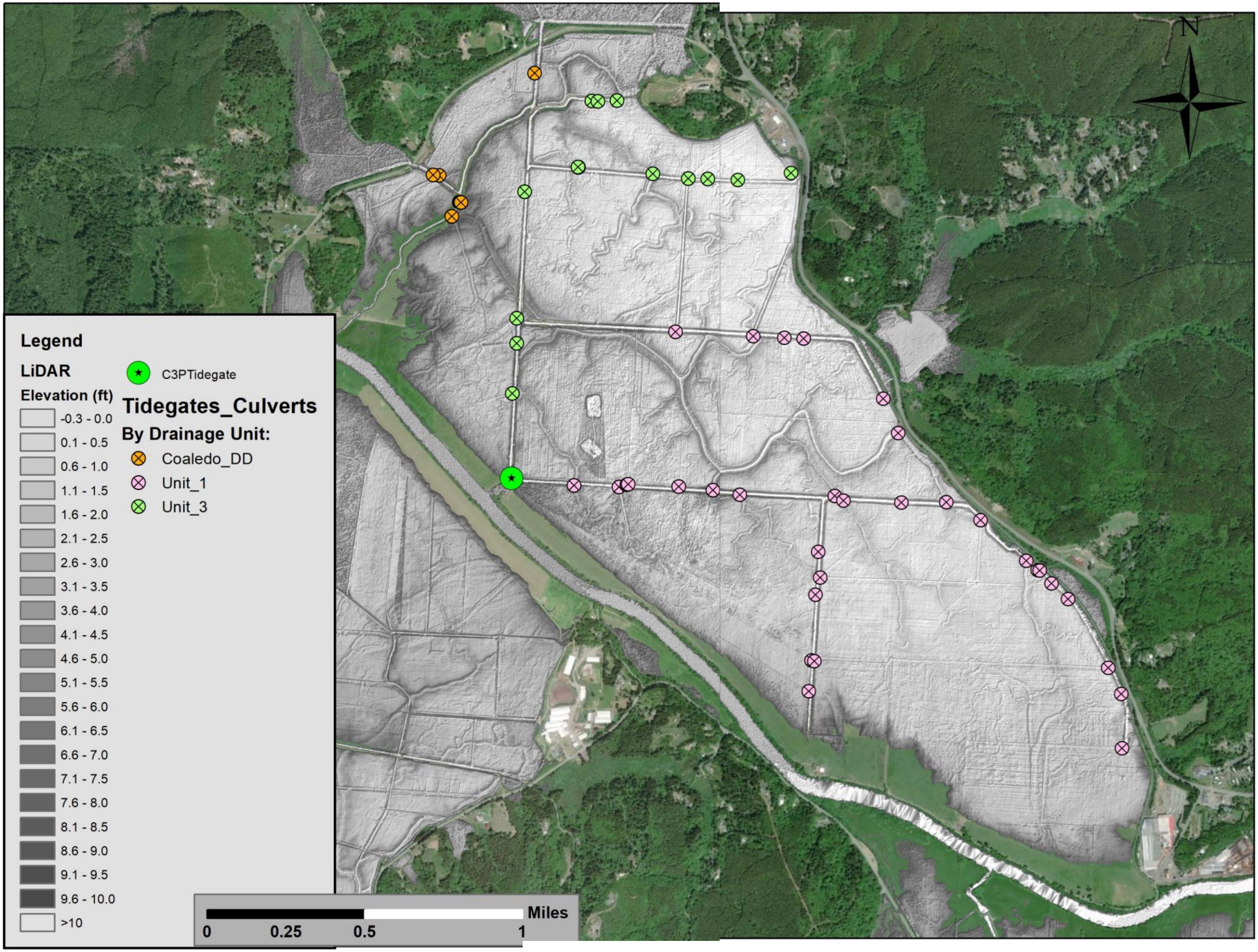


Figure 25. LiDAR Hillshade Imagery

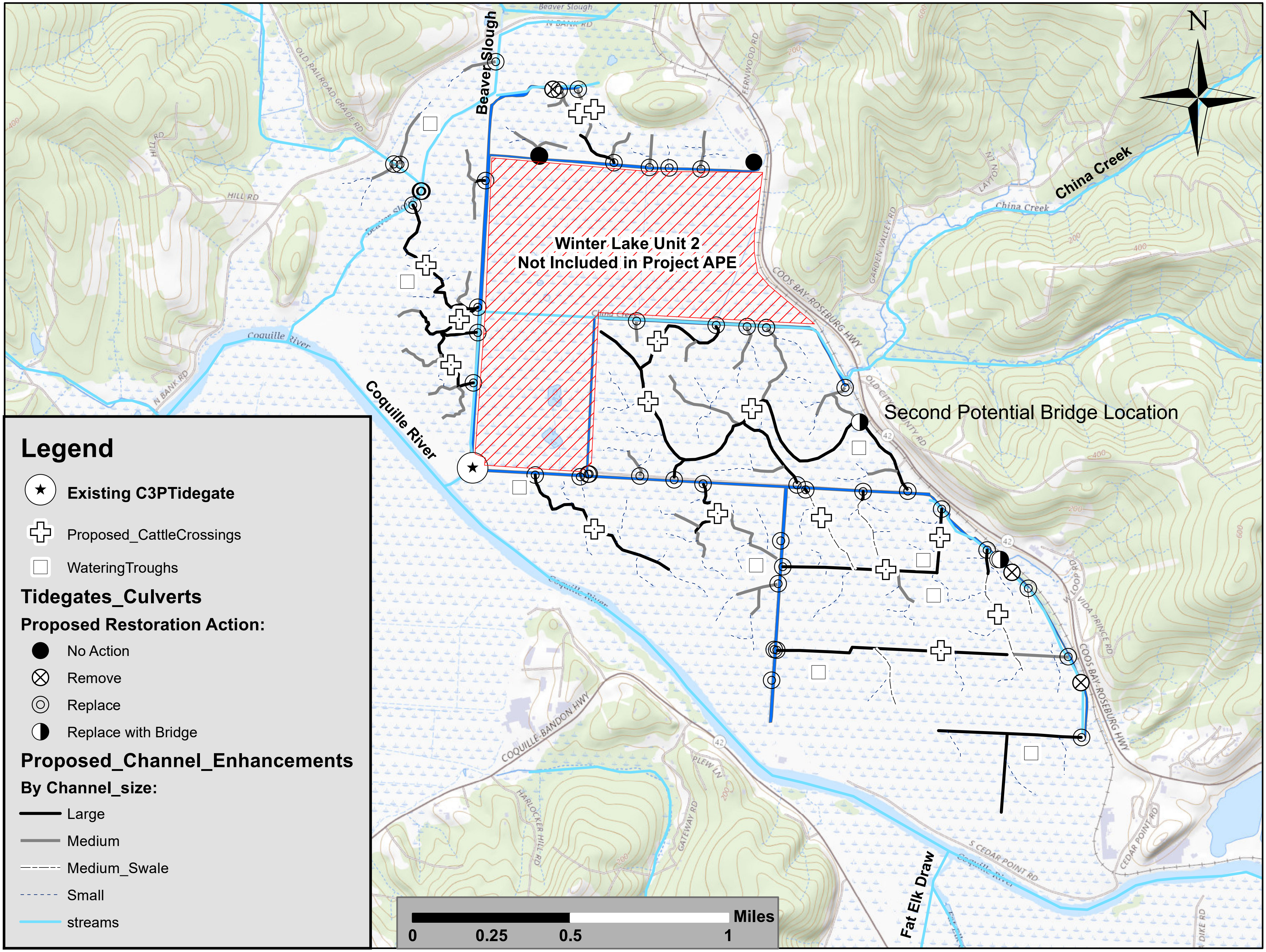


Figure 25.b (Revised): Map showing the locations of proposed Watering Troughs and Cattle Crossings.

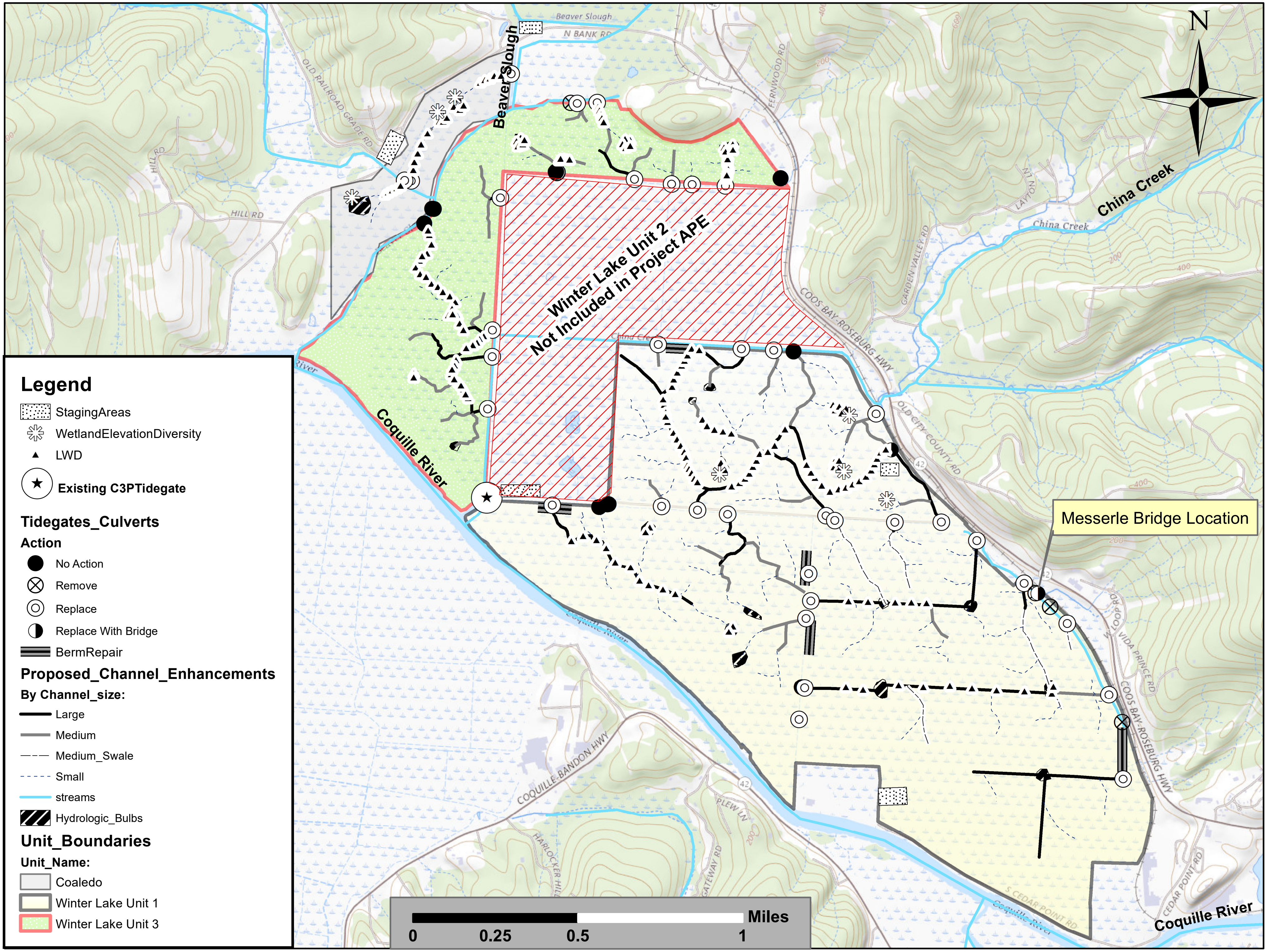


Figure 25. c. Large Woody Debris Map

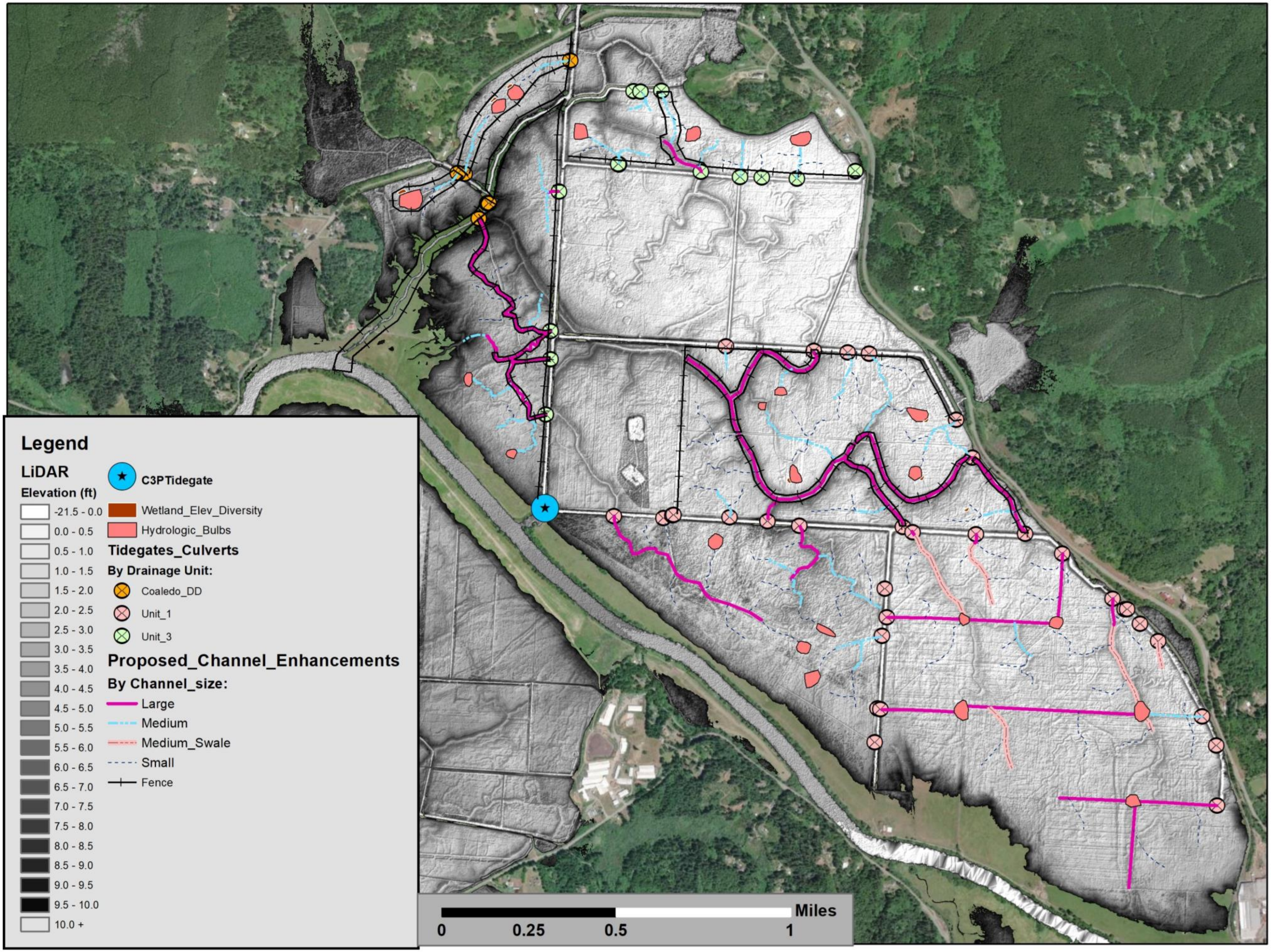


Figure 26. LiDAR Hillshade Imagery with proposed channel network

Figure 27. Photos of existing shallow swale channels

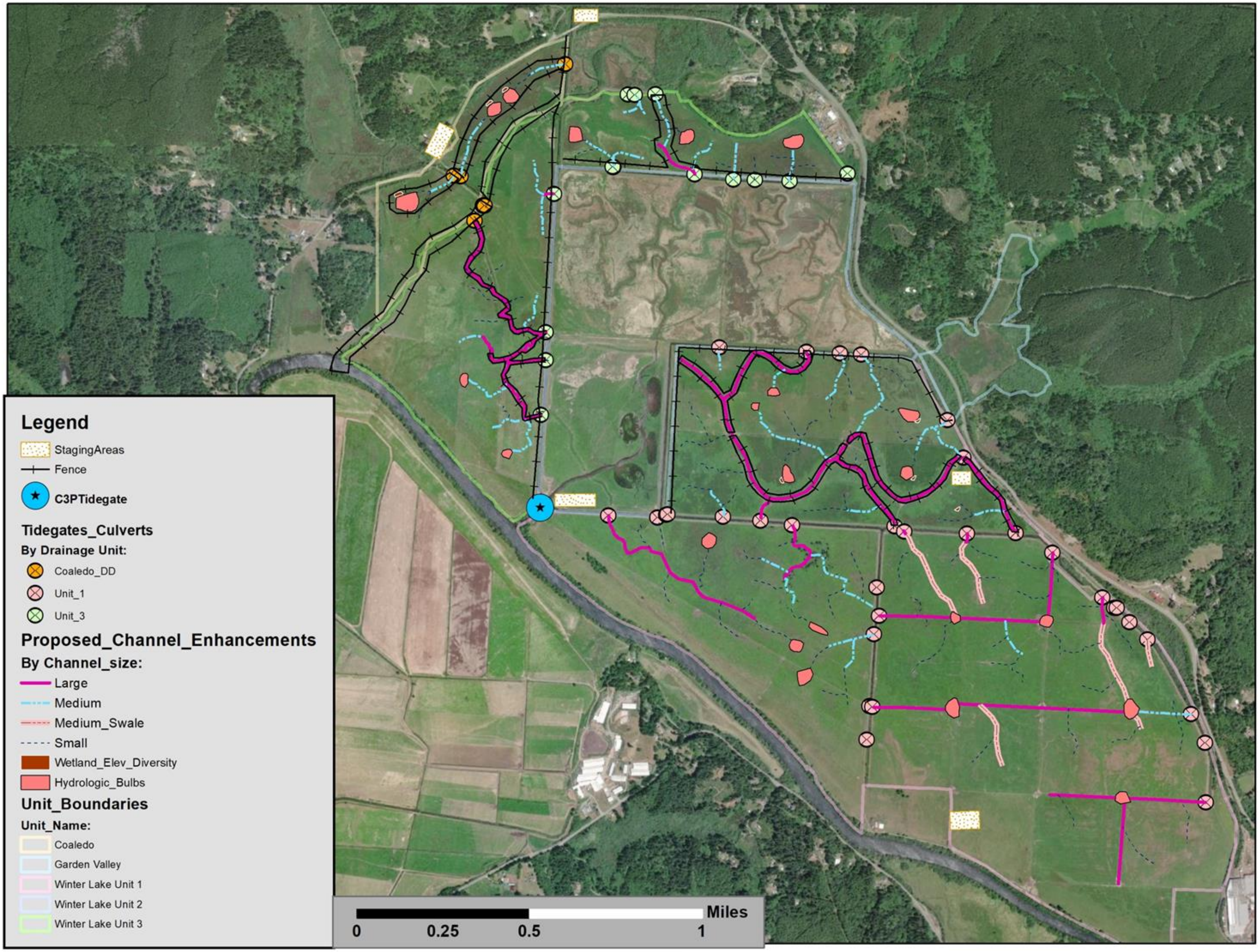


Figure 28. Map of Equipment Staging Areas

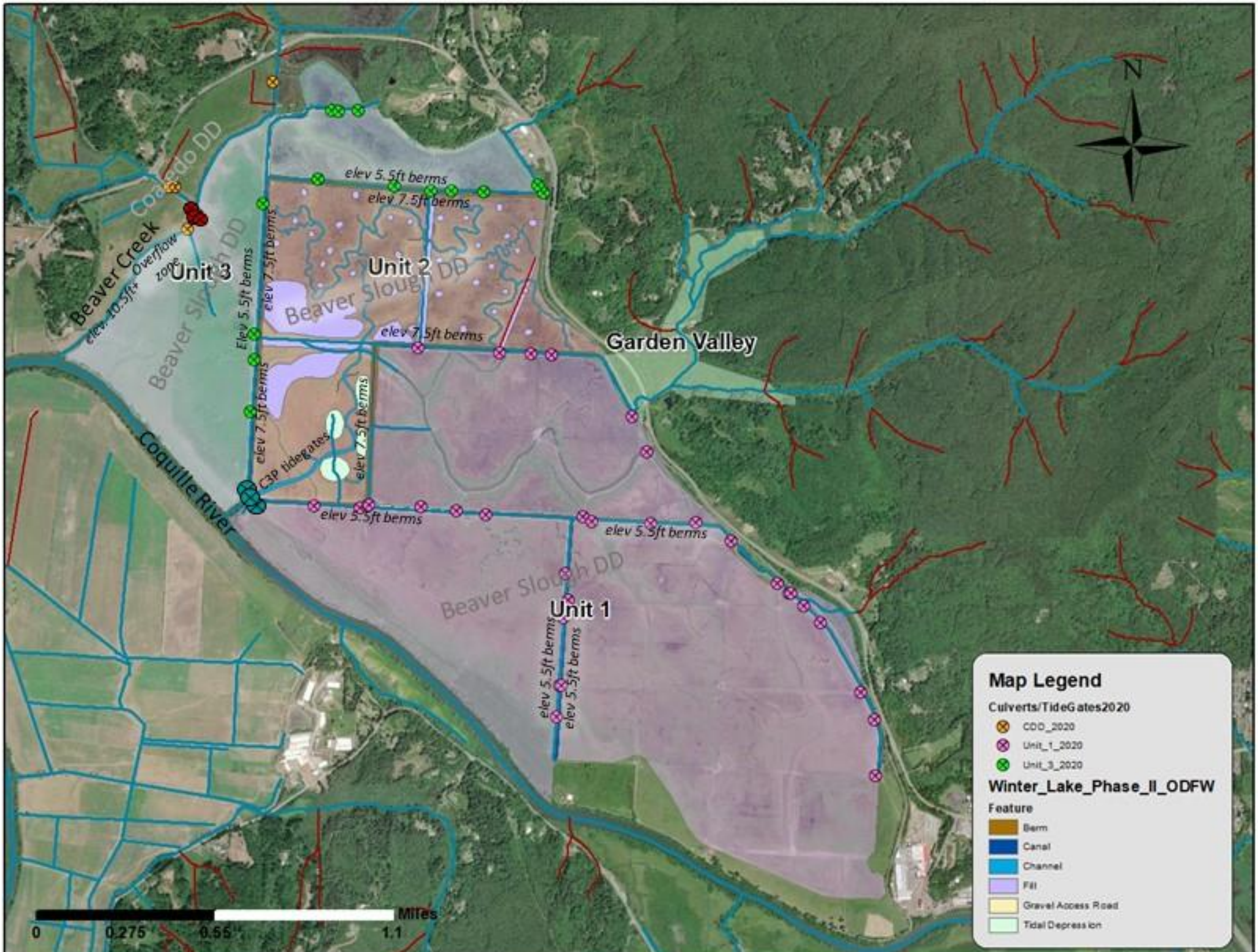


Figure 29. Berm Map

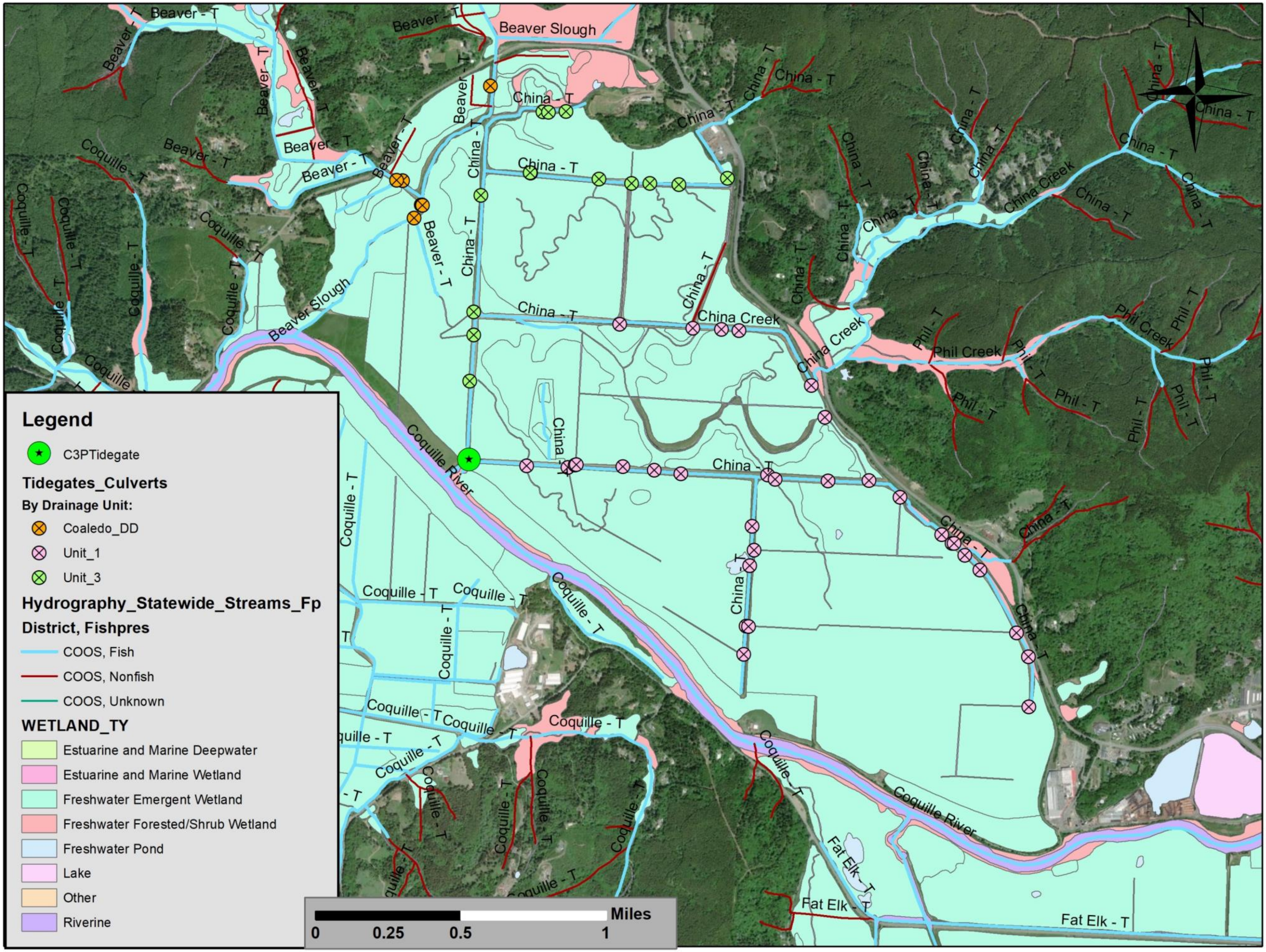
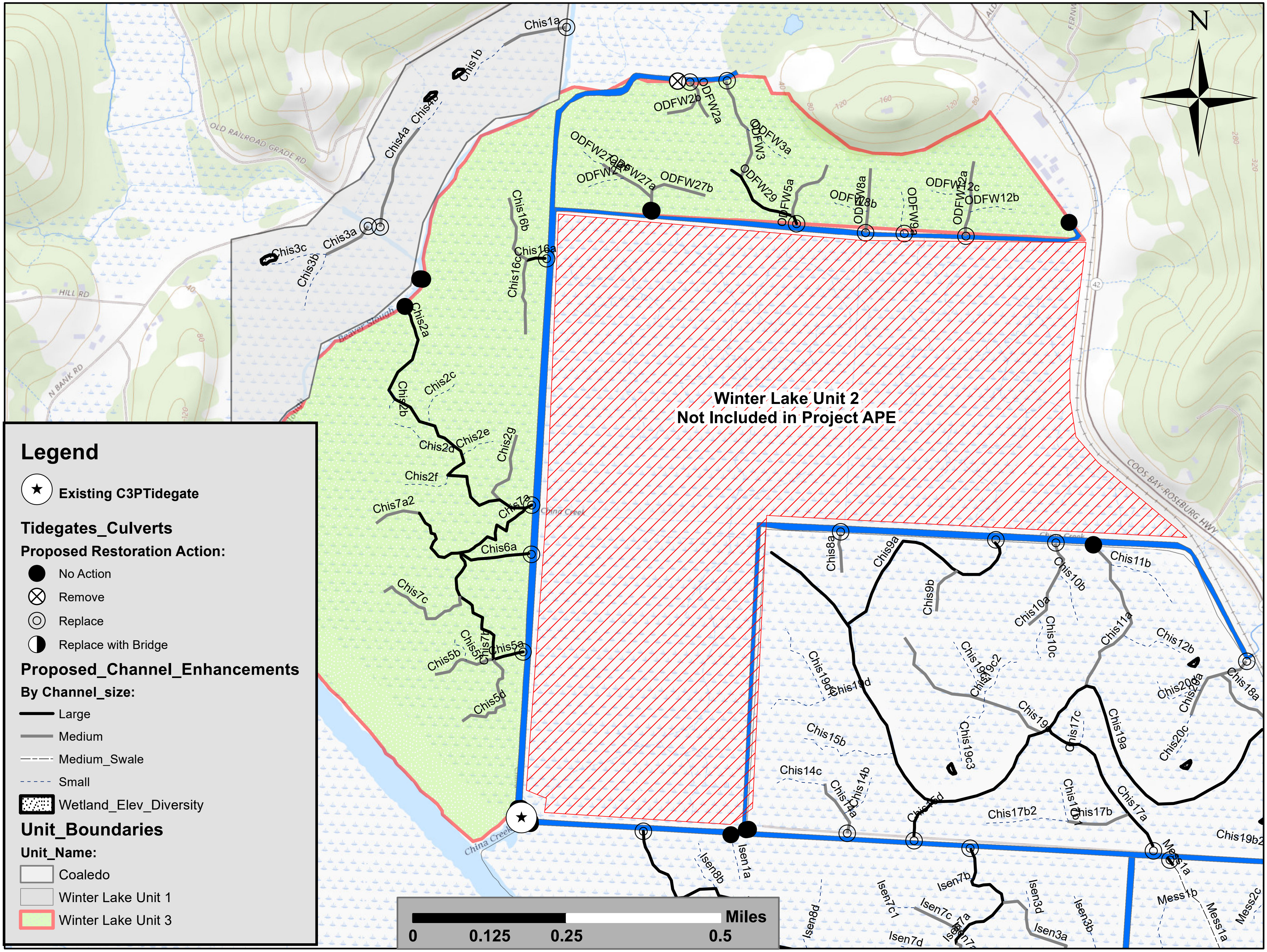


Figure 30. Wetlands Map



N
Winter Lake Unit 2
Not Included in Project APE
Legend
Existing C3PTidegate
Tidegates_Culverts
Proposed Restoration Action:
No Action
Remove
Replace
Replace with Bridge
Proposed_Channel_Enhancements
By Channel_size:
Large
Medium
Medium_Swale
Small
Wetland_Elev_Diversity
Unit_Boundaries
Unit_Name:
Coaledo
Winter Lake Unit 1
Winter Lake Unit 3
Miles
0
0.125
0.25
0.5
OLD RAILROAD GRADE RD
HILL RD
N BANK RD
COOS BAY-ROSEBURG HWY
Beaver Slough
China Creek
Chis1a
Chis1b
Chis2a
Chis2b
Chis2c
Chis2d
Chis2e
Chis2f
Chis2g
Chis3a
Chis3b
Chis3c
Chis4a
Chis5a
Chis5b
Chis5d
Chis6a
Chis7a2
Chis7c
Chis8a
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ODFW3a
ODFW5a
ODFW8a
ODFW8b
ODFW12b
ODFW12c
ODFW27a
ODFW27b
ODFW29
Isen1a
Isen3a
Isen3b
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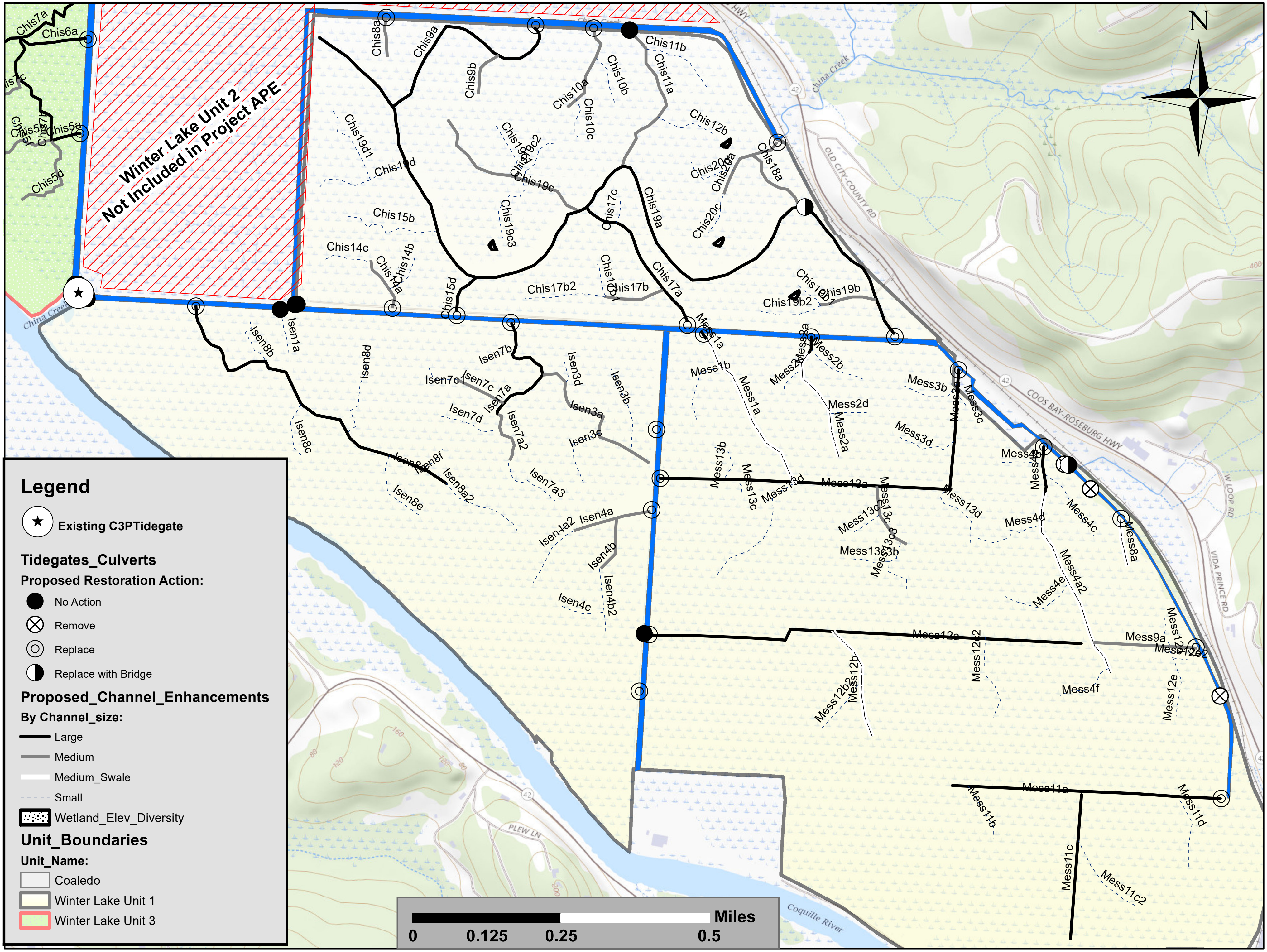
Mess1a
Mess1b
Mess2c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Winter Lake Unit 1
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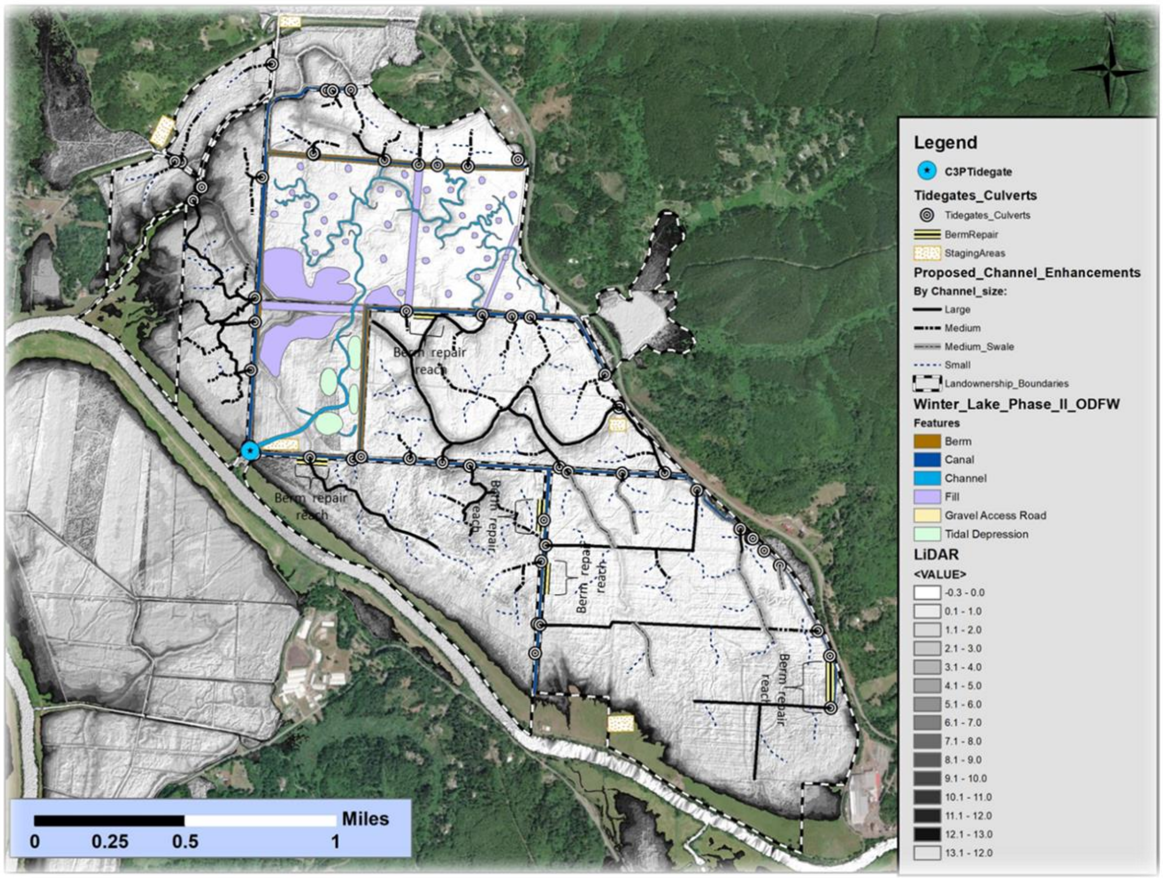
China Creek
Coquille River
COOS BAY-ROSEBURG HWY
OLD CITY-COUNTY RD
PLEW LN
VIDA PRINCE RD
W LOOP RD

WINTER LAKE PHASE III PROJECT
PROJECT ACTIONS

Designs and Yardage Calculations



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Introduction

The “Winter Lake” land area is a distinct river adjacent floodplain west of Coquille Oregon (Figure 1). The portion that is east and south of North Bank Lane and south of Hwy 42 and bordered by the Coquille River on the south is ~1,873 acres in size. Historically the acres of this unique valley floodplain that lie below elevation 8.0ft NAVDD88 were subjected to regular tidal inflow and outflow. In 1906-1907 the Beaver Slough Drainage District (BSDD; Figure 2) was formed and the Coaledo Drainage District (CDD; Figure 2) some years thereafter. These drainage districts provided social and financial framework facilitating construction of canal networks and installation of large tidegate systems for the properties to be drained. The BSDD installed tidegates in 1908-1909 allowed for drainage of 1,700 acres and the CDD installed the Beaver Creek tidegate that allowed for drainage of the remainder. The lands prior to conversion to pastureland were forested with wetland tree species with a highly dendritic tidal channel network. As part of the land alterations, interior berms were constructed along pasture and property boundaries with elevation crests of ~5.5ft in order to allow for individual pasture management when water was below that elevation. The land area ownership was originally comprised of multiple individuals and entities and in the early years and land use varied with cultivation of some crops and extensive hay production on higher pastures. Currently the primary use is pastureland grazing and ownership has been greatly consolidated.

In 2017 a largescale restoration project developed by the BSDD, Oregon Department of Fish and Wildlife (ODFW), and The Nature Conservancy (TNC) was implemented in the BSDD, where the four legacy 8.0ft corrugated metal culverts with associated top-hinged wooden tidegates connecting BSDD lands to the Coquille River were replaced with the C3P project (Phase I). The C3P project consisted of construction of seven 10.0x8.0ft concrete box culverts and associated vertical slide-gates (VSFTG) and side-hinged aluminum tidegates (Figure 2). In addition, an access road was rebuilt from Hwy 42 and from North Bank Lane, with associated bridges to provide access across existing legacy canals to serve this infrastructure. In 2018 restoration actions (Phase II) installed 31,000ft of sinuous channel on properties upstream of the C3P tidegate referred to as “Unit 2” lands and hydrology was returned to more historical condition within Unit 2 using the Muted Tidal Regulator (MTR) effects that were possible with the new C3P vertical slide-gates.

Upstream of the new C3P tidegate, in Units 1 and 3 at connection of interior pasture channels with main canals in the BSDD and CDD along Beaver Creek are 42 undersized culverts with a high prevalence in the 2.0-3.0 diameter range. These culverts greatly underserve the tidal inflow/outflow capacity of the new C3P tidegate. Additionally, the old linear field drainage channels were originally laid out with little attention to microtopography, often on property and or pasture boundaries. The Winter Lake Phase III project is proposing to replace the remaining 42 interior culverts and old style top-hinged tidegates in Units 1, 3, and pastures along Beaver Creek with 38 appropriately sized culverts. Upstream of the new culverts within pastures the project will construct on-grade channels that meet the precipitation hydrology as well as the tidal hydrology of the landscape and the Beaver Slough Drainage District (BSDD) Water Management Plan (DWMP). Existing engineering tools (USGS Streamstats) and engineering culvert capacity information were utilized to develop culvert and channel sizing that meets or exceeds the site hydrology and fish passage guidelines for both Federal and State jurisdictions. The project has been designed: 1). To develop channel networks that mimic historical condition, on grade and sufficient capacity; 2). Channel networks that provide for transport of sediments from reconstructed/constructed channels through proper construction design, management of flows, and time zero attention to locations where vegetation needs removed.

The C3P tidegates are able to be open and allow for inflow for a longer period of time, while not exceeding interior pasture management water elevation goals if the pasture channels have sufficient volume capacity. The project goals include creating interior "reservoir" capacity that will allow for a longer time of tidegate door openness on incoming tides at C3P prior to water elevations exceeding management goals. Greater time of C3P door openness is critical to allow for movement of native migratory fish into the project channel networks from the mainstem Coquille River. This reservoir capacity and greater overall inflow of water into the network and exchange on outflow with the Coquille River serves to mix waters and greatly improve water quality leading to a higher ecological function for native fish, wildlife, and livestock watering.

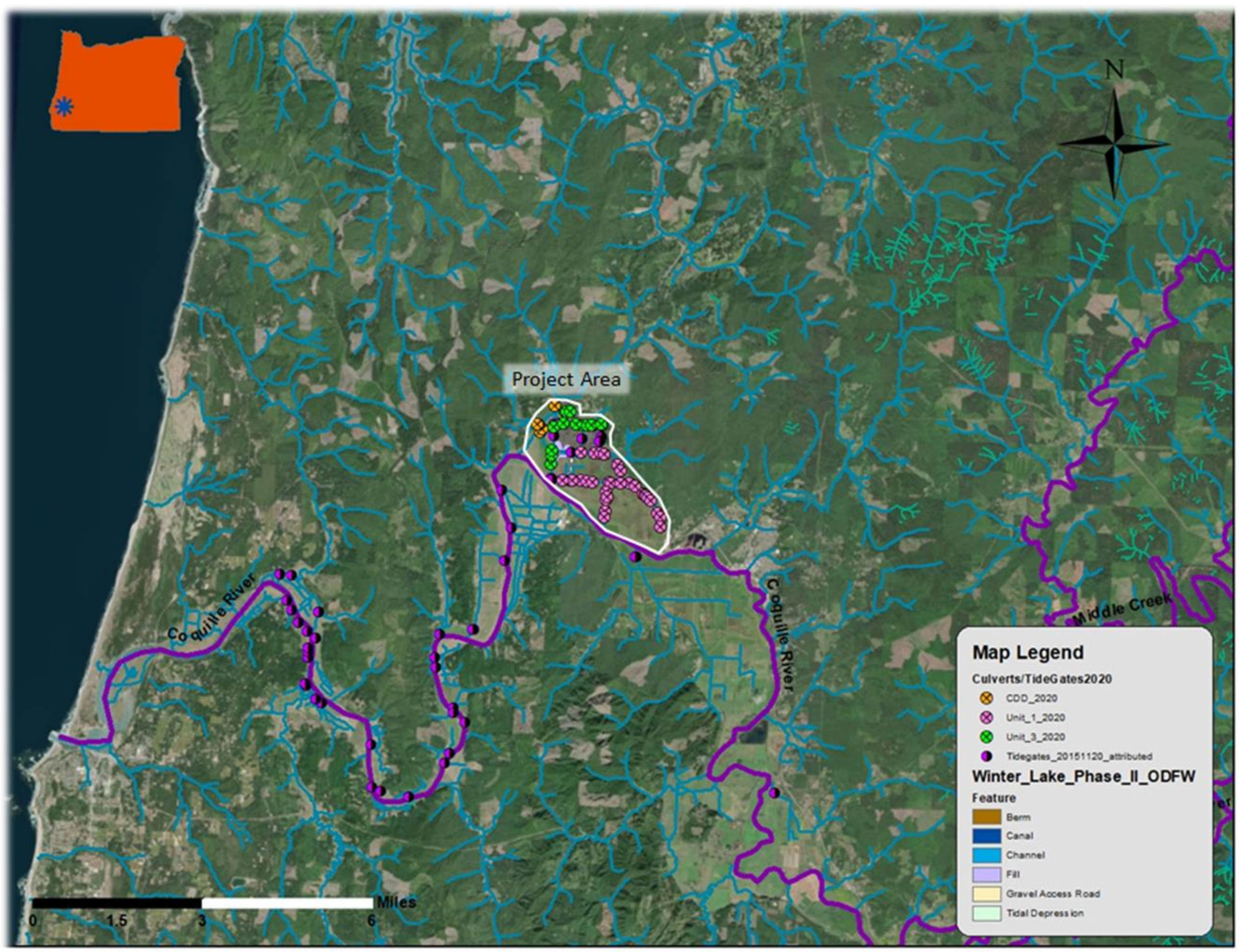


Figure 1. Coquille River estuary with demarcation of the Phase III project area at River Mile 21. 5.

The proposed "Winter Lake Phase III" project has been developed by a team of partners including BSDD, the Coos Soil and Water Conservation District (Coos SWCD), ODFW, and the Nature Conservancy (TNC). The project is designed to complement the BSDD C3P tidegate replacement project completed in 2017. The Phase III replacement of 42 existing undersized culverts and associated old style top-hinged tidegates with 38 new culverts, upgraded water control structures, and redesigned interior pasture channels are anticipated to maximize hydrologic connectivity in order to achieve a balance of fish/wildlife and pasture grass production. We are incorporating design that meets the ODFW Habitat Mitigation Policy guidelines and National Marine Fisheries Service (NMFS) Tidal Area Restoration Project (TARP) and Standard Local Operating Procedures for Endangered Species (SLOPES V) restoration guidelines.

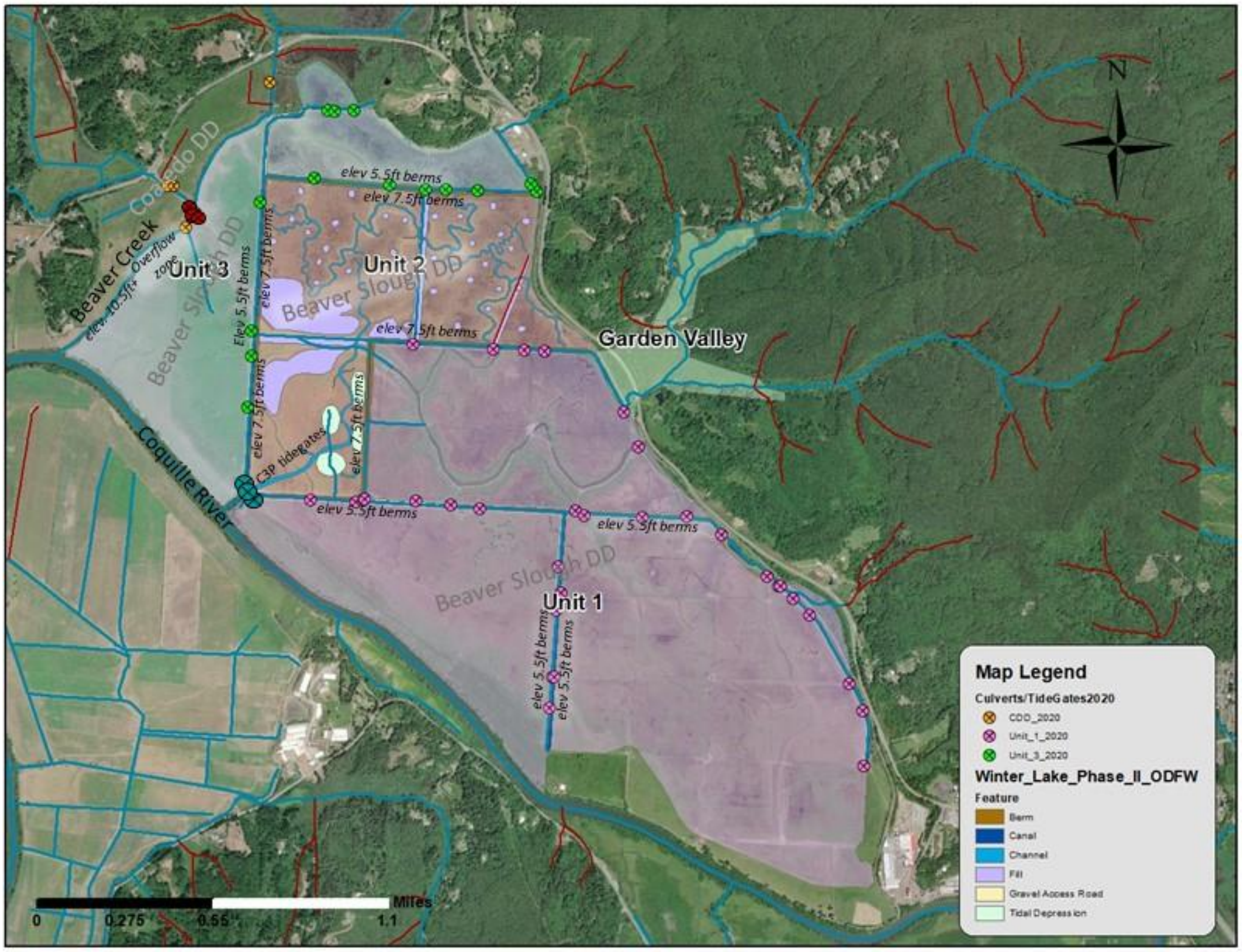


Figure 2. Winter Lake Phase I, II, and III project area and the land management Units within the Beaver Slough Drainage District; Rm 21.5 west of Coquille OR. Note two small parcels in the Coaledo Drainage District immediately to west/northwest of Unit 3 label are also in the Phase III project area.

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 (*Figure 2*). The lands within Units 1 and 3 are managed with agricultural emphasis during spring, summer, and early fall months, however, are considered to have large unrealized capacity for juvenile coho rearing during the late fall, winter, and early spring. 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 modifications through time and maintenance dredging on roughly a 15yr interval to clean sediments that accumulated through time. This project as designed with installation of new channels that will provide adequate inflow/outflow capacity and reconstruct segments where sediments have accumulated to develop capacities that meet the project goals.

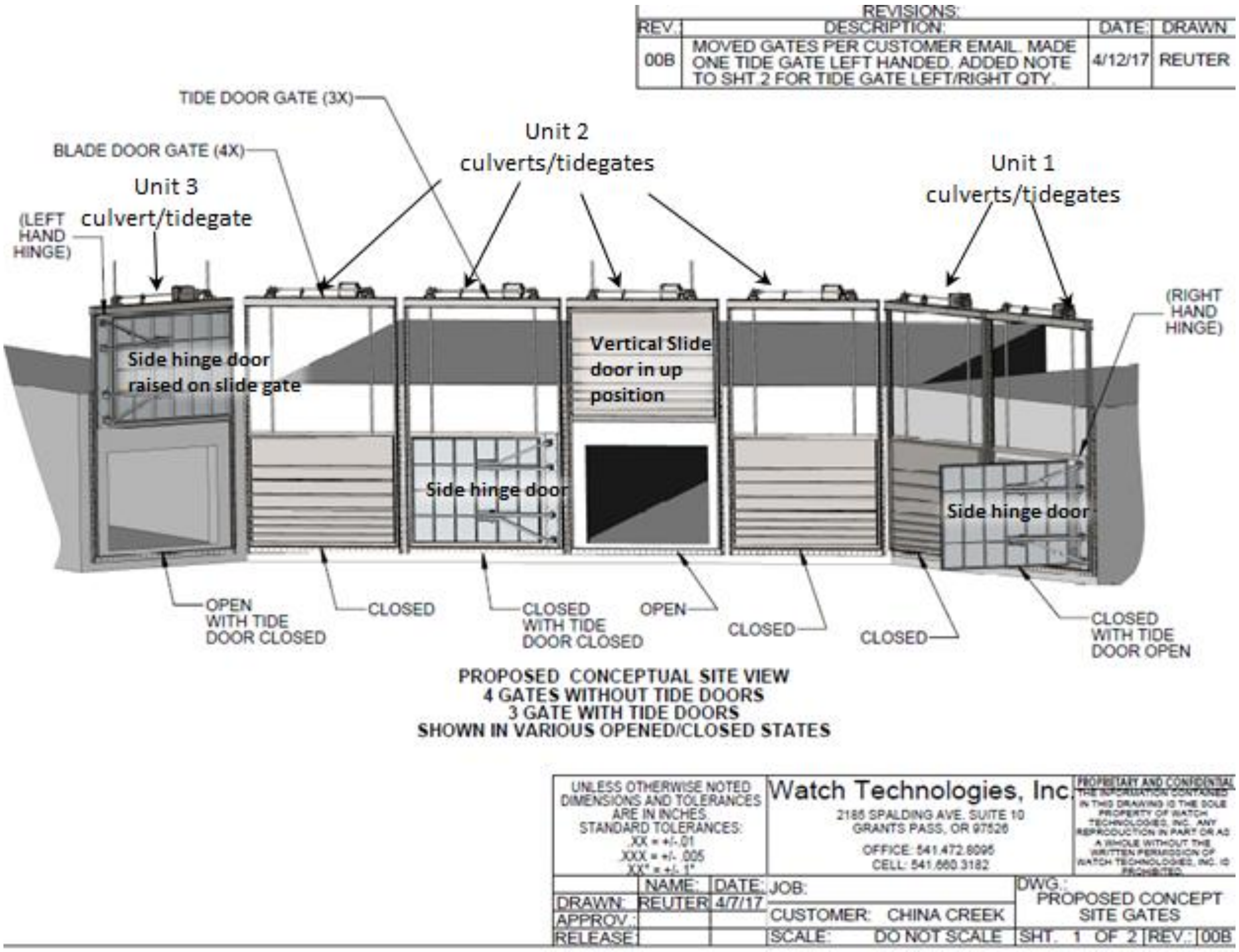


Figure 3. C3P tidegates and 10.0x8.0ft concrete box culverts configuration.

Key Hydrology/Habitat Issues

The Phase I C3P tidegate project in 2017 project alleviated hydrologic connectivity issues at the BSDD connection point to the mainstem Coquille River with main canals. In 2018 the Unit 2 “Restoration” project installed over 31,000ft of channel, connecting this 407 acre land area fully and addressing poor hydrologic connectivity, limited access for fish, fish stranding potential, and mosquito production risk. However, within Units 1 and 3 upstream of the C3P tidegate in the BSDD and the two parcels in the CDD, there remain numerous dysfunctional hydrological and habitat attributes for floodplain connectivity, wetland hydrologic function, and access for a number of native fish species including: Oregon Coast (OC) coho juveniles, fall Chinook juveniles, winter steelhead outmigrants, and coastal cutthroat trout that would otherwise use these locations seasonally. In addition, the poor hydrologic connectivity leads to poor functionality in regards to water management for pasture grazing production

Hydrological Issues:

There are a myriad of hydrologic connectivity issues within the project area fully discussed in the “Winter Lake Phase III Hydrologic Assessment” document. The primary concerns relate to culverts and associated channels that do not properly deliver or allow for outflow to “drained out” condition from the ~1,400 acres of pastureland below elevation 8.0ft in the BSDD and CDD project areas. Several of the primary issues from the Hydrologic Assessment are listed below:

- *<u>Channel Discontinuity:</u> Discontinuity of channel networks due to construction of linear networks in 1908-1909 that redirected flow from the historical natural hydrologic flow paths. This results in the inability for tidal inflow/outflow to move into and from the floodplain pastures properly.*

- *<u>Insufficient Fish Access:</u> Insufficient interior channel network density/acre and average channel depths in Units 1 and 3 to provide access routes for juvenile fish to feed and find sufficient refugia depth. This condition results in very limited use of large portions of the floodplain by juvenile Oregon Coast coho. The interior pasture elevations in Units 1 and 3 is just over 3.0ft. If there is <18" of water on pastures and channels are distant from a location, coho will not move overland to potential feeding areas. The distance coho will move is related to depth until around 3.0ft, where they will move widely. At 3.0ft of depth the overall average water elevation in Units 1 and 3 is around elevation 6.0ft, which is on the majority of years a small portion of the November to April time period when coho are present. Increased channel networks will allow for substantively increased use of available habitat as coho penetrate through channel networks into interior pasturelands and feed adjacent to channels when water is at depths under 3.0ft.*

- *<u>Restriction of Tidal Flow:</u> Undersized culverts connecting to the main canals within Units 1 and 3 and the CDD pastures that restrict proper tidal/flood-flow and underserve hydrologic connectivity/irrigation needs in the period when salmonid fish would use the habitats and pasture production months.*

- *<u>Top-Hinged Tidegates</u>: 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 restriction of fish movements from the canals into pasture floodplain channels where food availability is higher and competition with non-native fish lower.*

- *<u>Channel Grades:</u> 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. Limited excavation/maintenance through time to compensate for the poor sediment transport capacity of these historical designs has led to sediment accumulation restricting inflow/outflow of these interior channels. Reconstruction or new construction is now needed to achieve the desired capacity and functionality.*

- *<u>High Culvert Invert:</u> Culverts were in many locations installed with an invert elevation inappropriately high, which results in a condition where pasture channel networks at early winter water elevation levels are disconnected from main canals resulting in delayed ability for fish to enter the floodplain and resultant increased potential for stranding and predation.*

- *<u>Poor Sediment Transport:</u> The lack of proper sediment transport has facilitated establishment of aquatic vegetation in existing networks that further restricts inflow/outflow and the ability to meet goals for moving water into the landscape for fish passage and off of the landscape for pasture management/forage production.*

Methodology for Proposed Actions

<u>Culvert Replacement:</u> The project will implement replacement of 38 of the existing 42 undersized pasture channel culverts and elimination of 4. At one location, where the Messerle pasture road accesses the floodplain from Hwy 42 a culvert will be replaced with a bridge *(Figure 4)*. The remaining four culverts with associated tidegates will be removed and consolidated within the remaining reconstructed 38 channel networks. The location of entry for six of these pasture channels and associated culverts to main canals will be moved to more appropriately configure the network to landscape topography. Culverts will be primarily Advanced Drainage System (ADS) or High-density polyethylene (HDPE), to extend life of culverts.

> ***Culvert Design/Materials***
> *1). It is critical that culverts be installed with an invert elevation that provides for fish passage. Culverts will meet swim through conditions with continuous 20-50% backwatering that meets the ODFW and NMFS fish passage criteria.*
> *2). Culverts will be installed with an invert elevation (-1.0 to 0.0ft NAVDD 88) that provide for both accommodation of inflow/outflow hydrology amplitudes, above criteria #1, and drainout of pastureland channels.*
> *3). Culverts were sized in order to meet Hydrologic volumes for inflow/outflow (see Hydrologic Assessment) based on tidal regimes, the DWMP, and irrigation needs.*

We have designed culvert sizing to meet ODFW and NMFS criteria based on the "Winter Lake Phase III Hydrologic Assessment." The low tide minimum elevations do not reach the minimums that are observed at the ocean due to riverbank damping of the tidal amplitude. Northwest Hydraulic Consultants water level logger data in the C3P tidegate Hydraulic Analysis noted that the minimum water elevations rarely fall below elevation +1.5ft. In order to accommodate inflow/outflow and meet Federal and State fish passage guidelines we have designed culvert inverts to be set from -1.0ft NAVDD 88 to 0.0ft elevation depending on the individual installation site. These elevation inverts will provide for proper depth to hydrologically connect channels. ADS, HDPE, and an in-development concrete pre-cast structure (Appendix A) will be installed on the project. Typical installation designs for culverts through berms is shown in Sheet 1.

<u>Water Control Structures:</u> The project is planning replacement of tidegates on the 38 interior culverts with either: a). Side-hinged aluminum tidegates (Appendix B); with door brace for managing in the door open position b). Water control slide/knife gates operated manually through screw drive and wheel (Appendix B); or c). Other water control structures such as baffles or louvered gates. The individual water control types will be operated similarly and open as prescribed under the BSDD DWMP. Several styles of water control structure are shown in Appendix A. These water control structures are generally connected to the culvert prior to installation and the culvert and water control structure are then installed as a unit.

<u>Channel Reconstruction/Channel Creation:</u> The Phase III project proposes reconfigure/reconstructing ~29,981ft or 5.7 miles of existing tidal channel *(Figures 5 and 6)* and creation of 74,670 ft or 14.1 miles of new tidal and tidal swale channels in Units 1 and 3 *(Figures 5, 6)*. These channels will encompass lessons learned from Ni-Les'tun and Unit 2 restoration including using on-grade design and bank sloping that maximizes edge habitats in order to:

- Provide depth refugia for native salmonids in winter and native resident fish in summer months,
- Contribute to greater utilization of the project area by juvenile coho, through increasing channel distribution on the landscape and fish penetration into the floodplain.

- Provide adequate volume capacity for:
  a). A hydrologic Connectivity relationship that more closely mimics water inflow/outflow management and capacity at the main C3P tidegate;
  b). Capacity that adequately provides for rain and floodwater outflow/drainage below elevation 5.5ft; and
  c). Capacity that provides for delivery of summer irrigation flows.

The yardage calculations for channel work (Sheets 1-17 and Tables 1, 2, and 3) were developed based on:

1). Use of the LiDAR elevation averaging to determine the pasture elevation average for a given channel

2). Use of the known invert elevation at the pasture channel connection point with the main existing canals to determine the depth of material that would be excavated.

3). Channels in a number of locations were designed with a different sloping in first 300ft for small/medium size channels and 500ft for large channels. This is demarcated in Sheets 3-17. Additionally, yardage calculations reflect greater depth in the initial 300/500ft due to invert elevations that are deeper in segments where channels enter pastures at connection points with canals.

4). Thin-spreading of excavated material to DSL/USACE approved 3.0" in average depth on pastures adjacent to channels will be the primary use of spoils. There will be some locations where suitable material for berm reconstruction excavated during channel construction will be identified and this material will be used in berm repair locations.

Note: *All channel calculations were designed with a margin that tends to slightly overestimate yardages so as to fully provide impacts appropriately for the Oregon Department of State Lands (DSL) and U.S. Army Corps of Engineers (USACE) 404 Fill and Removal Permit. Thin spreading of spoils will mimic natural deposition from flood events that was eliminated from 1909-2017 and now has been partially restored through installation of the C3P tidegate and capacity to deliver winter floodwaters. Subsidence through time has contributed to pasture topography variability that currently complicates water management and contributes to fish stranding.*

<u>Interior Berms:</u> Interior pasture berms will be reconstructed to elevation 5.5ft NAVDD88 in locations where they have degraded *(Figures 4, 5, and 6)*. Spoils from channel construction will be used to bring these locations into functional condition in order to allow for individual pasture/landowner water management up to elevation 5.5ft. Initial reconstruction will be completed with placement of earth to elevation 6.0ft, which will allow for 6.0" of settling and usable long-term berm height of 5.5ft. Berm yardage calculations were developed using aerial imagery estimation of the length of repair in combination with ground truthing and then defined design (Figures 6 and 7; Sheets 1, 18, and 19, and Table 3).

<u>Excavation of Sediments China Canal and Sections of Unit 1 Southeast Canal:</u> The China Camp Creek canal has accumulated 3,675 cy's of sediment that has been transported to where the stream gradient reaches near 0.0% (Figure 6; Sheets 19-22). This segment of canal is critical for transport of China Camp Creek flow and drainage of the Garden Valley lands upstream of Hwy 42. A total of 3,675 cy's of silt/clay material will be excavated in the 1,262ft long work reach (Sheet 19) using a long reach excavator working from top of bank. Dewatering of the canal is not possible in the work area as the damage to aquatic resources would exceed impacts of excavation. The work will be completed on a low incoming tide in a period when water temperatures are above the level tolerable for salmonid fishes, as such they will not be in the work area. Working on low incoming tide will keep sediments that are generated in the active work area. Lamprey ammocoetes and other non-salmonid fishes that are entrained in the excavated material e.g. sticklebacks

and sculpin, will be salvaged as material is deposited in the pasture. Excavated material will be placed adjacent to the canal where it will be thin spread to a depth average of 3", (Table 3).

There is also another reach of the Unit 1 canal where a small slump has narrowed flow volume capacity in the Unit 1 canal on the southeastern leg (Figure 4). An excavator working from the top of bank will be utilized to remove this flow constriction. Sediments will be excavated and thin spread to an average depth of 3" in the pastures adjacent to the canal. The total cy's estimated for removal in this reach is 667cy (Sheet 21). The very southeast 904ft of the Unit 1 Canal has sediment accumulation of 1,333cy (Sheet 21) that will be removed. Finally, the northeast portion of the Wheeler Canal in an 840ft segment is in need of 1,116cy of excavation to reestablish proper hydrology and accommodate outflow from proposed culvert and channel upgrades (Sheet 22 and Table 3).

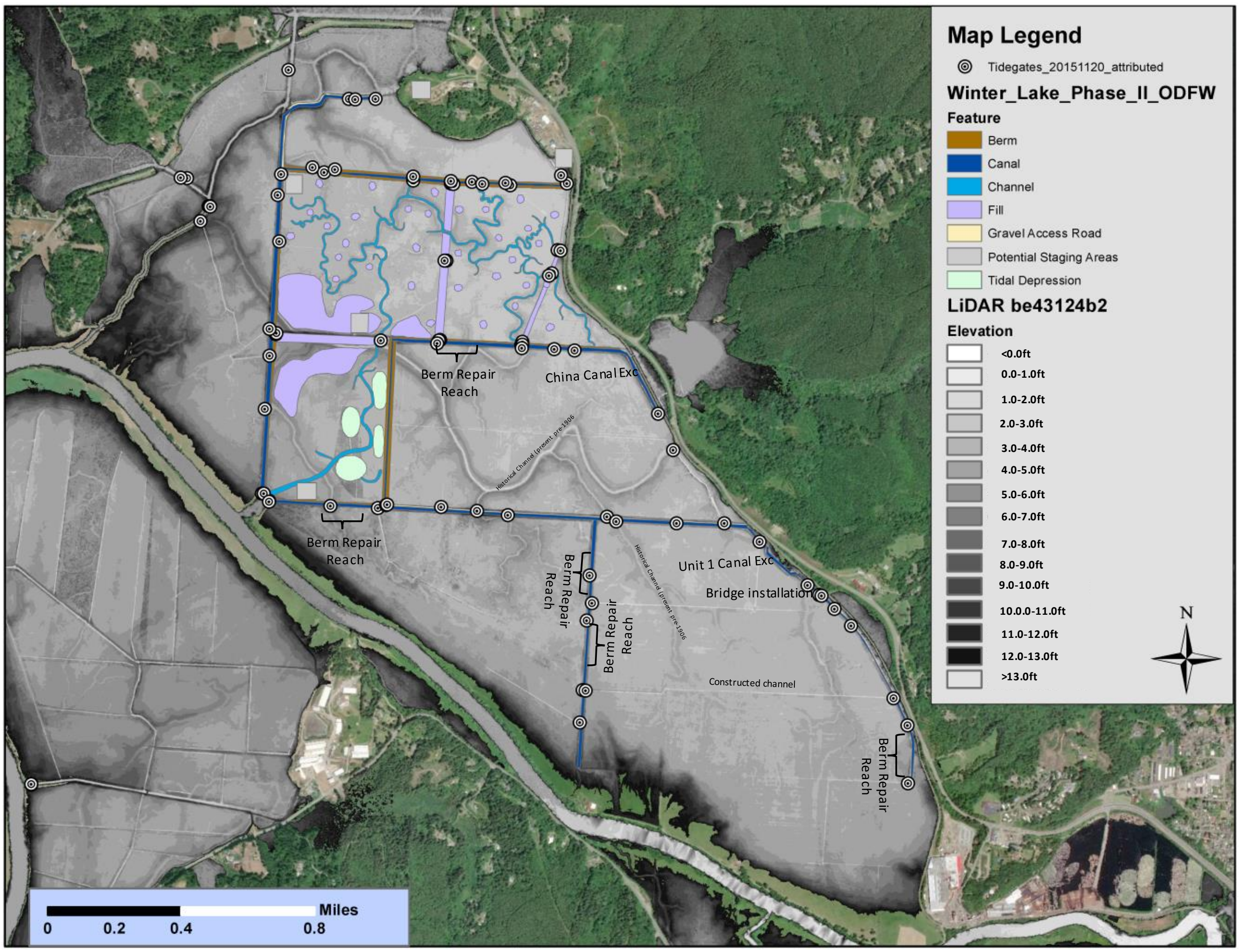


Figure 4. LiDAR elevational map and locations where berm reconstruction is needed. Grayscale depiction allows for historically installed linear pasture drainage channels to be visible.

<u>Habitat Uplift</u>: The Phase III project will incorporate a number of additional habitat uplift benefits. While these are not related to hydrology it is important to note that they will increase ecological functionality (Table 1 Appendix D) of the pasturelands and reduce the potential that channels will reaccumulate sediments. These actions are more fully addressed in the Phase III project DSL/USACE 404 fill and removal

permit. Proposed Phase III project actions that are designed to greatly enhance ecologic uplift include (Table 1 Appendix D):

1). Fencing or exclosures with skip planting along the first 500ft of large and medium channels that connect to main canals (Skip planting concepts Sheets 24-26 in Appendix C), however, access for machinery will be left in the planting design and layout if a return excavation is needed in specific small locations;

2). Channel construction bank sloping that will provide for extended life of channels and provide extensive edge feeding habitat for fish along channel banks;

3). Installation of channels into locations where the topography is low, water ponds, and currently fish become stranded;

4). Hydrologic bulbs (Figure 7) at the terminus of larger channel networks that provide a small basinal low area excavated to provide fish habitat in winter and channel flushing to move any accumulation of sediments from the channel network.

5). The channels will be designed with on grade construction, which will result in hydrology where sediment accumulation in the invert will be transported in perpetuity down networks into the main Coquille River with a greatly reduced or no long term need for repeated/substantial excavation.

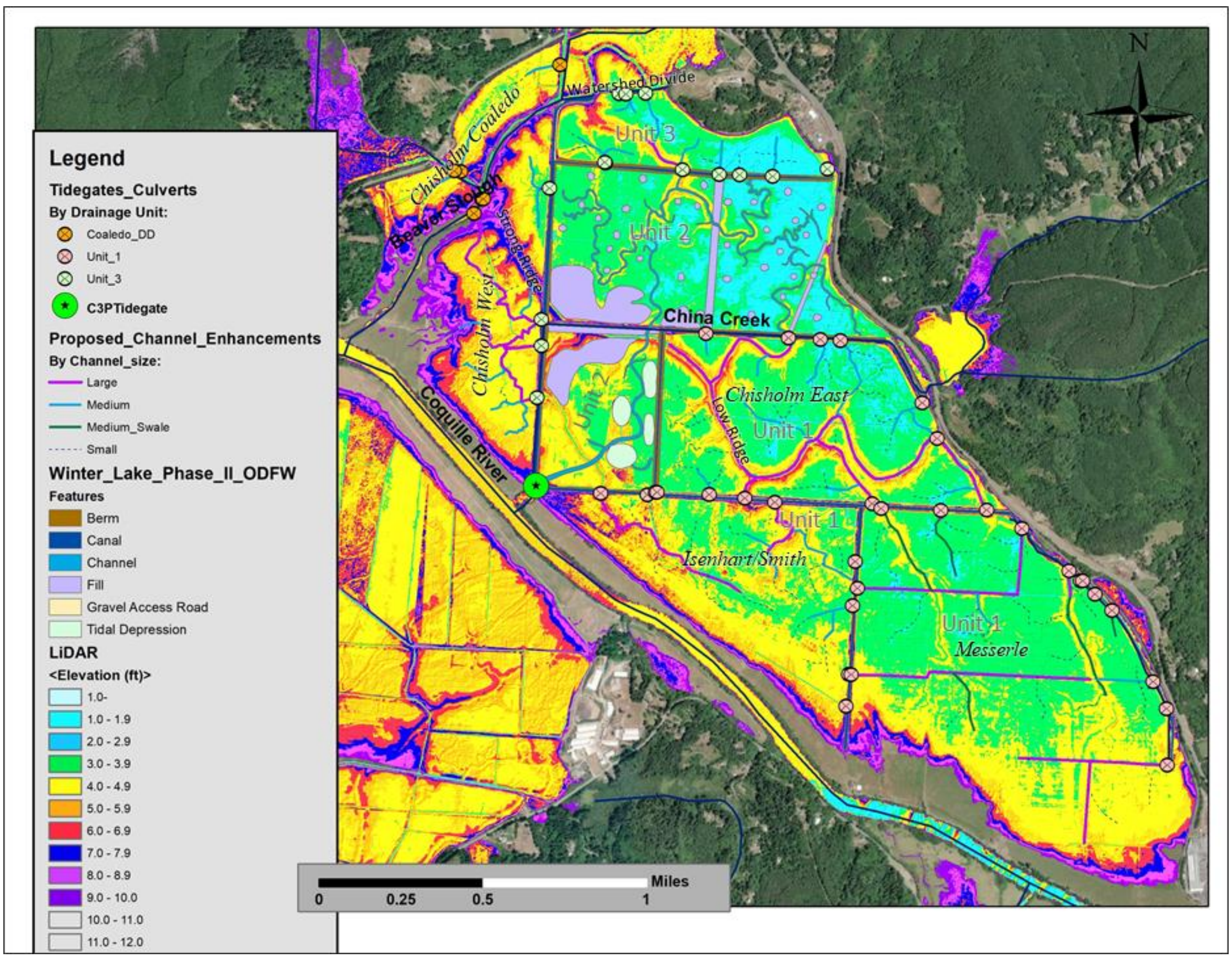


Figure 5. LiDAR elevational map of the Winter Lake Phase III project area with new proposed channels depicted. Lands above elevation 10ft allow for the aerial imagery to show through.

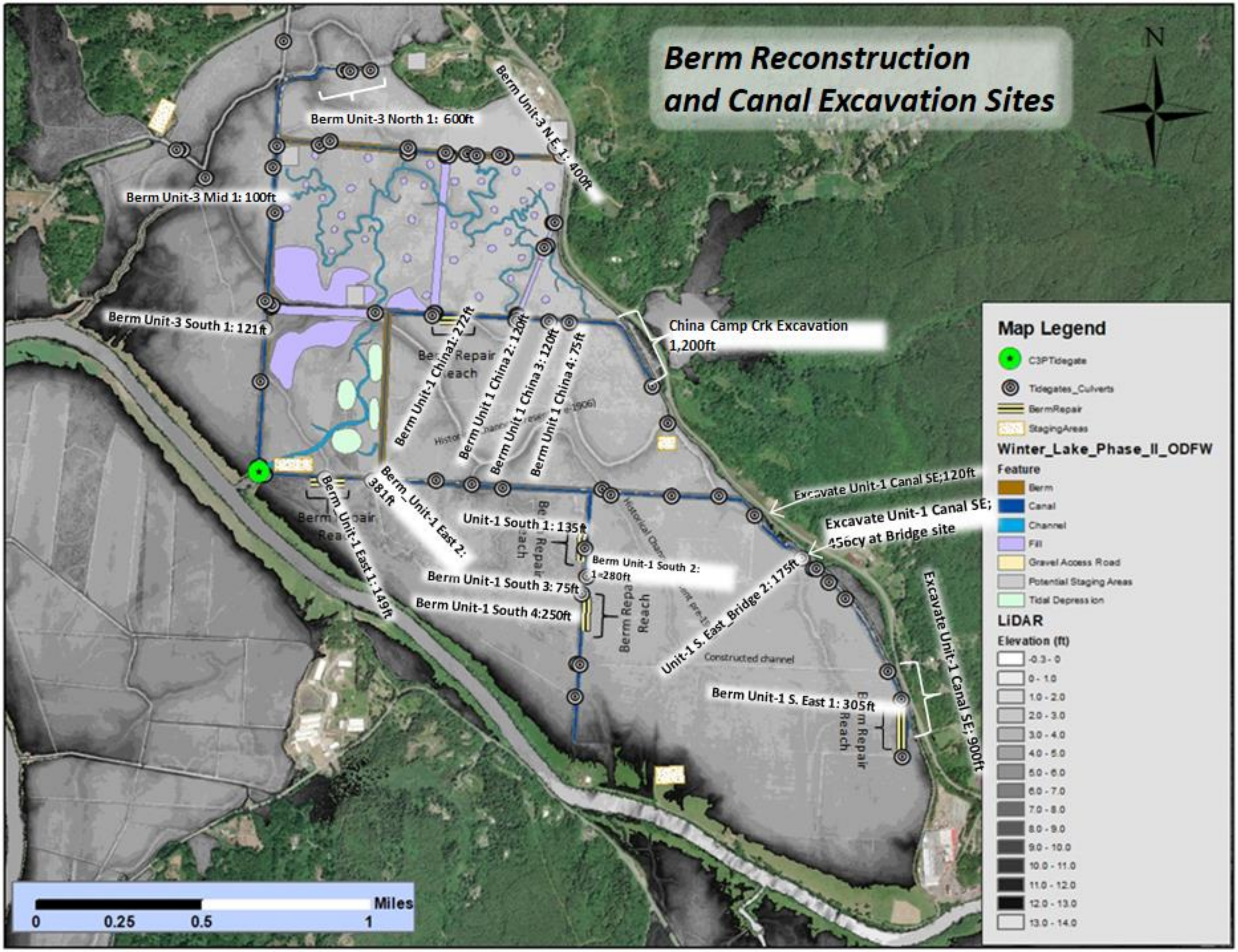


Figure 6. Phase III proposed channel reconstruction/construction depicted with LiDAR in grayscale.

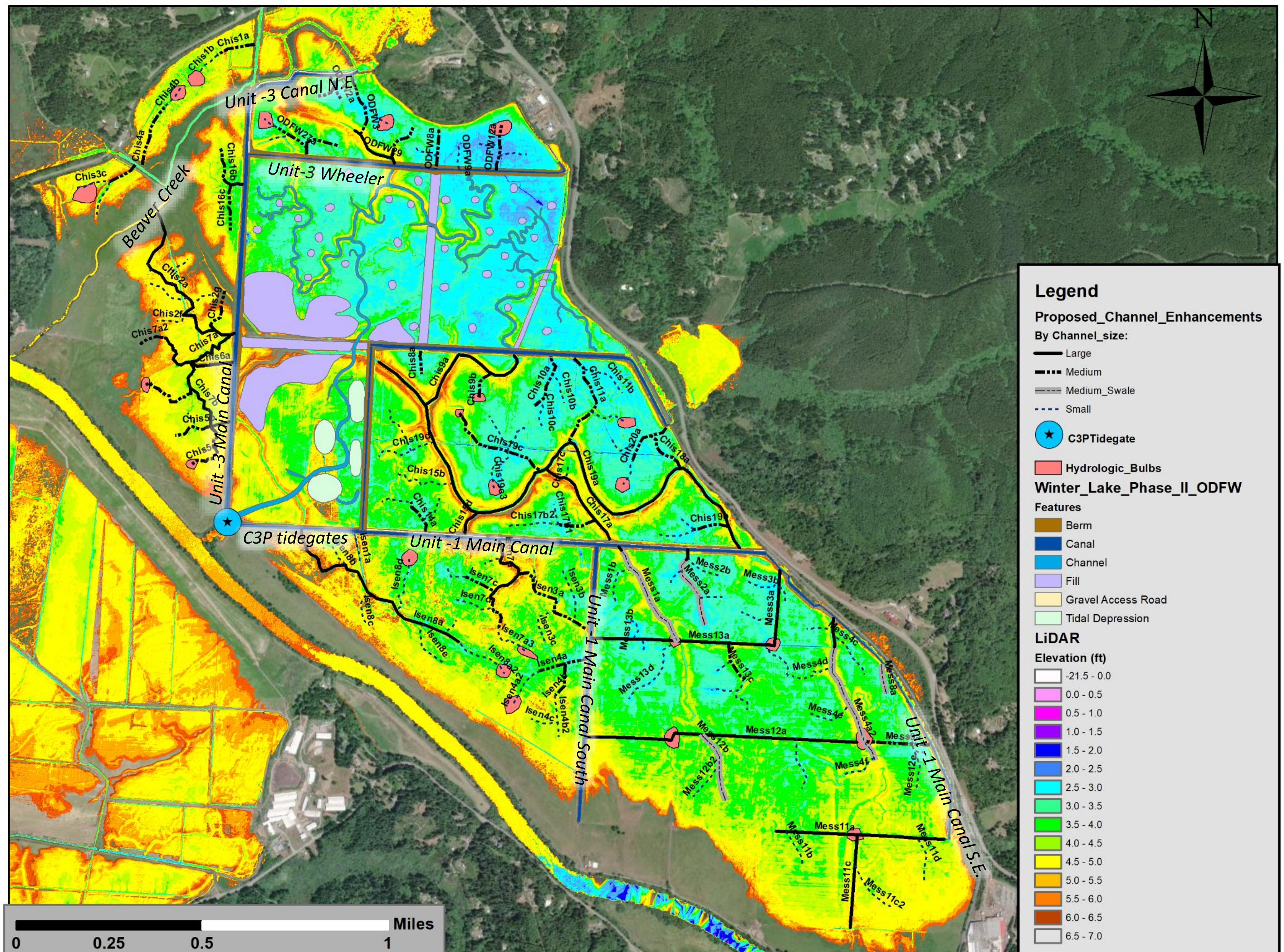


Figure 7. Reconstructed/New channel construction I.D. and configuration. ***Note:*** *culvert I.D. is same as channel I.D.; Large and Medium channel connection locations with main canals are culvert replacement locations.*

Table 1. Winter Lake Phase III interior culvert location I.D.'s and pipes. Culverts installed at channel connections with main canals as denoted in Figures 7 and 8.

Unit Number	CIS_ID	Chan Size	Acres	Acres_blw 10ft_elev	Current CulvrtSize_ft	Culvert Prop. (ft)	100yr Flow Clvrt [1]	Culvert_Cap% ± Prop Ovr 100yr[1]	Culvert_Size% ± Prop Ovr 100yr
Unit-3	Chis16	M	42.4	42.4	3.0	4.0	24	+598.8%	200.0%
Unit-3	ODFW27	M	23.0	23.0	4.0	4.0	24	+957.8%	200.0%
Unit-3	ODFW2	M	8.8	8.8	1.0	3.0	15	+1212.5%	240.0%
Unit-3	ODFW3	M	14.1	13.1	1.0	3.0	18	+756.8%	200.0%
Unit-3	ODFW29	L	11.9	9.56	None Present	4.0	15	+1851.2%	320.0%
Unit-3	ODFW8	M	12.3	7.6	2.0	4.0	18	+1791%	266.7%
Unit-3	ODFW9	M	6.8	4.0	1.0	3.0	12	+1569.2%	300.0%
Unit-3	Chis2	L	27.5	25.2	4.0	4.0	21	+801.1%	228.6%
CDD	Chis1	M	31.3	17.9	3.0	4.0	24	+703.8%	200.0%
CDD	Chis3	M	60.5	22.9	4.0	4.0	30	+364.1%	160.0%
CDD	Chis4	M	51.6	41.9	3.0	4.0	27	+426.9%	177.8%
Unit-3	Chis7	L	39.1	35.3	3.0	4.0	24	+563.4%	200.0%
Unit-3	Chis6	L	69.2	47.4	4.0	4.0	30	+318.3%	160.0%
Unit-3	Chis5	L	45.2	31.4	3.0	5.0	27	+860.5%	222.2%
Unit-1	Isen8	L	134.6	112.1	None Present	5.0	42	+289.0%	142.9%
Unit-1	Isen7	L	48.23	48.23	1.0	5.0	27	+806.4%	222.2%
Unit-1	Isen3	M	24.5	24.5	1.0	4.0	21	+899.1%	228.6%
Unit-1	Isen4	M	26.3	26.3	1.0	4.0	21	+837.6%	228.6%
Unit-1	Isen6	S	36.5	23.8	1.5	3.0	24	+292.3%	150.0%
Unit-1	Mess2	M	25.6	25.6	1.0	3.0	21	416.8%	171.4%
Unit-1	Mess3	M	49.0	49.0	1.5	4.0	27	449.2%	177.8%
Unit-1	Mess4	L	48.8	48.8	1.5	4.0	27	451.0%	177.8%
Unit-1	Mess8	M	11.4	11.4	1.5	4.0	15	2078.2%	320.0%
Unit-1	Mess9	M	17.0	17.0	2.0	4.0	18	1293.9%	266.7%
Unit-1	Mess11	M	199.3	162.0	2.0	5.0	48	195.1%	125.0%
Unit-1	Mess13	M	41.8	41.8	2.0	4.0	27	527.2%	177.8%
Unit-1	Mess12	M	177.2	137.6	2.0	5.0	42	219.5%	142.9%
Unit-1	Mess1	L	22.6	22.6	2.0	4.0	21	973.0%	228.6%
Unit-3	ODFW12	M	23.1	18.9	4.0	4.0	21	+1683.8%	228.6%
Unit-1	Chis8	M	9.1	9.1	2.0	4.0	15	+4274.2%	320.0%
Unit-1	Chis14	L	18.2	18.2	2.0	4.0	18	586.3%	266.7%
Unit-1	Chis15	L	38.1	38.1	2.0	4.0	24	+578.2%	200.0%
Unit-1	Chis9	L	20.5	20.5	2.0	5.0	21	+1897.3%	285.7%
Unit-1	Chis17	L	73.9	73.9	2.0	5.0	33	+526.3%	181.8%
Unit-1	Chis10	M	15.3	15.3	2.0	4.0	18	+1439.8%	266.7%
Unit-1	Chis11	M	26.3	26.3	2.0	4.0	21	+837.6%	228.6%
Unit-1	Chis20	M	26.1	26.1	2.0	3.0	21	+408.8%	171.4%
Unit-1	Chis19	L	38.5	38.5	4.0	6.0	24	+1591.4%	300.0%

1). Based on values from Table 6 Robison, George E., A. Mirati, and M. Allen 1999, also in Foltz et al. 2009

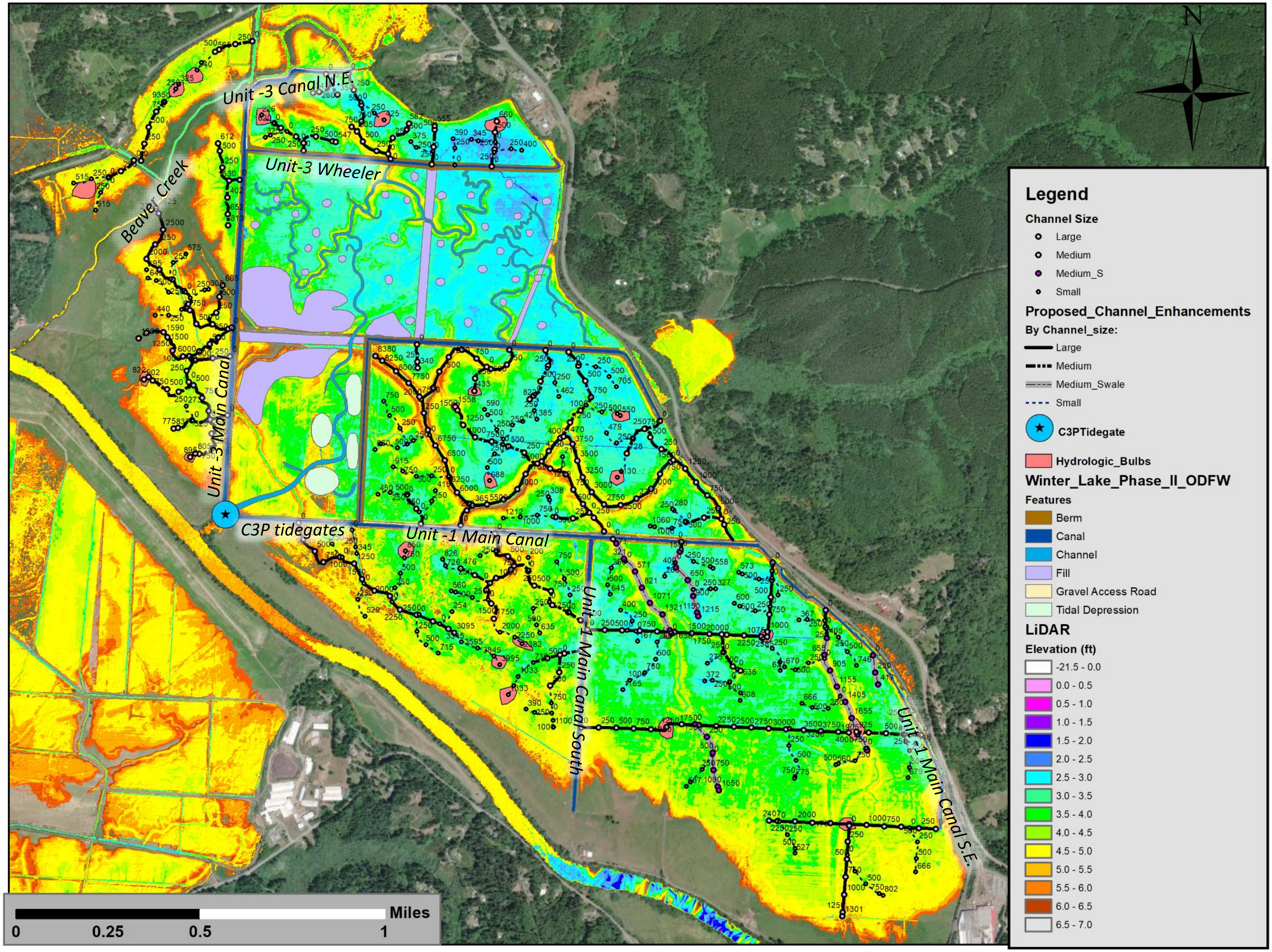
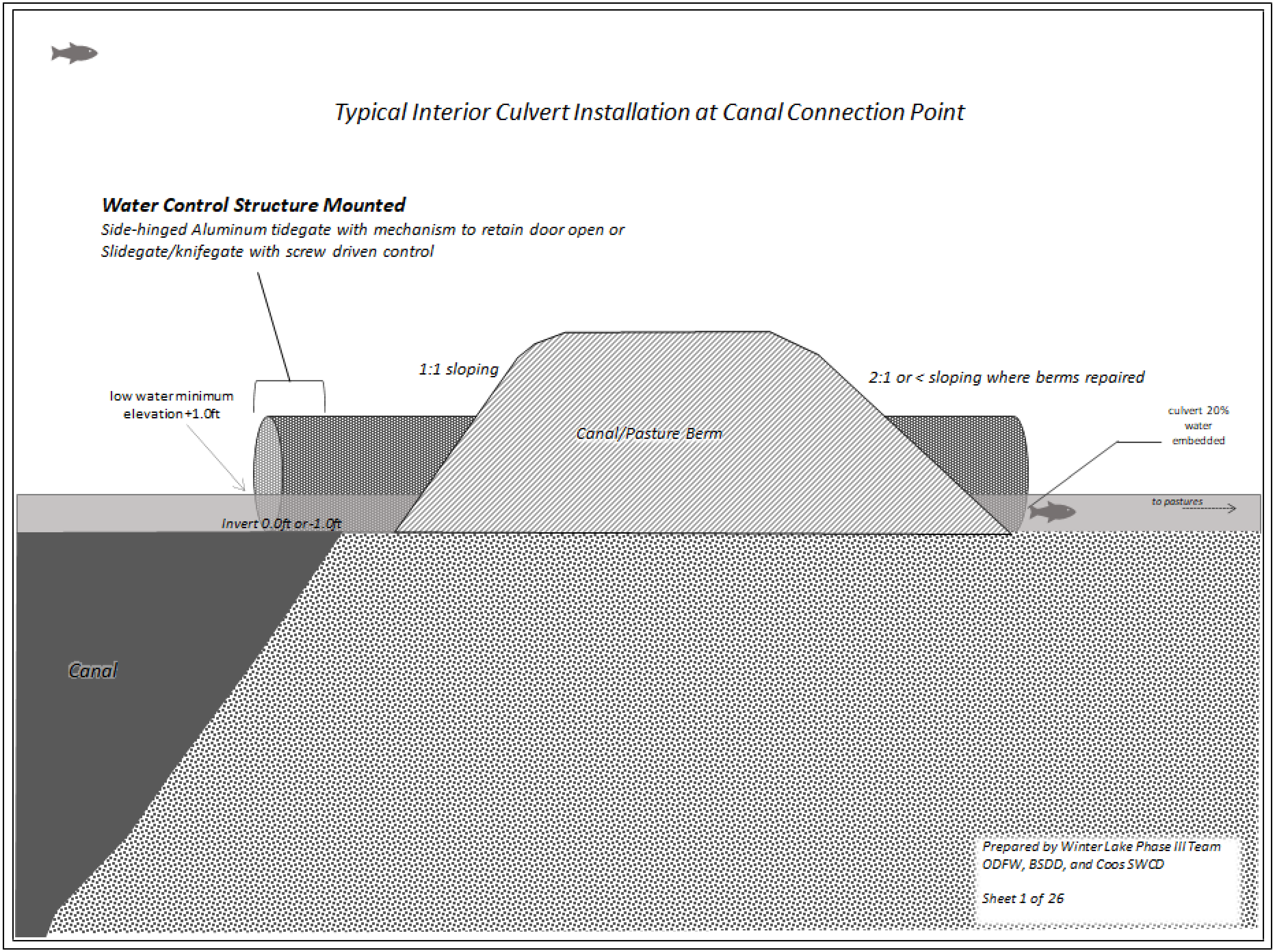


*Figure 8. Reconstruct/New channel construction distance demarcation. **Note:** Channel connection locations with main canals are culvert replacement sites.*



Typical Interior Culvert Installation at Canal Connection Point
Water Control Structure Mounted
Side-hinged Aluminum tidegate with mechanism to retain door open or
Slidegate/knifegate with screw driven control
1:1 sloping
2:1 or < sloping where berms repaired
low water minimum
elevation +1.0ft
culvert 20%
water
embedded
Canal/Pasture Berm
Invert 0.0ft or -1.0ft
to pastures
Canal
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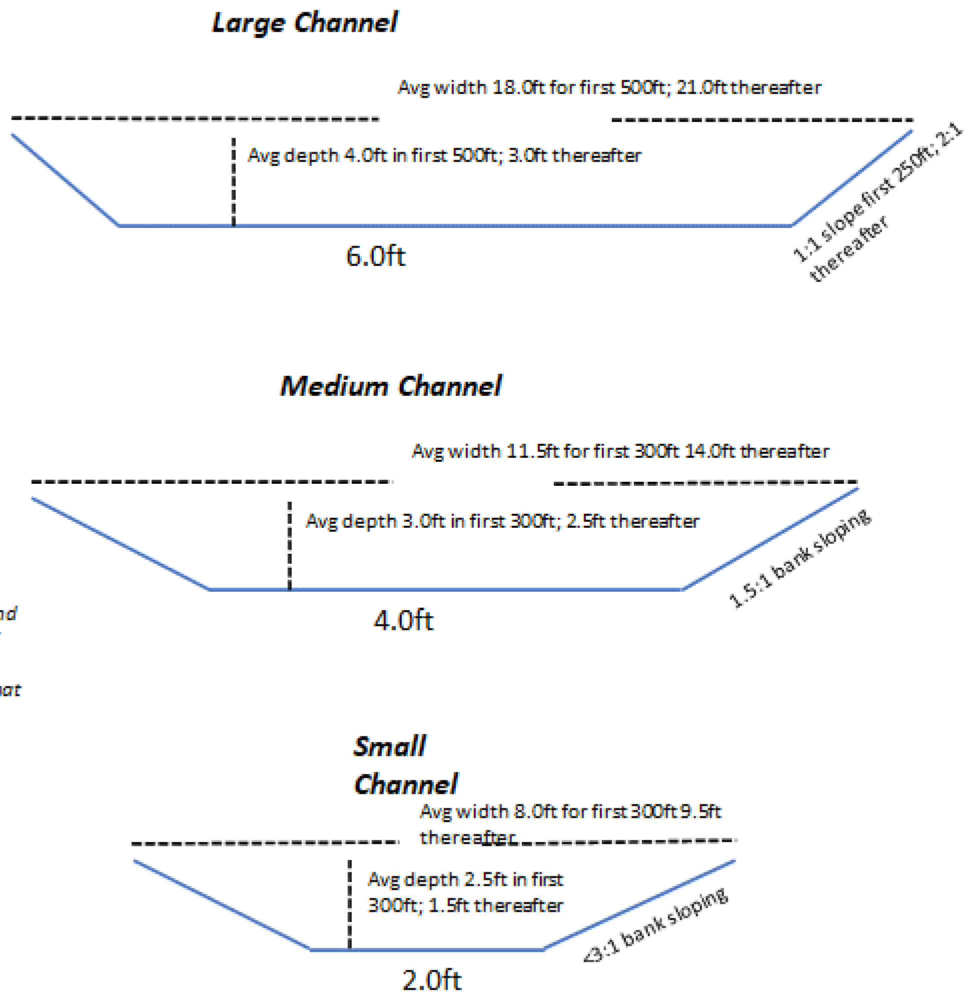
Pasture Channel Cross-Sections



Note: *For large channels first 500ft and For medium channels the first 300ft of selected channels that connect to main canals will have a invert grade that is steeper.*

Note: *Channel drawings not to scale.*

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Table 2. Winter Lake Phase III channel excavation calculations for cubic yards of material.

Chan_ID	Channel Size (ft)	Channel Length (ft)	CY/ft; First 500/300ft	CY/ft; First 500/300ft	Length x CY/ft First 500/300ft[1]	Length x CY/ft First 500/300ft[2]	Total CY's
Chis7a	6	1,597	1.78	1.56	890	1,712	2,602
Chis7b	6	1,127	1.78	1.56	890	979	1,869
Chis7c	4	1,458	1.11	0.93	333	1,077	1,410
Chis5b	4	563	1.11	0.93	333	244	577
Chis5a	6	265	1.78	1.56	890		890
Chis2g	4	670	1.11	0.93	333	344	677
Chis2a	6	2,832	1.78	1.56	890	3,637	4,527
Chis2d	2	622	0.93	0.33	279	40	319
Chis7e	2	346	0.93	0.33	279	15	294
Chis2f	2	445	0.93	0.33	279	48	327
Chis6c	2	816	0.93	0.33	279	104	383
Chis5d	4	808	1.11	0.93	333	472	805
Chis7a2	4	645	1.11	0.93	333	321	654
Chis2b	2	201	0.93	0.33	279		279
Chis2c	2	476	0.93	0.33	279	58	337
Chis2e	2	309	0.93	0.33	279	3	282
Chis5f	2	270	0.93	0.33	279		279
Chis6a	6	606	1.78	1.56	890	165	1,055
Chis16c	4	658	0.93	0.93	279	333	612
Chis16a	6	152	1.78	1.56	534		534
Chis16b	4	612	1.11	0.93	333	290	623
Chis8a	4	337	1.11	0.93	333	34	367
Chis9a	6	1,978	1.78	1.56	890	2,305	3,195
Chis14a	4	504	1.11	0.93	333	4	337
Chis19c	4	1,488	1.11	0.93	333	1,105	1,438
Chis10a	4	826	1.11	0.93	333	489	822
Chis19c1	2	589	0.98	0.33	294	95	389
Chis11a	4	1,475	1.11	0.93	333	1,093	1,426
Chis15b	2	912	0.93	0.33	279	136	415
Chis14c	2	440	0.93	0.33	279	46	325
Chis15d	6	359	1.78	1.56	890	92	982
Chis19d	2	869	0.93	0.33	279	188	467
Chis20a	4	726	1.11	0.93	333	396	729

1. For Small and Medium Channels assumed minimum distance of 300ft of deeper dpeth of excavation. If overall length <300ft

2. If left blank then channel segment <500/300ft in length

Table 2. Continued.

Chan_ID	Channel Size (ft)	Channel Length (ft)	CY/ft; First 500/300ft	CY/ft; First 500/300ft	Length x CY/ft First 500/300ft[1]	Length x CY/ft First 500/300ft[2]	Total CY's
Chis11b	2	680	0.93	0.33	279	125	404
Chis20c	2	291	0.93	0.33	279		279
Chis20d	2	481	0.93	0.33	279	60	339
Chis19a	6	8,370	1.78	1.56	890	12,277	13,167
Chis14b	2	412	0.93	0.33	279	37	316
Chis17a	6	1,404	1.78	1.56	890	1,410	2,300
Chis17b	4	541	1.11	0.93	333	224	557
Chis17b1	2	303	0.93	0.33	279	1	280
Chis17b2	2	718	0.93	0.33	279	138	417
Chis17c	2	221	0.93	0.33	279		279
Chis19b	4	512	1.11	0.93	333	198	531
Chis19b1	2	281	0.93	0.33	279		279
Chis19b2	2	564	0.93	0.33	279	87	366
Chis18a	4	656	1.11	1.56	333	555	888
Chis19d1	2	746	0.93	0.33	279	147	426
Chis3a	4	445	1.11	0.93	333	135	468
Chis3b	2	517	0.93	0.33	279	72	351
Chis3c	2	516	0.93	0.33	279	71	350
Chis4a	4	932	1.11	0.93	333	587	920
Chis4b	2	338	0.93	0.33	279	12	291
Chis1a	4	563	1.11	0.93	333	245	578
Chis1b	2	377	0.93	0.93	279	71	350
Isen8a	6	3,097	1.78	1.56	890	4,051	4,941
Isen1a	2	341	0.93	0.33	279	14	293
Isen8d	2	732	0.93	0.33	279	143	422
Isen8c	2	526	0.93	0.33	279	75	354
Isen8e	2	714	0.93	0.33	279	137	416
Isen8f	2	253	0.93	0.33	279		279
Isen7a	6	1,238	1.78	1.56	890	1,152	2,042
Isen7a2	4	514	1.11	0.93	333	199	532
Isen7c	4	468	1.11	0.93	333	156	489
Isen7c1	4	347	0.93	0.33	279	16	295
Isen7d	2	565	0.93	0.33	279	87	366
Isen7b	2	252	0.93	0.33	279		279

1. For Small and Medium Channels assumed minimum distance of 300ft of deeper dpeth of excavation. If overall length <300ft

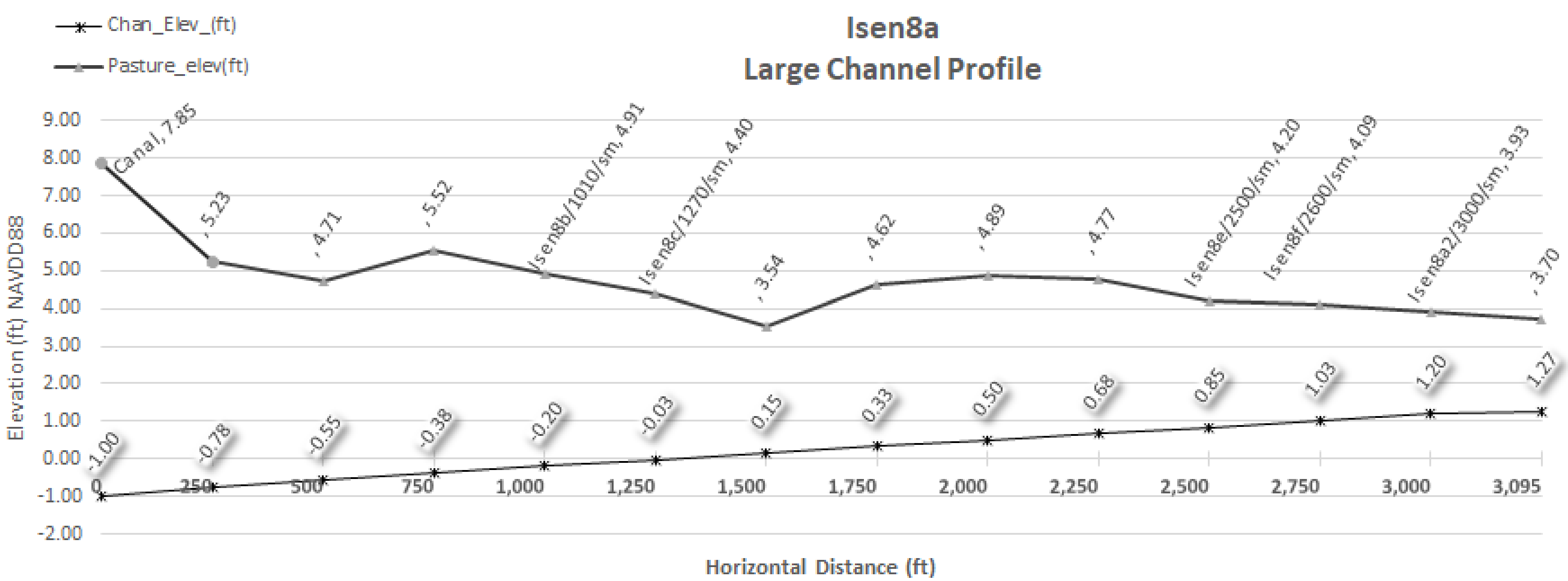
2. If left blank then channel segment <500/300ft in length

Table 2. Continued

Chan_ID	Channel Size (ft)	Channel Length (ft)	CY/ft; First 500/300ft	CY/ft; First 500/300ft	Length x CY/ft First 500/300ft[1]	Length x CY/ft First 500/300ft[2]	Total CY's
Isen7a3	2	468	0.93	0.33	279	55	334
Isen3a	4	1,464	1.11	0.93	333	1,082	1,415
Isen3c	2	622	0.93	0.33	279	106	385
Isen3b	2	767	0.93	0.33	279	154	433
Isen4a	4	706	1.11	0.93	333	378	711
Isen4b2	2	595	0.93	0.33	279	97	376
Isen4a2	2	559	0.93	0.33	279	86	365
Isen8a2	2	821	0.93	0.33	279	172	451
Isen4c	2	381	0.93	0.33	279	27	306
Isen4b	4	499	1.11	0.93	333	185	518
Mess13a	4	1,194	1.11	0.93	333	831	1,164
Mess1a	4	1,554	1.78	1.56	445	2,034	2,479
Mess12a	4	3,902	1.78	1.56	890	5,307	6,197
Mess1a2	4	Removed 2022	1.11	0.93	333		
Mess1b	4	638	0.93	0.33	279	112	391
Mess2a	4	1,052	1.11	0.93	333	699	1,032
Mess2d	2	320	0.93	0.33	279	7	286
Mess3d	4	585	0.93	0.33	279	94	373
Mess3a	4	1,072	1.78	1.56	890	892	1,782
Mess3b	2	559	1.11	0.33	333	86	419
Mess2c	2	266	0.93	0.33	279		279
Mess4a	6	402	1.78	1.56	890		890
Mess3c	2	277	0.93	0.33	279		279
Mess1e	2	880	0.93	0.33	279	191	470
Mess13b	2	406	0.93	0.33	279	35	314
Mess11c	6	1,286	1.78	1.56	534	1,538	2,072
Mess11d	2	683	0.93	0.33	279	126	405
Mess4d	2	662	0.93	0.33	279	120	399
Mess8a	2	424	1.11	1.56	333	193	526
Mess4c	2	736	0.93	0.33	279	144	423
Mess9a	4	925	1.11	0.93	333	581	914
Mess4f	2	541	0.93	0.33	279	80	359
Mess4e	2	661	0.93	0.33	279	119	398
Mess13c2	2	274	0.93	0.33	279		279
Mess11a	6	2,390	1.78	1.56	890	2,948	3,838
1. For Small and Medium Channels assumed minimum distance of 300ft of deeper dpeth of excavation. If overall length <300ft							
2. If left blank then channel segment <500/300ft in length							

Table 2. Continued.

Chan_ID	Channel Size (ft)	Channel Length (ft)	CY/ft; First 500/300ft	CY/ft; First 500/300ft	Length x CY/ft First 500/300ft[1]	Length x CY/ft First 500/300ft[2]	Total CY's
Mess2b	2	368	0.93	0.33	279	22	301
Mess11b	2	540	0.93	0.33	279	79	358
Mess13c3	2	609	0.93	0.33	279	102	381
Mess13c3	2	362	0.93	0.33	279	20	299
Mess13c	2	627	0.93	0.33	279	108	387
Mess13d	2	618	0.93	0.33	279	105	384
Mess12d	2	277	0.93	0.33	279		279
Mess12e2	2	135	0.93	0.33	279		279
ODFW27a	4	618	1.11	0.93	333	296	629
ODFW27a2	2	230	0.93	0.33	279		279
ODFW27b	2	329	0.93	0.33	279	9	288
ODFW27b	4	547	1.11	0.93	333	230	563
ODFW2a	4	351	1.11	0.93	333	47	380
ODFW2b	4	342	1.11	0.93	333	39	372
ODFW3	4	905	1.11	0.93	333	563	896
ODFW29	6	775	1.78	1.56	890	429	1,319
ODFW3a	2	422	0.93	0.33	279		279
ODFW5a	4	589	1.11	0.93	333	268	601
ODFW8a	4	556	1.11	0.93	333	238	571
ODFW9a	2	387	0.93	0.33	279		279
ODFW12a	4	655	1.11	0.93	333	330	663
ODFW12b	2	403	0.93	0.33	279	34	313
ODFW12c	2	352	0.93	0.33	279	17	296
ODFW8b	2	372	0.93	0.33	279	24	303
Isen8b	2	491	0.93	0.33	279	63	342
Isen3d	2	198	0.93	0.33	279		279
Chis12b	2	440	0.93	0.33	279	46	325
Mess1c3	2	609	0.93	0.33	279	102	381
Mess1c4	2	362	0.93	0.33	279	21	300
Mess3b	2	585	0.93	0.33	279	94	373
Chis10b	2	457	0.93	0.33	279	52	331
Chis19c3	2	569	0.93	0.33	279	89	368
Chis10c	2	385	0.93	0.33	279	28	307
Chis19c2	2	419	0.93	0.33	279	39	318
Chis9b	4	433	1.11	0.93	333	124	457
Total Ft		**99,781**		***Totals***			**110,815**
	Miles	***18.9***					



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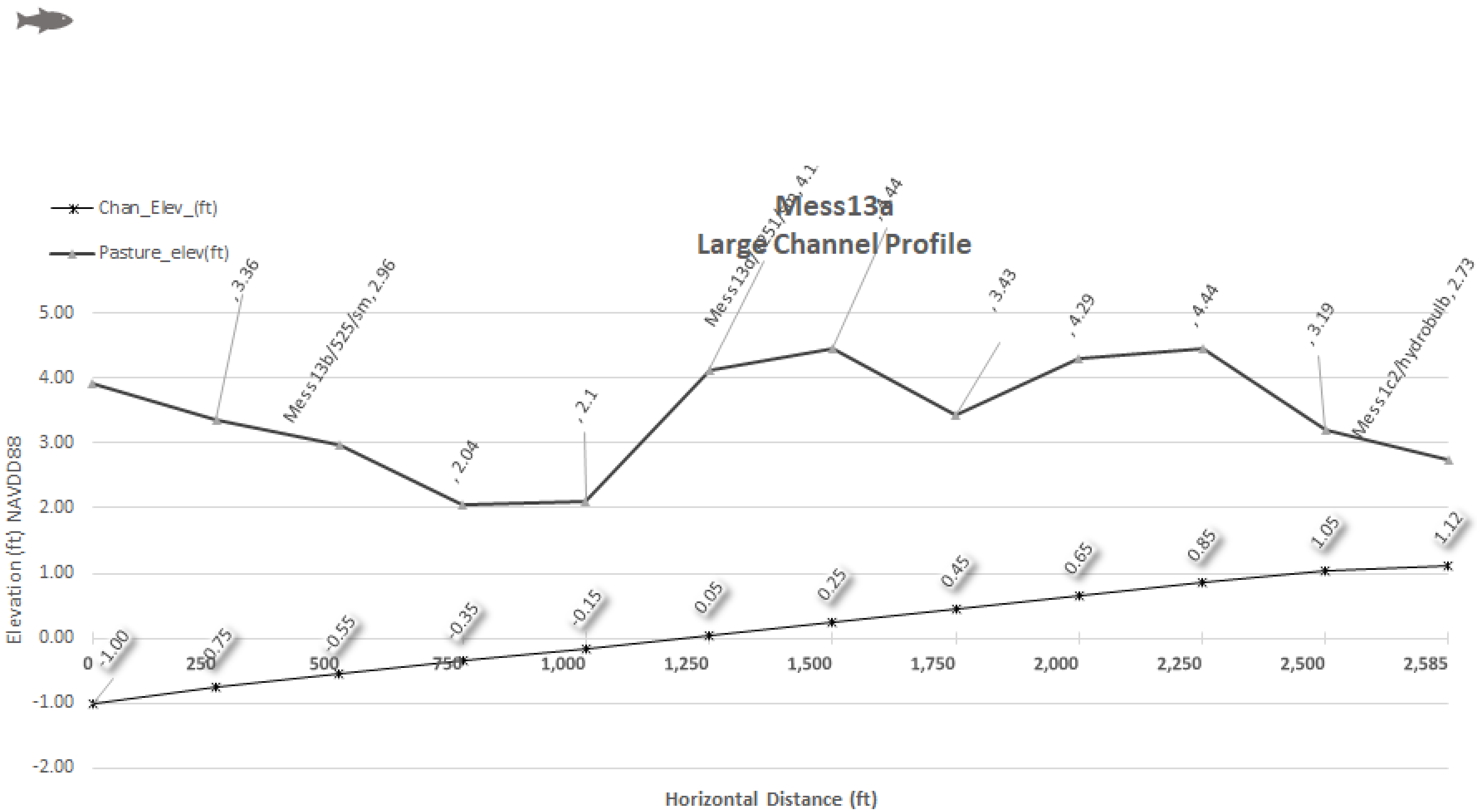

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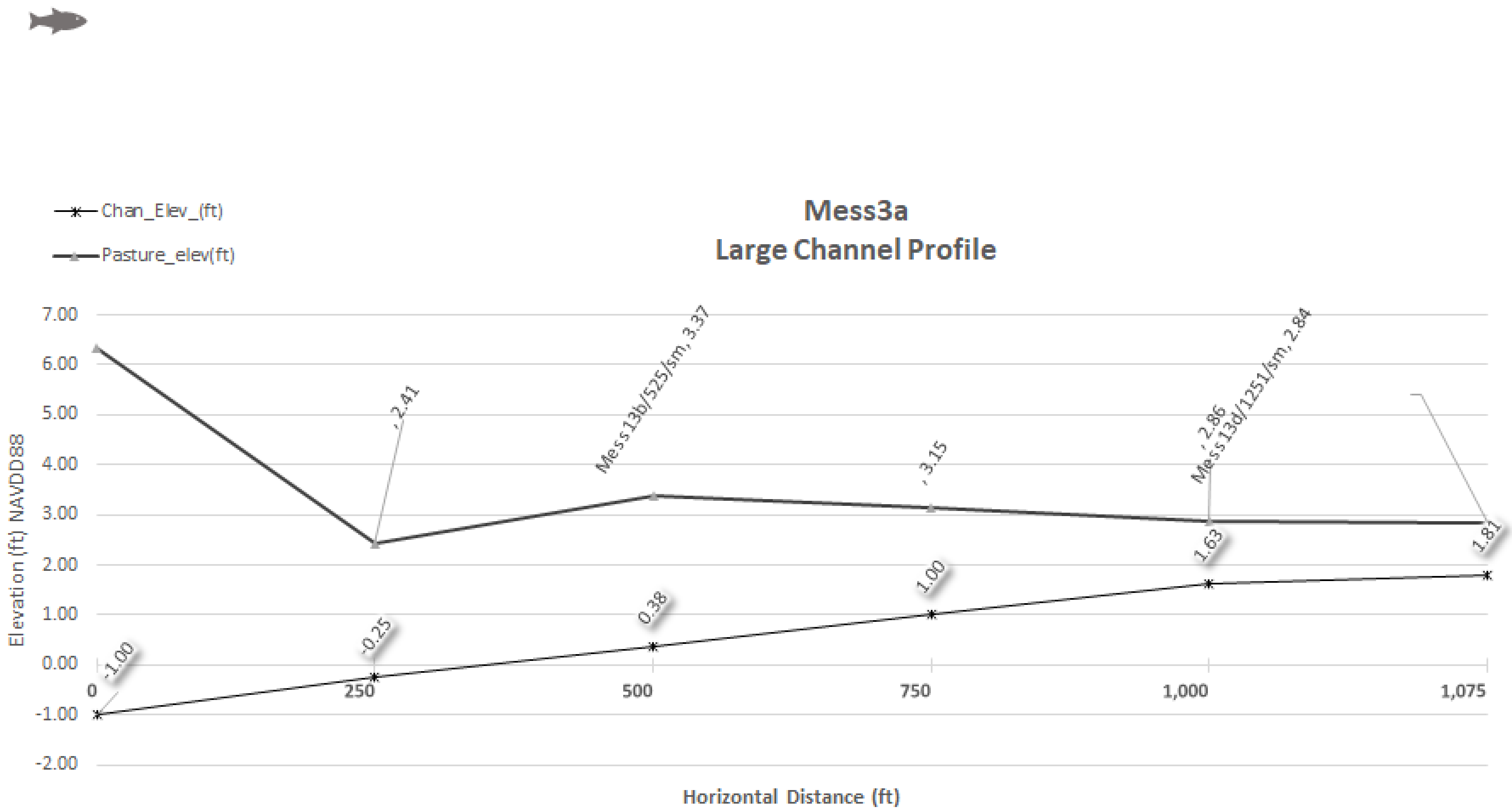

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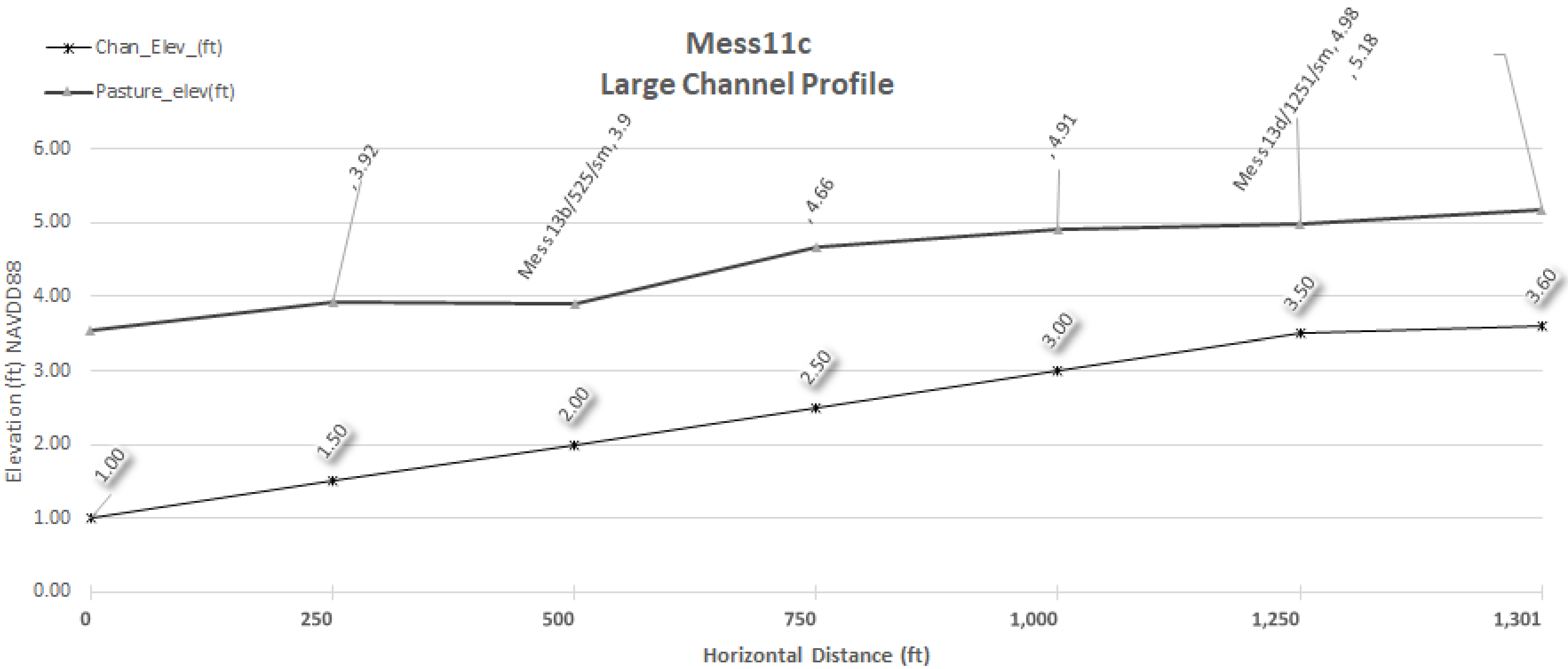

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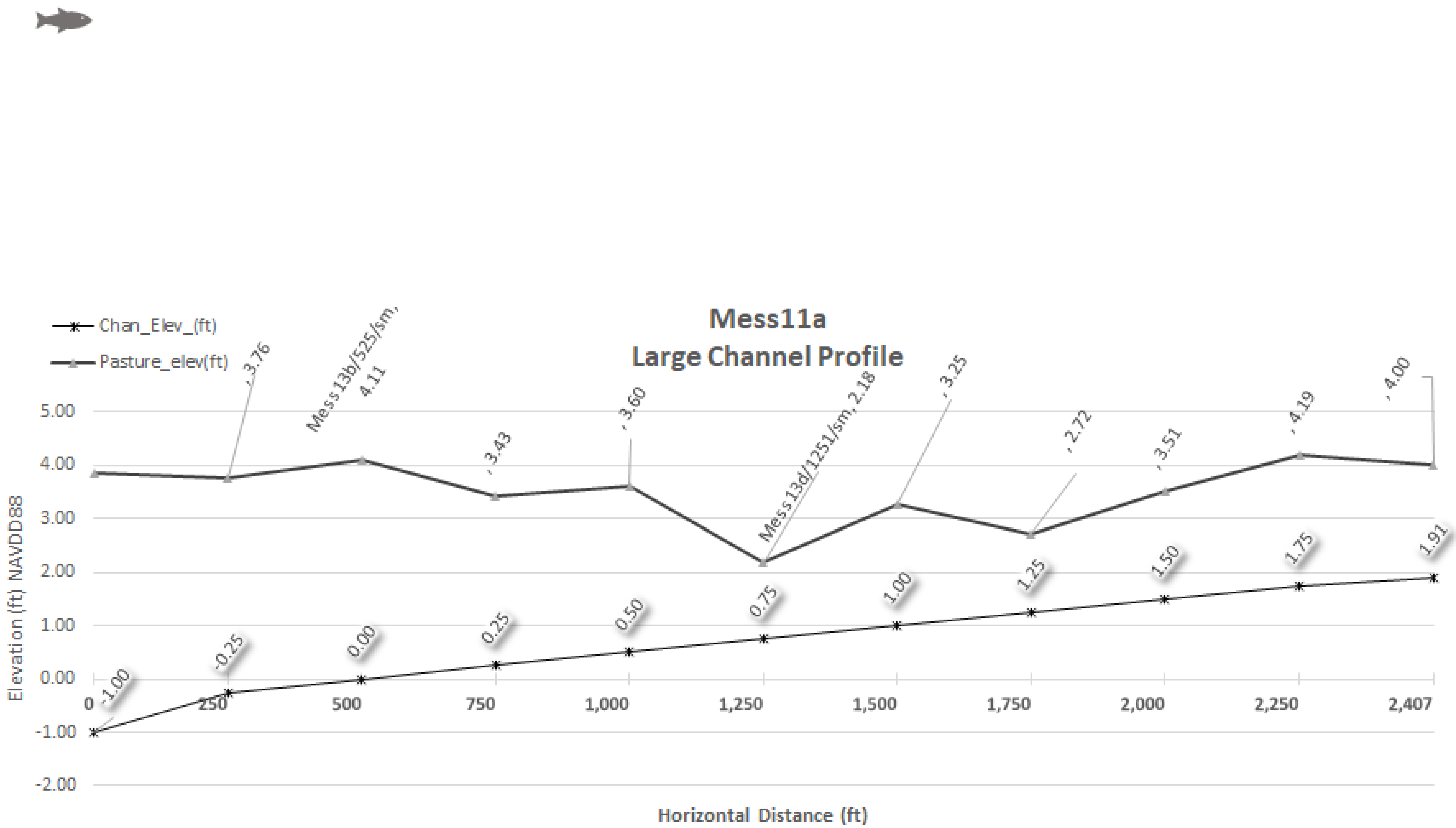
Sheet 6 of 26



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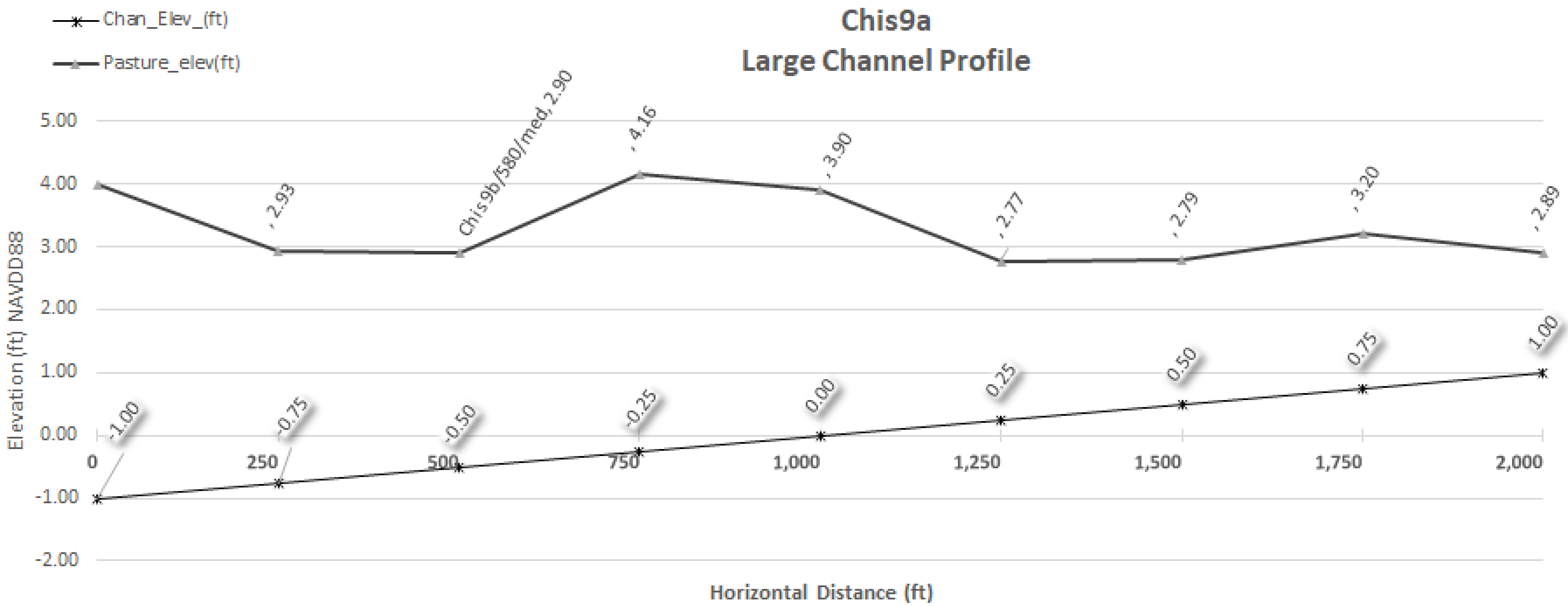

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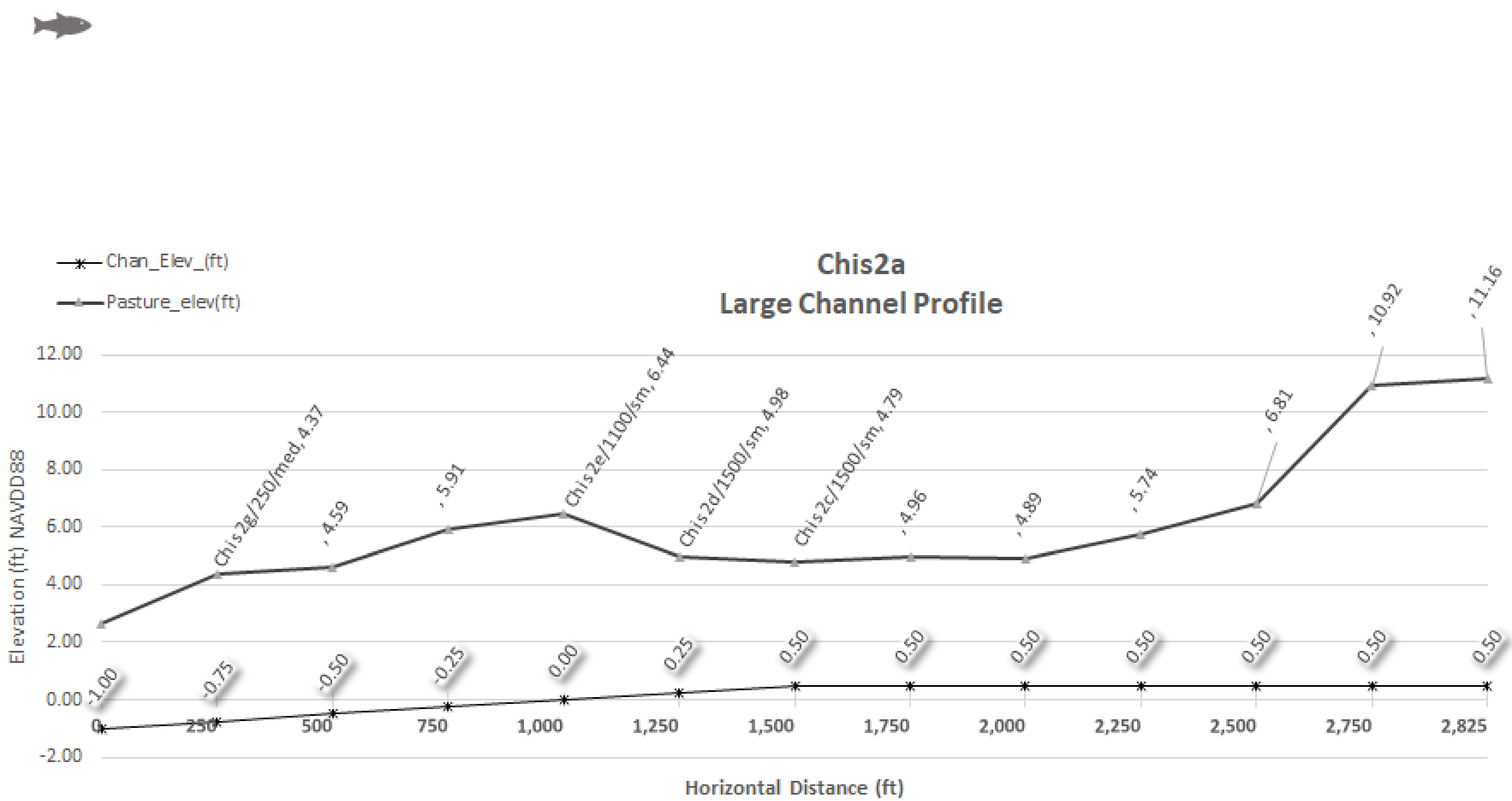

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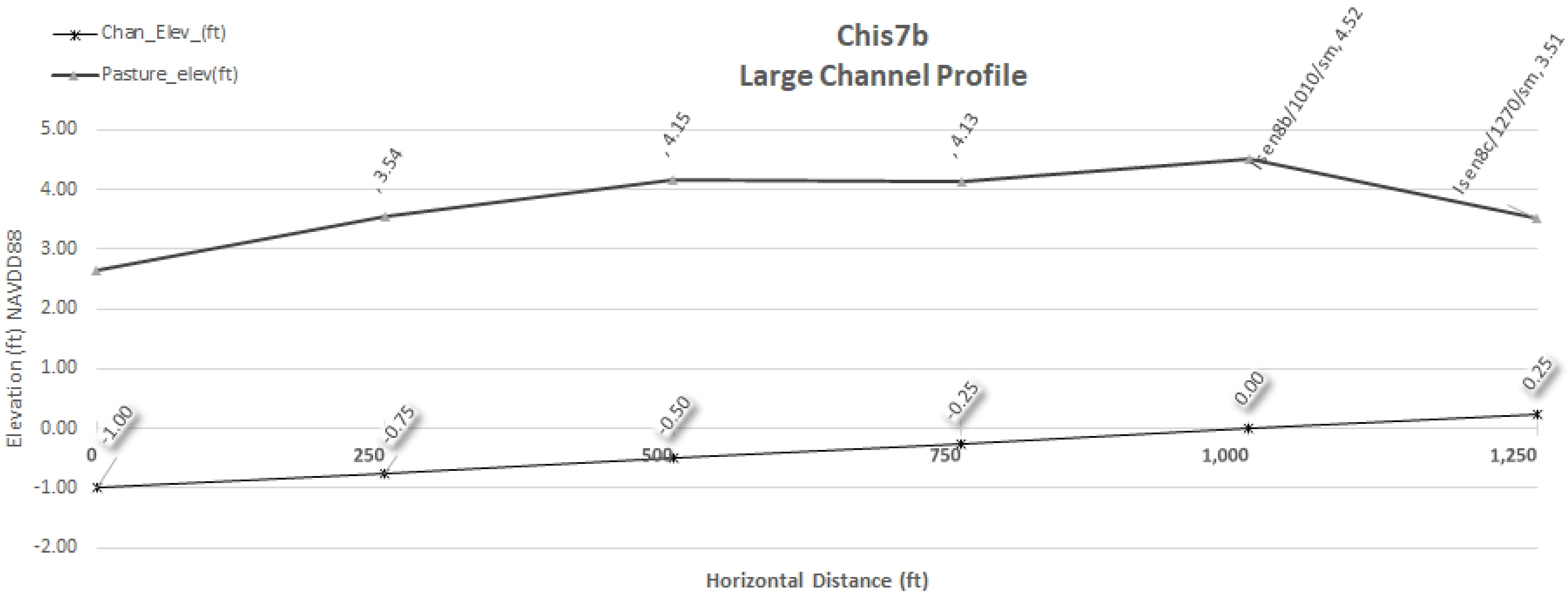

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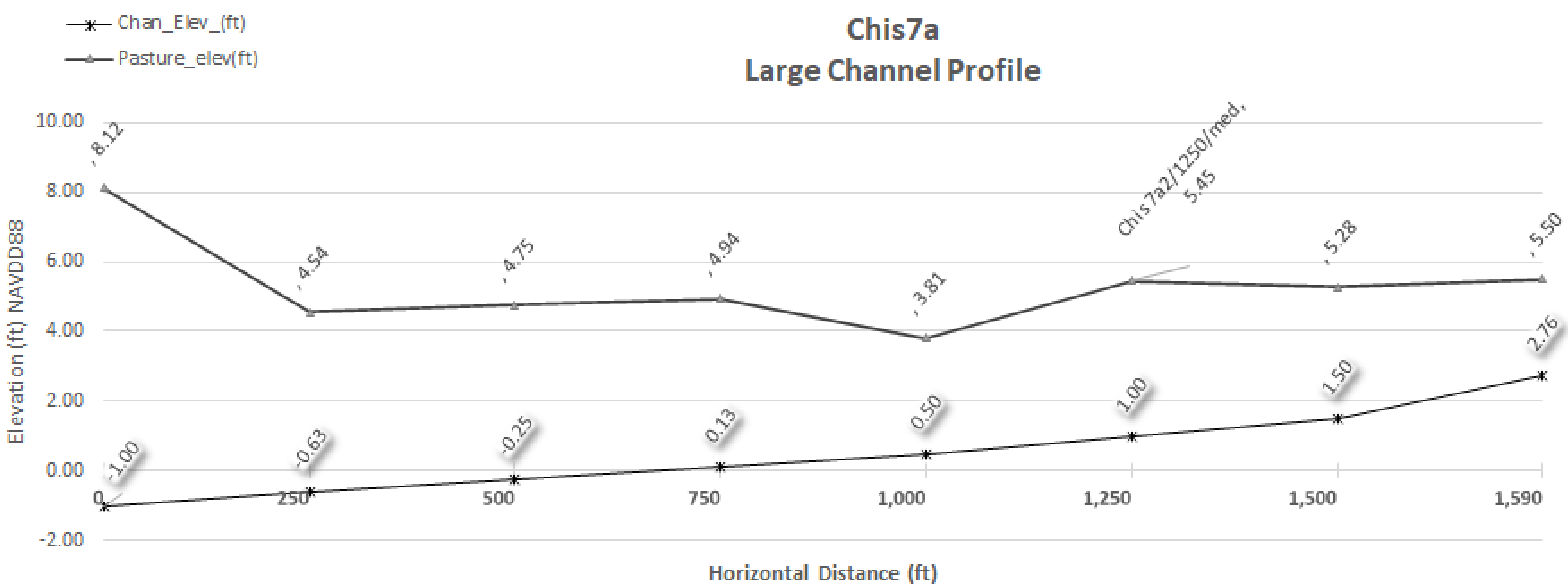

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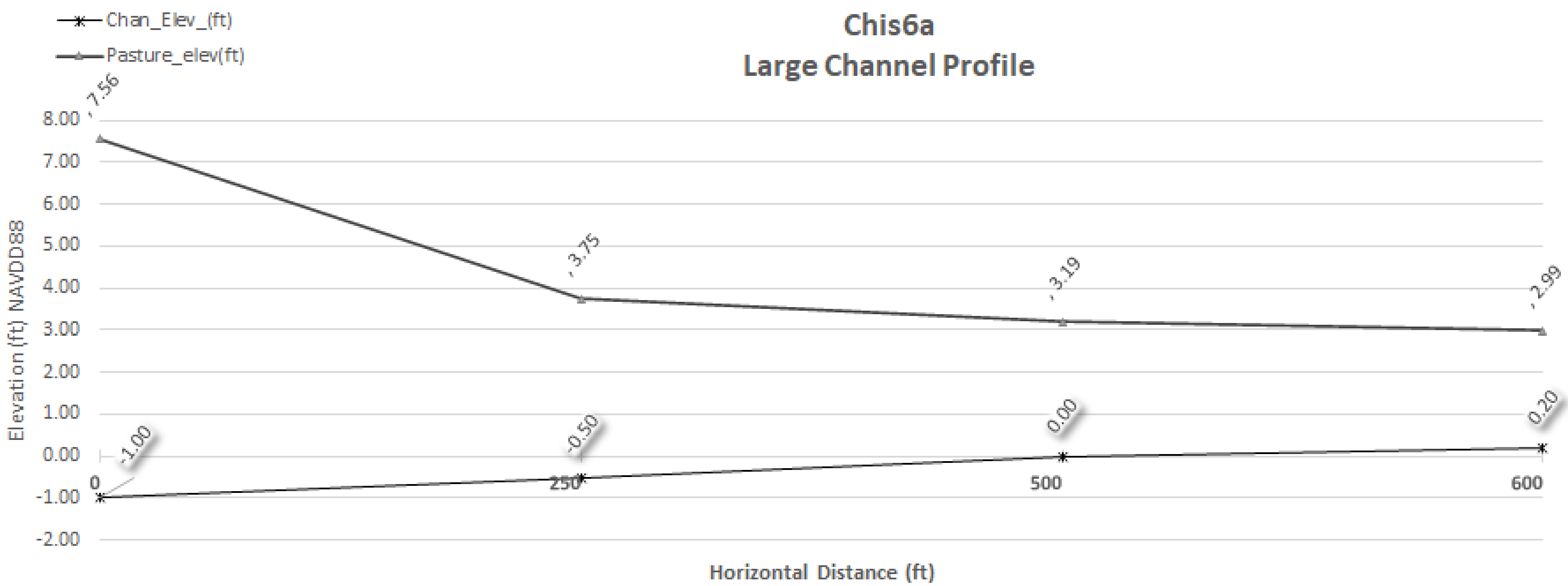

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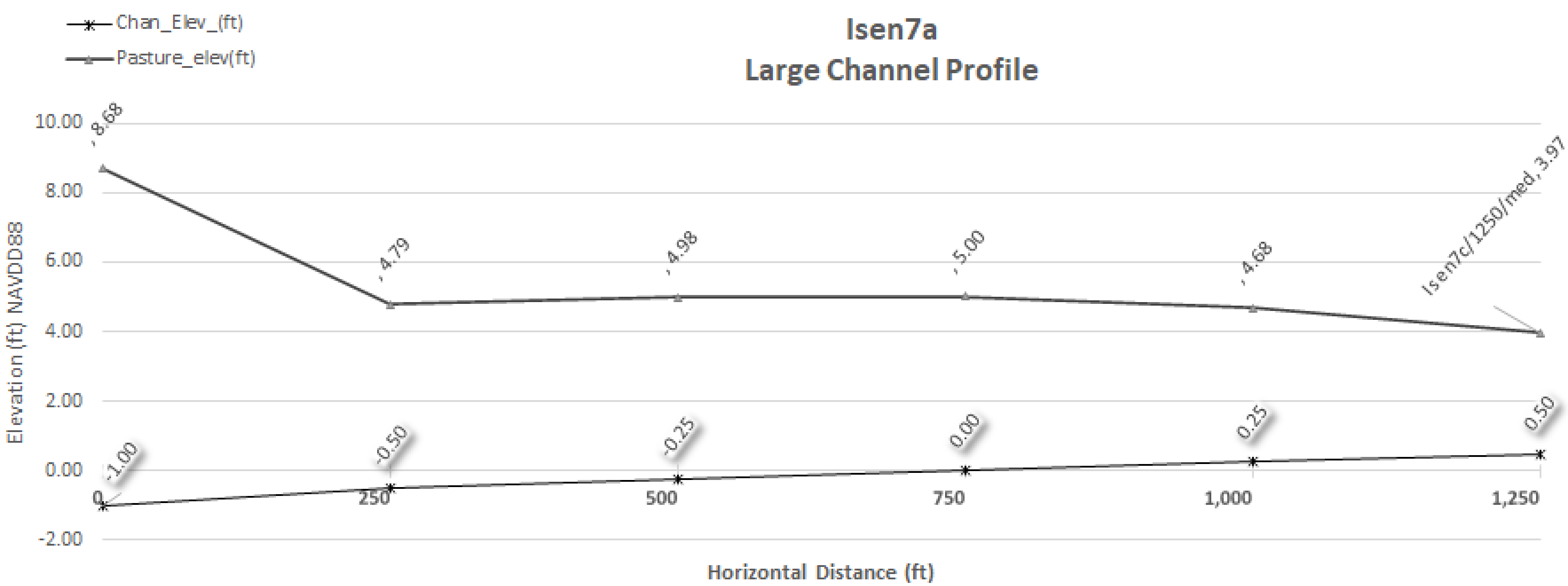

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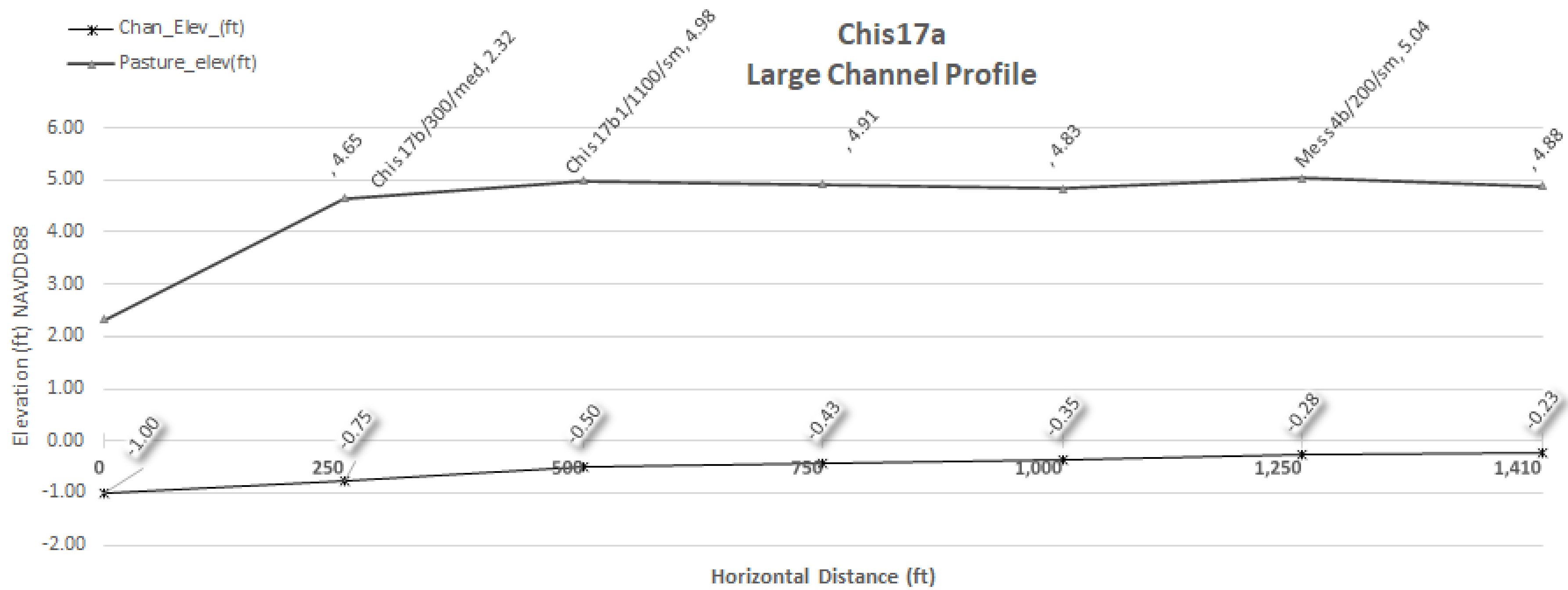

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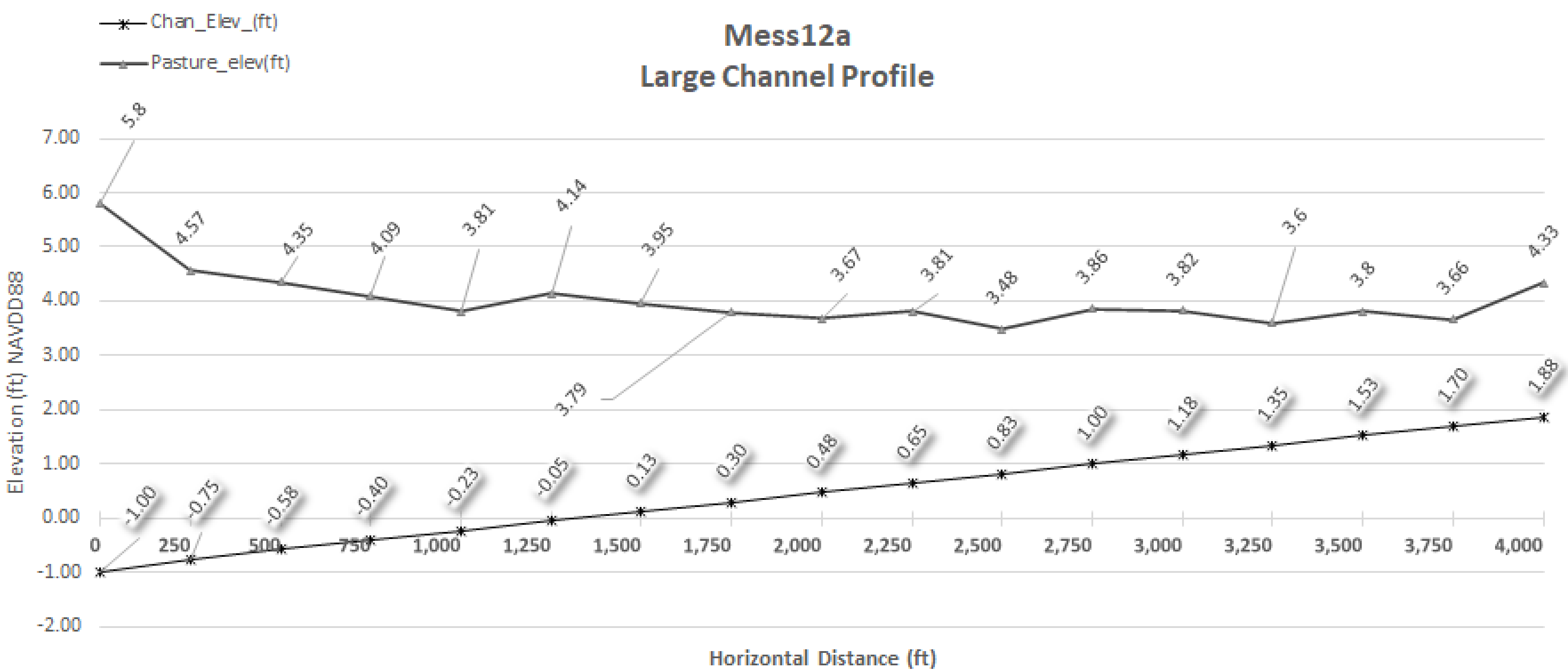

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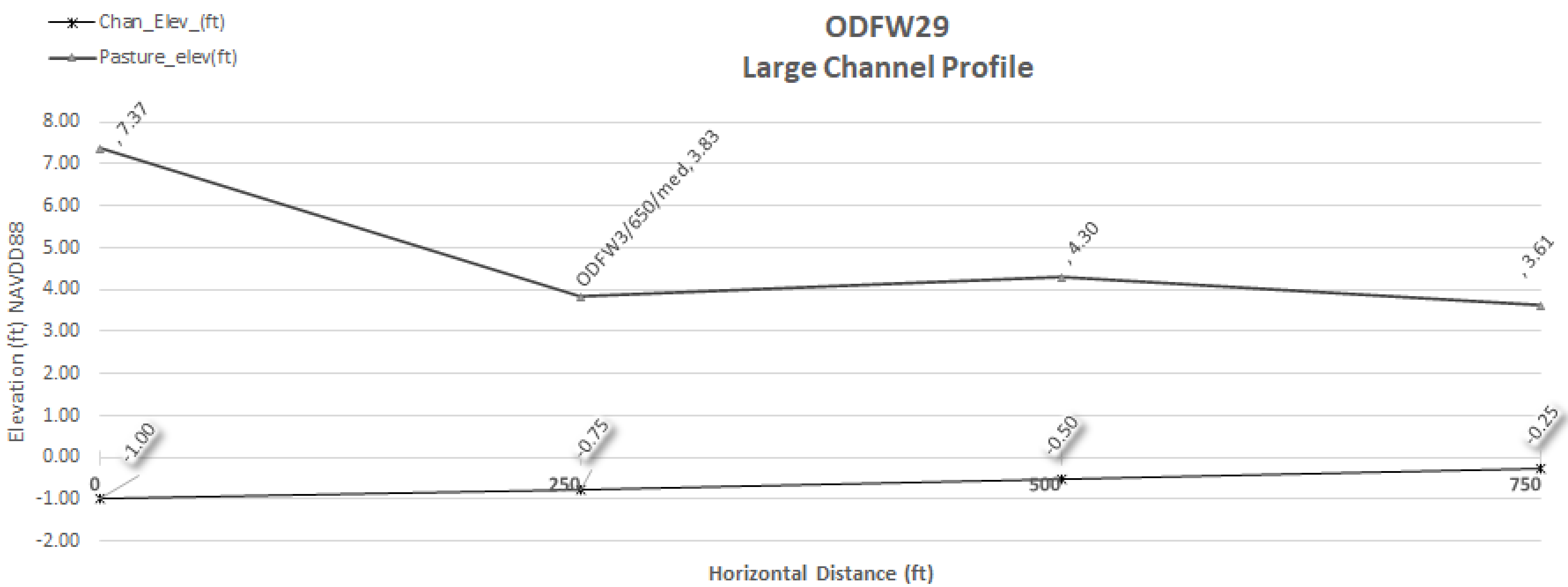

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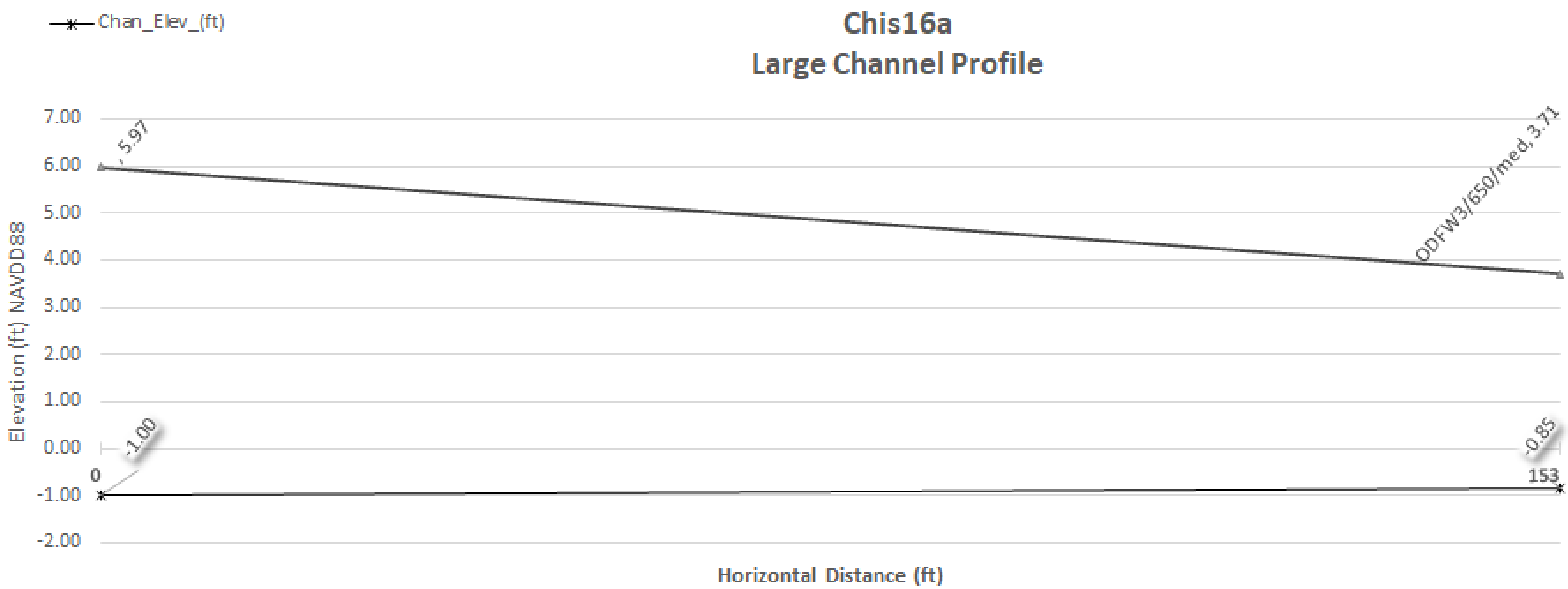

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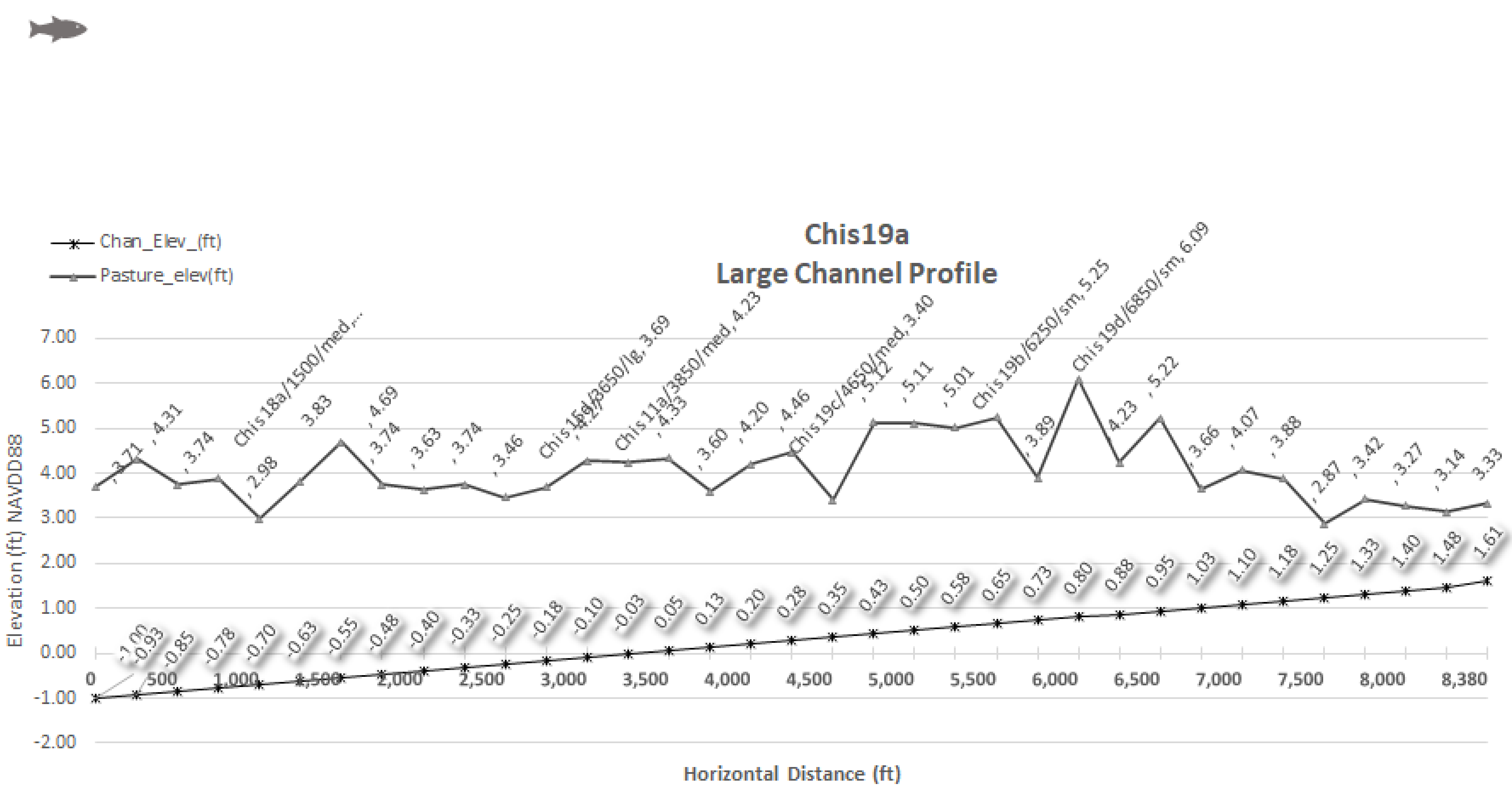

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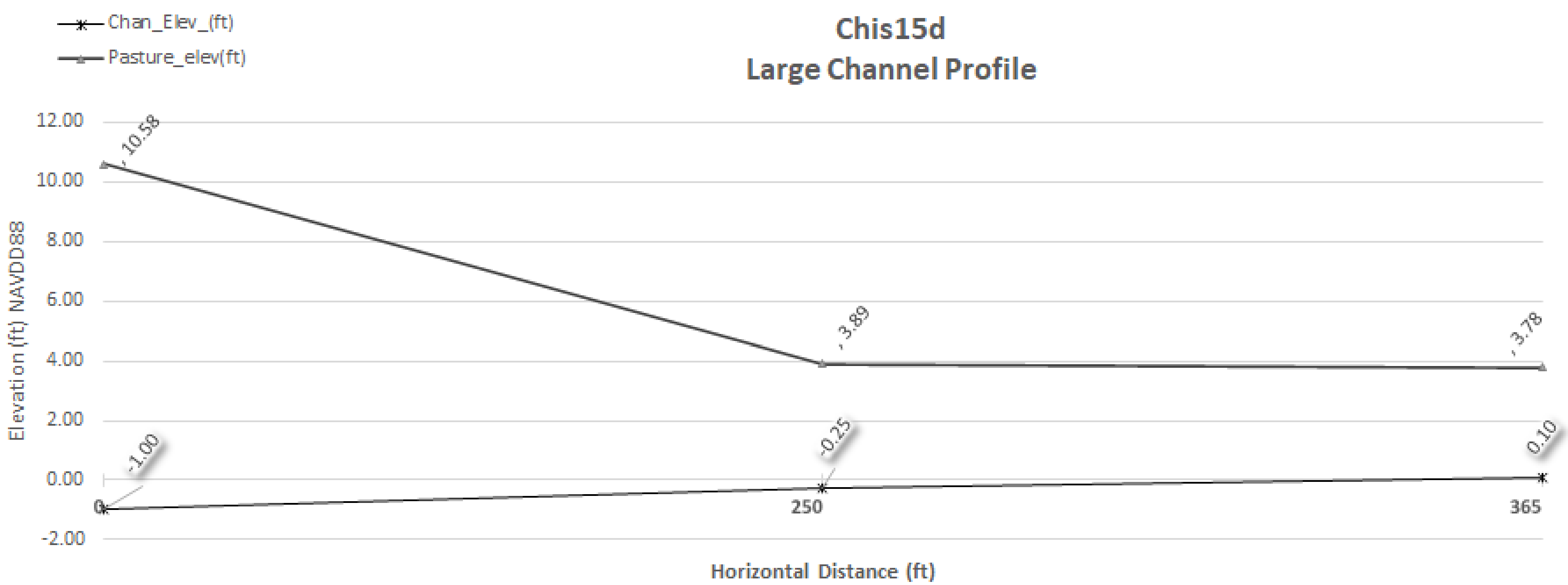

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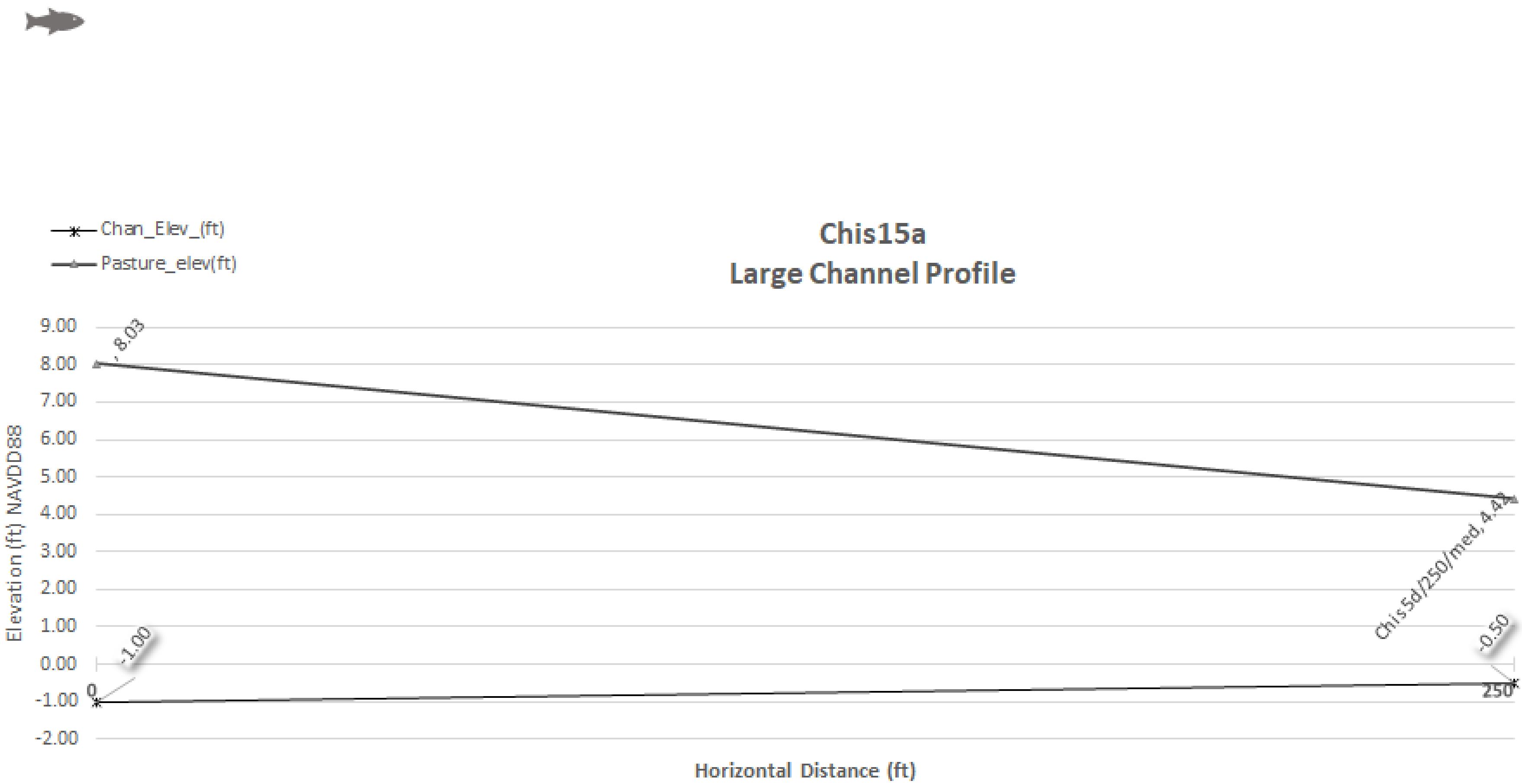

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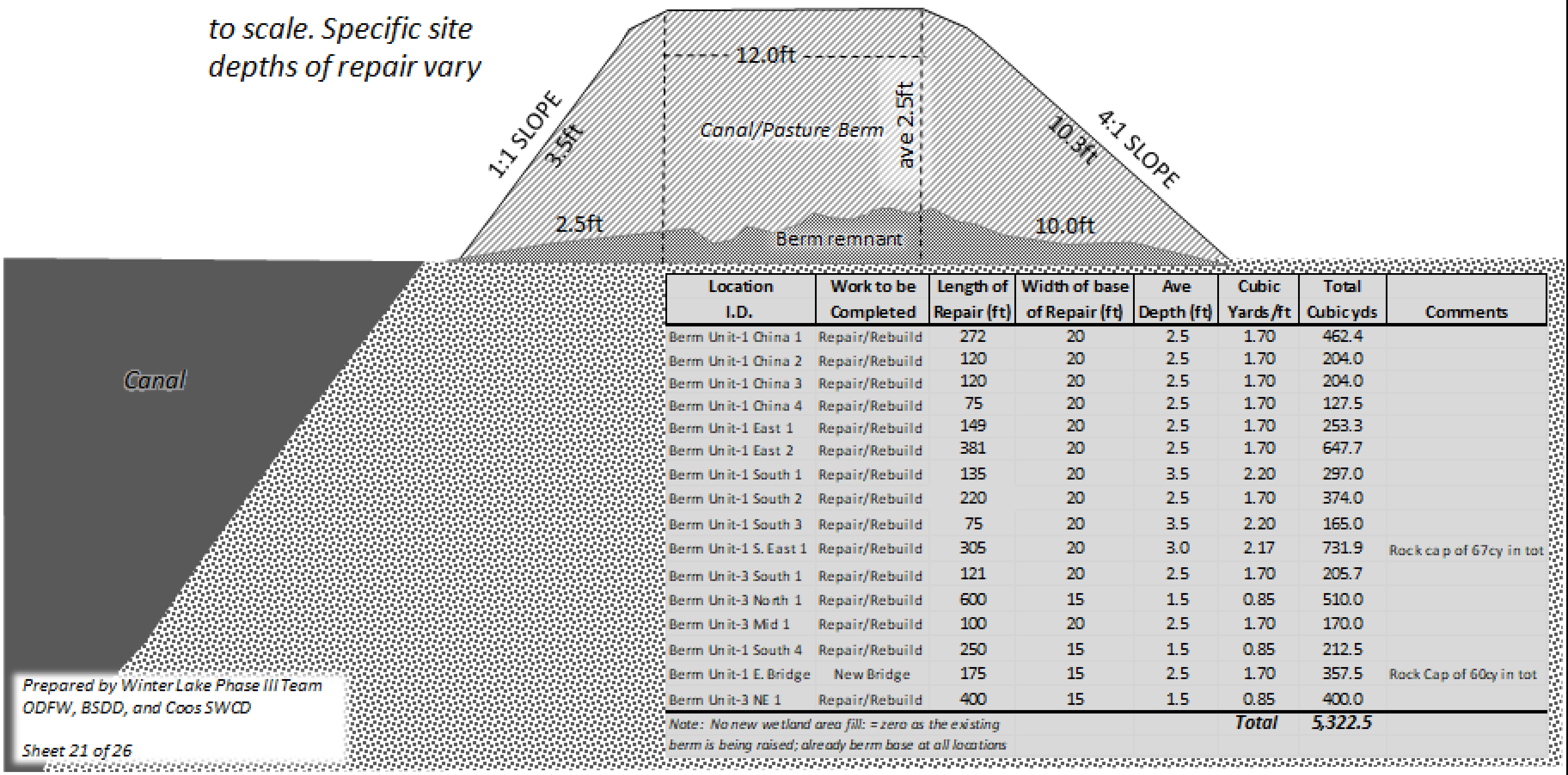
TYPICAL INTERIOR PASTURE/CANAL BERM REPAIR DESIGN

Note: *Not Drawn to scale. Specific site depths of repair vary*



Location I.D.	Work to be Completed	Length of Repair (ft)	Width of base of Repair (ft)	Ave Depth (ft)	Cubic Yards/ft	Total Cubic yds	Comments
Berm Unit-1 China 1	Repair/Rebuild	272	20	2.5	1.70	462.4	
Berm Unit-1 China 2	Repair/Rebuild	120	20	2.5	1.70	204.0	
Berm Unit-1 China 3	Repair/Rebuild	120	20	2.5	1.70	204.0	
Berm Unit-1 China 4	Repair/Rebuild	75	20	2.5	1.70	127.5	
Berm Unit-1 East 1	Repair/Rebuild	149	20	2.5	1.70	253.3	
Berm Unit-1 East 2	Repair/Rebuild	381	20	2.5	1.70	647.7	
Berm Unit-1 South 1	Repair/Rebuild	135	20	3.5	2.20	297.0	
Berm Unit-1 South 2	Repair/Rebuild	220	20	2.5	1.70	374.0	
Berm Unit-1 South 3	Repair/Rebuild	75	20	3.5	2.20	165.0	
Berm Unit-1 S. East 1	Repair/Rebuild	305	20	3.0	2.17	731.9	Rock cap of 67cy in tot
Berm Unit-3 South 1	Repair/Rebuild	121	20	2.5	1.70	205.7	
Berm Unit-3 North 1	Repair/Rebuild	600	15	1.5	0.85	510.0	
Berm Unit-3 Mid 1	Repair/Rebuild	100	20	2.5	1.70	170.0	
Berm Unit-1 South 4	Repair/Rebuild	250	15	1.5	0.85	212.5	
Berm Unit-1 E. Bridge	New Bridge	175	15	2.5	1.70	357.5	Rock Cap of 60cy in tot
Berm Unit-3 NE 1	Repair/Rebuild	400	15	1.5	0.85	400.0	
Note: No new wetland area fill: = zero as the existing berm is being raised; already berm base at all locations					***Total***	***5,322.5***	

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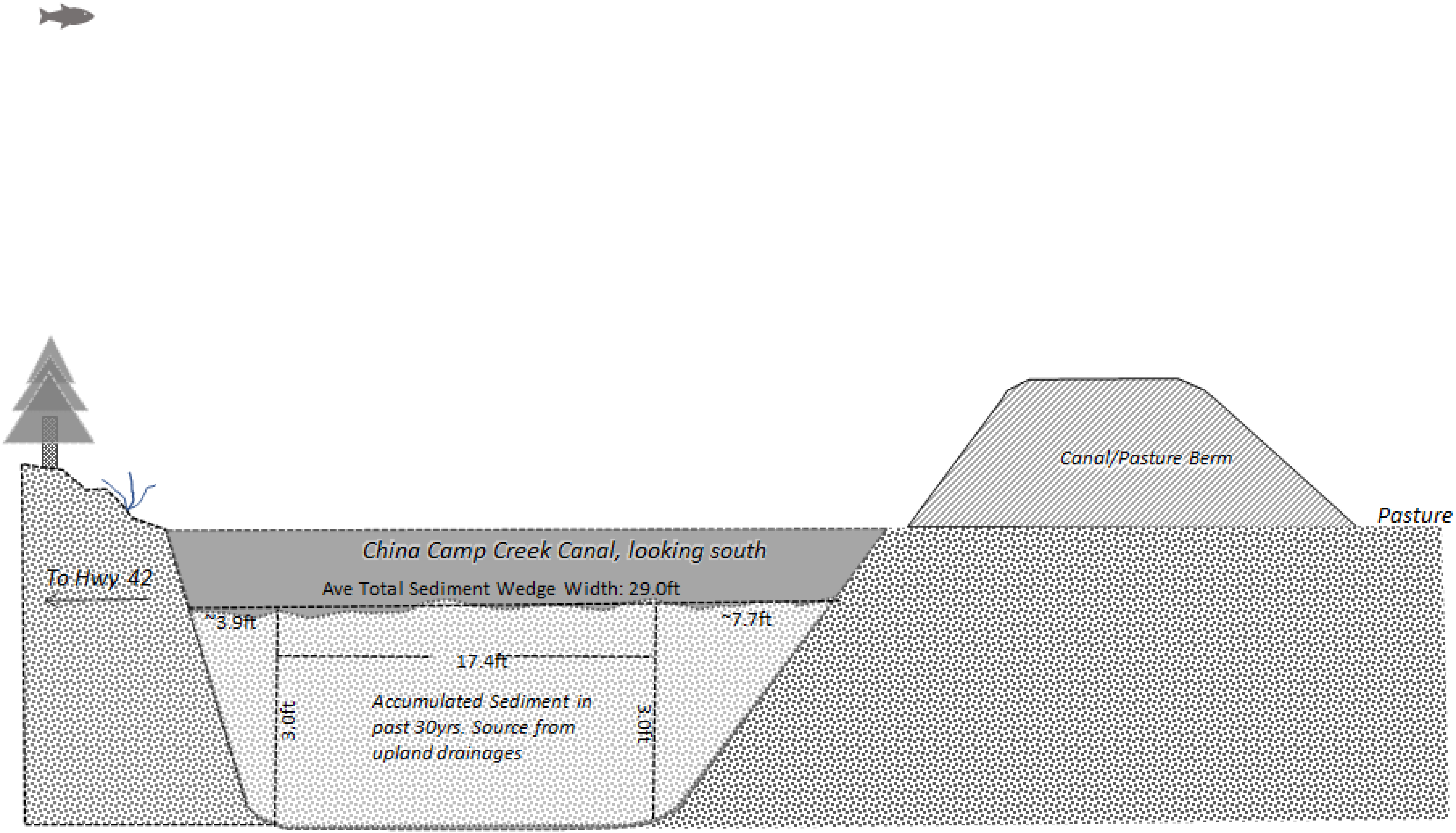

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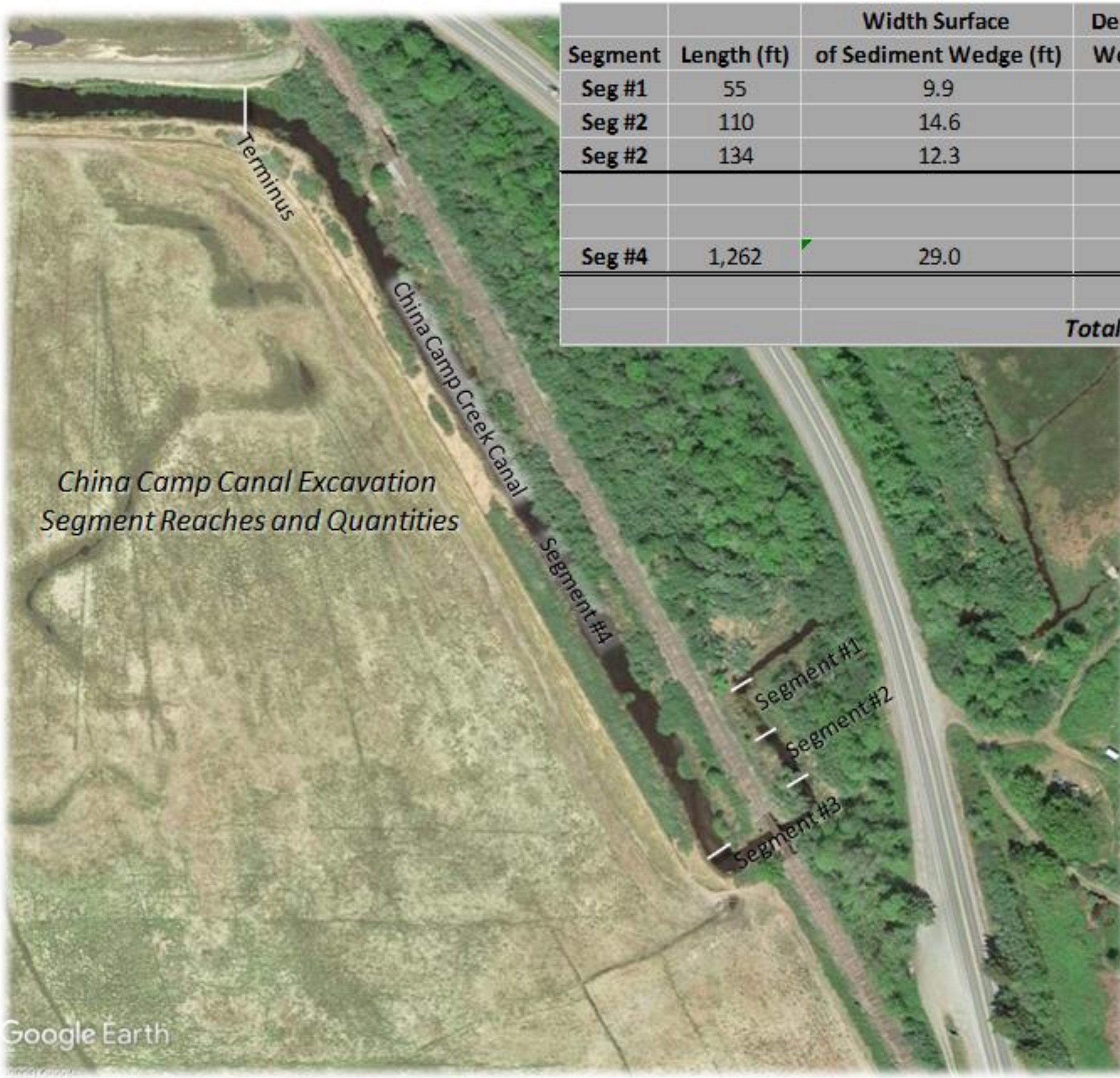
		Width Surface	Depth Sediment	
Segment	**Length (ft)**	**of Sediment Wedge (ft)**	**Wedge; Ave (ft)**	**Total Cubic Yards**
Seg #1	55	9.9	3.0	60.2
Seg #2	110	14.6	3.0	178.8
Seg #2	134	12.3	3.0	183.1
			SubTotal	**422.1**
Seg #4	1,262	29.0	4.0	3,253.0
			Total all Segments	***3675.1***



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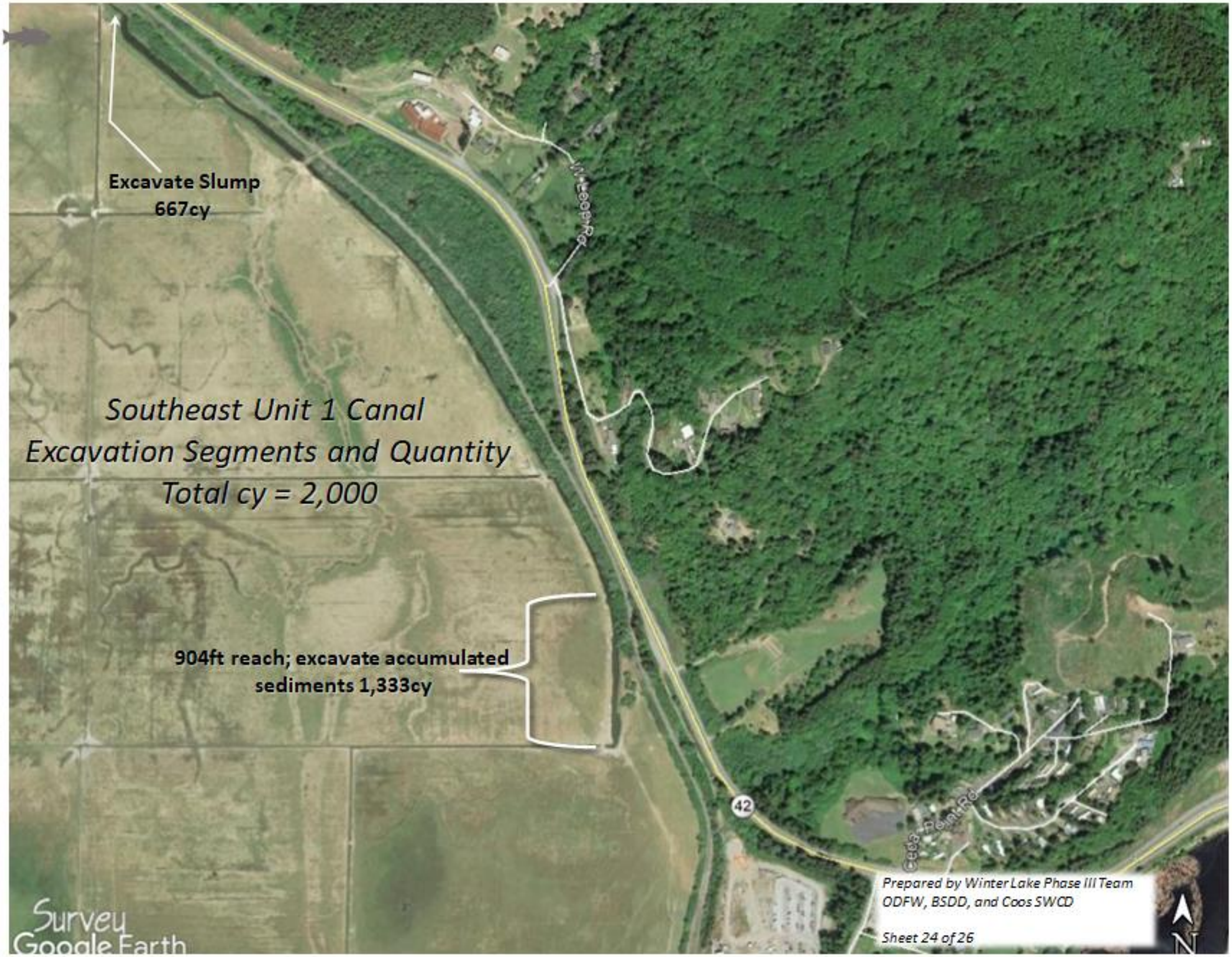
Excavate Slump
667cy
Southeast Unit 1 Canal
Excavation Segments and Quantity
Total cy = 2,000
904ft reach; excavate accumulated
sediments 1,333cy
42
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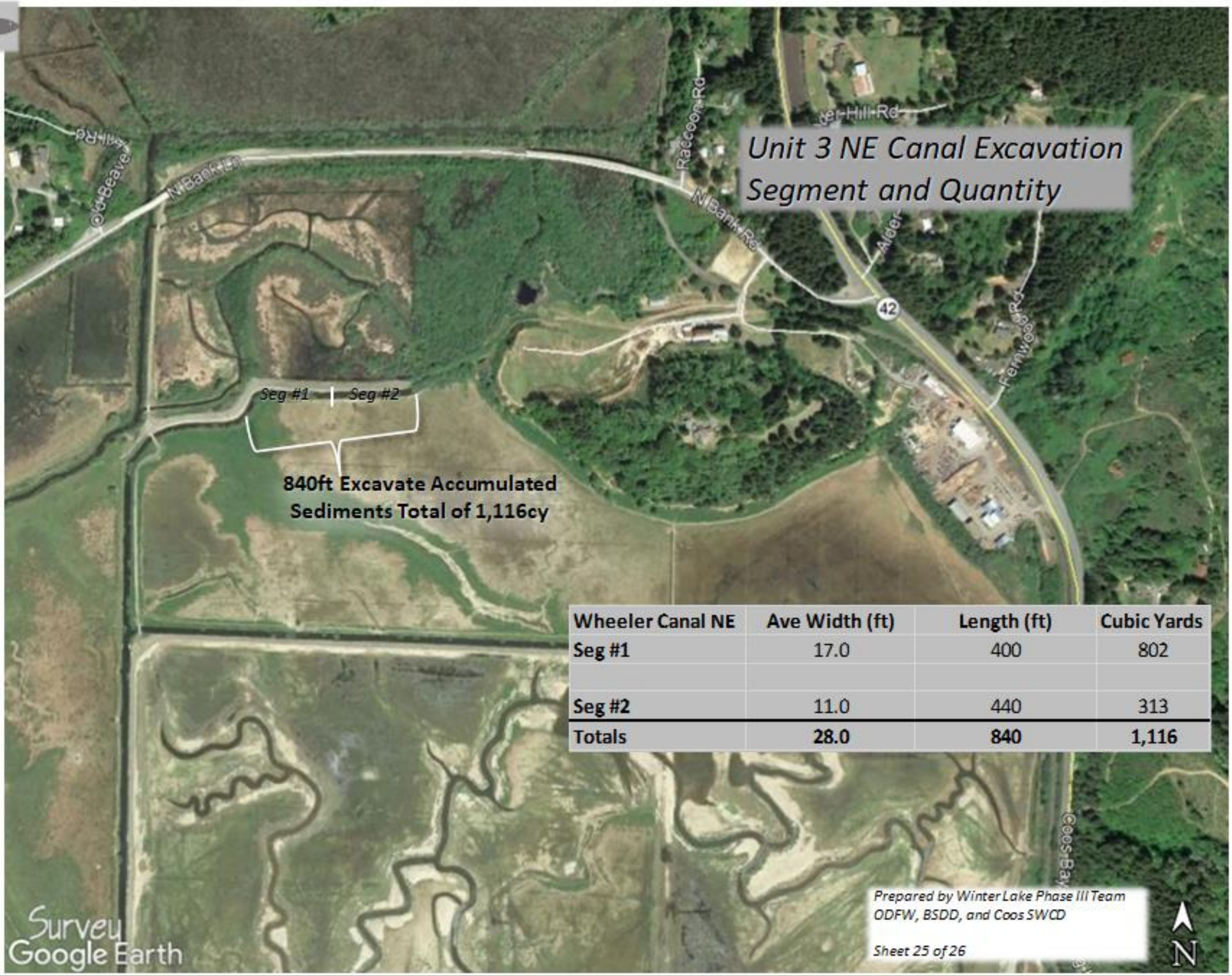
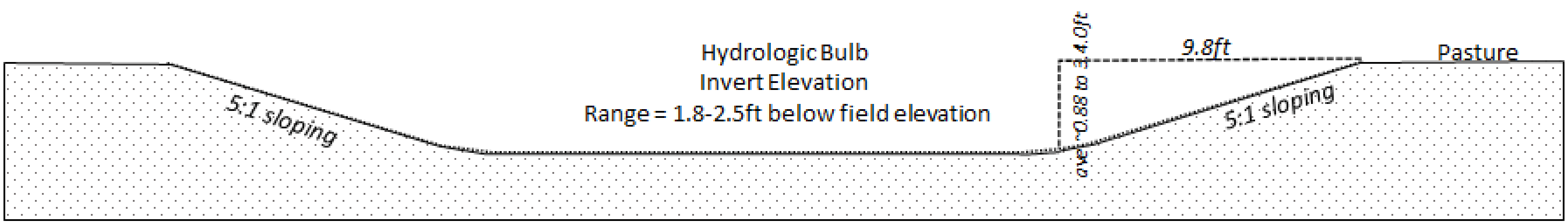
N
Survey
Google Earth



Wheeler Canal NE	Ave Width (ft)	Length (ft)	Cubic Yards
Seg #1	17.0	400	802
Seg #2	11.0	440	313
Totals	**28.0**	**840**	**1,116**

Hydrologic Bulb Layout Cross-Section

Hydro Bulb I.D.	Channel Connect Size	Distance frm Connect Chan (ft)	NAVDD88 Invert (ft)	Field Elevation (ft)	Excavate Depth (ft)	Acres	Sq ft	Excavate Volume CY
Isen8a2	Small	3,995	2.5	3.85	1.35	0.73	31,799	1,827
Mess1a2	Medium-S	1,571	1.8	4.35	2.55	0.7	30,492	3,112
Mess11d	Large	1,250	2.5	4.67	2.17	0.74	32,234	2,841
Mess1c2	Large	1,075	2.5	3.84	1.34	1.19	51,836	2,883
Isen7a3	Small	2,137	2.0	4.27	2.27	0.61	26,572	2,511
Mess2a	Large	1,215	1.8	2.99	1.19	0.46	20,038	1,081
Chis5b	Medium	837	2.1	3.74	1.64	0.43	18,731	1,331
Chis19c3	Small	688	1.8	2.88	1.12	0.8	34,848	1,686
Chis20c	Small	1,130	1.8	2.91	1.11	0.76	33,106	1,604
Chis5d	Medium	895	2.0	5.39	3.39	0.39	16,988	2,311
Chis19c	Small	1,500	2.3	4.33	2.03	0.28	12,197	1,071
Chis7c	Medium	902	3.5	4.79	1.28	0.47	20,473	1,172
Chis12b	Small	550	1.8	3.14	1.34	1.12	48,787	2,675
Mess1e	Small	880	2.5	3.96	1.46	1.14	49,658	2,990
Isen4a2	Small	1,333	2.0	4.62	2.62	1.05	45,738	4,631
Isen8d	Small	732	2.5	3.65	1.15	0.92	40,075	1,972
ODFW12a	Medium	655	1.0	2.71	1.71	1.2	52,272	3,627
ODFW3a	Small	422	1.0	2.89	1.89	0.94	40,946	2,866
ODFW27a	Small	230	1.0	3.23	2.23	0.941	40,990	3,666
Chis1b	Small	377	1.5	3.82	2.32	0.94	40,946	3,790
Chis4b	Small	338	1.5	4.18	2.68	0.85	37,026	3,939
Chis3c	Small	516	1.5	4.94	3.44	1.9	82,764	10,921
				Totals		*18.56*	*808,517*	*64,505*



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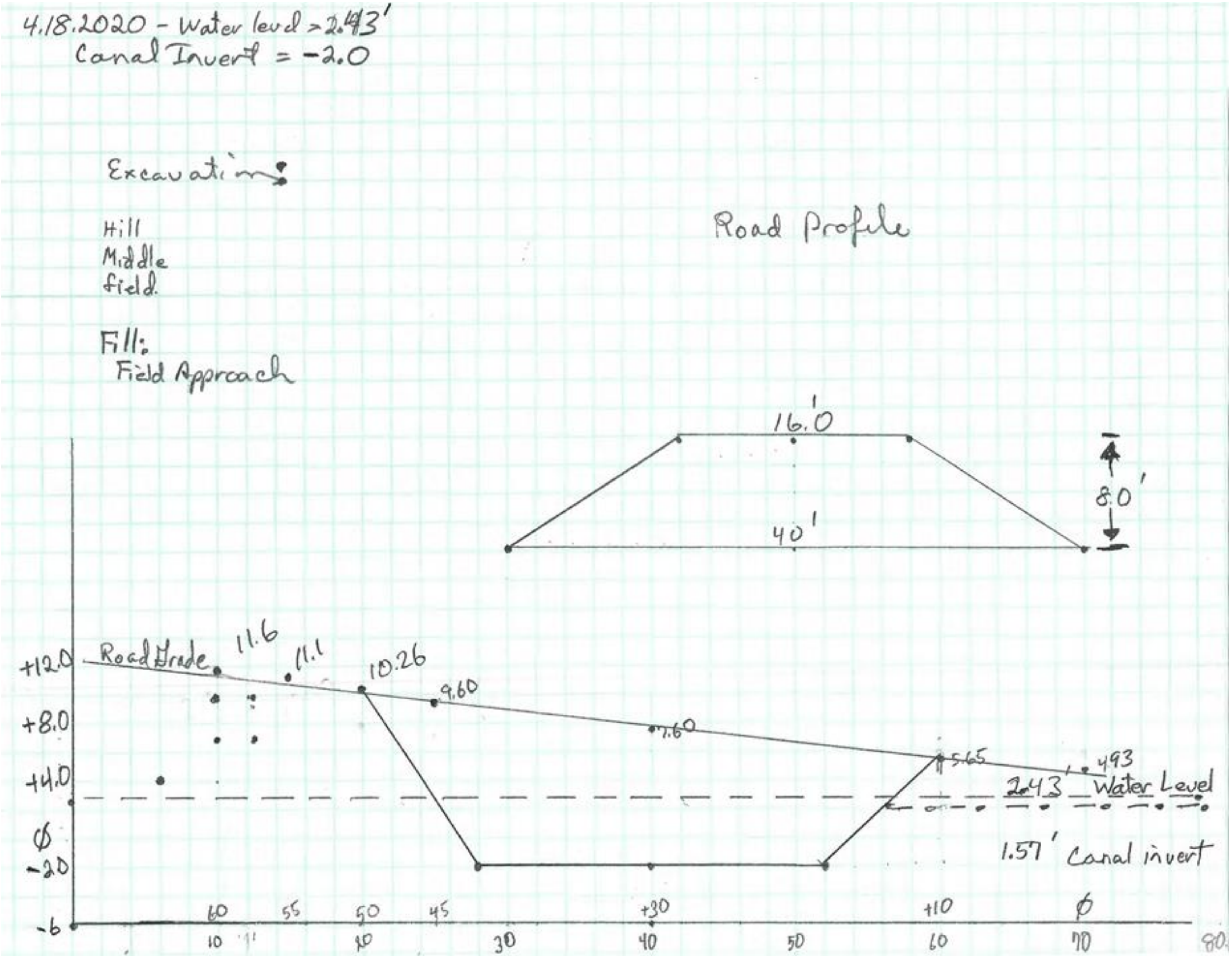

Figure 9. Unit 1 S. Canal S.E. pasture access bridge cross-section drawing profile of canal excavation and road profile.

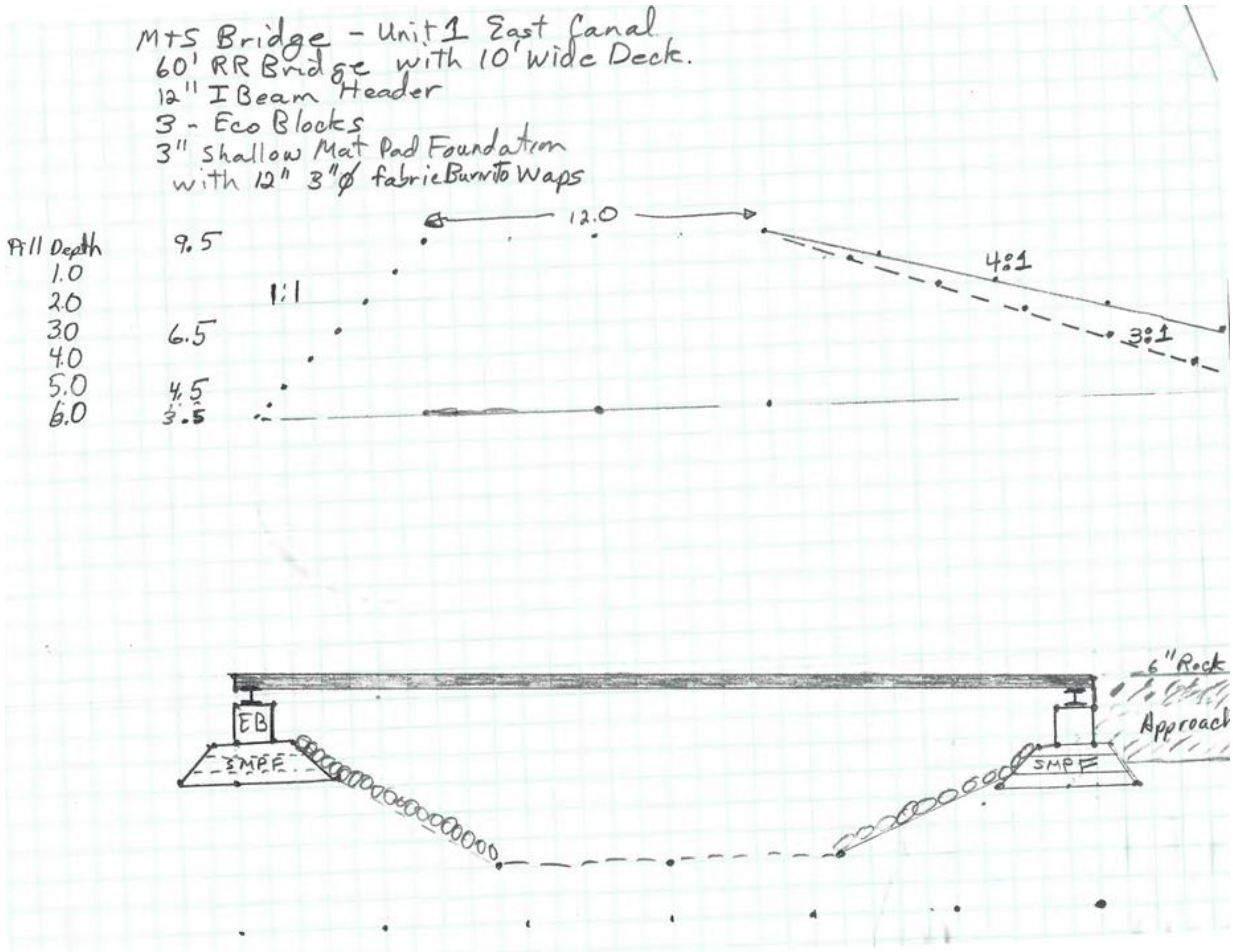

Figure 10. Unit 1 S. Canal S.E. pasture access bridge cross-section drawing.

Table 3. Phase III Fill and Removal volumes and dispositions

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
								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
								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
								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***	

APPENDIX A

Winter Lake Phase III Channel Gradients

Appendix A. Table 1. Winter Lake Phase III interior pasture channel gradient. ***Note:*** *In tables the channel grades are the grade forward of the station; i.e. if the grade at 250 is 0.50% and then 0.20% at 500ft then the grade from 250 to 500 is 0.20%*

Large Channels			**Chan Elev**			
Channel	**Channel**	**Distance frm**	***NAVDD88***	**LiDAR**	**Chan**	**Connect Chan**
I.D.	**Size**	**Cnct Chan (ft)**	**Invert (ft)**	**(ft)[1]**	**Slope %[2]**	**I.D./loc_dist/sze**
Isen8a	Large	0	-1.00	7.85	0.09%	Canal
Isen8a	Large	250	-0.78	5.23	0.09%	
Isen8a	Large	500	-0.55	4.71	0.09%	
Isen8a	Large	750	-0.38	5.52	0.07%	
Isen8a	Large	1000	-0.20	4.91	0.07%	Isen8b/1010/sm
Isen8a	Large	1250	-0.03	4.40	0.07%	Isen8c/1270/sm
Isen8a	Large	1500	0.15	3.54	0.07%	
Isen8a	Large	1750	0.33	4.62	0.07%	
Isen8a	Large	2000	0.50	4.89	0.07%	
Isen8a	Large	2250	0.68	4.77	0.07%	
Isen8a	Large	2500	0.85	4.20	0.07%	Isen8e/2500/sm
Isen8a	Large	2750	1.03	4.09	0.07%	Isen8f/2600/sm
Isen8a	Large	3000	1.20	3.93	0.07%	Isen8a2/3000/sm
Isen8a	Large	3095	1.27	3.70	0.07%	
Isen8a2	***Small***	***3995***	**1.90**	***3.85***	0.07%	Isen8a2/3995/term
Mess13a	Large	0	-1.00	3.92	0.10%	
Mess13a	Large	250	-0.75	3.36	0.10%	
Mess13a	Large	500	-0.55	2.96	0.08%	Mess13b/525/sm
Mess13a	Large	750	-0.35	2.04	0.080%	
Mess13a	Large	1000	-0.15	2.10	0.080%	
Mess13a	Large	1250	0.05	4.13	0.080%	Mess13d/1251/sm
Mess13a	*Large*	*1500*	*0.25*	*4.44*	0.080%	
Mess13a	Large	1750	0.45	3.43	0.080%	
Mess13a	Large	2000	0.65	4.29	0.080%	
Mess13a	Large	2250	0.85	4.44	0.080%	
Mess13a	Large	2500	1.05	3.19	0.080%	
Mess13a	Large	2585	1.12	2.73	0.080%	Mess1c2/hydrobulb
Mess12a	Large	0	-1.00	5.80	0.100%	
Mess12a	Large	250	-0.75	4.57	0.100%	
Mess12a	Large	500	-0.58	4.35	0.070%	
Mess12a	Large	750	-0.40	4.09	0.070%	
Mess12a	Large	1000	-0.23	3.81	0.070%	
Mess12a	Large	1250	-0.05	4.14	0.070%	
Mess12a	Large	1500	0.13	3.95	0.070%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Large Channels			Chan Elev			
Channel	Channel	Distance frm	*NAVDD88*	LiDAR	Chan	Connect Chan
I.D.	Size	Cnct Chan (ft)	Invert (ft)	(ft)[1]	Slope %[2]	I.D./loc_dist/sze
Mess12a	Large	1750	0.30	3.79	0.070%	
Mess12a	Large	2000.00	0.48	3.67	0.07%	
Mess12a	Large	2250	0.65	3.81	0.07%	
Mess12a	Large	2500	0.83	3.48	0.07%	
Mess12a	Large	2750	1.00	3.86	0.07%	
Mess12a	Large	3000	1.18	3.82	0.07%	
Mess12a	Large	3250	1.35	3.60	0.07%	
Mess12a	Large	3500	1.53	3.80	0.07%	
Mess12a	Large	3750	1.70	3.66	0.07%	
Mess12a	Large	4000	1.88	4.33	0.07%	Mess11d/hydrobulb
Mess3a	Large	0	-1.00	6.35	0.30%	
Mess3a	Large	250	-0.25	2.41	0.30%	
Mess3a	Large	500	0.38	3.37	0.25%	
Mess3a	Large	750	1.00	3.15	0.25%	
Mess3a	Large	1000	1.63	2.86	0.25%	
Mess3a	Large	1075	1.81	2.84	0.25%	Mess11d/hydrobulb
Mess11a	Large	0	-1.00	3.86	0.30%	
Mess11a	Large	250	-0.25	3.76	0.30%	
Mess11a	Large	500	0.00	4.11	0.10%	Mess11d/580
Mess11a	Large	750	0.25	3.43	0.10%	
Mess11a	Large	1000	0.50	3.60	0.10%	
Mess11a	Large	1250	0.75	2.18	0.10%	Mess11c/1250
Mess11a	Large	1500	1.00	3.25	0.10%	
Mess11a	Large	1750	1.25	2.72	0.10%	
Mess11a	Large	2000	1.50	3.51	0.10%	
Mess11a	Large	2250	1.75	4.19	0.10%	
Mess11a	Large	2407	1.91	4.00	0.10%	
Mess11c	Large	0	1.00	3.54	0.20%	
Mess11c	Large	250	1.50	3.92	0.20%	
Mess11c	Large	500	2.00	3.90	0.20%	
Mess11c	Large	750	2.50	4.66	0.20%	
Mess11c	Large	1000	3.00	4.91	0.20%	
Mess11c	Large	1250	3.50	4.98	0.20%	
Mess11c	Large	1301	3.60	5.18	0.20%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Large Channels			**Chan Elev**			
Channel I.D.	**Channel Size**	**Distance frm Cnct Chan (ft)**	***NAVDD88*** **Invert (ft)**	**LiDAR (ft)[1]**	**Chan Slope %[2]**	**Connect Chan I.D./loc_dist/sze**
Chis9a	Large	0	-1.00	3.98	0.10%	
Chis9a	Large	250	-0.75	2.93	0.10%	
Chis9a	Large	500	-0.50	2.90	0.10%	
Chis9a	Large	750	-0.25	4.16	0.10%	
Chis9a	Large	1000	0.00	3.90	0.10%	Chis9b/580/med
Chis9a	Large	1250	0.25	2.77	0.10%	
Chis9a	Large	1500	0.50	2.79	0.10%	
Chis9a	Large	1750	0.75	3.20	0.10%	
Chis9a	Large	2000	1.00	2.89	0.10%	
Chis2a	Large	0	-1.00	2.64	0.10%	
Chis2a	Large	250	-0.75	4.37	0.10%	
Chis2a	Large	500	-0.50	4.59	0.10%	
Chis2a	Large	750	-0.25	5.91	0.10%	Chis2g/250/med
Chis2a	Large	1000	0.00	6.44	0.10%	
Chis2a	Large	1250	0.25	4.98	0.10%	
Chis2a	Large	1500	0.50	4.79	0.10%	Chis2e/1100/sm
Chis2a	Large	1750	0.50	4.96	0.00%	Chis2d/1500/sm
Chis2a	Large	2000	0.50	4.89	0.00%	Chis2c/1500/sm
Chis2a	Large	2250	0.50	5.74	0.00%	
Chis2a	Large	2500	0.50	6.81	0.00%	
Chis2a	Large	2750	0.50	10.92	0.00%	
Chis2a	Large	2825	0.50	11.16	0.00%	
Chis7b	Large	0	-1.00	2.64	0.10%	
Chis7b	Large	250	-0.75	3.54	0.10%	
Chis7b	Large	500	-0.50	4.15	0.10%	
Chis7b	Large	750	-0.25	4.13	0.10%	Chis5b/250/med
Chis7b	Large	1000	0.00	4.52	0.10%	Chis5d/250/med
Chis7b	Large	1250	0.25	3.51	0.10%	
Chis7a	Large	0	-1.00	8.12	0.15%	Chis7c/1000/med
Chis7a	Large	250	-0.63	4.54	0.15%	
Chis7a	Large	500	-0.25	4.75	0.15%	
Chis7a	Large	750	0.13	4.94	0.15%	
Chis7a	Large	1000	0.50	3.81	0.15%	
Chis7a	Large	1250	1.00	5.45	0.20%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Large Channels			Chan Elev			
Channel I.D.	Channel Size	Distance frm Cnct Chan (ft)	*NAVDD88* Invert (ft)	LiDAR (ft)[1]	Chan Slope %[2]	Connect Chan I.D./loc_dist/sze
Chis7a	Large	1500	1.50	5.28	0.20%	
Chis7a	Large	1590	2.76	5.50	1.40%	Chis7a2/1250/med
Chis7a2	Medium	1980	8.22	9.14	1.40%	
Chis6a	Large	0	-1.00	7.56	0.20%	
Chis6a	Large	250	-0.50	3.75	0.20%	
Chis6a	Large	500	0.00	3.19	0.20%	
Chis6a	Large	600	0.20	2.99	0.20%	
Isen7a	Large	0	-1.00	8.68	0.20%	
Isen7a	Large	250	-0.50	4.79	0.20%	
Isen7a	Large	500	-0.25	4.98	0.10%	
Isen7a	Large	750	0.00	5.00	0.10%	
Isen7a	Large	1000	0.25	4.68	0.10%	
Isen7a	Large	1250	0.50	3.97	0.10%	
Isen7a3	Small	2137	1.39	4.27	0.10%	
Chis17a	Large	0	-1.00	2.32	0.10%	Isen7c/1250/med
Chis17a	Large	250	-0.75	4.65	0.10%	Isen7a3/hydrobulb
Chis17a	Large	500	-0.50	4.98	0.10%	
Chis17a	Large	750	-0.43	4.91	0.03%	Chis17b/300/med
Chis17a	Large	1000	-0.35	4.83	0.03%	
Chis17a	Large	1250	-0.28	5.04	0.03%	Chis17b1/1100/sm
Chis17a	Large	1410	-0.23	4.88	0.03%	
ODFW29	Large	0	-1.00	7.37	0.10%	
ODFW29	Large	250	-0.75	3.83	0.10%	Mess4b/200/sm
ODFW29	Large	500	-0.50	4.30	0.10%	
ODFW29	Large	750	-0.25	3.61	0.10%	ODFW3/650/med
Chis16a	Large	0	-1.00	5.97	0.10%	
Chis16a	Large	153	-0.85	3.71	0.10%	
Chis19a	Large	0	-1.00	3.71	0.03%	Chis19b/275/med
Chis19a	Large	250	-0.93	4.31	0.03%	
Chis19a	Large	500	-0.85	3.74	0.03%	
Chis19a	Large	750	-0.78	3.88	0.03%	
Chis19a	Large	1000	-0.70	2.98	0.03%	
Chis19a	Large	1250	-0.63	3.83	0.03%	Chis18a/1500/med
Chis19a	Large	1500	-0.55	4.69	0.03%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Large Channels			Chan Elev			
Channel	Channel	Distance frm	*NAVDD88*	LiDAR	Chan	Connect Chan
I.D.	Size	Cnct Chan (ft)	Invert (ft)	(ft)[1]	Slope %[2]	I.D./loc_dist/sze
Chis19a	Large	1750	-0.48	3.74	0.03%	
Chis19a	Large	2000	-0.40	3.63	0.03%	
Chis19a	Large	2250	-0.33	3.74	0.03%	
Chis19a	Large	2500	-0.25	3.46	0.03%	
Chis19a	Large	2750	-0.18	3.69	0.03%	
Chis19a	Large	3000	-0.10	4.27	0.03%	
Chis19a	Large	3250	-0.03	4.23	0.03%	Chis15d/3650/lg
Chis19a	Large	3500	0.05	4.33	0.03%	
Chis19a	Large	3750	0.13	3.60	0.03%	Chis11a/3850/med
Chis19a	Large	4000	0.20	4.20	0.03%	
Chis19a	Large	4250	0.28	4.46	0.03%	
Chis19c	Large	4500	0.35	3.40	0.03%	
Chis19a	Large	4750	0.43	5.12	0.03%	
Chis19a	Large	5000	0.50	5.11	0.03%	Chis19c/4650/med
Chis19a	Large	5250	0.58	5.01	0.03%	
Chis19a	Large	5500	0.65	5.25	0.03%	
Chis19a	Large	5750	0.73	3.89	0.03%	
Chis19a	Large	6000	0.80	6.09	0.03%	Chis19b/6250/sm
Chis19a	Large	6250	0.88	4.23	0.03%	
Chis19a	Large	6500	0.95	5.22	0.03%	Chis19d/6850/sm
Chis19a	Large	6750	1.03	3.66	0.03%	
Chis19a	Large	7000	1.10	4.07	0.03%	
Chis19a	Large	7250	1.18	3.88	0.03%	
Chis19a	Large	7500	1.25	2.87	0.03%	
Chis19a	Large	7750	1.33	3.42	0.03%	
Chis19a	Large	8000	1.40	3.27	0.03%	
Chis19a	Large	8250	1.48	3.14	0.03%	
Chis19a	Large	8380	1.61	3.33	0.10%	
Chis15d	Large	0	-1.00	10.58	0.30%	
Chis15d	Large	250	-0.25	3.89	0.30%	
Chis15d	Large	365	0.10	3.78	0.30%	
Chis5a	Large	0	-1.00	8.03	0.20%	
Chis5a	Large	250	-0.50	4.42	0.20%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Medium Channels			Chan Elev			
Channel I.D.	**Channel Size**	**Distance frm Cnct Chan (ft)**	***NAVDD88*** **Invert (ft)**	**LiDAR (ft)[1]**	**Chan Slope %[2]**	**Hydro Bulb Elev Invert (ft)**
Mess1a	Lg to Med-S	0	-1.00	7.47	0.80%	
Mess1a	Medium_S	71	-0.43	4.07	0.80%	
Mess1a	Medium_S	321	1.57	4.09	0.80%	mess1b/321
Mess1a	Medium_S	571	1.74	3.63	0.07%	
Mess1a	Medium_S	821	1.92	4.02	0.07%	
Mess1a	Medium_S	1071	2.09	3.90	0.07%	
Mess1a	Medium_S	1321	2.27	4.01	0.07%	
Mess1a	Medium_S	1571	2.44	3.31	0.07%	
Mess1a	Medium_S	1636	2.4885	3.50	0.070%	hydrobulb/1.8ft
Mess2a	Lg to Med-S	0	-1.00	7.85	0.900%	
Mess2a	Medium_S	150	0.20	3.08	0.800%	Mess2b/220
Mess2a	Medium_S	400	1.95	3.11	0.700%	
Mess2a	Medium_S	650	2.08	3.20	0.050%	
Mess2a	Medium_S	900	2.20	2.78	0.050%	
Mess2a	Medium_S	1150	2.33	2.69	0.050%	
Mess2a	Medium_S	1215	2.36	2.79	0.050%	
Mess12b	Medium_S	0	0.30	3.51	0.600%	Mess12a/1750
Mess12b	Medium_S	250	1.80	3.90	0.600%	
Mess12b	Medium_S	500	1.98	4.16	0.070%	Mess12b2/526
Mess12b	Medium_S	750	2.15	4.17	0.07%	
Mess12b	Medium_S	1000	2.33	4.08	0.07%	
Mess12b	Medium_S	1050	2.36	4.11	0.07%	
Mess4a	Lg to Med-S	0	-1.00	7.11	0.90%	
Mess4a	Lg to Med-S	250	1.25	3.32	0.90%	
Mess4a2	Medium_S	405	1.72	3.58	0.30%	Mess4c
Mess4a2	Medium_S	655	1.84	3.28	0.05%	Mess4d/710
Mess4a2	Medium_S	905	1.97	3.76	0.05%	
Mess4a2	Medium_S	1155	2.09	3.87	0.05%	
Mess4a2	Medium_S	1405	2.22	4.27	0.05%	Mess4e/1300
Mess4a2	Medium_S	1655	2.34	5.02	0.05%	
Mess4a2	Medium_S	1905	2.47	4.65	0.05%	
Mess4a2	Medium_S	2155	2.59	3.58	0.05%	
Mess4a2	Medium_S	2180	2.60	4.13	0.05%	
Mess8a	Medium_S	0	-1.00	4.85	1.40%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Medium Channels			Chan Elev			
Channel I.D.	**Channel Size**	**Distance frm Cnct Chan (ft)**	***NAVDD88* Invert (ft)**	**LiDAR (ft)[1]**	**Chan Slope %[2]**	**Hydro Bulb Elev Invert (ft)**
Mess8a	Medium_S	250	2.50	3.22	1.40%	Different formula
Mess8a	Medium_S	417	2.65	3.33	0.09%	Different formula
Mess13c	Medium	0	0.65	3.78	0.09%	Different formula
Mess13c	Medium	250	0.88	4.30	0.09%	Different formula
Mess13c	Medium	500	1.10	3.99	0.09%	Different formula
Mess13c	Medium	636	1.22	4.23	0.09%	Different formula
Mess9a	Medium	0	-1.00	4.89	0.20%	***Zero interior loc***
Mess9a	Medium	250	-0.50	3.59	0.20%	
Mess9a	Medium	500	0.00	3.49	0.20%	
Mess9a	Medium	750	0.50	3.05	0.20%	
Mess9a	Medium	925	0.85	3.01	0.20%	
Isen3a	Medium	1500	-1.00	4.13	0.20%	
Isen3a	Medium	1250	-0.50	3.85	0.20%	
Isen3a	Medium	1000	-0.30	4.20	0.08%	1.97
Isen3a	Medium	750	-0.10	4.21	0.08%	Different formula
Isen3a	Medium	500	0.10	4.64	0.08%	Different formula
Isen3a	Medium	250	0.30	4.95	0.08%	Different formula
Isen3a	Medium	0	0.50	4.76	0.08%	Different formula
Chis19c	Medium	0	0.35	4.62	0.20%	Different formula
Chis19c	Medium	250	0.85	3.29	0.20%	Different formula
Chis19c	Medium	500	1.35	2.73	0.20%	Different formula
Chis19c	Medium	750	1.58	2.94	0.09%	Different formula
Chis19c	Medium	1000	1.80	4.39	0.09%	Different formula
Chis19c	Medium	1250	2.03	3.86	0.09%	Different formula
Chis19c	Medium	1500	2.25	3.54	0.09%	
Chis19c	Medium	1558	2.30	4.33	0.09%	
Isen4a	Medium	0	-1.00	3.11	0.20%	
Isen4a	Medium	250	-0.50	3.26	0.20%	
Isen4a	Medium	500	0.08	3.73	0.23%	
Isen4a2	Small	1333	1.99	4.62	0.23%	
Chis19b	Medium	0	-0.85	4.10	0.55%	
Chis19b	Medium	250	0.53	3.26	0.55%	2.30
Chis19b	Medium	500	1.90	2.88	0.55%	
Isen7c	Medium	0	0.50	4.67	0.15%	

1). Elevation of general pasture lands adjacent to channel point

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Appendix A. Table 1. Continued

Medium Channels			Chan Elev			
Channel	Channel	Distance frm	*NAVDD88*	LiDAR	Chan	Hydro Bulb
I.D.	Size	Cnct Chan (ft)	Invert (ft)	(ft)[1]	Slope %[2]	Elev Invert (ft)
Isen7c	Medium	250	0.88	3.56	0.15%	
Isen7c	Medium	476	1.21	3.70	0.15%	2.0
Isen7a2	Medium	1250	0.5	5.09	0.10%	
Isen7a2	Medium	1500	0.75	5.24	0.10%	
Isen7a2	Medium	1750	1.00	4.96	0.10%	2.0
Isen4b	Medium	0	-1.00	3.39	0.20%	
Isen4b	Medium	250	-0.50	4.32	0.20%	
Isen4b	Medium	500	-0.25	4.65	0.10%	
Mess2a	Medium	0	-1.00	4.72	0.20%	
Mess2a	Medium	250	-0.50	3.25	0.20%	
Mess2a	Medium	500	0.15	3.61	0.26%	
Mess2a	Medium	750	0.80	2.91	0.26%	
Mess2a	Medium	1000	1.45	2.86	0.26%	
Mess2a	Medium	1146	1.83	2.99	0.26%	
Chis20a	Medium	0	-1.00	3.31	0.20%	
Chis20a	Medium	250	-0.50	3.16	0.20%	
Chis20a	Medium	500	0.13	2.69	0.25%	
Chis20a	Medium	728	0.70	2.92	0.25%	
Chis20c	Small	1130	1.70	2.91	0.25%	
Chis18a	Medium	0	-0.55	3.33	0.25%	1.8
Chis18a	Medium	250	-0.55	3.37	0.00%	
Chis18a	Medium	500	-0.55	3.28	0.00%	
Chis18a	Medium	750	-0.55	3.17	0.00%	
Chis11a	Medium	0	-1.00	4.89	0.20%	
Chis11a	Medium	250	-0.50	2.92	0.20%	1.8
Chis11a	Medium	500	-0.375	2.81	0.05%	
Chis11a	Medium	750	-0.25	3.20	0.05%	
Chis11a	Medium	1000	-0.13	4.60	0.05%	
Chis11a	Medium	1250	0.00	4.75	0.05%	
Chis11a	Medium	1470	0.11	2.70	0.05%	
Chis10a	Medium	0	-1.00	5.64	0.20%	
Chis10a	Medium	250	-0.50	3.00	0.20%	
Chis10a	Medium	500	0.00	3.16	0.20%	
Chis10a	Medium	750	0.50	2.92	0.20%	

1). Elevation of general pasture lands adjacent to channel point

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Appendix A. Table 1. Continued

Medium Channels			Chan Elev			
Channel I.D.	Channel Size	Distance frm Cnct Chan (ft)	*NAVDD88* Invert (ft)	LiDAR (ft)[1]	Chan Slope %[2]	Hydro Bulb Elev Invert (ft)
Chis10a	Medium	822	0.64	3.20	0.20%	
Chis14a	Medium	0	-1.00	7.59	0.10%	
Chis14a	Medium	250	-0.75	3.24	0.10%	
Chis14a	Medium	500	-0.50	3.55	0.10%	
Chis5d	Medium	0	-0.75	3.49	0.10%	
Chis5d	Medium	250	0.00	4.89	0.30%	
Chis5d	Medium	500	1.25	5.03	0.50%	
Chis5d	Medium	750	2.50	4.93	0.50%	
Chis5d	Medium	895	3.23	5.39	0.50%	
Chis7c	Medium	0	0.00	4.07	0.10%	
Chis7c	Medium	250	0.25	4.27	0.10%	
Chis7c	Medium	500	1.50	4.87	0.50%	2
Chis7c	Medium	750	2.75	5.62	0.50%	
Chis7c	Medium	822	3.11	4.22	0.50%	
Chis7c	Medium	902	3.51	4.79	0.50%	2.0
Chis5b	Medium	0	-0.75	4.13	0.25%	
Chis5b	Medium	250	-0.13	3.33	0.25%	
Chis5b	Medium	275	-0.06	3.71	0.25%	
Chis5b	Medium	433	0.33	3.74	0.25%	
Chis5b	Medium	525	0.79	4.05	0.50%	
Chis5b	Medium	775	2.04	4.45	0.50%	
Chis5b	Medium	837	2.10	4.56	0.10%	
Chis8a	Medium	0	-0.50	3.50	0.20%	
Chis8a	Medium	250	0.00	3.15	0.20%	
Chis8a	Medium	340	0.18	3.59	0.20%	
Chis2g	Medium	0	-0.75	4.19	0.20%	
Chis2g	Medium	250	0.75	4.24	0.60%	
Chis2g	Medium	500	2.25	5.71	0.60%	
Chis2g	Medium	665	3.24	4.81	0.60%	
Chis7a2	Medium	1840	2.76	8.81	2.00%	1.8
Chis7a2	Medium	1980	6.96	9.14	3.00%	
Mess11c	Medium	3750	1.48	4.19	0.20%	
Mess11c	Medium	4000	1.73	~4.5	0.10%	
Mess11d	Small	4732	2.46	4.67	0.10%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Medium Channels			**Chan Elev**			
Channel I.D.	**Channel Size**	**Distance frm Cnct Chan (ft)**	***NAVDD88* Invert (ft)**	**LiDAR (ft)[1]**	**Chan Slope %[2]**	**Hydro Bulb Elev Invert (ft)**
ODFW12a	Medium	0	-1.00	3.84	0.20%	1.8
ODFW12a	Medium	250	-0.5	2.24	0.20%	
ODFW12a	Medium	500	-0.25	2.50	0.10%	
ODFW12a	Medium	660	-0.09	2.70	0.10%	
ODFW5a	Medium	0	-1.00	3.92	0.10%	
ODFW5a	Medium	250	-0.50	3.40	0.20%	
ODFW5a	Medium	500	-0.25	3.38	0.10%	
ODFW5a	Medium	582	-0.17	3.63	0.10%	
ODFW27b	Medium	0	-0.50	3.38	0.10%	
ODFW27b	Medium	250	-0.25	3.60	0.10%	
ODFW27b	Medium	500	0.00	3.28	0.10%	
ODFW27b	Medium	547	0.05	3.47	0.10%	
Chis4a	Medium	0	-1.00	7.57	0.20%	
Chis4a	Medium	250	-0.50	5.18	0.20%	
Chis4a	Medium	500	0.00	4.65	0.20%	
Chis4a	Medium	750	0.50	3.52	0.20%	
Chis4a	Medium	935	0.87	3.66	0.20%	
Chis17b	Medium	0	-0.75	4.95	0.20%	
Chis17b	Medium	250	-0.25	3.74	0.20%	
Chis17b	Medium	500	0.25	2.94	0.20%	
Chis16b	Medium	0	-0.85	3.71	0.50%	
Chis16b	Medium	250	0.65	4.19	0.60%	
Chis16b	Medium	500	2.15	4.20	0.60%	
Chis16b	Medium	612	2.822	4.69	0.60%	
ODFW3	Medium	0	-1.00	5.51	0.20%	2
ODFW3	Medium	250	-0.50	3.51	0.20%	
ODFW3	Medium	500	-0.25	2.81	0.10%	
ODFW3	Medium	750	0.00	3.31	0.10%	
ODFW3	Medium	905	0.16	4.77	0.10%	
Chis1a	Medium	0	-1.00	7.19	0.20%	
Chis1a	Medium	250	-0.50	4.36	0.20%	
Chis1a	Medium	500	0.25	4.07	0.30%	
Chis1a	Medium	565	0.45	4.17	0.30%	
Chis3a	Medium	0	-1.00	3.11	0.30%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Medium Channels			**Chan Elev**			
Channel I.D.	**Channel Size**	**Distance frm Cnct Chan (ft)**	***NAVDD88*** **Invert (ft)**	**LiDAR (ft)[1]**	**Chan Slope %[2]**	**Hydro Bulb Elev Invert (ft)**
Chis3a	Medium	250	-0.25	4.27	0.30%	
Chis3a	Medium	450	0.35	3.57	0.30%	
Chis16c	Medium	402	0.21	3.78	0.30%	
Chis16c	Medium	652	0.96	3.82	0.30%	
Chis16c	Medium	813	1.44	4.00	0.30%	
ODFW27a	Medium	0	-1.00	6.08	0.20%	
ODFW27a	Medium	250	-0.50	3.88	0.20%	
ODFW27a	Medium	500	0.00	3.66	0.20%	
ODFW27a	Medium	620	0.24	3.56	0.20%	
ODFW2b	Medium	0	-1.00	2.90	0.20%	
ODFW2b	Medium	260	-0.48	3.24	0.20%	
ODFW2b	Medium	347	-0.31	3.80	0.20%	
ODFW8a	Medium	0	-1.00	3.28	0.20%	
ODFW8a	Medium	250	-0.50	2.76	0.20%	
ODFW8a	Medium	500	-0.25	2.90	0.10%	
ODFW8a	Medium	555	-0.20	3.22	0.10%	2.5
Chis5d	Medium	805	0.06	5.03	0.10%	
ODFW2a	Medium	0	-0.48	5.19	0.20%	
ODFW2a	Medium	350	0.22	3.08	0.20%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Small Channels			Chan Elev			
Channel I.D.	**Channel Size**	**Distance frm Cnct Chan (ft)**	***NAVDD88* Invert (ft)**	**LiDAR (ft)[1]**	**Chan Slope %[2]**	**Hydro Bulb Elev Invert (ft)**
Mess1b	Small	0	1.57	4.48	0.07%	
Mess1b	Small	250	1.75	3.44	0.07%	
Mess1b	Small	500	1.92	3.69	0.07%	
Mess1b	Small	645	2.02	2.61	0.07%	
Mess13d	Small	0	0.05	2.76	0.17%	2.5
Mess13d	Small	250	0.48	3.05	0.17%	
Mess13d	Small	500	0.90	3.33	0.17%	
Mess13d	Small	750	1.33	3.11	0.17%	
Mess13d	Small	1000	1.75	3.01	0.17%	
Mess13d	Small	1165	2.03	3.22	0.17%	
Mess2b	Small	0	0.35	3.10	0.20%	2.5
Mess2b	Small	250	0.85	3.23	0.20%	
Mess2b	Small	500	1.35	3.37	0.20%	
Mess2b	Small	558	1.47	3.34	0.20%	
Mess13b	Small	0	1.00	2.83	0.20%	2.5
Mess13b	Small	250	1.50	2.82	0.20%	
Mess13b	Small	400	1.80	2.84	0.20%	1.8
Mess3b	Small	0	0.50	3.17	0.20%	
Mess3b	Small	250	1.00	3.02	0.20%	
Mess3b	Small	500	1.50	3.32	0.20%	
Mess3b	Small	573	1.65	3.47	0.20%	
Mess3d	Small	0	1.00	3.35	0.15%	
Mess3d	Small	250	1.38	3.47	0.15%	
Mess3d	Small	500	1.75	3.34	0.15%	
Mess3d	Small	600	1.90	3.19	0.15%	
Mess2c	Small	0	1.90	2.88	0.10%	
Mess2c	Small	265	2.17	3.28	0.10%	2.5
Mess2d	Small	0	2	3.02	0.05%	
Mess2d	Small	250	2.13	3.30	0.05%	
Mess2d	Small	327	2.16	3.08	0.05%	
Mess4b	Small	0	1.25	3.47	0.07%	
Mess4b	Small	250	1.43	3.38	0.07%	2.5
Mess4b	Small	367	1.51	3.44	0.07%	
Mess13d	Small	0	1.12	3.38	0.07%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Small Channels			**Chan Elev**			
Channel I.D.	**Channel Size**	**Distance frm Cnct Chan (ft)**	***NAVDD88* Invert (ft)**	**LiDAR (ft)[1]**	**Chan Slope %[2]**	**Hydro Bulb Elev Invert (ft)**
Mess13d	Small	250	1.30	3.27	0.07%	
Mess13d	Small	500	1.47	3.36	0.07%	
Mess13d	Small	627	1.58	3.21	0.09%	
Mess13c2	Small	0	0.88	3.91	0.09%	
Mess13c2	Small	275	1.13	3.02	0.09%	
Mess13c3	Small	0	1.22	3.96	0.09%	
Mess13c3	Small	250	1.45	3.78	0.09%	
Mess13c3	Small	500	1.67	3.74	0.09%	
Mess13c3	Small	608	1.77	3.49	0.09%	
Mess13c3b	Small	0	1.22	3.73	0.09%	
Mess13c3b	Small	250	1.45	3.18	0.09%	
Mess13c3b	Small	372	1.55	3.01	0.09%	
Mess4c	Small	0	1.72	3.23	0.05%	
Mess4c	Small	250	1.85	3.73	0.05%	
Mess4c	Small	500	1.97	3.53	0.05%	
Mess4c	Small	746	2.09	3.65	0.05%	
Mess4d	Small	0	1.84	3.89	0.05%	
Mess4d	Small	250	1.97	4.09	0.05%	
Mess4d	Small	500	2.09	3.82	0.05%	
Mess4d	Small	670	2.18	3.42	0.05%	
Mess4e	Small	0	2.00	4.52	0.05%	
Mess4e	Small	250	2.13	3.72	0.05%	
Mess4e	Small	500	2.25	3.52	0.05%	
Mess4e	Small	666	2.33	3.91	0.05%	
Mess12b2	Small	0	1.90	3.89	0.05%	
Mess12b2	Small	250	2.03	4.04	0.05%	
Mess12b2	Small	500	2.15	3.89	0.05%	
Mess12b2	Small	587	2.1935	4.20	0.05%	
Mess12c2	Small	0	1.20	3.58	0.05%	
Mess12c2	Small	250	1.33	3.65	0.05%	
Mess12c2	Small	500	1.45	3.48	0.05%	
Mess12c2	Small	750	1.58	3.87	0.05%	
Mess12c2	Small	775	1.59	3.80	0.05%	
Mess12e	Small	0	0.50	3.49	0.07%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Small Channels			**Chan Elev**			
Channel	**Channel**	**Distance frm**	***NAVDD88***	**LiDAR**	**Chan**	**Hydro Bulb**
I.D.	**Size**	**Cnct Chan (ft)**	**Invert (ft)**	**(ft)[1]**	**Slope %[2]**	**Elev Invert (ft)**
Mess12e	Small	250	0.68	3.18	0.07%	
Mess12e	Small	500	0.85	3.66	0.07%	
Mess12e	Small	679	0.98	4.17	0.07%	
Mess4f	Small	0	2.50	3.93	0.07%	
Mess4f	Small	250	2.68	3.41	0.07%	
Mess4f	Small	500	2.85	4.27	0.07%	
Mess4f	Small	560	2.89	3.72	0.07%	
Mess12d	Small	0	1.18	3.51	0.07%	
Mess12d	Small	250	1.36	3.29	0.07%	
Mess12d	Small	275	1.37	3.49	0.07%	
Mess12e2	Small	0	1.00	3.22	0.09%	
Mess12e2	Small	148	1.13	3.07	0.09%	
Mess11b	Small	0	1.75	3.79	0.09%	
Mess11b	Small	250	1.98	4.49	0.09%	
Mess11b	Small	500	2.20	4.14	0.09%	
Mess11b	Small	527	2.22	3.95	0.09%	
Mess11c2	Small	0	2.00	4.15	0.10%	
Mess11c2	Small	250	2.25	4.81	0.10%	
Mess11c2	Small	500	2.50	4.23	0.10%	
Mess11c2	Small	750	2.75	4.63	0.10%	
Mess11c2	Small	802	2.802	4.64	0.10%	
Mess11d	Small	0	1.00	4.17	0.20%	
Mess11d	Small	250	1.50	4.54	0.20%	
Mess11d	Small	500	2.00	4.33	0.20%	
Mess11d	Small	666	2.332	4.67	0.20%	
Mess13c	Small	0	1.22	1.95	0.10%	
Mess13c	Small	167	1.39	2.85	0.10%	
Mess3c	Small	0	1.00	2.38	0.10%	
Mess3c	Small	250	1.25	3.31	0.10%	
Isen4a2	Small	730	0.80	3.52	0.28%	
Isen4a2	Small	1033	1.65	3.25	0.28%	
Isen4a2	Small	1170	2.03	4.53	0.28%	
Isen4a2	Small	1333	2.4884	4.62	0.28%	2.5
Chis20c	Small	1000	0.70	3.02	0.80%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Small Channels			Chan Elev			
Channel I.D.	Channel Size	Distance frm Cnct Chan (ft)	*NAVDD88* Invert (ft)	LiDAR (ft)[1]	Chan Slope %[2]	Hydro Bulb Elev Invert (ft)
Chis20c	Small	1130	1.74	2.91	0.80%	1.8
Isen8c	Small	0	-0.03	3.85	0.60%	
Isen8c	Small	250	1.97	4.05	0.80%	
Isen8c	Small	529	3.64	4.76	0.60%	
ODFW9a	Small	0	-0.50	4.20	0.10%	
ODFW9a	Small	250	-0.25	2.54	0.10%	
ODFW9a	Small	390	0.03	2.22	0.20%	
Chis11b	Small	0	-0.5	2.86	0.20%	
Chis11b	Small	250	0.75	2.89	0.50%	
Chis11b	Small	500	1.50	2.69	0.30%	
Chis11b	Small	705	2.525	2.85	0.50%	
Chis19d	Small	0	1.10	4.68	0.13%	
Chis19d	Small	250	1.43	3.62	0.13%	
Chis19d	Small	500	1.75	3.52	0.13%	
Chis19d	Small	750	2.075	4.41	0.13%	
Chis19d	Small	860	2.22	3.51	0.13%	
Isen8a2	Small	3345	1.20	3.31	0.17%	
Isen8a2	Small	3595	1.63	3.73	0.17%	
Isen8a2	Small	3845	2.05	3.64	0.17%	
Isen8a2	Small	3995	2.31	3.85	0.17%	2.5
Isen3b	Small	0	-0.50	3.85	0.30%	
Isen3b	Small	250	0.25	3.25	0.30%	
Isen3b	Small	500	1.25	4.31	0.40%	
Isen3b	Small	750	2.25	3.80	0.40%	
Chis3c	Small	0	0.35	3.57	0.35%	
Chis3c	Small	250	1.23	4.88	0.35%	
Chis3c	Small	515	2.15	4.63	0.35%	
Chis2d	Small	0	0.50	4.73	0.35%	
Chis2d	Small	250	1.38	4.77	0.35%	
Chis2d	Small	500	2.25	4.76	0.35%	
Chis2d	Small	645	2.76	4.97	0.35%	
Isen8d	Small	0	0.33	7.25	0.50%	
Isen8d	Small	250	1.58	3.75	0.50%	
Isen8d	Small	500	1.83	3.90	0.10%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Small Channels			**Chan Elev**			
Channel I.D.	**Channel Size**	**Distance frm Cnct Chan (ft)**	***NAVDD88* Invert (ft)**	**LiDAR (ft)[1]**	**Chan Slope %[2]**	**Hydro Bulb Elev Invert (ft)**
Isen8d	Small	750	2.08	3.63	0.10%	
Isen8d	Small	850	2.18	3.65	0.10%	2.5
Isen4b2	Small	750	-0.25	4.15	0.15%	
Isen4b2	Small	1000	1.50	4.18	0.70%	
Isen4b2	Small	1100	2.20	4.29	0.70%	
Isen3c	Small	0	-0.10	4.20	0.45%	
Isen3c	Small	250	1.03	4.31	0.45%	
Isen3c	Small	500	1.9	4.33	0.35%	
Isen3c	Small	635	2.37	4.22	0.35%	
Chis19d1	Small	0	1.43	3.31	0.10%	
Chis19d1	Small	250	1.68	5.23	0.10%	
Chis19d1	Small	500	1.93	3.64	0.10%	
Chis19d1	Small	750	2.18	3.73	0.10%	
Chis19c1	Small	0	1.35	3.35	0.12%	
Chis19c1	Small	250	1.65	3.14	0.12%	
Chis19c1	Small	500	1.95	3.14	0.12%	
Chis19c1	Small	590	2.06	3.14	0.12%	
Chis15b	Small	0	0.88	5.68	0.15%	
Chis15b	Small	250	1.26	3.81	0.15%	
Chis15b	Small	500	1.63	3.71	0.15%	
Chis15b	Small	750	2.005	3.78	0.15%	
Chis15b	Small	915	2.25	3.66	0.15%	
Isen8b	Small	0	-0.38	3.62	0.80%	
Isen8b	Small	250	1.62	4.63	0.80%	
Isen8b	Small	515	2.15	3.83	0.20%	
Mess1c3	Small	0	0.29	3.70	0.90%	
Chis17b2	Small	500	0.25	3.09	0.25%	
Chis17b2	Small	750	0.88	3.14	0.25%	
Chis17b2	Small	1000	1.50	3.83	0.25%	
Chis17b2	Small	1212	2.03	3.82	0.25%	
Chis3b	Small	0	0.35	3.97	0.35%	
Chis3b	Small	250	1.73	4.39	0.55%	
Chis3b	Small	515	3.18	4.91	0.55%	
ODFW3a	Small	0	0	2.71	0.35%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Small Channels			Chan Elev			
Channel I.D.	Channel Size	Distance frm Cnct Chan (ft)	*NAVDD88* Invert (ft)	LiDAR (ft)[1]	Chan Slope %[2]	Hydro Bulb Elev Invert (ft)
ODFW3a	Small	250	0.88	2.73	0.35%	
ODFW3a	Small	425	1.49	2.76	0.35%	
Chis14c	Small	0	-0.50	3.41	0.50%	
Chis14c	Small	250	1.00	4.07	0.60%	
Chis14c	Small	450	2.20	4.18	0.60%	
Chis19b1	Small	0	1.90	2.88	0.05%	
Chis19b1	Small	250	2.025	3.20	0.05%	
Chis19b1	Small	280	2.03	3.20	0.02%	
Chis19b2	Small	750	2.13	2.99	0.02%	
Chis19b2	Small	1000	2.18	3.27	0.02%	
Chis19b2	Small	1060	2.19	3.07	0.02%	
Isen7d	Small	0	0.75	5.10	0.30%	
Isen7d	Small	250	1.50	3.72	0.30%	
Isen7d	Small	500	2.00	3.29	0.20%	
Isen7d	Small	560	2.12	3.74	0.20%	
Chis10b	Small	0	-0.50	2.85	0.80%	
Chis10b	Small	250	1.25	2.98	0.70%	
Chis10b	Small	462	1.67	3.29	0.20%	
Chis2f	Small	0	0.00	4.65	0.80%	
Chis2f	Small	250	2.00	4.69	0.80%	
Chis2f	Small	440	3.52	5.86	0.80%	
ODFW12c	Small	0	-0.50	2.32	0.20%	
ODFW12c	Small	250	0	2.33	0.20%	
ODFW12c	Small	345	0.19	2.35	0.20%	
Isen8e	Small	0	-0.25	3.29	0.20%	
Isen8e	Small	250	1.00	4.23	0.50%	
Isen8e	Small	500	1.50	4.27	0.20%	
Isen8e	Small	715	1.93	3.80	0.20%	
Isen1a	Small	0	-0.50	4.97	0.40%	
Isen1a	Small	250	0.50	4.33	0.40%	
Isen1a	Small	345	0.88	4.37	0.40%	
Chis19c2	Small	0	1.35	3.37	0.09%	
Chis19c2	Small	250	1.575	2.58	0.09%	
Chis19c2	Small	420	1.73	3.36	0.09%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Small Channels			**Chan Elev**			
Channel	**Channel**	**Distance frm**	***NAVDD88***	**LiDAR**	**Chan**	**Hydro Bulb**
I.D.	**Size**	**Cnct Chan (ft)**	**Invert (ft)**	**(ft)[1]**	**Slope %[2]**	**Elev Invert (ft)**
Chis14b	Small	0	-0.50	3.64	0.09%	
Chis14b	Small	250	1.5	3.70	0.80%	
Chis14b	Small	415	2.82	4.15	0.80%	
Chis19c3	Small	0	1.35	3.46	0.06%	
Chis19c3	Small	250	1.50	2.80	0.06%	
Chis19c3	Small	500	1.65	3.16	0.06%	
Chis19c3	Small	688	1.76	2.88	0.06%	1.8
Chis12b	Small	0	-0.13	4.00	0.35%	
Chis12b	Small	250	0.75	3.54	0.35%	
Chis12b	Small	500	1.62	3.50	0.35%	
Chis12b	Small	550	1.80	3.14	0.35%	1.8
ODFW12b	Small	0	-0.40	2.24	0.10%	
ODFW12b	Small	250	-0.15	2.27	0.10%	
ODFW12b	Small	400	0	2.69	0.10%	
ODFW8b	Small	0	-0.50	2.34	0.20%	
ODFW8b	Small	250	0.00	2.83	0.20%	
ODFW8b	Small	375	0.25	3.31	0.20%	
ODFW27b	Small	0	0.10	4.08	0.20%	
ODFW27b	Small	250	0.60	3.80	0.20%	
ODFW27b	Small	325	0.75	3.50	0.20%	
Chis2c	Small	0	0.50	4.92	0.90%	
Chis2c	Small	250	2.75	4.72	0.90%	
Chis2c	Small	575	4.05	5.11	0.40%	
Chis1b	Small	815	0.45	3.53	0.60%	
Chis1b	Small	940	1.20	3.72	0.60%	
Chis17b1	Small	250	0.25	3.10	1.00%	
Chis17b1	Small	308	0.83	2.94	1.00%	
Mess2d	Small	0	0.80	3.09	0.20%	
Chis4b	Small	0	0.87	3.83	0.50%	
Chis4b	Small	250	2.12	4.50	0.50%	
Chis4b	Small	325	2.72	4.27	0.80%	
Chis2e	Small	0	0.25	4.76	0.90%	
Chis2e	Small	250	2.50	4.85	0.90%	
Chis2e	Small	309	2.62	4.72	0.20%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

Appendix A. Table 1. Continued

Small Channels			Chan Elev			
Channel I.D.	Channel Size	Distance frm Cnct Chan (ft)	*NAVDD88* Invert (ft)	LiDAR (ft)[1]	Chan Slope %[2]	Hydro Bulb Elev Invert (ft)
Chis20d	Small	0	0.13	2.56	0.20%	
Chis20d	Small	250	0.63	3.13	0.20%	
Chis20d	Small	479	1.08	3.01	0.20%	
Isen4c	Small	0	1.50	4.27	0.10%	
Isen4c	Small	250	1.75	4.26	0.10%	
Isen4c	Small	390	1.89	4.40	0.10%	
Isen7c1	Small	726	2.23	3.35	0.10%	
Isen7c1	Small	826	2.33	3.14	0.10%	
ODFW27a2	Small	0	0.24	3.58	0.30%	
ODFW27a2	Small	226	0.92	3.51	0.30%	
Chis5f	Small	0	-0.13	3.80	0.80%	
Chis5f	Small	273	2.06	3.75	0.80%	
Isen8b	Small	0	-0.67	3.51	1.00%	
Isen8b	Small	250	1.83	4.61	1.00%	
Isen8b	Small	515	3.15	4.61?	0.50%	
Chis10c	Small	0	0.40	2.92	0.40%	
Chis10c	Small	250	1.40	3.08	0.40%	
Chis10c	Small	385	1.94	2.92	0.40%	
Chis17c	Small	0	-0.35	4.89	0.90%	
Chis17c	Small	215	1.59	3.76	0.90%	
Isen7a3	Small	1750	1.00	4.76	0.25%	
Isen7a3	Small	2000	1.63	3.75	0.25%	
Isen7a3	Small	2137	1.97	4.27	0.25%	2.0
Isen3d	Small	0	0.70	4.85	1.00%	
Isen3d	Small	200	2.70	4.45	1.00%	
Isen7b	Small	0	1.00	4.82	0.70%	
Isen7b	Small	250	2.75	4.09	0.70%	
chis2b	Small	0	1.50	~4.00	0.90%	
Chis2b	Small	195	3.26	4.93	0.90%	

1). Elevation of general pasture lands adjacent to channel point

2.) In tables the channel grades are the grade forward of the station. i.e. if the grade at 250 is 0.50%and then 0.20%at 500ft then the grade from 250 to 500 is 0.20%

APPENDIX B

Culvert and Water Control Structures

http://www.agriexpo.online/prod/watermar
industries/product-174233-19232.html

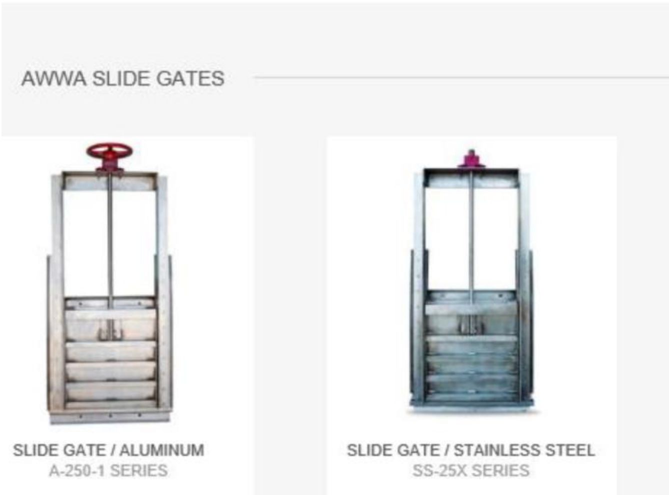


Figure 1. Slide gates proposed for selected interior pasture connection culverts.

Figure 2. Typical side-hinged aluminum tidegate mounted on 6.0ft CMP.

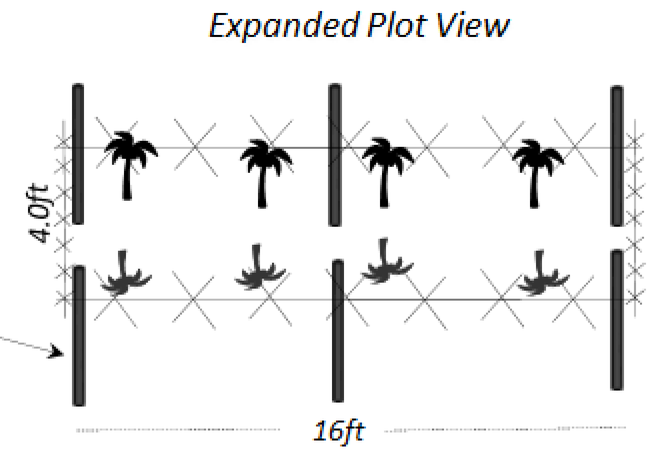
Figure 3. Side-hinged aluminum tidegate door in working location.

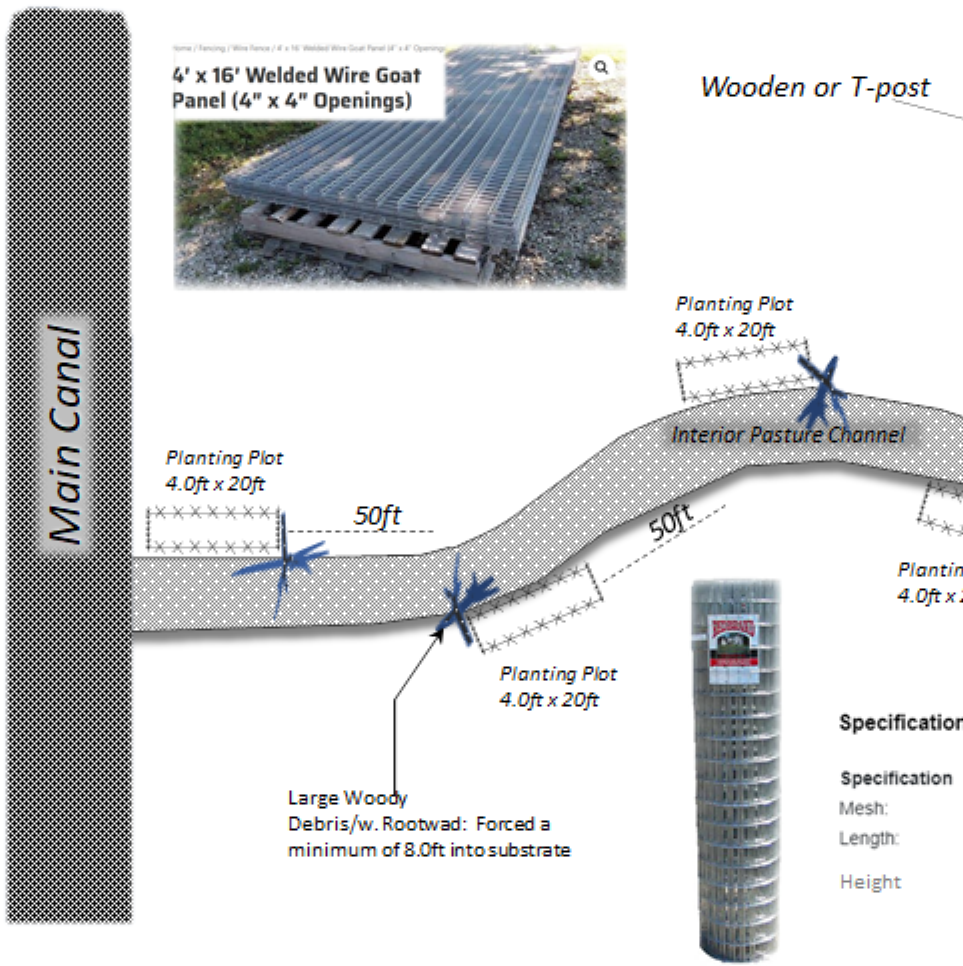
APPENDIX C

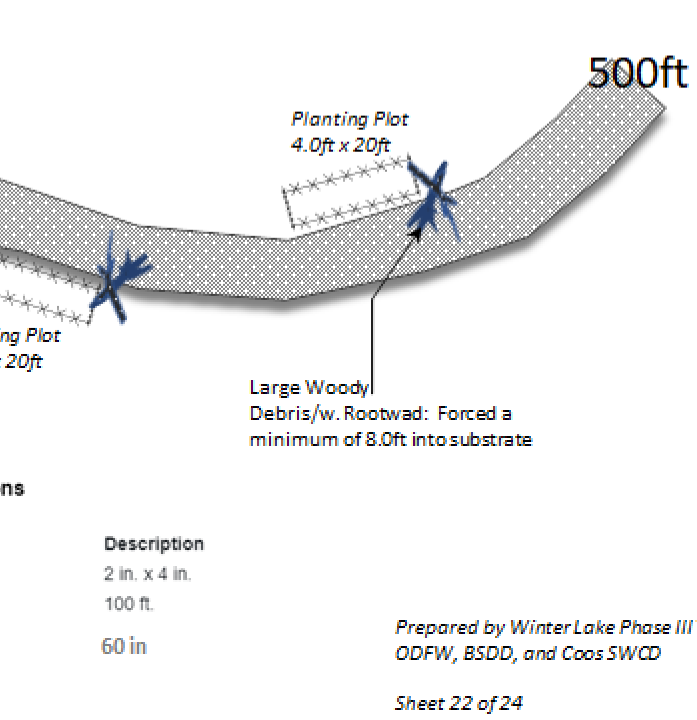
Winter Lake Phase III
Planting Concepts and Large Woody Debris Installation

Large/Medium Connecting Channel Skip Planting Concepts Option #1

Planting Plots #1: Welded panels or wire; 4.0w x 20ft in length alternated on channel sides with 50ft spacing. Trees planted (cottonwood or ash) inside exclosure 8 total trees planted on six ft spacing. Planting plots are on large and medium channels that connect to main canals for first 500ft. ***Note:*** *Welded panels or wire is needed with 4"x4" mesh to protect trees from livestock and beaver.*







Prepared by Winter Lake Phase III Team
ODFW, BSDD, and Coos SWCD

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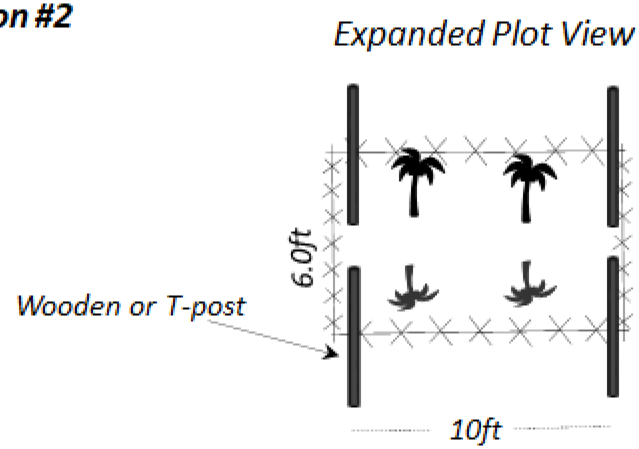
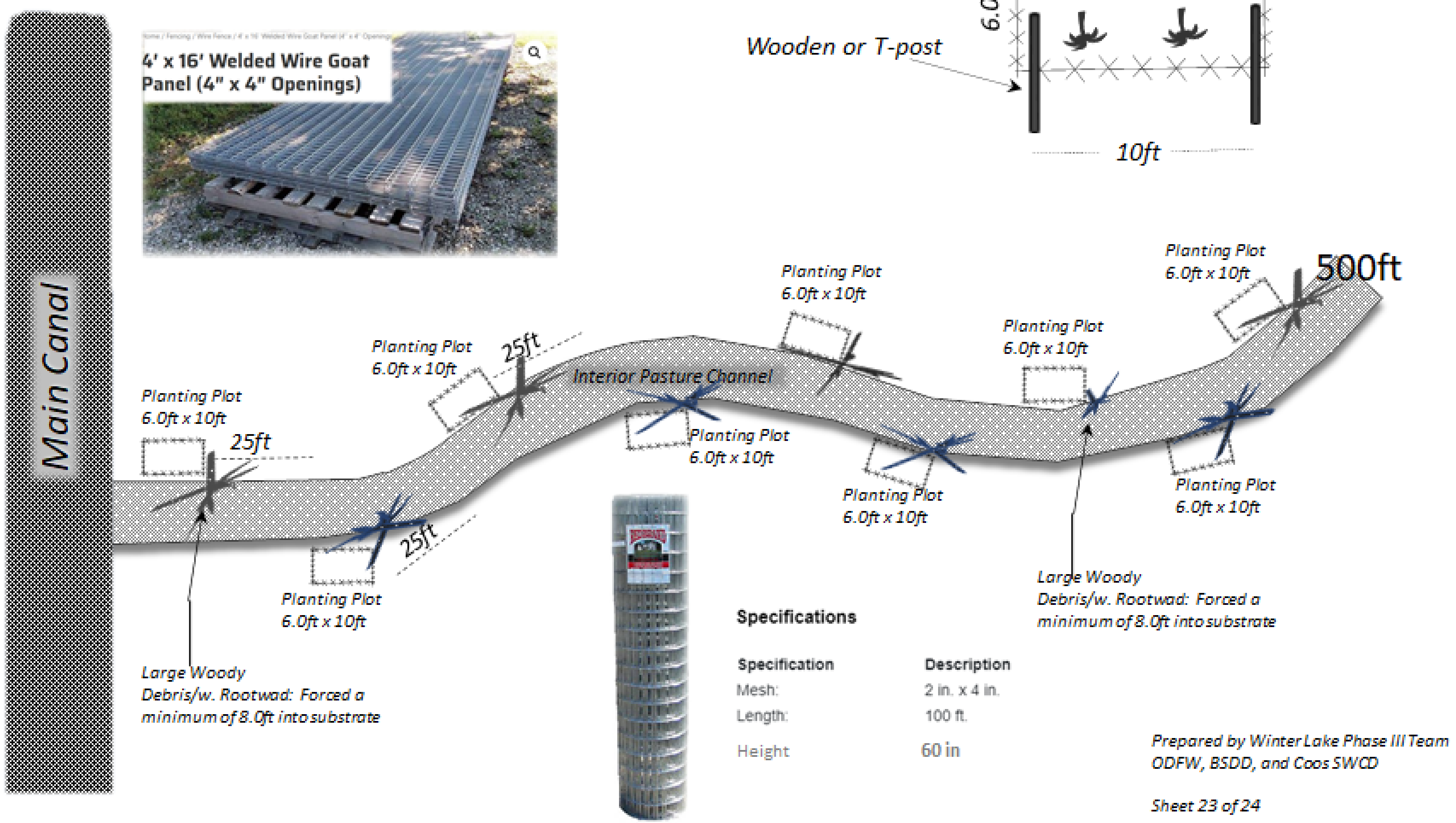
Large/Medium Connecting Channel Skip Planting Concepts Option #2

Planting Plots #2: Welded panels or wire; 4.0w x 10ft in length alternated on channel sides with 25ft spacing. Trees planted (cottonwood or ash) inside exclosure 8 total trees planted on six ft spacing. Planting plots are on large and medium channels that connect to main canals for first 500ft. ***Note:*** *Welded wire is needed with 4"x4" mesh to protect trees from livestock and beaver.*





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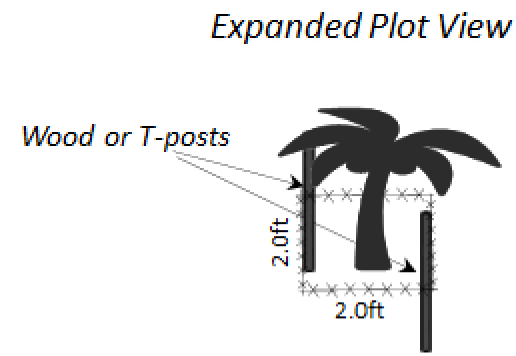
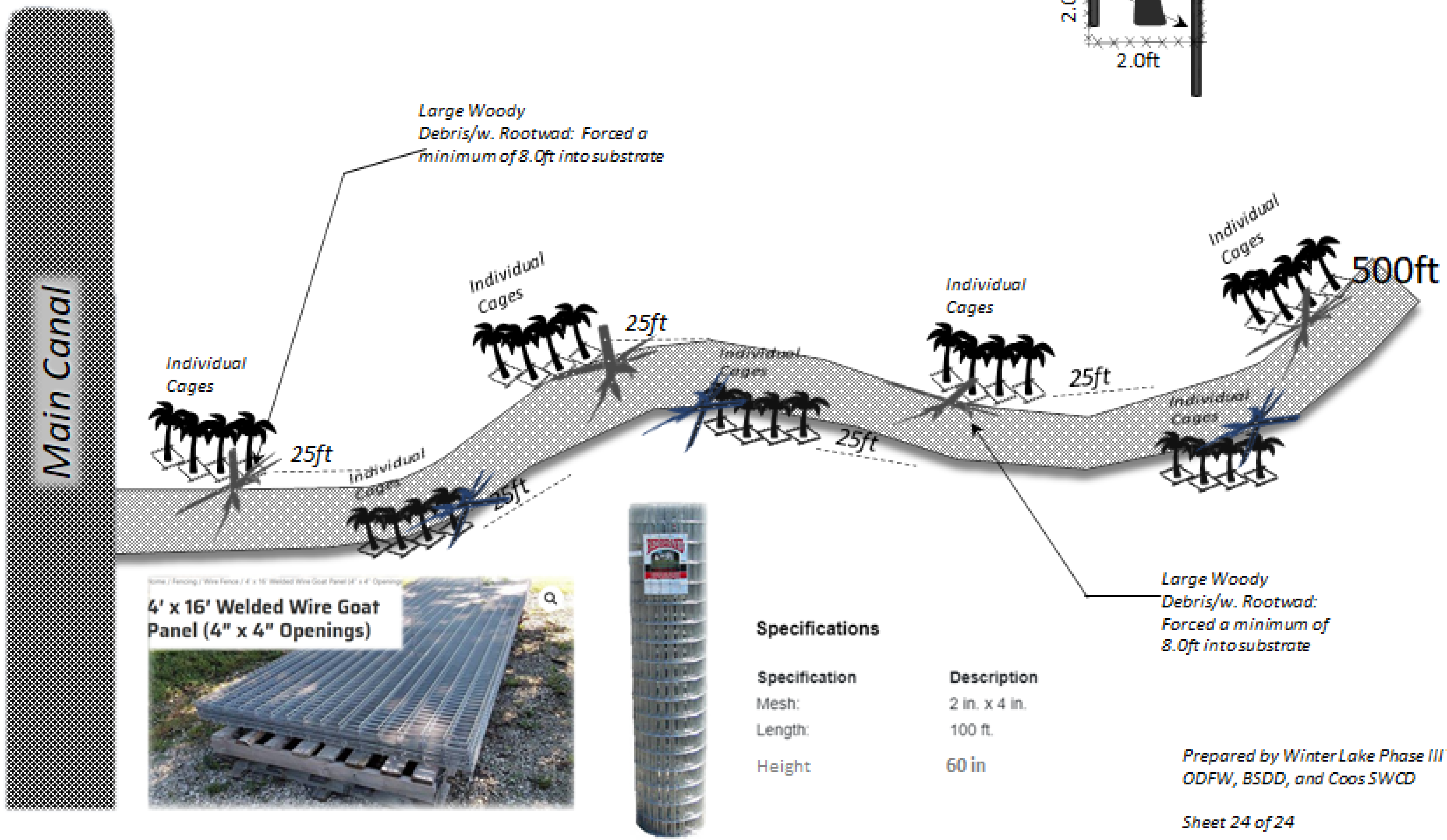
Large/Medium Connecting Channel Skip Planting Concepts Option #3

Planting Plots #2: Welded panels or wire around individual trees planted in groups of 4 trees with 8ft spacing alternating every 25 ft of channel. Trees planted (cottonwood or ash) inside. Plantings on large and medium channels that connect to main canals for first 500ft. ***Note:*** *Welded panels or wire is needed with 4"x4" mesh to protect trees from livestock and beaver.*





Specifications

Specification	Description
Mesh:	2 in. x 4 in.
Length:	100 ft.
Height	60 in

Prepared by Winter Lake Phase III Team
ODFW, BSDD, and Coos SWCD

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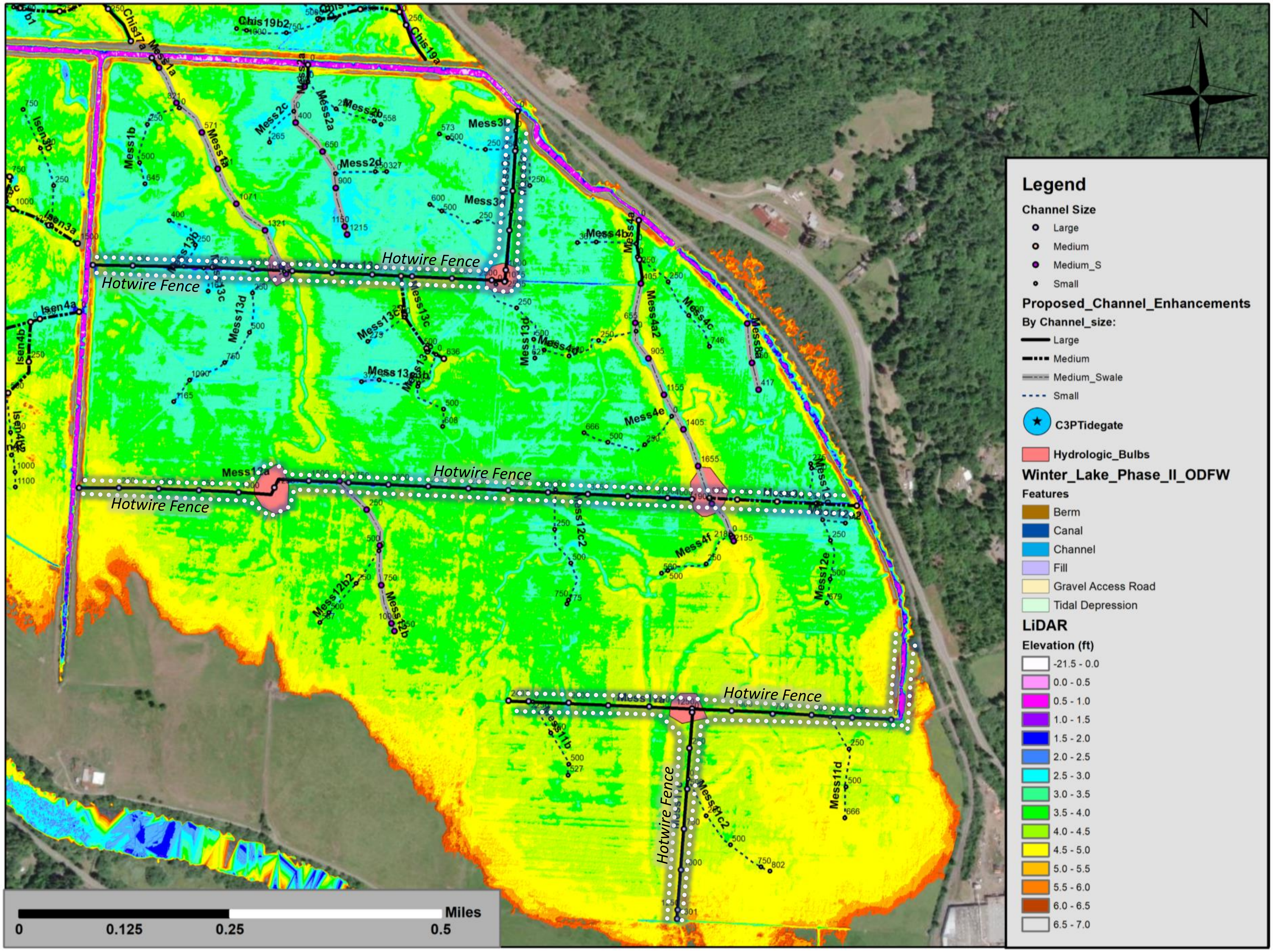
APPENDIX D

Winter Lake Phase III
Habitat Uplift Table

Appendix D. Table 1. Winter Lake Phase III project proposed actions and Ecological Uplift assessment.

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 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.*
Berm Reconstruction		Yes, soil disturbance	**Low**	**Yes**	**Neutral by year 3**	**Neutral by year 3**	*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 of large channels and selected medium channel reaches (Figure xxx). Tree species will be either Oregon Ash, Black Cottonwood, or Spruce.*
			Net Ecological Benefit by Year 1			**Medium**	
			Net Ecological Benefit by Year2			**High**	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Channel Size
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Proposed_Channel_Enhancements
By Channel_size:
Large
Medium
Medium_Swale
Small
C3PTidegate
Hydrologic_Bulbs
Winter_Lake_Phase_II_ODFW
Features
Berm
Canal
Channel
Fill
Gravel Access Road
Tidal Depression
LiDAR
Elevation (ft)
-21.5 - 0.0
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Hotwire Fence
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Mess1a
Mess1b
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Mess2d
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Mess4a
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Mess4c
Mess4d
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Mess11b
Mess11c2
Mess11d
Mess12b
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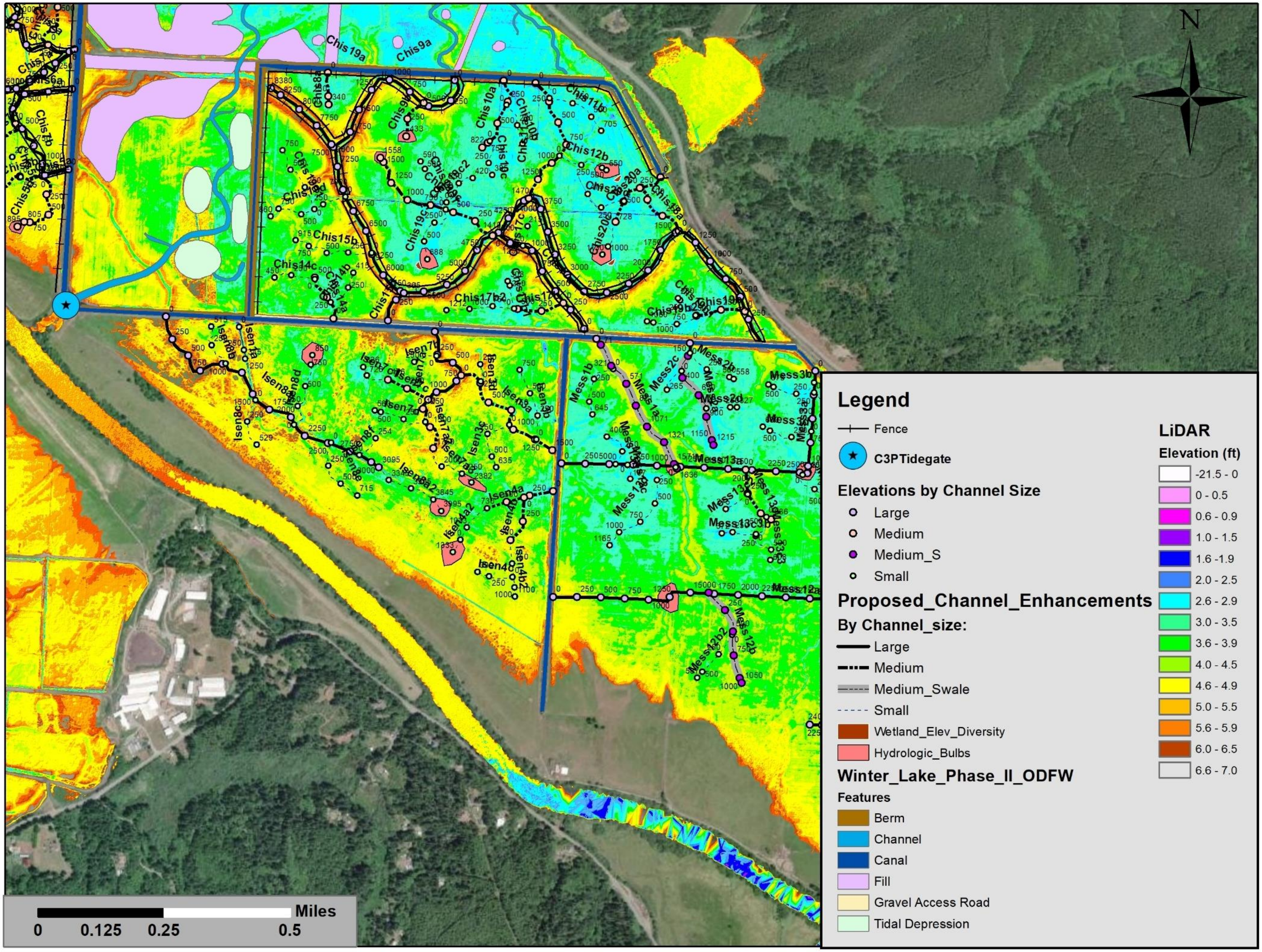
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Medium_Swale
Small
Wetland_Elev_Diversity
Hydrologic_Bulbs
Winter_Lake_Phase_II_ODFW
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Channel
Canal
Fill
Gravel Access Road
Tidal Depression
LiDAR
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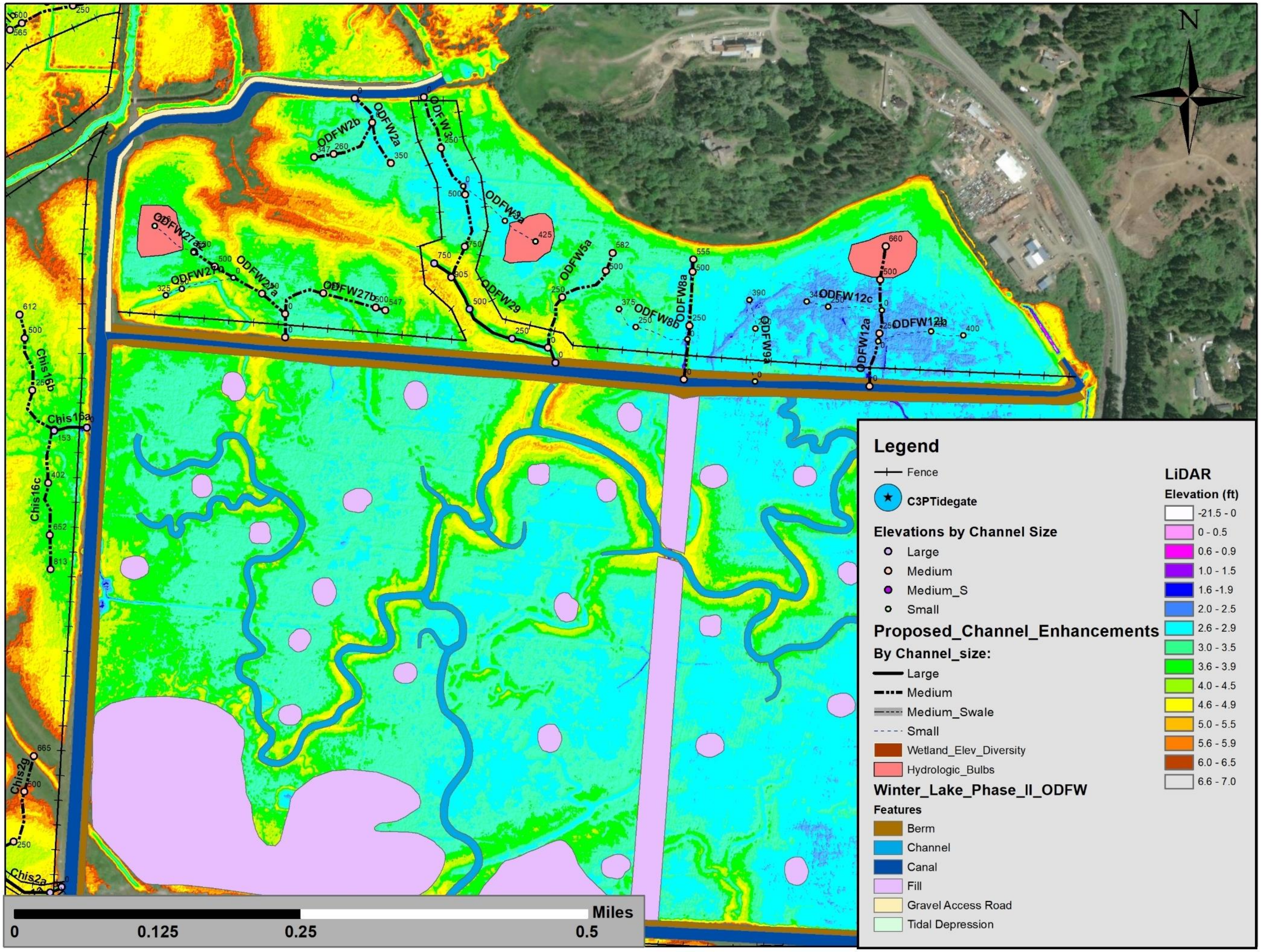

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3.0 - 3.5
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4.0 - 4.5
4.6 - 4.9
5.0 - 5.5
5.6 - 5.9
6.0 - 6.5
6.6 - 7.0
ODFW2b
ODFW2a
ODFW3
ODFW3a
ODFW27a
ODFW27b
ODFW21a
ODFW29
ODFW5a
ODFW8a
ODFW8b
ODFW9a
ODFW12a
ODFW12b
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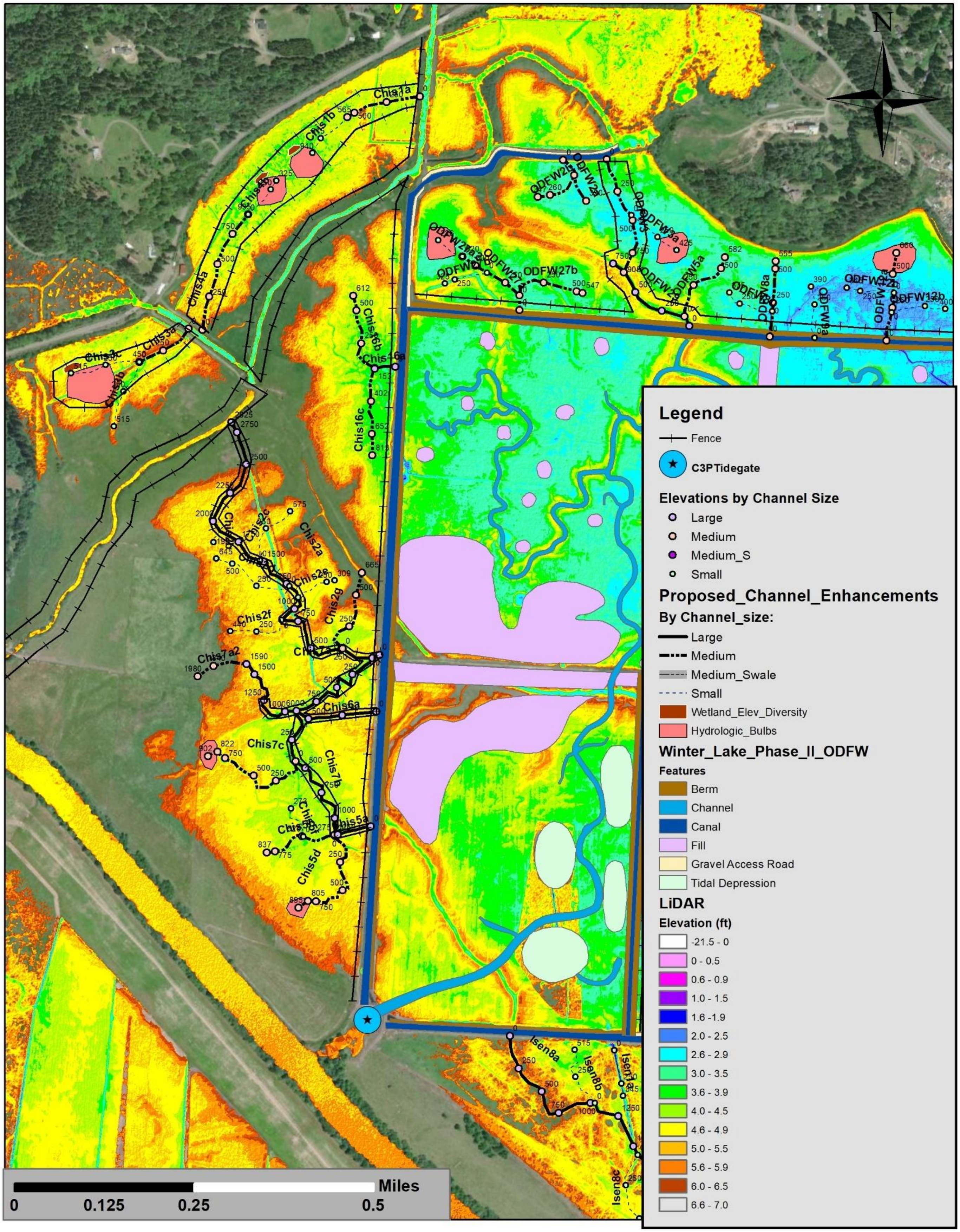
Miles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2.6 - 2.9
3.0 - 3.5
3.6 - 3.9
4.0 - 4.5
4.6 - 4.9
5.0 - 5.5
5.6 - 5.9
6.0 - 6.5
6.6 - 7.0
Miles
0
0.125
0.25
0.5

Winter Lake Phase III Project
Hydrologic Assessment

January, 2022

Produced by

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EXECUTIVE SUMMARY

The "Winter Lake" land area is a distinct river adjacent floodplain west of Coquille Oregon. The portion that is east and south of North Bank Lane and south of Hwy 42 bordered by the Coquille River is ~1,873 acres in size. Historically the acres of this unique valley floodplain that lie below elevation 8.0ft NAVDD88 were subjected to regular tidal inflow and outflow. In 1906-1907 the Beaver Slough Drainage District (BSDD) was formed and the Coaledo Drainage District (CDD) some years thereafter. These drainage districts provided social and financial framework facilitating construction of canal networks and installation of large tidegate systems for the properties to be drained. The BSDD installed canals and tidegates in 1908-1909 allowed for drainage of 1,700 acres and the CDD installed the Beaver Creek tidegate that allowed for drainage of the remainder in the early 1900s. The lands prior to conversion to pastureland were forested with wetland tree species with a highly dendritic tidal channel network. As part of the land alterations, interior berms were constructed along pasture and property boundaries with elevation crests of ~5.5ft in order to allow for individual pasture management when water was below that elevation. The land area ownership was originally comprised of multiple individuals and entities and in the early years and land use varied with cultivation of some crops and extensive hay production on higher pastures. Currently the primary use is pastureland grazing and ownership has been greatly consolidated.

In 2017 a largescale restoration project developed by the BSDD, Oregon Department of Fish and Wildlife (ODFW), and The Nature Conservancy (TNC) was implemented in the BSDD, where the four legacy 8.0ft corrugated metal culverts with associated top-hinged wooden tidegates connecting BSDD lands to the Coquille River were replaced with the C3P project (Phase I). The C3P project consisted of construction of seven 10.0x8.0ft concrete box culverts and associated vertical slide-gates and side-hinged aluminum tidegates. In addition, an access road was rebuilt from Hwy 42 and from North Bank Lane, with associated bridges to provide access across existing legacy canals to serve this infrastructure. In 2018 restoration actions (Phase II) installed 31,000ft of sinuous channel on properties upstream of the C3P tidegate referred to as "Unit 2" lands and hydrology was returned to more historical condition within Unit 2 using the Muted Tidal Regulator (MTR) effects that were possible with the new C3P vertical slide-gates.

Upstream of the new C3P tidegate, in Units 1 and 3 and pastures along Beaver Creek in the BSDD and CDD are 42 undersized culverts with a high prevalence in the 2.0-3.0 diameter range. These culverts greatly underserve the tidal inflow/outflow capacity of the new C3P tidegate and the water management strategies outlined under the BSDD Water Management Plan (DWMP). Additionally, the tidal channels that were present historically were largely cut-off when linear field drainage channels were originally laid out. These linear channels were installed with little attention to microtopography, often on property and or pasture boundaries resulting in a number of hydrologic discontinuity issues. The Winter Lake Phase III project is proposing to replace the remaining 42 interior culverts and old style top-hinged tidegates in Units 1, 3, and pastures along Beaver Creek with 38 appropriately sized culverts. Upstream of the new culverts within pastures the project will construct on-grade channels that meet the precipitation hydrology as well as the tidal hydrology of the landscape and the BSDD DWMP. Existing engineering tools (USGS Streamstats) and engineering culvert capacity information were utilized to develop culvert and channel sizing that meets or exceeds the site hydrology and fish passage guidelines for both Federal and State jurisdictions.

I. INTRODUCTION

The Winter Lake floodplain area, at over 1,873 acres, represents one of the largest contiguous land areas in the lower Coquille River Basin with both high potential for providing Oregon Coast (OC) coho overwintering habitat and high-quality pasture grazing. 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 (*Figure 1*). The current proposed Phase III actions seek to address hydrologic connectivity within BSDD Units 1 and 3 and two pastures, which are 62 and 44 acres respectively in the Coaledo Drainage District (CDD) (*Figures 1 and 2*). Prior to installation of the linear canals and tidegates which eliminated tidal influence in 1908-1909; the lands were forested and contained a dense tidal channel network (Benner 1992). Native salmonids, specifically coho salmon *(Oncorhynchus kisutch)* juveniles, used these habitats heavily during fall/winter/spring months to feed and rear prior to smoltification. The habitats were also highly important for fall Chinook salmon *(O tshawytscha),* winter steelhead *(O. mykiss)* coastal cutthroat trout *(O. clarki clarki),* and tidal outflow from the dendritic tidal network of channels likely provided large quantities of macroinvertebrate food items to in-river native fish.

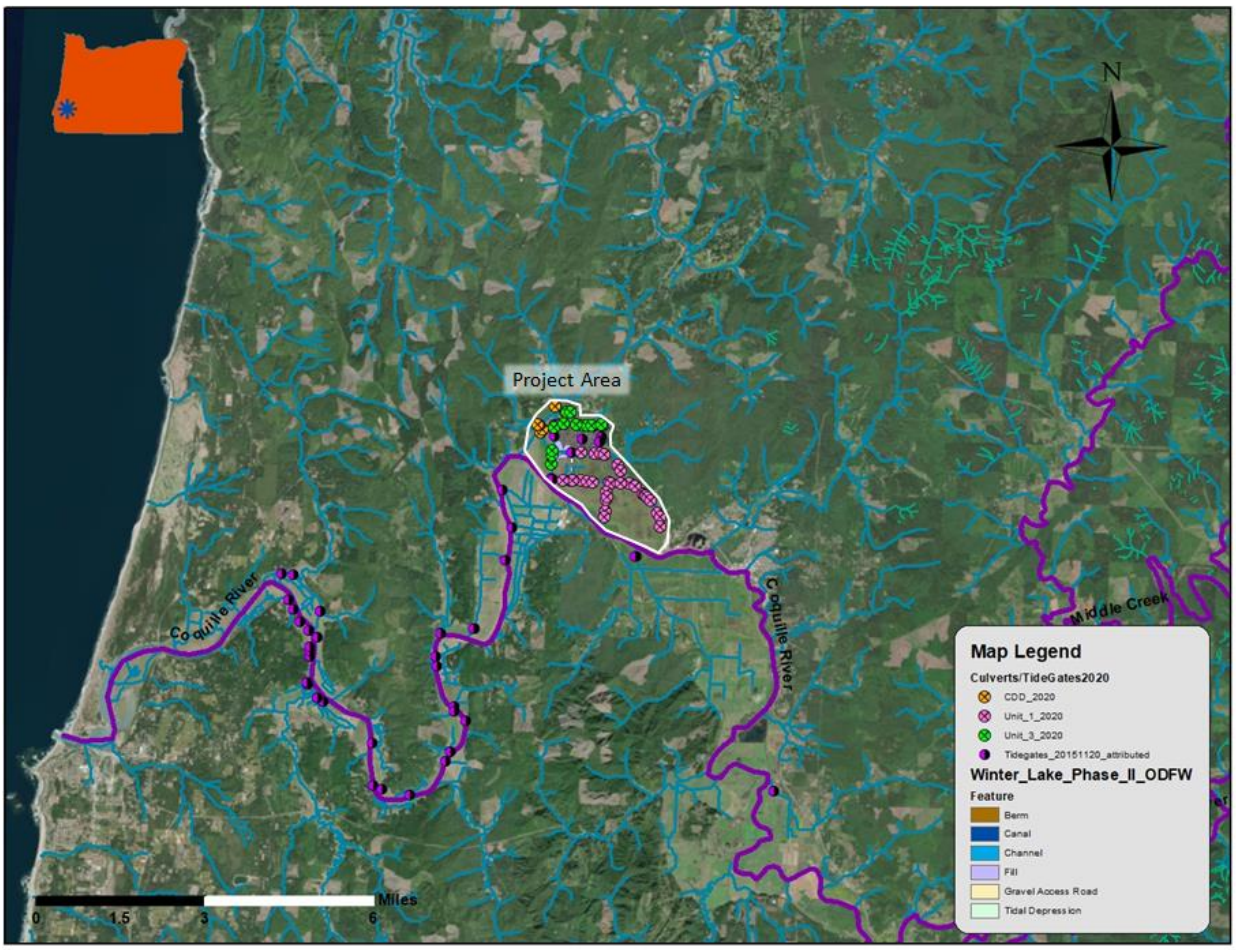

Figure 1. Coquille River estuary with demarcation of the Phase III project area at River Mile 21. 5.

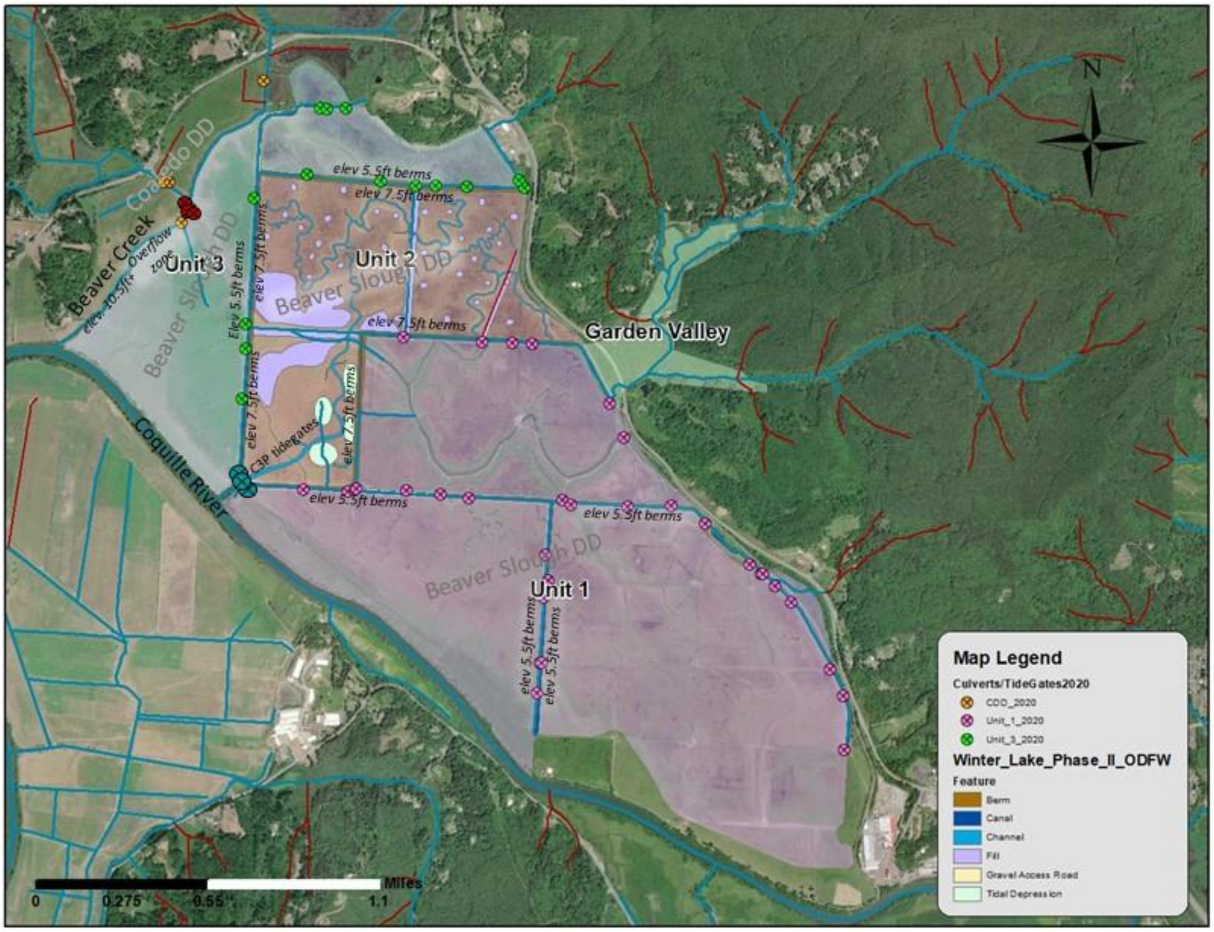

Figure 2. Winter Lake Phase I, II, and III project area and the land management Units within the Beaver Slough Drainage District. Note the two small parcels in the Coaledo Drainage District are immediately to west/northwest of Unit 3 label and are also in the Phase III project area.

II. WINTER LAKE PROJECT BACKGROUND

The "Winter Lake Phase I," project installed seven new tidegates to replace the four previously existing undersized culverts and top-hinged gates that were failing. The four 8.0ft corrugated metal culverts (CMP's) were originally installed in the early 1960's on the stem channel that provides interface of the BSDD floodplain with the Coquille River. These were replaced in 2017 with seven 10.0x8.0ft concrete box culverts. New Vertical Slide Frame Tide Gates (VSFTG) were then installed on the seven concrete box culverts. On three of the VSFTG gates feeding into the BSDD (Units 1, 2, and 3), secondary side-hinged aluminum tidegates (*Figure 3*) were installed to provide a dual water management power-off backup capacity. The slide-gate water control system is currently configured with both manual and remote access control. The seven new culverts with associated tidegates are collectively referred to as the "C3P Tidegate" project. The new tidegates also have the capacity to be operated with Muted Tidal Regulator (MTR) technology, whereby they can be opened to allow for tidal inflow to a set desired level, and controlled by a computer program, which is linked to river/tidal level feedback. The seven new slide-gate tidegates have increased the capacity for water movement into and out of the 1,700acre BSDD by 300%.

The Phase I C3P tidegate construction resolved the problem of hydrologic restriction of tidal inflow/outflow from the Coquille River BSDD main canals that had existed prior to the project. The Winter Lake Phase I project resulted in potential for delivery of large volumes of tidal inflow/outflow. However, while the two main BSDD canals were sufficient in size to carry flow volumes from the new C3P tidegates into the floodplain landscape; water entry from these canals into the interior pasture channel networks within Units 1, 2, and 3 (*Figures 1 and 2*) remained unchanged following completion of Phase I.

Unit 2 lands are owned by the China Camp Gun Club and Oregon Department of Fish and Wildlife (ODFW). The China Camp Gun Club lands are managed for summer pasture grazing and recreational duck hunting during winter months. The ODFW-owned lands comprise 286 acres (northern portion of Unit 2- see *Figure 2*) with the Gun Club accounting for the remaining 121 acres that extend south to the C3P tidegates 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 ODFW, BSDD, The Nature Conservancy (TNC), and Tetratech Engineering staff, in the 407 acre Unit 2 (*Figure 2*).
The main tidal channel upstream of the C3P tidegates (*Figure 3*) in Unit 2 was designed to have volume capacity that exceeds that of the four concrete box culverts and tidegates which feed into Unit 2. The design was based on the Hydraulic Analysis completed by Northwest Hydrology Consultants (NHC), (see Appendix A). This large channel has facilitated ability to serve water from the C3P tidegates to Unit 2 lands, provide juvenile coho and other native fish passage into the site, as well as provide for pasture irrigation on the China Camp Gun Club property. Hydrologic connectivity provided by the new Phase I and II projects in 2017-2018 is considered fully adequate to provide tidal inflow/outflow into Unit 2. The proposed Phase III project does not include any proposed actions within Unit 2.

The proposed "Winter Lake Phase III" project has been developed by a team of partners including the BSDD, the Coos Soil and Water Conservation District (Coos SWCD), and ODFW. This project is designed to complement the BSDD C3P tidegate replacement project which was completed in 2017. Phase III actions proposed within BSDD Units 1 and 3 include replacement of 42 existing undersized culverts and their associated old-style top-hinged tidegates with 38 new culverts; installation of upgraded water control structures; and redesign of the interior pasture channel network. These project actions are anticipated to maximize hydrologic connectivity, with the goal of achieving a more sustainable balance of fish/wildlife and forage production. We are incorporating designs that meet the ODFW Habitat Mitigation Policy guidelines (OAR 635-415) and National Marine Fisheries Service (NMFS) Tidal Area Restoration Project (TARP) and Standard Local Operating Procedures for Endangered Species (SLOPES V) restoration guidelines.

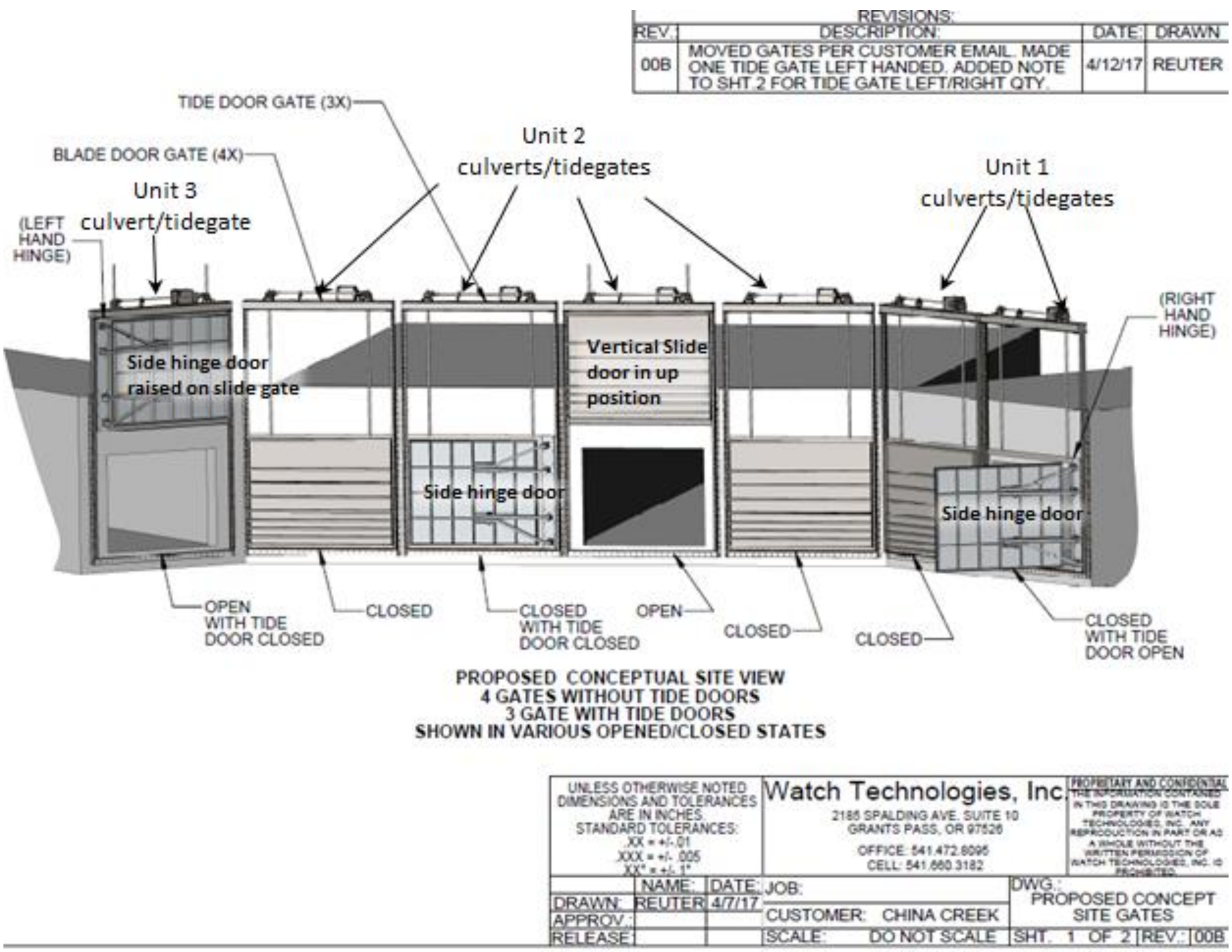

Figure 3. C3P tidegates and 10.0x8.0ft concrete box culverts configuration.

The proposed Phase III project is designed to address current insufficient hydrologic capacity and channel layout issues in both Units 1 and 3 of Winter Lake, and two parcels in the CDD (*Figure 2*). The lands within Units 1 and 3 are actively managed for agricultural production (grazed pasture) during the spring, summer, and early fall months. These lands are, however, considered to have largely unrealized capacity for rearing of juvenile coho during the late fall, winter, and early spring. Water management to date within Units 1 and 3 has relied primarily on linear channel networks that were installed in the early 1900's, with subsequent modifications implemented over time, and maintenance dredging occurring at roughly 15yr intervals to clean sediments that had accumulated in "ditches" or canals.

It is important to note that the individual landowner pastures within Units 1 and 3 are isolated up to elevation 5.5ft NAVDD88 by legacy earthen berms that run along the sides of the major canals (*Figure 2*). Culverts installed through the berms provide for hydrologic connectivity from low water elevations up to elevation 5.5ft, at which point sheet flow begins to overtop the berms. Secondary tidegate water control structures have been installed on these interior culverts to allow landowners the ability to manage water on their individual parcels, up to water elevation 5.5ft. These berms have had little or no maintenance for a number of years, and currently have substantive need for reconstruction and repair. There are five key locations where 100-200ft segments of the berms have been eroded down to heights below elevation 3.5ft. These damaged segments of berm are breached sooner by rising water, disrupting the functionality of individual pasture irrigation inflow management.

The forty-two culverts currently installed within the berms also present a major need for improvement as most are equipped with outdated, top-hinge style wooden tidegates for water control. These interior tidegates present hydrologic discontinuity issues due to being undersized, installed at incorrect elevations, and many are located in sub-optimal areas of topography. These culverts with their associated hydrologic issues impact the pasture channel network's overall capacity to move water efficiently and evenly across the landscape, thereby negatively impacting fish and wildlife values; wetland ecological function; pasture drainage for forage production; and irrigation.

III. KEY HYDROLOGY AND HABITAT CONCERNS

The Winter Lake Phase I C3P Tidegate project completed in 2017 alleviated hydrologic connectivity issues at the connection point between the BSDD overall land area and the mainstem Coquille River. In 2018, the Phase III/Unit 2 "Restoration" project installed over 31,000ft of channel, fully connecting 407 acres of land in Unit 2. The Phase II restoration actions addressed hydrologic discontinuity, limited access for fish, stranding potential, and mosquito production risk.

However, most of the land within Winter Lake Units 1 and 3 upstream of the C3P tidegate in the BSDD, and two parcels in the CDD, were not included in restoration plans for either Phase I or Phase III. These approximately 1,873 acres retain numerous dysfunctional hydrological and habitat attributes for floodplain connectivity, wetland function, and access for a native fish. There are a number of salmonid species including Oregon Coast (OC) coho juveniles; fall Chinook juveniles; winter steelhead outmigrants; and coastal cutthroat trout that would otherwise use these locations during fall, winter, and spring as temperature regimes are within preferable range. In addition, the limited hydrologic capacity/connectivity leads to poor functionality in regard to water management capability for irrigation.

A. Subsidence:

It is important to visit the issue of subsidence through time. Removal of water in 1908-1909 through tidegate installation and canal construction effectively reduced the average summer water table by around 5.0ft. Through millennia prior to 1908, soils on the floodplain forested tidal wetland developed with deposition of sediments during flood events that flowed to the extent of a highly dendritic channel networks. Not all sediment was deposited through tidal channels. A large overflow channel directly entering the Winter Lake floodplain from the Coquille River was also diked in the mid-1900s, which has prevented heavy influx of turbid waters.

No less important to subsidence has been the oxygenation of the highly organic soils, which has allowed bacterial digestion similar to a compost pile. When the wetlands were drained in 1909 thousands of years of carbon rich leaf litter from trees, layers of detritus, such as slough sedge, rushes, and other wetland plants that had reached maturity in the late summer each year, and then fallen into water directly or on the forest floor were incorporated into soils. This resulted in a very carbon rich soil profile and the constant tidal inundation resulted in limited levels of oxygen in the soil to support bacterial decomposition. Soil layers in the top 5-8ft may have been 60%+ carbon prior to dewatering. Accordingly, once dewatering allowed for oxygenation bacteria would have been able to use this carbon for energy. This condition is very prevalent in the farmlands around San Francisco Bay, where some locations have subsided over 20ft. The current condition at the Phase III project area is that the soils have likely subsided in some locations greater than 3.0ft. Subsidence has not been uniform across the floodplain and thus there are locations where water currently struggles to drain as shallow depressions are now present. Subsidence has complicated fish ingress/egress and pasture management.

B. Hydrological Issues:

1. Channel Discontinuity:

Discontinuity of channel networks due to the original historic construction of linear "ditches" in 1908-1909, which redirected flows from the sinuous native/natural channel flow paths. This results in the inability for tidal inflow/outflow to move into and out of the floodplain pastures properly.

2. Insufficient Fish Access:

Insufficient interior channel network density/acre and average channel depths in Units 1 and 3 to provide access routes for juvenile fish to feed and find sufficient depth refugia. This condition results in limited utilization of large portions of the floodplain by juvenile OC coho, except when water levels exceed roughly 3.0ft above pasture elevations.

3. Fish Stranding*:*

Low-lying land areas within individual pasture ownership that are disconnected from channel networks, which results in water retention or "ponding" when flood levels decline and resulting in high stranding risk for juvenile coho on the floodplain.

4. Restriction of Tidal Flow:

Undersized culverts connecting to the main canals within Units 1 and 3 and the CDD pastures that restrict proper tidal/flood-flow and underserve hydrologic connectivity/irrigation needs in the period when salmonid fish would use the habitats and pasture production months.

5. High Invert:

Culverts were in many locations installed with an invert elevation inappropriately high, which results in a condition where pasture channel networks at early winter water elevation levels are disconnected from main canals resulting in delayed ability for fish to enter the floodplain and resultant increased potential for stranding and predation.

6. 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 (Figure 4). This results in restriction of fish movements from the canals into pasture floodplain channels where food availability is higher and competition with non-native fish lower.

7. Channel Grades:

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. Limited excavation/maintenance through time to compensate for the poor sediment transport capacity of these historical designs has led to sediment accumulation restricting inflow/outflow of these interior channels. Reconstruction or new construction is now needed to achieve the desired capacity and functionality.

8. Underserved Acres:

Poorly located linear channel networks that do not follow land elevation hydrologic paths and undersized segments, with both insufficient volume capacity, length, and or routes 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.

9. Nonnative Fish:

The main large canals are sufficiently large to serve C3P inflow/outflow capacity, however, Units 1 and 3 currently do not have ample channel lengths and volumetric capacity of interior pasture channel networks. This condition results in extremely limited ability to 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 accommodated by the relatively slack water conditions within the canals that serve Units 1 and 3. This project will allow much greater exchange of volume in those canals reducing ecological dominance of species that are not native and move conditions towards native fish.

10. Water Quality:

The pastureland channel networks are insufficient in density and network layout to properly move water with the tidal inflow/outflow from the main C3P tidegates to manage water quality. Currently water will enter a channel and stagnate for long periods until a high flow event (Fall/Winter) or an irrigation event. Resultantly, dissolved oxygen levels deteriorate, and aquatic production reflects this poor habitat condition in affected areas. Water quality in late spring/summer/fall is largely a function of water movement into the canals and pasture channel network on incoming tide through water delivered from C3P tidegates and then outflow following high tide. Reconstructed/new channels will eliminate this issue as it will provide for direct connectivity to regular tidal inflow/outflow management at the C3P tidegates and much greater volumetric exchange of water.

11. Subsidence*:*

Two factors have contributed to subsidence of the floodplain pastures on the BSDD and CDD: 1). The historical input of sediments annually through floodflow delivery was essentially eliminated in 1909 with installation of tidegates that were not able to be opened during winter; and 2) Drying of the landscape through tidegate installation that allowed for bacterial digestion of the organic (carbon) components that comprised what were relatively peaty soils prior to 1909. Currently the C3P tidegate has restored a notable ability to deliver sediment laden floodwaters to the main canal networks. However, pastureland interior channel networks are greatly undersized, without divergences into large sections of pastures, and interior channels are linked to main canals with insufficiently sized culverts. Resultantly, the network is unable to provide for inflow of sediment rich waters to pastures reducing further subsidence and restoring this natural process.

12. Pasture Residual Water:

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.

13. Improper Location:

Channel networks that are not located properly for individual pasture drainage/irrigation, resulting in over/under-watering of individual landowner pastures.

14. C3P Duration of Door-Open Condition:

The current interior pasture channels capacities are insufficient by several magnitudes to provide inflow volume capacity that allows a substantive timer period for inflow filling of the network prior to water reaching pasture elevation. With the C3P tidegates adjusted to allow for tidal inflow, the amount of water and the quantity of time from low tide to field height elevation is linked to the volumetric capacity of the canals and interior pasture channel networks. Increased channel capacity will allow for opportunity to keep the tidegates open a greater amount of time prior to water entering the pastures and impacting other land management needs. This duration when channel networks are able to absorb inflow is important within the DWMP for increasing the duration the slide-gates are open and fish can ingress on the incoming tide.

Figure 4. Typical top hinged flapper tidegate style currently used within Units 1 and 3.

C. Water Management:

NOTE: *The historically installed infrastructure (main tidegates and interior culverts and channels) have been used to provide both drainage and irrigation function since installation in 1909. Irrigation function 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 behavioral 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 for the individual pastures over one to three 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 due to canal and river temperatures that have been measured as high as 80°F and 76° respectively. Irrigation utilizing tidal inflow during summer, is therefore considered to be companionable with the natural life-history of native fish that are present; and native salmonids are unlikely to be present during the months when irrigation is implemented within the project area.*

The Coquille River has a natural levee that developed over thousands of years as higher sediment deposition occurred in the first 100-350ft adjacent to the river channel with decreasing unloading as the floodplain extends to the north. The natural levee runs from the toe of a large point just west of Coquille on the north side of the river to the Beaver Creek natural levee ~13,600ft downstream. There are two channels that currently enter the main Coquille River through the natural levee that hydrologically connect the Winter Lake floodplain: the BSDD channel at the C3P tidegates and Beaver Creek. This levee has facilitated the ability to manage tidal water elevation within the Winter Lake floodplain up to elevation 10.5ft NAVDD88 through use of the C3P tidegate and CDD tidegate on Beaver Creek. At elevation 10.5 river waters overtop the Beaver Creek dike *(Figure 2*) and flows overland into the Winter Lake floodplain.

Tidal elevations observed in the mainstem Coquille River are softened by the riverbank friction in the length from the ocean to RM 21.5 where the C3P tidegate channel enters the main Coquille River. Despite this effect the tidal signal is substantial and generally ranges from a low of around +1.5ft on the lowest tides to highs at the C3P channel of 8.5+ft (See Northwest Hydrology Consultants "Hydraulic Analysis" in the BSDD Water Management Plan (DWMP) Appendix A)). 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 when major flooding events occur.

Up to elevation 10.5ft the C3P tidegates are able to resist inflow and provide water management of BSDD floodplain pastures of which ~1,295 acres are <8.0ft in elevation *(Figure 5)*. The C3P tidegate operations and water management goals within the District are based on the needs of both the upstream landowners and fish and wildlife goals, which are defined in the BSDD DWMP. The lands upstream of the C3P tidegates and the 39 BSDD culverts addressed in this **Hydrologic Assessment** are <u>subservient</u> to water management at the C3P tidegates and the BSDD DWMP, which has been reviewed and approved by the National Marine Fisheries Service (NMFS) and ODFW Fish Passage staff during the Winter Lake Phase I and II permitting process. The BSDD DWMP strategies for Units 1 and 3 are structured around seasonal agriculture pasture grazing and fish/wildlife needs with the following operational goals (*see Table 1*):

- *Winter Habitat Elevation Level:* November to March; transition in April-May
- *Spring Drain-out:* April to May
- *Summer Low Elevation:* June to October; transition in October-November

NOTE: *Individual landowners have plasticity under the District Water Management Plan to operate internal water control structures in transition periods for pasture management needs. The three culverts that will be addressed in the CDD are not under a Water Management Plan and are upstream and subservient to the Beaver Creek tidegate.*

Table 1. Beaver Slough Drainage District Water Management Plan (DWMP).

BEAVER SLOUGH DRAINAGE DISTRICT - OPERATING PROTOCOLS					
SEASON	UNIT	WATER LEVEL	TARGET ELEVATION RANGE		
WINTER - Oct to Mar:					
	Units 1&3				
		Basic Flush Level until first flood event or cattle are pulled	3.0	to	3.5
		After first flood event transition to Over Winter Habitat Level	4.5	to	5.5
	Unit 2				
		Complete transition to Over Winter Habitat Level	4.5	to	5.5
SPRING DRAIN OUT – Apr to May:					
	Units 1&3				
		Maximum Dry Out – maximum elevation	2.0	to	4.0
		Transition to Basic Flush Level as conditions allow	3.0	to	3.5
	Unit 2				
		Transition back to Basic Flush Level	3.5	to	4.0
SUMMER – Jun to Sep:					
	Units 1&3				
		Complete Transition from Maximum Dry Out to Basic Flush Level	3.0	to	3.5
		Irrigation Level – Every 10 to 14 days as per coordinated request from landowners	4.0	to	4.5
	Unit 2				
		Basic Flush Level	3.5	to	4.0
		Sept to October begin transition to Over Winter Habitat Level	4.5	to	5.5

1. Water Elevation Management:

***NOTE**: there currently are locations where the interior berms in Units 1 and 3 are below elevation 5.5ft NAVDD88 and in need of repair. This section discusses the water management goals with berms reconstructed to the goal height of elevation 5.5ft. The CDD tidegate (Figure 3) on Beaver Creek consists of three 6.0ft CMP's with top-hinged tidegates. There is no MTR capability at that site thus water is managed for Drain-out only. At the BSDD C3P tidegates water is able to be managed for Drain-out and inflow. At C3P VSFTG's are able to be opened to allow for inflow or outflow and secondary side-hinged aluminum tidegates allow for outflow only.*

a) When floodwaters are above elevation 10.5ft NAVDD88 water moves up Beaver Creek and subsequently flows over the low portions of the Beaver Creek levee just downstream of the CDD tidegate then moving across the pastures. At this elevation

Units 1, 2, 3, and the CDD are hydrologically connected in a lake like condition *(Figure 2)*. *(Berms that isolate Unit 2 were reconstructed to elevation 7.0ft in 2018; and berms around individual water management pastures in Units 1 and 3 are elevation 5.5ft or lower).*

b) As floodwaters recede below elevation 10.5ft the natural river levee along the Coquille serves as hydrologic control. The C3P concrete box culverts/tidegate outflow control point is through this levee and when river levels are below 10.5ft C3P is at an elevation sufficient to allow for management of water in the BSDD. From elevation 10.5ft and lower the BSDD is separated from the CDD by the natural levee along the west side along Beaver Creek (Figure 2). From 10.5ft as water recedes to elevation 7.0ft (Unit 2 berm height), Units 1, 2, and 3 are remain connected within BSDD, however, BSDD is disconnected from CDD at 10.5ft.

c) With water levels 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 thus no longer connection of Units 1, 2, or 3 hydrologically below elevation 7.0ft *(Figure 2)*.

d) Below elevation 5.5ft the interior berms in Units 1 and 3 allow for individual water management on the various pastures using the interior pasture culvert water control structures and channel networks *(Figure 2)*.

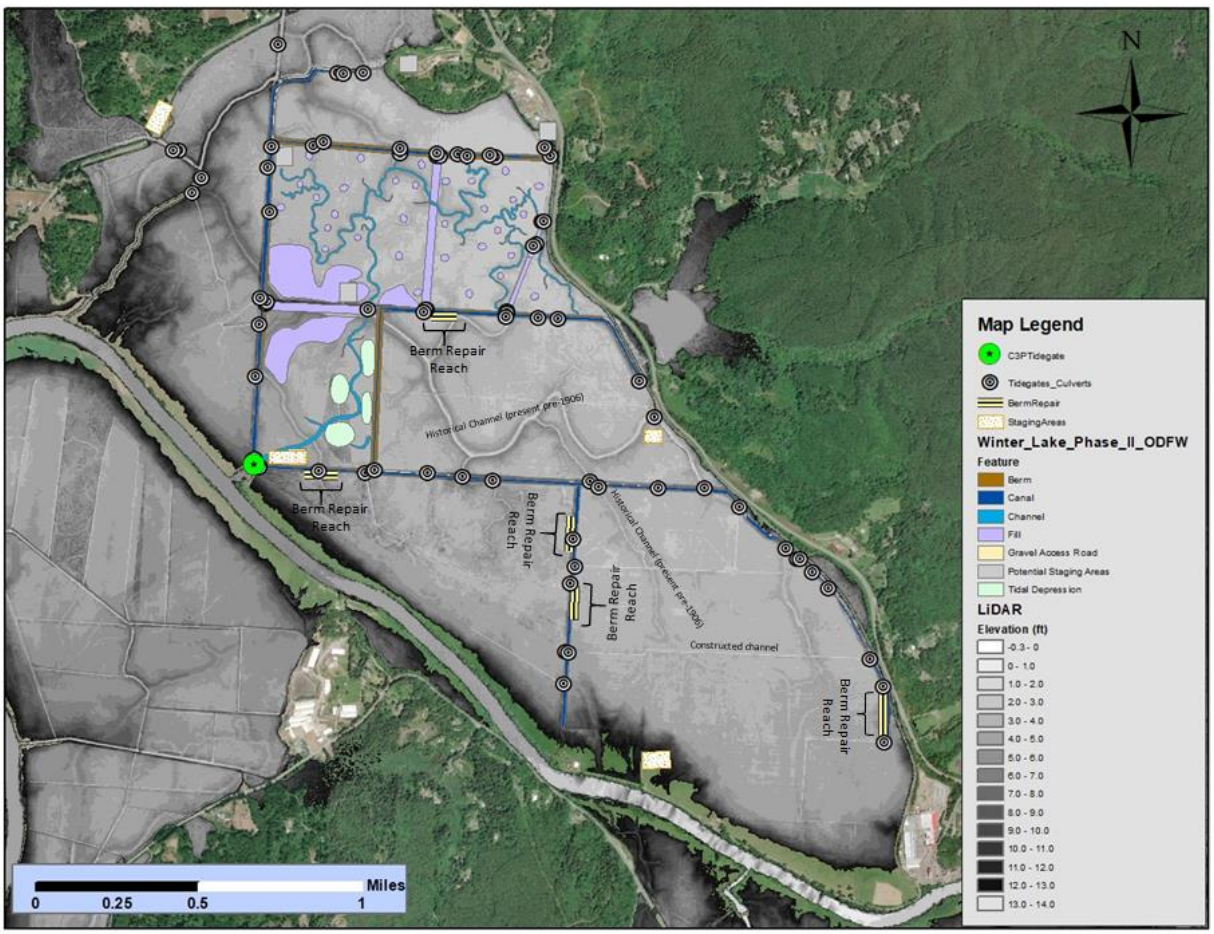

Figure 5. LiDAR elevational map and locations where berm reconstruction is needed. Grayscale depiction allows for historically installed linear pasture drainage channels to be visible.

D. Pasture Drainage Management:

NOTE: *In regards to Interior Pasture Culvert capacity 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 volume movement independent of the culvert infrastructure when water is above elevation 5.5ft. The sizing of culverts and channels is: 1) In order to provide for fully adequate connectivity of pastures and canals 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 Unit 1 and 3 culvert network below elevation 5.5ft.*

Water that is moved into the interior landscape from the C3P tidegate enters pasture floodplains through the existing undersized culverts that penetrate through earthen berms up to elevation 5.5ft whereas water is then able to sheetflow over berms. Currently the channel networks and undersized culverts connecting these channels do not provide capacity and connectivity that serves fish/wildlife and landowner needs. We have sized the new culvert infrastructure to respond to the inflow/outflow stimulus as river levels or tide levels are managed at the C3P tidegate. In the spring period when there is a strong need to provide pasture Drain-out for forage production, the proposed project will reduce the length of time needed to accommodate dewatering of pastures, which will be line with agricultural production goals.

E. Irrigation Management:

Irrigation for individual landowner pastures within Units 1 and 3 is incorporated in the period of June through September. Higher tide cycles associated with the moon phase are used to push water into the main canal networks, which is delivered to pastures through manipulation of individual water control structures on culverts through the interior pasture berms. Irrigation is able to be delivered when tides are generally above 4.0ft in elevation, through the peak of the tide. As tides subside water moves from pastures through sheetflow and the insufficient channel networks to the main canals and then back to the Coquille River through the C3P tidegate box culverts. Irrigation is generally for very short periods, e.g. three high tides over a three day period once a month. This equilibrates to roughly 6.0hrs of water delivery on a high tide cycle for three high tides over three days or a total of 18.0hrs of irrigation water delivery per month. When evaluated for the percent of hours per month that irrigation occurs, roughly 2.5% of the hours would be associated with inflow with another 6.0hrs for outflow/Drain-out or roughly 5.0% of the total hours per month. On an annual basis irrigation delivery including both inflow and outflow would account for 18hrs per month x 4 months or a total of ~72hrs per summer out of 8,760 hours per year or 0.8% of the period that fish would need to enter or emigrate from pasture channels. Flow velocities through interior culverts during irrigation events will potentially exceed 5.0ft/sec. However, due to the very limited duration annually that irrigation would be implanted and the period of year irrigation would occur, which is not a period when native migratory fish are present, we propose that the Phase III culvert sizing will meet Federal and State criteria in regards to irrigation management.

F. Culverts and Tidegates:

Historically, culverts on the project area were installed with undersized capacity for various reasons, however, often due to lower cost. There have been negative legacy effects during winter flooding for fish passage and subsequent extended drain-out in spring due to undersizing, which impacts pasture grass production. The Phase III project is designed to address the hydrologic capacity limitation associated with the culverts that are currently in place. Of the numerous channels proposed, four will also be realigned to reduce the overall culvert number needed from the current 42 to 38 through channel network consolidation. Old-style flapper tidegates predominate currently *(Figure 4)*. These will be replaced with either slide style vertical knife gate water control devices or side-hinged aluminum tidegates with a device to maintain the door open as desired. The BSDD DWMP dictates the water management strategies (Appendix A). This DWMP provides for a high degree of access for water and fish from the mainstem Coquille River during winter months. Landowners are on board with managing interior pasture channel culvert water control structures from November 1 to March 30th in alignment with the BSDD DWMP and needs for fish access and floodflow hydrology.

Note: *The BSDD DWMP provides for individual landowners to have individual water control structure management flexibility during April-May Drain-out and the pre-winter October transition period.*

G. Channels:

The existing channels in Units 1 and 3 were installed in the 1908-1990s without: a). Design that was based on microelevation 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). Channels were not constructed on grade, which promoted sediment accumulation rather than transport from deposition location downstream to main canals and to the mainstem Coquille River. *Historically, natural channels formed with on-grade morphology and transported sediments prior to installation of tidegates*; 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.

These above noted factors, which are highly prevalent for existing channels 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. There is high inherent potential for fish production within Winter Lake Units 1 and 3; however, their current hydrologic disconnection yields the issues noted in the previous ***Key Hydrology/Habitat*** section. Difficulty with obtaining permits has contributed to inability to conduct excavation maintenance in the past twenty years. Thus, for channels that were not on-grade and without proper hydrologic inflow/outflow to transport sediments (nearly the entire network) there is currently a condition where interior channel networks are clogged with sediment and vegetation and in need of reconstruction.

H. Interior Berms:

From 1908 until the mid-1990's interior berms were constructed utilizing the spoils from channel cleaning. These berms were built upstream of the C3P tidegate along the banks of the main north-south and east-west canals *(Figure 2)*. Berms have generally been elevated to 5.5ft NAVDD88, however, vary somewhat depending on the landowner/location with some short segments a bit higher. The berms in Units 1 and 3 historically provided secondary interior protection from tidegate leakage that occurred through the main CMP culverts and top hinged wooden tidegates draining Units 1, 2, and 3 into the mainstem Coquille River. Since the C3P tidegate Phase I project was installed there has been little or no leakage at the main tidegates. Culverts through interior berms predominantly have top hinged flapper style water control structures in use for providing secondary tidal inflow management. Despite the new functionality of the C3P tidegates in controlling water, the interior berms continue to have strong utility for providing water management during the late spring and early summer during Drain-out. In summer months these berms provide the ability to provide individual pasture irrigation management using the culvert and tidegate networks that enter pastures to deliver water where needed and prevent water entry into locations where livestock are grazing.

IV. WINTER LAKE PHASE III: PROPOSED PROJECT ACTIONS

A. Culvert Replacement*:*

Replacement of 38 of the existing 42 undersized pasture channel culverts and elimination of 4 on the BSDD and CDD project area. At one location, where the Messerle pasture road accesses the Winter Lake floodplain from Hwy 42, a culvert will be replaced with a bridge *(Figure 5)*. The remaining four culverts and their associated tidegates will be removed and consolidated within the remaining reconstructed 38 channel networks. The location of entry for six of these pasture channels and associated culverts to main canals will be moved in order to better configure the interior channel network to landscape topography and ground elevations. Culverts will be primarily HDPE.

B. Hydrologic Connectivity/Drainage Management:

Interior culverts and channel networks are critical for both providing adequate hydrologic connectivity to serve fish/wildlife and landowner pasture production needs. The 38 proposed new culverts have been sized to serve both water inflow and drain-out on the floodplain in order to meet both these goals. Fish access and pasture management are currently in a "poor" functional condition as ingress/egress for fish is limited and ranching operations are hurt by long durations of residual water in pasture areas that prevents proper grass growth. Water movement response time due to interior culvert and channel constrictions fails to properly reflect inflow/outflow from the C3P tidegate operations.

C. Pasture Irrigation:

There will be 12-15 irrigation management and cattle crossing culverts installed in addition to the main 38 pasture channel culverts. These will be interior to the 38 pasture channel culverts and will be sized according to equal or exceed the flow volumes at the points of the crossings. They will not restrict volume that is delivered to these deep pasture locations from the 38 downstream main pasture channel/main canal connecting culverts. As these deep interior cattle crossing culvert will meet or exceed water delivery volumes at the installation point they were not relevant for the Hydrologic Assessment calculations in relation to the C3P tidegates. These will be installed at pasture-to-channel junction points in order to provide for the ability to manipulate water into desired pastures during summer irrigation. These pipes will have associated slide/knife gate water control structures. They will be sized according to the location in the channel network based on the same methods as the main 38 channel culverts (described in Methods section). Exact locations will be finalized upon channel layout prior to construction. The water control structures will be managed to default of open, except when irrigating during high tides in summer months.

D. Water Control Structures:

The project is planning on replacement of tidegates on the 38 interior culverts with either: a). Side-hinged aluminum tidegates (Appendix B); with door brace for managing in the door open position b). Water control slide/knife gates operated manually through screw drive and wheel (Appendix B); or c). Other water control structures such as baffles or louvered gates. The individual water control types will be operated similarly and open as prescribed under the BSDD DWMP.

Note: *The team recognizes that ODFW and NMFS will have a requirement to review design drawings of non-traditional water control structures prior to approval and perhaps inspect function of a scaled down prototype model. Non-traditional water control structures will not be installed on the project until that threshold has been met in order to ensure agency staff approve that they can meet or exceed both State and Federal fish* *passage guidelines. Until that threshold has been met only traditional water control structures will be installed on the project area.*

E. Channel Reconstruction:

The Phase III project proposes reconfigure/reconstructing ~29,981ft or 5.7 miles of existing tidal channel *(Figures 6, 7, and 8)*. The majority of interior pasture channel networks are linear as is visible in Figures 5 and 6 that show the LiDAR elevations. These historically constructed channels were installed without attention to grade and inhibit the ability for fish to move successfully to and from the river without becoming vulnerable to stranding in low-lying pasture locations. This issue currently limits the use the pasture channel network by OC coho juveniles during the important fall/winter/spring rearing period.

F. New Channel Creation:

The project is planning creation of 74,670 ft or 14.1 miles of new tidal and tidal swale channels in Units 1 and 3 *(Figures 6, 7, and 8)*. These channels will encompass lessons learned from Ni-Les'tun and Unit 2 restorations including using on-grade design and bank sloping that maximizes edge habitats in order to:

- provide depth refugia for native salmonids in winter and native resident fish in summer months,
- contribute to greater utilization of the project area by juvenile coho, through increasing channel distribution on the landscape and capacity for fish penetration into the floodplain.
- provide adequate volume capacity for: **a).** A hydrologic connectivity relationship that more closely mimics water inflow/outflow management at the main C3P tidegate; **b).** Capacity that adequately provides for rain and floodwater outflow/drainage below elevation 5.5ft; and **c).** Capacity that provides for delivery of summer irrigation flows.

G. Interior Berms:

Interior pasture berms will be reconstructed to elevation 5.5ft NAVDD88 in locations where they have degraded *(Figure 5)*. Spoils from channel construction will be used to bring these locations into functional condition in order to allow for individual pasture/landowner water management up to elevation 5.5ft.

H. Habitat Uplift:

The Phase III project will incorporate a number of additional habitat uplift benefits. While these are not related to hydrology it is important to note that they will increase ecological functionality of the floodplain and reduce the potential that channels will reaccumulate sediments. These actions are more fully addressed in the Phase III project DSL/USACE 404 fill and removal permit. Proposed Phase III project actions that are designed to greatly enhance ecologic uplift include: Fencing, skip planting of trees, more appropriate channel construction bank sloping, installation of channels into current areas where fish are stranded, and other measures are noted in *Appendix D, Table 1*. The Phase III project goals include:

- Restoration of more natural fish passage from canal networks into secondary channel networks and pasture floodplain habitats.
- Increasing the quantity of water exchange as the new volume capacity of the interior pasture channel networks will provide for more inflow/outflow with main canals and the Coquille River, thus improving oxygenation.
- Improving the 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.
- Improving the irrigation capability of the interior channel network as appropriately sized culverts feeding interior pasture channels will allow for greater volumetric delivery of water to irrigate pastures during single high tide events.

V. METHODOLOGY-Background

For any culvert or bridge replacement there is the need to determine the capacity of the new structure to accommodate the upstream flow volume that will be produced through precipitation or groundwater input. Many project sites feature naturally-formed channels that have developed morphology reflecting the hydraulic forces of the flow volume, slope, geology, and vegetative potencies. Channel size for a given watershed directly reflects the volume of water and the above noted factors. Tidal hydraulics, where the land area is well below the higher tide amplitude, result in a condition where tidal forces tend to dominate the hydraulic forces that contribute to channel evolution.

Prior to human manipulation, the Phase III project area had a dense network of channels that formed from both upland precipitation and geology, with tidal forces dominating in the lower elevations of the project area. Before the land was cleared of forest and developed into pasture, the tidal channels that were present ran largely north-northwest into Beaver Creek, where water was then transported southwest to the Coquille River. Through a combination of human intervention, hydrologic modification, and the installation of tidegates, these tidal regime forces were eliminated.

The original native channels were excavated through hand, horse, and steam powered equipment in 1908-1909. In 1908-1909 the drainage networks were circumvented for the BSDD portion of Winter Lake and converted into linear networks. The main exit point for the BSDD 1,700 acres was realigned and a new outlet was excavated through the relatively high river levee of the Coquille River at RM 21.5, where the C3P tidegate now currently exists. Channels on site currently reflect these excavated networks.

The large canals of Unit 1 and 3 were dredged with steam driven shovel methods. The canals size and capacity were more than adequate to transport rain and floodwater delivered from the pastures downstream. However, until Phase I was initiated in 2017, there was a large restriction of flow through both the original 1909 concrete culvert and its associated tidegates, and the four CMP's that were installed in the 1960's at the main Coquille River juncture. Interior pasture culverts have continuously been undersized since 1909. The 42 interior pasture culverts (39 in BSDD and 3 in CDD) that will be addressed through Phase III were essentially the best infrastructure affordable and available historically for the goals of ***a)*** agricultural production of pasture grass; and ***b)*** removing water in the late spring and early summer from the pastures to allow access for livestock grazing.

The installation of the new C3P tidegates in 2017 further illuminated the insufficiency of the interior network. The upgraded capacity and control to allow for inflow/outflow of tidal and floodflow to the main canals and interior pasture channels increased by 300% over the original 8.0ft CMPs that were replaced. The main north-south and east-west canals have been tested since the installation of the C3P tidegate and are considered fully sufficient in size to transport flows that are able to be delivered from the new slide-gate style tidegates. However, there remains a substantive bottleneck for volume delivery to the interior floodplain due to the 42 undersized culverts that currently connect pastures to the main canals.

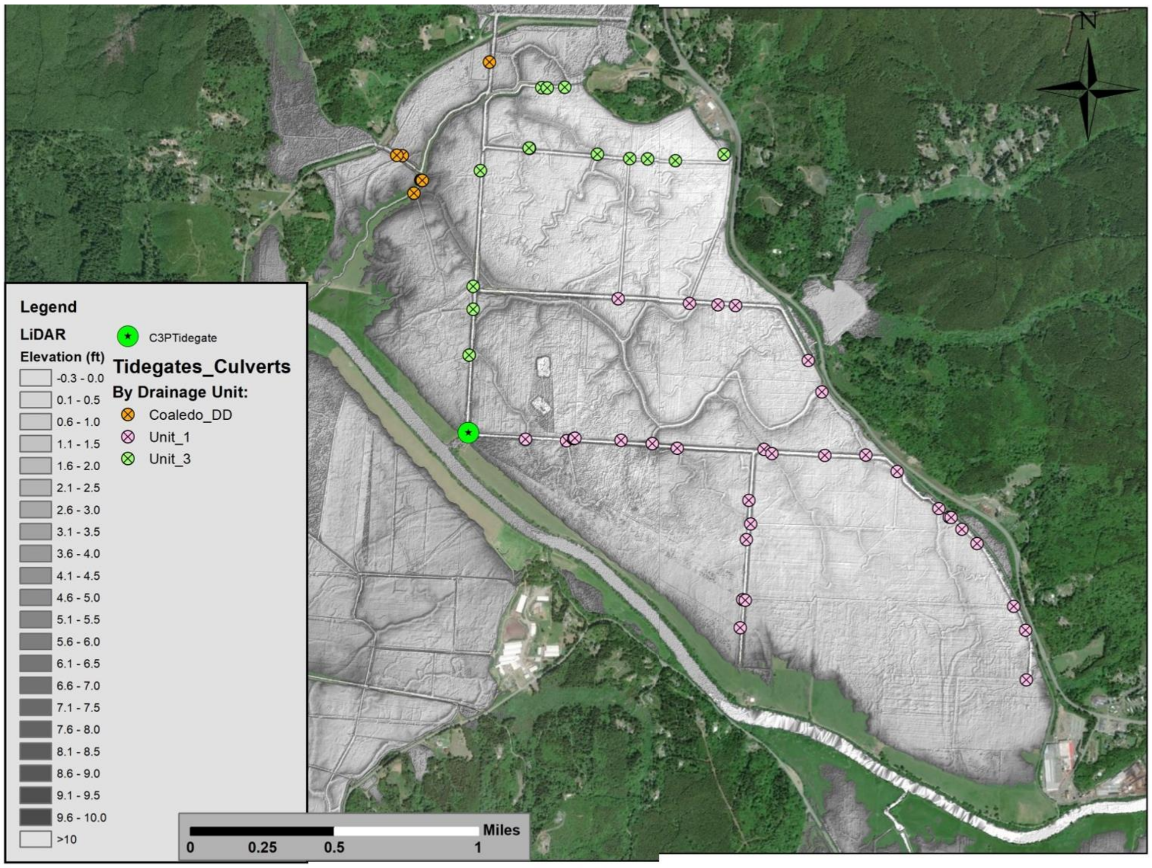

Figure 6. Grayscale Hillshade LiDAR imagery

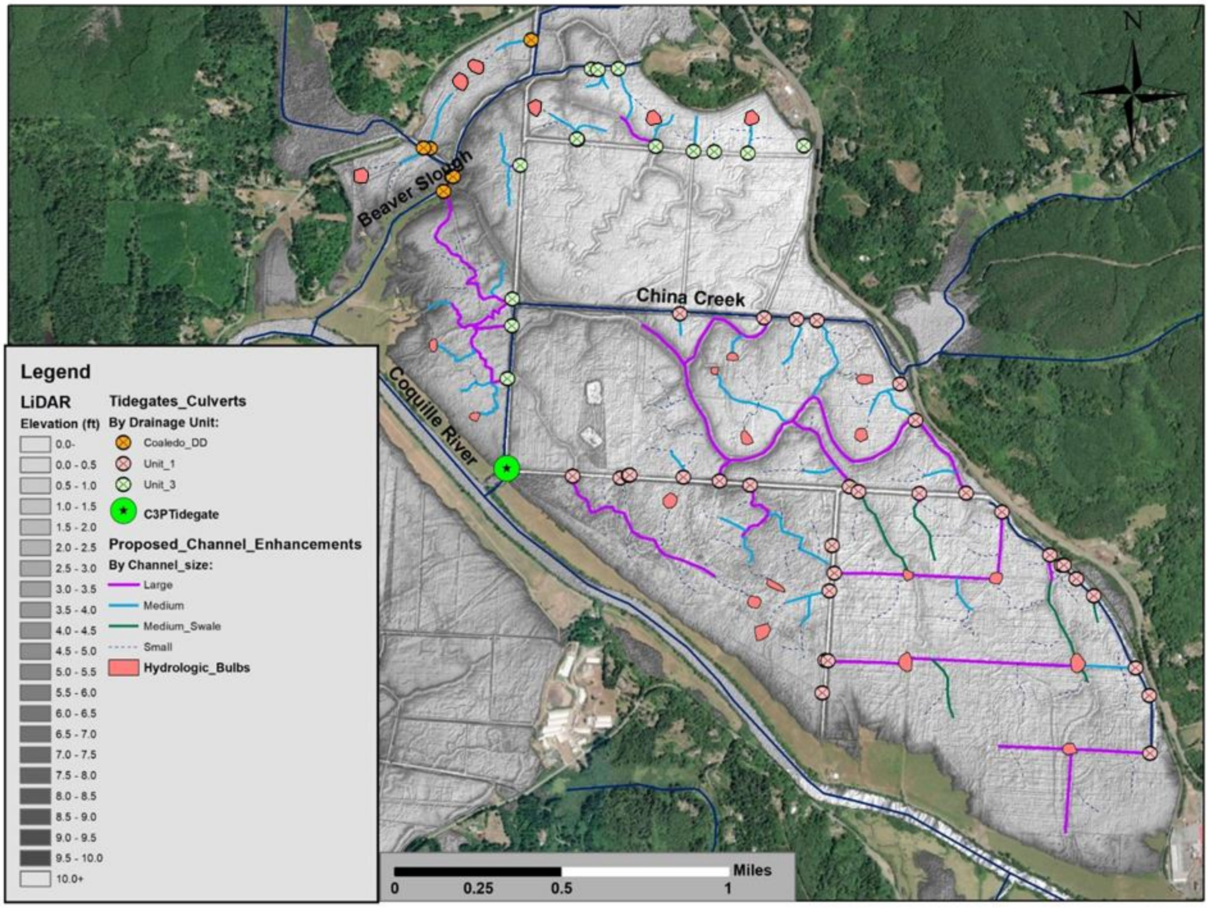

Figure 7. Grayscale Hillshade LiDAR imagery with proposed reconstructed channel network overlaid

The current floodplain pasture channels present are primarily linear shallow ditches that were constructed from 1908-current. The main tidegates downstream have for over 100yrs eliminated most of the hydraulic inflow/outflow forces due to constricted capacity where the land area water volume enters the river. Accordingly, pasture channel morphology has not been retained through time, or been further developed over time due to limited hydraulic forces; and/or does not reflect natural hydrological forces. This is an important feature for consideration in regard to the lack of ability to accurately measure Active Channel Widths (ACWs). In order to assess the proper size of culverts and associated channels that would accommodate a given inflow/outflow for the “microwatersheds” on the project area, we incorporated methodology based on a “Hydrology Logic Train” including the following Technical Tools:

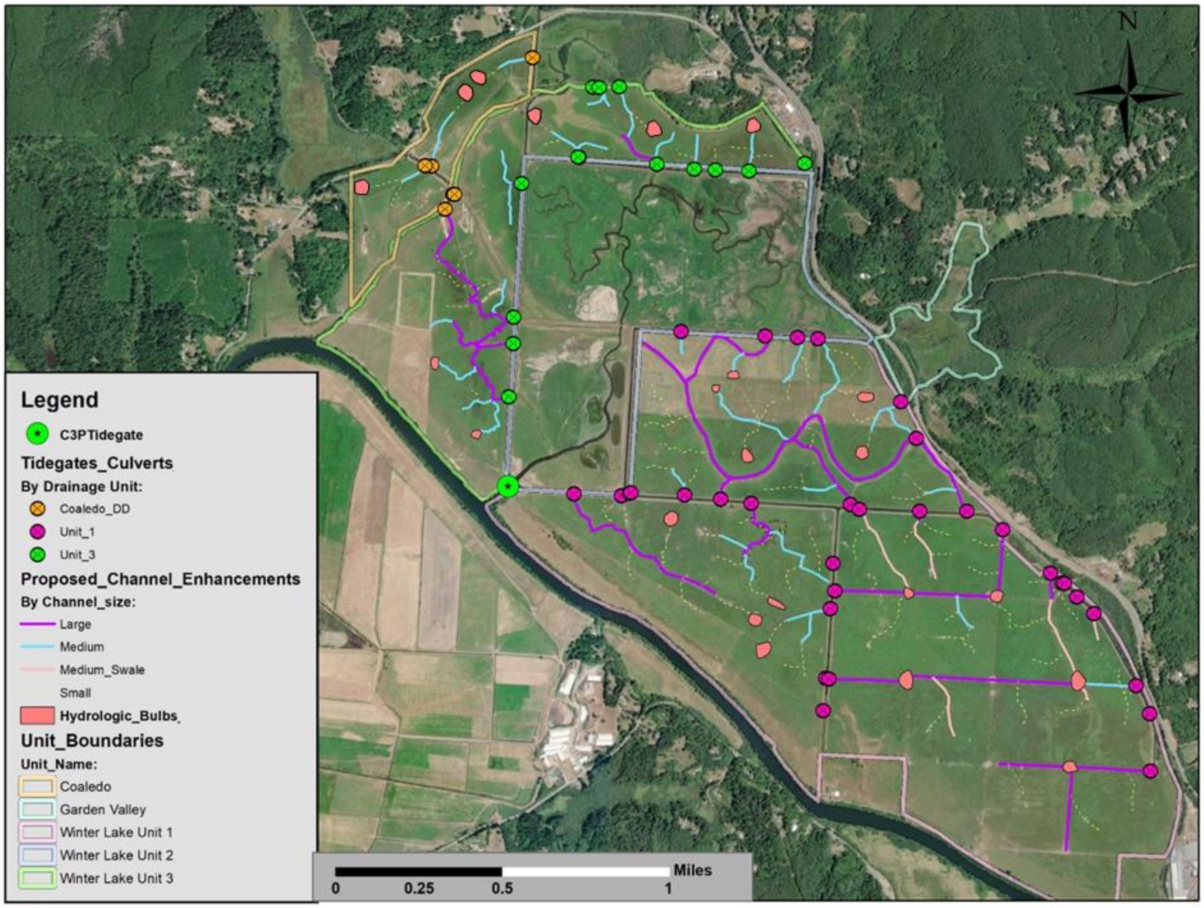

Figure 8. Winter Lake Phase III Proposed Channel Enhancements (hydrologic bulbs are not shown here)

A. Culvert Capacity per Land Area Served:

We determined the size of “microwatersheds” that would be served by the individual culverts proposed to be replaced, through use of the LiDAR, topographic drainage divides, and current culvert locations *(Figure 9)*. This was done as a technical assessment in order to better understand culvert capacity in regard to land areas.

Note: *It is important to note that these land area “microwatersheds” were for technical analysis and are not divided by substantial elevation divides and thus are either hydrologically connected continuously or with minor water elevation increases. This results in a condition whereas numerous culverts are continuously connected to a common water volume on a given pasture area.*

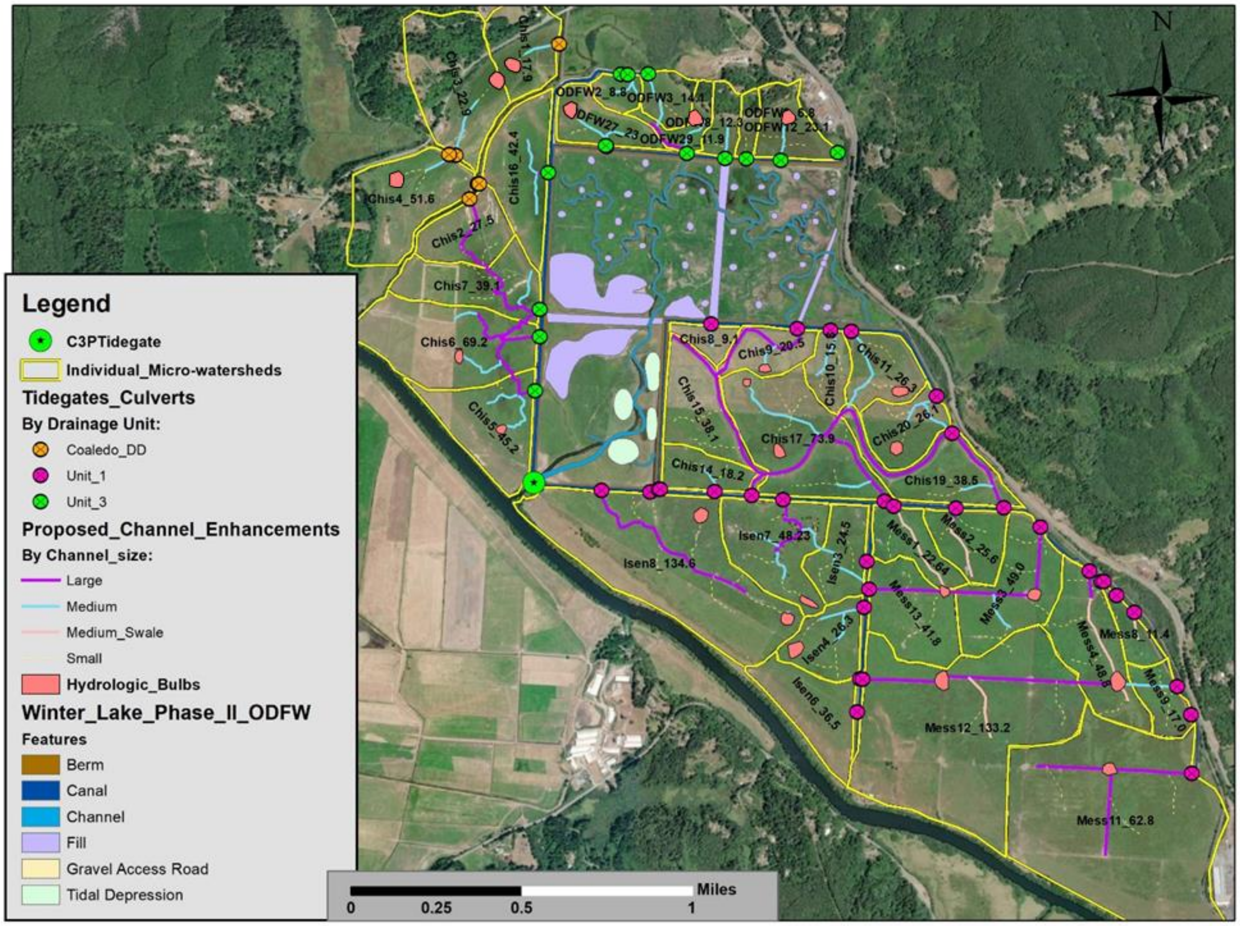

Figure 9. Phase III "microwatersheds" as delineated by LiDAR, culvert location, and main canal entry points.

B. Precipitation and Outflow Analysis:

In order to determine the volume of water that would be produced from precipitation events within the project area individual "microwatersheds" we used the local China Camp Creek watershed (Figure 10) as a surrogate. Through use of USGS streamstats (USGS 2020) regression analysis engine we determined an outflow per acre relationship. This was then applied to the individual "microwatersheds" to determine the cubic feet per second (cfs) outflow that would be expected from a precipitation event of 100yr floodflow magnitude. The 100yr precipitation event volume outflow for individual "microwatersheds" was then analyzed in regards to engineering culvert hydraulics tables in section *C. "Hydraulics Culvert Capacities."* below.

C. Hydraulic Culvert Capacities:

We used the flow volume precipitation regression to determine the cfs that would be produced for a given pastureland area for the 50yr and 100yr floodflows and then evaluated the volume/culvert relationships that would accommodate these flowing using volume tables that had been developed for fish passage (Foltz et al. 2009 and Robison et al. 1999).

D. Hydraulic Evaluation:

We used the combined Technical Tool information noted above (A-C) in our Hydraulic Evaluation to assess the volume capacity (sizing) of the 38 individual pasture culverts (35 in BSDD and 3 in CDD) that would be needed to meet flow dynamics that meet or exceed State and

Federal fish passage guidelines based on <u>an Individual Assessment and Synthesis of three methodologies:</u>

The C3P tidegate box culvert structures have been previously evaluated and approved by Federal and State Fish Passage staff to acceptably meet fish passage standards. We have designed the interior culvert and associated channel networks with capacity by Unit for Units 1, and 3 that meets or exceeds the volume capacity of the previously approved C3P 10x8ft concrete box culvert capacity (*Appendix A and Table 2*). As the interior culvert network is subservient to capacity of the C3P tidegate network and the proposed Phase III project actions result in an upgrade of capacity for interior pasture culverts and channels that exceeds C3P ability for inflow/outflow there was an assumption of fish passage compliance by default.

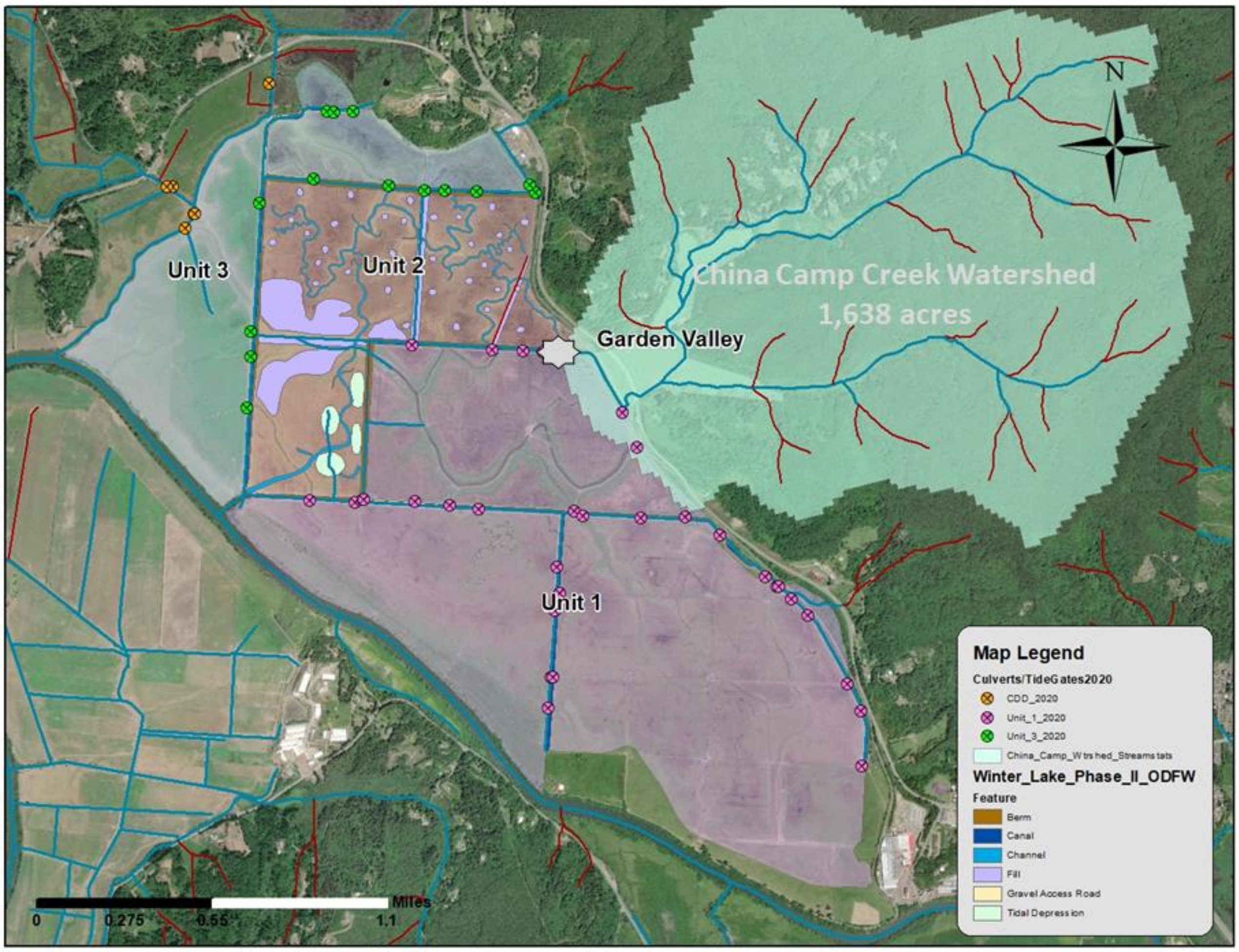

Figure 10. China Camp Creek watershed used as a surrogate for developing peakflow cfs/acre correlations.

Note: *For the CDD culverts this method was not applicable as* a) *the Beaver Creek CDD tidegate serves a large land area in addition to the two pastures within the project area; b) the Beaver Creek CDD tidegate culverts do not have MTR capability; and c) the CDD culverts were not evaluated for fish passage compliance through the Phase I project as they were outside the BSDD project area.*

We assessed the proposed interior culverts hydraulic capacity in regards to:

- Current culvert capacity in relation to proposed culvert capacity;
- Capacity of culverts to accommodate 100yr precipitation events and;
- Proposed culverts to accommodate C3P capacity.

Engineering literature was obtained pertaining to hydraulic capacity of culverts and fish passage. This information served as reference materials for evaluation including: a) Washington Department of Transportation (Barber, M. E. and R. C. Downs 1996); b) Oregon Department of Transportation (ODOT) 1990; c) Federal Highways Administration (Normann, M.N. et al. 1985), and the Oregon Department of Forestry Robison et al. 1999 (Appendix C).

ODFW Coos-Coquille Fish Passage permit information data from eight local sites in the Coos and Coquille River basins was evaluated in regard to the Active Channel Width (ACW) of streams at the location where a culvert or bridge crossing plan had been developed and the ACW had been measured. The upstream watershed size was then evaluated using USGS Streamstats and the regression analysis for a given land area was used to determine the ACW channel the watershed had naturally developed correlated with a given 100yr floodflow volume for the location in the watershed. Active Channel Widths that were naturally occurring for a given watershed size in local watersheds were then compared to the acreage areas for the Phase III "microwatersheds." The outflow volumes produced by the 100yr floodflows were in turn assessed in regards to the ACW, which would represent the size of culvert needed for a given "microwatershed."

VI. HYDROLOGIC ASSESSMENT

It is important to note for both inflow and outflow at the C3P tidegate there are very few occasions when all three vertical slide tidegate doors in Units 1 and 3 are open during water management. Thus, there is a predominant condition that interior culverts and channels upstream are subjected to flow volumes well below full capacity of the 10x8ft box culverts at the C3P tidegate. In the period from 2018-2020 the three slide-gates that serve Units 1 and 3 have only been open to their fully capacity position during short periods of very high flood flows as a measure equalize water elevations in Units 1, 2, and 3 in order to prevent overflow berm infrastructure damage in Unit 2. Water management on a daily basis predominantly involves partial opening of a single slide-gate door resulting in measured flow delivery well below full capacity. That said, we evaluated the proposed interior culvert sizing based on the methodology that C3P gates can at times be managed with full open gate door capacity. We recognize that this level of inflow/outflow assessment is several magnitudes above the standard DWMP prescriptions.

A. Culvert and Channel Size

Note: *It is worthwhile to keep in mind that substantive flood flows most often result in water elevations that are above elevation 5.5ft. Water during those events overtops the interior pasture berms nullifying culvert capacity relationships and concerns with culvert sizing until water has subsided to elevation 5.5ft. The 38 interior pasture channel culverts are <u>subservient</u> to the capacity of the C3P tidegate 10.0x8.0ft concrete box culverts and the BSDD DWMP.*

B. INFLOW Evaluation

The inflow of water to Units 1 and 3 is controlled by the C3P tidegate DWMP and day to day operations of the VSFTG slide-gates. Thus, the volume is limited by the capacity of the number of slide-gates that are open, the height of the slide-gate opening, and the head pressure of the tides. Landowners within the BSDD and CDD that within the Phase III project have agreed to an interior pasture culvert DWMP that provides for the following:

- *Pasture Grazing Season*:
  April through October; where interior pasture channel culvert water control structures will be managed open other than irrigation events. Transition period October-November.

- *Fall/Winter/Spring Flood Season:*
  November through March; interior pasture channel culvert water control structures will be managed fully open continuously. Transition period April-May.

Note: *It is important to keep in mind that individual landowners have plasticity under the DWMP to operate internal water control structures on a needed basis to provide for livestock pasture management goals during spring and fall transition periods. There is a strong need for this flexibility with varying weather and water conditions that affect operations in Units 1 and 3.*

Interior tidegates or knife/slide water control structures will be adjusted to the open position for the Fall/Winter/Spring season and operated in either closed or open during April to September as is needed for irrigation and individual pasture management of water. The core months where there is need for native fish access is during November through March. From May through September the water temperatures in interior pasture channels are generally above the tolerable range of salmonid fishes and they are no longer present inherently.

Northwest Hydrology Consultants (NHC) developed hydraulic analysis (*Appendix A*) of the capacity of the C3P tidegates during project design in order to provide information for the ODFW and NMFS review of the fish passage needs at the site. We evaluated the 23 Unit 1 interior culverts in regards to the capacity of the two 8.0x10ft concrete box C3P box culverts serving Unit 1 and the capacity of the current and proposed interior culvert sizes. The cfs capacity of the two C3P 8.0x10ft box culverts feeding into the east canal feeding Unit 1 is 600cfs x 2 or 1,200 cfs (*Table 2; reproduced from the Winter Lake DSL/USACE permit application Tetratech 2016*) with the tidegate and slide water control structures open to an elevation of 5.5ft.

The side-hinged aluminum tidegate doors at the C3P tidegates open to ~80° from when there is sufficient head pressure upstream and outflow. This angle, which is less than 90° undoubtedly produces some minimal water friction and turbulence associated with water moving past the door. We considered this headloss to be minimal, and thus assumed that the outflow with side-hinged aluminum gates will accommodate the full 600cfs capacity. However, the capacity is likely slightly less due to headloss. The estimated capacity of 600cfs per tidegate box culvert is likely slightly lower with flow through Unit 1 A and Unit 3 C3P culverts when the slide-gates are down and Drain-out reliance is on the side-hinged tidegate door. Our methodology, however, assumed full capacity of the C3P box culverts without tidegate door friction headloss.

In Unit 1 the project is proposing installation of 23 new properly sized culverts. Above elevation 5.5ft elevation water will run over the interior earthen berms and culvert capacity is no longer a limiting factor for inflow. In Unit 3 of the BSDD there are 12 culverts that will be replaced with larger culverts. In Unit 3 water is able to move over berms on the northern side of the Wheeler canal at elevation 5.0ft and culvert capacity no longer controls water flow. We assessed sizing/capacity for these culvert replacement combinations in relation to the capacity of the single 8.0x10.0ft concrete box culvert at the C3P tidegate that feeds into the north canal. The three undersized culverts will be replaced in the CDD with sizing based on relationship of the precipitation 100yr floodflow capacity, ACW and floodflow relationships, and hydraulics. Our assessment resulted in the following conclusions regarding culvert capacity by Unit, as compared to the C3P Tidegate:

1. Unit 1:

The current capacity of the two C3P 8.0x10.0ft box culverts with slide-gate tidegates serving Unit 1 with both doors open to 8.0ft in height at a water elevation of 5.5ft is 600cfs per door or 1,200cfs (Table 2). Above elevation 5.5ft water is able to move over interior berms and interior pasture culvert capacity is not a limiting factor. The capacity of the interior 23 culverts once replaced will be 1,781cfs (Table 3) at elevation 5.5ft with all of the slide/knife and side-hinged water control structures open from November through March.

2. Unit 3:

The current capacity of the single C3P 8.0x 10.0ft with the slide-gate door open to 8.0ft in height serving Unit 3 is 600cfs with water at elevation 5.5ft. Above elevation 5.0ft water moves over berms in Unit 3 and culvert capacity is not a limiting factor. The capacity of the interior 12 culverts upstream of the single tidegate of Unit 3 once replaced has been evaluated to be 654cfs (*Table 3*) at elevation 5.0ft with all the slide and side-hinged water control structures open from November through March.

Note: *Two of the interior pasture culverts in the analysis of Unit 3 were already replaced in 2018 on ODFW properties.*

3. CDD Pastures:

The two pastures where work will occur in the CDD in Phase III are served by 3 interior pasture culverts upstream of the CDD tidegate on Beaver Creek. There is not an ability to open the CDD tidegates without chaining them open and there is rarely a need presently for irrigation in the pastures they serve. Thus, there is not currently demand for inflow through the interior pasture culverts. However, an upcoming project to replace the CDD Beaver Creek tidegate is expected to be implemented prior to 2025. This new tidegate would have MTR capability and thus we considered this in our culvert and channel sizing as well for these lands. The Phase III project is proposing to increase the capacity of these three existing culverts by 200%, 160%, and 178% respectively and these were sized based on “microwatershed” size, precipitation 100yr floodflow capacity, ACW/floodflow relationships, and hydraulic culvert capacity methods.

Table 2. C3P tidegate box culvert flow volume assessment reconstructed from C3P project and Winter Lake Restoration USACE/DSL permit application; Tetratech Engineering 2016

Culvert Area (Square Feet)						
Water Surface Elevation	8-ft CMP (Invert at -4.0 feet)	10-ft x 8-ft Rectangle (Invert at -2 feet)	Difference in Area from Existing to Proposed	Four 8-ft CMP's (invert at -4.0 feet	Seven 10-ft x 8-ft Rectangles (invert at -2 feet)	Difference in Area from Existing to Proposed
6.0		80	+80		560	+560
5.0		70	+70		490	+490
4.0	50.2	60	+9.8	201	420	+219
3.0	46.8	50	+3.2	187.1	350	+162
2.0	40.4	40	-0.4	161.7	280	+118.3
1.0	33.0	30	-3.0	131.9	210	+78.1
0.0	25.1	20	-5.1	100.5	140	+39.5
-1.0	17.3	10	-7.3	69.1	70	+0.9
-2.0	9.8	0	-9.8	39.3	0	-39.3
-3.0	3.5	0	-3.5	13.9	0	-3.9
-4.0	0.0	0	0.0	0	0	0.0
Maximum Flow Volume (cfs) Conveyed by Culvert	***351***	***640***	***+289 (+82%)***	***1,407***	***4,480***	***3,073 (+218%)***

Table 3. Capacity of interior culverts proposed for Units 1 and 3 compared to C3P tidegate culverts.

Unit #		# of Culverts	Total Capacity Unit cfs	C3P Tidegate Capacity cfs	% diff Unit Clvrts to C3P
Unit 1		23	1,781	1,200	+148%
Unit 3		11 C3P/1Coaledo	654	600	+109%
	Totals	**33**	**2,435**	**1,800**	

4. Hydraulic Evaluation:

We also evaluated culvert sizing based on hydraulic assessment of the outflow volume that would be produced from the individual "microwatershed" zones with 100yr floodflow levels of precipitation. We compared eight watersheds in the Coos and Coquille River basins (*Figure 11*) where a stream location ACW had been previously measured, and then used a USGS Streamstats regression of the 100yr peakflow volume for the watershed at the location where the ACW was located (Table 4). This assessment indicated that for the majority (6 out of 8) of locations the recommendations from fish passage engineering literature for a given culvert sizing based on 100yr peakflow was larger than or similar to the ACW as measured for the individual sites (Table 4) and the two that were less than 100% were only slightly under. Using this relationship and design strategies for culvert capacity to exceed 100% capacity relationships (Table 5), we reaffirmed that the proposed culvert and channel designs were within standards for Federal and State fish passage guidelines.

Table 4. Measured Active Channel assessment in relation to hydraulically engineered fish passage culvert sizing recommendations from WashDOT, ODOT, and ODF.

Location/ Stream	SubBasin	Year Meas.	Map I.D.	Watrshed Size (Acres)	Streamstats 100yr flw (cfs	ACW Meas. (ft)	Clvrt Size (ft) for 100yr flw Hyd Tables[1]	Difference in Size (ft) Hyd vs ACW	Percent Diff
Catching Crk	Coos R	2019	**CatchC-1**	781	278	6.8	7.3	0.5	7%
Middle Creek_Trib	NF Coquille R	2016	**Lone_Pine-1**	365	190	5.6	6.3	0.7	12%
Cunningham Crk	Mnstem Coq R	2016	**CunningC-1**	6,912	2,560	14.0	30.7	16.8	120%
Salmon Gulch	MF Coquille R	2017	**SalmonG-1**	1,203	416	5.3	8.5	3.2	60%
Four Bit Gulch	SF Coquille R	2019	**FourBitG-1**	294	154	4.1	5.8	1.7	40%
S. Twomile Creek	Floras Crk/New R	2019	**S_TwomileC-1**	826	440	8.7	8.8	0.1	1%
Fall Creek	Big Crk/MF CoqR	2019	**BigC-1**	1,453	500	9.7	9.3	-0.4	-5%
"Huff Creek"	Big Crk/MF CoqR	2019	**HuffC-1**	198	80	5.1	4.5	-0.6	-12%

[1)] Based on values from Table 6 Robison, George E., A. Mirati, and M. Allen 1999, also in Foltz et al. 2009

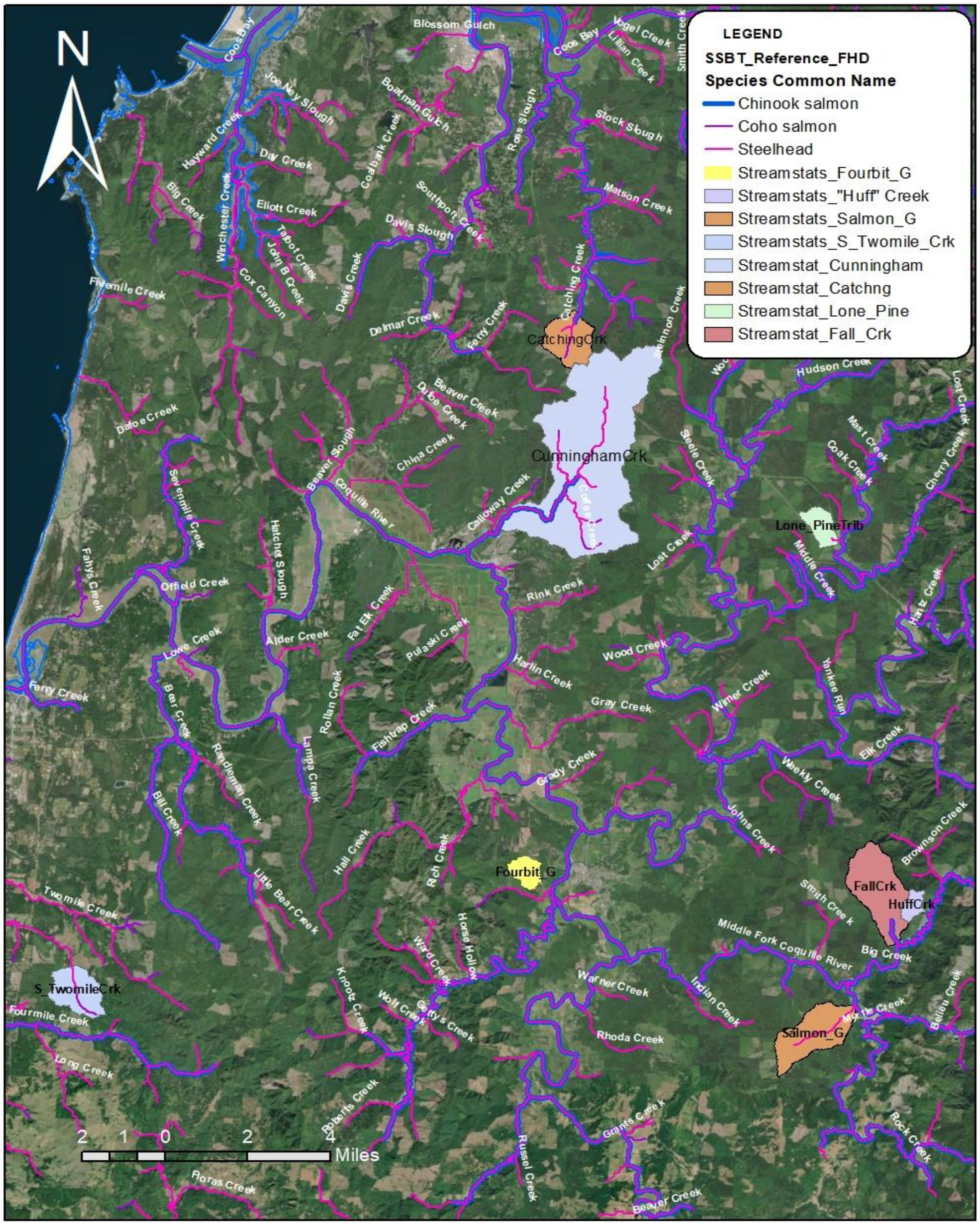

Figure 11. Stream basins where Active Channel Width to 100 Year Peakflow correlations were evaluated.

C. INFLOW Summary

It is important to keep in mind that the Phase III project is designed to provide capacity that will respond to inflow inputs from C3P in a manner that reflects appropriate capacity to mimic muted historical tidal regimes. The new and reconstructed channels will essentially repair the floodplain hydrology network that was broken in 1908-1909 when linear canals were installed that transverse the historical natural channel system, which drained to the northwest rather than the human constructed direction to the west and then south. Low elevation ponding will be connected reducing stranding potential for juvenile fish and providing hydrology regimes that increase wetland function.

We have determined that the inflow capacity of the interior 23 and 12 culverts in Units 1 and 3 once replaced exceed the delivery volume capability of the C3P tidegates in Unit 1 by 148% and 109% in Unit 3. Overall, there will be a total volume inflow capacity at elevation 5.5ft for interior culverts in Units 1 and 3 of 2,435 cfs as compared to 1,800 for the C3P three VGSTG gates that serve Units 1 and 3 respectively (Tables 2 and 3). The C3P tidegate network volume and DWMP plan have been approved by ODFW and NMFS. Accordingly, as the volume capacity for inflow of the interior culverts following Phase III will exceed the C3P box culverts capacity we are suggesting that the interior water conveyance sizing meets Federal and State fish passage guidelines. The culverts proposed for the three CDD locations were sized 200%, 160%, and 178% greater than the 100yr floodflow volume based on hydraulic methods developed from "microwatershed" and ACW relationships.

The reconstructed and new interior pasture/floodplain channels proposed for the project will have a bottom width that equals or exceeds the culvert that they are aligned with. The side-sloping of these channels will range from 1:1 for the first 200-500ft depending on the location and then will be 2:1. This side-sloping will result in channel form with *at least a minimum of 30% greater capacity than the culverts that serve them.*

D. OUTFLOW evaluation

Note: *It is important to keep in mind that individual landowners have plasticity under the DWMP to operate internal water control structures on an as-needed basis to provide for livestock management goals during spring and fall transition periods. There is a strong need for this flexibility with varying weather and water conditions that affect operations in Units 1 and 3.*

The type of water control structure on the interior 38 culverts will be determined by the project team (SWCD, BSDD, ODFW) and the individual landowners. From November through March all water control structures will be set to remain fully open. In the typically warmer/dryer months of April through September it is exceedingly rare for 100yr peak flow events to occur. Outflow capacity calculations assumed full open movement of water through the water control structures for the 38 culverts in Units 1, 3, and for the two pastures sites in the CDD. We then incorporated the volumetric and ACW/100yr floodflow relationship as a second and third methodology, respectively, in addition to the overall capacity relationship already evaluated for the C3P tidegate and interior channel culverts (previously discussed under **INFLOW Evaluation)**.

- We used the information from Barber, M. E. and R. C. Downs 1996; ODOT 1990; and Robison et al. 1999 to determine the recommended culvert sizing for the outflow associated with the 38 "microwatersheds" in the project area (Table 5) using acreage and the 100yr precipitation floodflow data. We then analyzed our proposed culverts in regards to their ability to meet or exceed the recommendations and calculations.
- We used the assessment of information from the eight ODFW fish passage sites and USGS Streamstats regression of the 100yr floodflow in those watersheds to establish the relationship of 100yr peakflow culvert size/capacity relationships to the ACW of a stream. This was then utilized to determine the ACW that would have been present for a given "microwatershed" had there not been human alterations on the Phase III project area. We then used this relationship to assess if our culvert recommendations would reflect the ACW that would be present under typical precipitation and flood regimes within the project area. We determined that the 100yr peakflow for a given acre was 0.29cfs/acre in the China Camp Creek local representative watershed.

E. OUTFLOW Summary

We determined that the 100yr floodflow capacity for the 38 culverts as recommended in the BSDD and CDD Phase III project area following replacement ranged from 159.5 to 4,274.2% larger and averaged 969.9% larger (*Table 5*) than needed to accommodate the 100yr floodflow generated from the “microwatershed” acreage. Similarly, our evaluation indicated that the culvert sizing recommendations for the project ranged from 111.1% to 320.0% larger and averaged 215.2% larger (*Table 5*) than needed using the ODFW fish passage and 100yr floodflow/ACW site relationship.

Table 5. Phase III culverts proposed size assessment in relation to hydrologic flow volume that would be associated with 100yr outflow capacity for the individual "microwatersheds." ***Note:*** *Chis2, although connected to C3P, receives inflow from Beaver Creek, thus is not included in culvert/C3P calculations.*

Unit Number	CIS_ID	Chan Size	Acres	Acres_blw 10ft_elev	Current CulvrtSize_ft	Culvert Prop. (ft)	100yr Flow Clvrt [1]	Culvert_Cap% ± Prop Ovr 100yr[1]	Culvert_Size% ± Prop Ovr 100yr
Unit-3	Chis16	M	42.4	42.4	3.0	4.0	24	+598.8%	200.0%
Unit-3	ODFW27	M	23.0	23.0	4.0	4.0	24	+957.8%	200.0%
Unit-3	ODFW2	M	8.8	8.8	1.0	3.0	15	+1212.5%	240.0%
Unit-3	ODFW3	M	14.1	13.1	1.0	3.0	18	+756.8%	200.0%
Unit-3	ODFW29	L	11.9	9.56	None Present	4.0	15	+1851.2%	320.0%
Unit-3	ODFW8	M	12.3	7.6	2.0	4.0	18	+1791%	266.7%
Unit-3	ODFW9	M	6.8	4.0	1.0	3.0	12	+1569.2%	300.0%
Unit-3	Chis2	L	27.5	25.2	4.0	4.0	21	+801.1%	228.6%
CDD	Chis1	M	31.3	17.9	3.0	4.0	24	+703.8%	200.0%
CDD	Chis3	M	60.5	22.9	4.0	4.0	30	+364.1%	160.0%
CDD	Chis4	M	51.6	41.9	3.0	4.0	27	+426.9%	177.8%
Unit-3	Chis7	L	39.1	35.3	3.0	4.0	24	+563.4%	200.0%
Unit-3	Chis6	L	69.2	47.4	4.0	4.0	30	+318.3%	160.0%
Unit-3	Chis5	L	45.2	31.4	3.0	5.0	27	+860.5%	222.2%
Unit-1	Isen8	L	134.6	112.1	None Present	5.0	42	+289.0%	142.9%
Unit-1	Isen7	L	48.23	48.23	1.0	5.0	27	+806.4%	222.2%
Unit-1	Isen3	M	24.5	24.5	1.0	4.0	21	+899.1%	228.6%
Unit-1	Isen4	M	26.3	26.3	1.0	4.0	21	+837.6%	228.6%
Unit-1	Isen6	S	36.5	23.8	1.5	3.0	24	+292.3%	150.0%
Unit-1	Mess2	M	25.6	25.6	1.0	3.0	21	416.8%	171.4%
Unit-1	Mess3	M	49.0	49.0	1.5	4.0	27	449.2%	177.8%
Unit-1	Mess4	L	48.8	48.8	1.5	4.0	27	451.0%	177.8%
Unit-1	Mess8	M	11.4	11.4	1.5	4.0	15	2078.2%	320.0%
Unit-1	Mess9	M	17.0	17.0	2.0	4.0	18	1293.9%	266.7%
Unit-1	Mess11	M	199.3	162.0	2.0	5.0	48	195.1%	125.0%
Unit-1	Mess13	M	41.8	41.8	2.0	4.0	27	527.2%	177.8%
Unit-1	Mess12	M	177.2	137.6	2.0	5.0	42	219.5%	142.9%
Unit-1	Mess1	L	22.6	22.6	2.0	4.0	21	973.0%	228.6%
Unit-3	ODFW12	M	23.1	18.9	4.0	4.0	21	+1683.8%	228.6%
Unit-1	Chis8	M	9.1	9.1	2.0	4.0	15	+4274.2%	320.0%
Unit-1	Chis14	L	18.2	18.2	2.0	4.0	18	586.3%	266.7%
Unit-1	Chis15	L	38.1	38.1	2.0	4.0	24	+578.2%	200.0%
Unit-1	Chis9	L	20.5	20.5	2.0	5.0	21	+1897.3%	285.7%
Unit-1	Chis17	L	73.9	73.9	2.0	5.0	33	+526.3%	181.8%
Unit-1	Chis10	M	15.3	15.3	2.0	4.0	18	+1439.8%	266.7%
Unit-1	Chis11	M	26.3	26.3	2.0	4.0	21	+837.6%	228.6%
Unit-1	Chis20	M	26.1	26.1	2.0	3.0	21	+408.8%	171.4%
Unit-1	Chis19	L	38.5	38.5	4.0	6.0	24	+1591.4%	300.0%

1): Based on values from Table 6 Robison, George E., A. Mirati, and M. Allen 1999, also in Foltz et al. 2009

F. Microtopography, Differential Velocities, and Fish Passage

Note: *It is important to note that while vertical slide style tidegates provide ability to manage tidal inflow at Winter Lake C3P tidegates, fish passage for juvenile fish entering the land area from the river is accomplished by a combination of traditional side-hinged aluminum mechanical tidegates on slide-gates Unit 1A, 2C, and 3A and opening slide-gates to varying elevation heights.*

The pasture areas within the Winter Lake Phase III Units 1 and 3 overall have very low microtopographic instantaneous relief (*Figure 11*). There are some historic tidal channel ridges denoted in Unit 1 Chisholm East, and a strong ridge in Chisholm West. However, within individual parcels, the majority of the pasture areas are primarily uniform steady gradient land areas where water will move between the multiple channel networks as proposed (Figure 11; new and reconstructed channels are shown). This leads to a hydrologic condition whereas the individual culverts upstream of C3P function relatively as a single "culvert" connecting to the water volume on the landscape during inflow/outflow to the pasture areas when water levels are below elevation 5.5ft. Accordingly, the project has assessed the inflow volume capacity of Phase III interior pasture culverts proposed in relation to the C3P tidegate as a single Unit with the following knowledge:

1. Microtopographic Relief

Microtopography acreage differences vary less within Unit 1 than the lands in Unit 3 (*Table 6*), however, there is a larger quantity of low-lying <3.0ft elevation pasture in the Chisholm and Messerle parcels than Isenhart/Smith (Table 6). In Unit 3 there is substantively more low-lying elevation lands in the ODFW parcel than in the Chisholm West parcel (Table 1). However, in the Winter Water management period of November 15th through March 31st, the Coquille River minimum levels predominantly do not ebb sufficiently to allow low lying area pastures below elevation 2.5-3.0ft to drain (Figures 14 and 17). This results in a pasture hydrologic connectivity of the pasture culverts and a condition where inflow/outflow hydrologic forces are largely pushing on a common mass of water within individual landowner parcel sub-units. Water is then able to move across the landscape freely due to very limited 'microtopographic' relief, which will result in a condition where individual pasture culverts feed water into landscape with similar velocities due to hydrologic elevational equilibrium.

2. Tidegate Management

Although the Winter Lake Phase III project has sized interior pasture culverts based on the capacity of the C3P tidegate the DWMP goals and need to protect infrastructure result in a condition where the C3P Unit 1A, 1B, and Unit 3A vertical slide tidegates are rarely open more than 3.0ft from the closed position, which would be elevation +1.0ft as the bottom of the box culverts are at -2.0ft. For the majority of the period during the fall/winter/spring DWMP period a single slide-gate in Units 1 and in Unit 3 is open from 0.2ft to 2.5ft. We calculated the days during the fall and overwinter DWMP from October 1 to March 31st that the Unit 1A, 1B, and Unit 3A vertical slide tidegates were open 3.0ft or more. From October 1, 2018 to March 31st, 2019 Gate 1A was open a total of 2 days more than 3.0ft in the 172 day period or 1.1% of the time.

An openness of 3.0ft for a single slide-gate door equals a C3P inflow capacity of roughly 240cfs or (13.1%) of the 1,830cfs capacity of the 23 culverts in Unit 1 and 29% of the capacity of the low-lying culverts with elevation 2.0ft pasture area upstream. In Unit 1 the culverts that would be installed into low-lying pastures with elevation 2.0-3.0ft lands in Chisholm (6 clvrts) and Messerle (4 clvrts) have a volume capacity of 770cfs or 320.8% greater capacity than C3P will deliver with a single tidegate door open to 3.0ft in height. Singly for the Chisholm parcel the low-lying culverts proposed in Phase III have a capacity that is 449cfs, which is 187.1% of the C3P capacity with a single slide-gate open to 3.0ft. On an individual basis the low-lying culverts proposed for the Phase III project serving elevation 2.0-3.0ft lands in the Messerle parcel of Unit 1 have capacity of 321cfs or 133.8% of the capacity of a single slide-gate open to 3.0ft in Unit 1. In 2019-2020 the 1A tidegate was not operational for the period and was not opened. The 1B tidegate was open 3.0ft in height or greater (+1.0ft of elevation) for a total of 7 days or 4.1% of the duration from October 1 to March 31st in 2018-2019. Days when Unit 1A or 1B tidegates were open more than 3.0ft did not coincide. Data for 2019-2020 for slide-gate 2B was not able to be sorted due to errors from computer communications.

The vertical slide-gates for Unit3A were analyzed for time of openness for the condition where the tidegate door was open more than 3.0ft in height for the October 1 to March 31st 2018-2019 period. Gate 3A was open for a total of 2 days >3.0ft in height in 2018-2019 for an openness percentage of 1.1% during the period. This equilibrates to a time of 1.1% when the settings at C3P would be at 240cfs or greater inflow capacity. Upstream culvert capacity for the sum of Unit 3 culverts proposed is 654cfs. The capacity of C3P in Unit 3 with the gate door at 3.0ft is 240cfs or 36.7% of the Unit 3 overall capacity. The capacity of the C3P tidegate water delivery in regards to those low-lying culverts in Unit 3 is 84.2% of the capacity of the 6 culverts that would serve the lowest pastures on ODFW or rather these proposed low-lying culverts have capacity that is 118.8% greater capacity than the Unit 3 slide-gate open 3.0ft. Due to an error in the mod-bus and the computer control the data for 2019-2020 for the period was not available.

We anticipate more active management of the C3P tidegates during the Winter period in future years, however, this activity will be in relation to the number of days the slide-gates are open to any level rather than greater quantity of openness >3.0ft. It is important to note that vertical slide-gates are operated most of the time with door openness of <3.0ft in height over large periods of the winter to provide fish passage, while managing for berm stability, recreational public access, and livestock safety. The WMP provides the framework for this style of management in perpetuity. Operation of the slide-gates open to the 5.5ft elevation in a non-flood condition with interior water levels <5.5ft of elevation, below interior berms, where the interior culvert capacity is needing to accommodate C3P will be very rare.

3. Precipitation and Water Elevation

Water inflow into Winter Lake canals is monitored at the C3P tidegate computer network (*Figure 12-13*). The culvert capacity at C3P and DWMP strategies as served through control at the C3P tidegate have a strong dampening effect on inflow (*Figures 12 and 13*) and do not reach Coquille River tidal and flow magnitude or elevation levels on the same time curve (*Figure 13*). Inflow filling of interior pastures is over days generally rather than hours and includes precipitation accumulation in pastures as well as inflow during the Winter Water Management Plan period (*Figures 14-19*). The precipitation accumulation from streams/springs/groundwater within pastures and upstream of C3P in addition to inflow results in a decreased volume of inflow through C3P in order for pastures to reach a particular elevation during a rainfall or flooding event. The peakflow of China Camp Creek upstream of C3P at the 2yr event is 141cfs and at the 100yr precipitation event is 476cfs. Winter Lake lands are often filling upstream of C3P from “In Watershed” generated water at a similar rate as the Coquille river due to water within the BSDD and thus there is often limited movement of water through interior pasture culverts.

4. Sheet Flow

Above elevation 5.5ft the water will sheetflow over canal/landowner parcel berms and individual pipe hydraulic capacity above that elevation will not serve as a hydrologic control.

5. Inflow and Fish Passage

Fish will be able to move through culverts into channels with the inflow of tide/flooding events as well as on outflow rather than a state where they would need to fight culvert outflow velocities to enter a pasture area. This will accommodate fish passage on inflow over the inflow velocity range and with the differences that may occur with individual culvert/channel network locations.

6. Channel Network Connectivity

The interior new/reconstructed channels will be connected with channels from other pasture zones within hydrologically connected landowner parcels at a number of junctions in the networks allowing for hydrologic equilibrium between channels and pastures where elevations are low (Figure 11). This eliminates the “microwatersheds” from being separated in regards to hydrologic elevational equilibrium.

7. Tidal Wave Form and Fish Passage

Although fish are able to fully enter the individual Units pasture channels through movement on incoming tidal inflow, the culvert sizing and tidal hydrologic waveform allows for long periods where there is a range of velocities that serve to accommodate fish passage (*Figures 12 and 13*) during outflow as well.

G. Land Elevations within Unit and Parcel

We have calculated the individual landowner acreages for elevation 2.0-3.0ft, 3.0-4.0ft and 4.0-5.0ft using GIS LiDAR elevation mapping methods. The methods used, although more coarse than individual raster evaluation, provide reasonable land area elevation relationships (Table 6). At very low (elevation 2.0-3.0ft there is a greater quantity of land area in Unit 1 comparing Messerle, Chisholm, and Isenhart/Smith. Isenhart/Smith properties have very few acres that are elevation 2.0-3.0ft, however, from 2.0-4.0ft elevation the acreages for individual landowner parcels are more similar. The Chisholm cells within Unit 3 have no 2.0-3.0ft elevation area, while ODFW lands have 26 acres. However, from elevation 2.0-4.0ft these two parcels in Unit 3 have similar quantity of acres (Table 6).

Table 6: Estimates of Winter Lake Phase III project area lands by Unit/Landowner.

Unit	Parcel	Elevation 2.0-3.0ft Acres	Elevation 3.0-4.0 ft Acres	*Tot Acres Elev 2.0-4.0ft*	Elevation 4.0-5.0ft Acres	*Tot Acres Elev 2.0-5.0ft*	Culverts/C3P Nmbr in Parcel	Culvert Capcty Proposed cfs
1	Messerle	10	266	276	167	443	9	641
1	Chisholm East	43	136	179	43	222	9	755
1	Smith/Isenhart	1	70	71	170	241	5	385
3	Chisholm West	0	7	7	46	54	4	305
3	ODFW	26	39	65	9	74	7	349
	Unit 1 Totals	54	472	526	380	906	23	1781
	Unit 3 Totals	26	46	72	56	128	11	654
	Totals	**81**	**517**	**598**	**436**	**1,034**	**34**	**2,435**
		Culverts/C3P	**Culvert Capcty**	**C3P Capcty**	**Clvrts Prop cfs**			
		Nmbr in Parcel	**Proposed cfs**	**1 Door 3ft (cfs)**	**% to C3P @ 3ft**			
1	**Messerle tot**	9	641	240	+267.1%			
	Mess_Low_Elev[1]	4	321	240	+133.8%			
1	**Chisholm East**	9	755	240	+314.6%			
	Chis_E_Low_Elev[1]		449	240	+187.1%			
1	**Smith/Isenhart**	5	385	240	+160.4%			
	Smth_Isen_Low_Elev[1]	*N/A*	*N/A*	*N/A*				
3	**Chisholm West**	4	305	240	+127.1%			
	Chis_W_Low_Elev[1]	*N/A*	*N/A*	*N/A*				
3	**ODFW**	7	349	240	+145.4%			
	ODFW_Low_Elev1	6	285	240	+118.8%			
	1) Low-lying denotes areas served by culverts that have acreage w. elevation 2.0-3.0ft							

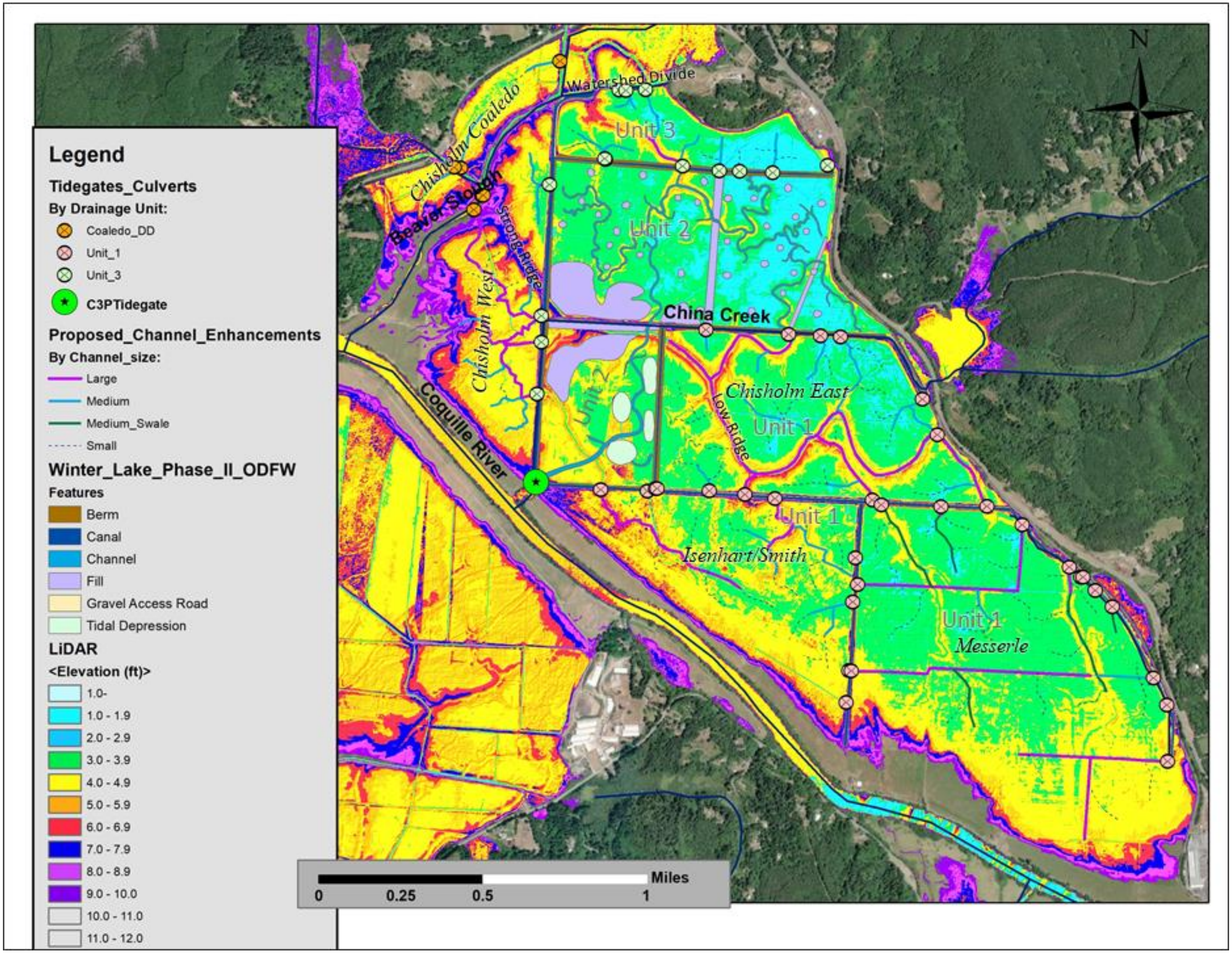

Figure 12. Winter Lake Phase III project area LiDAR depicted elevational relief with new proposed channels shown.

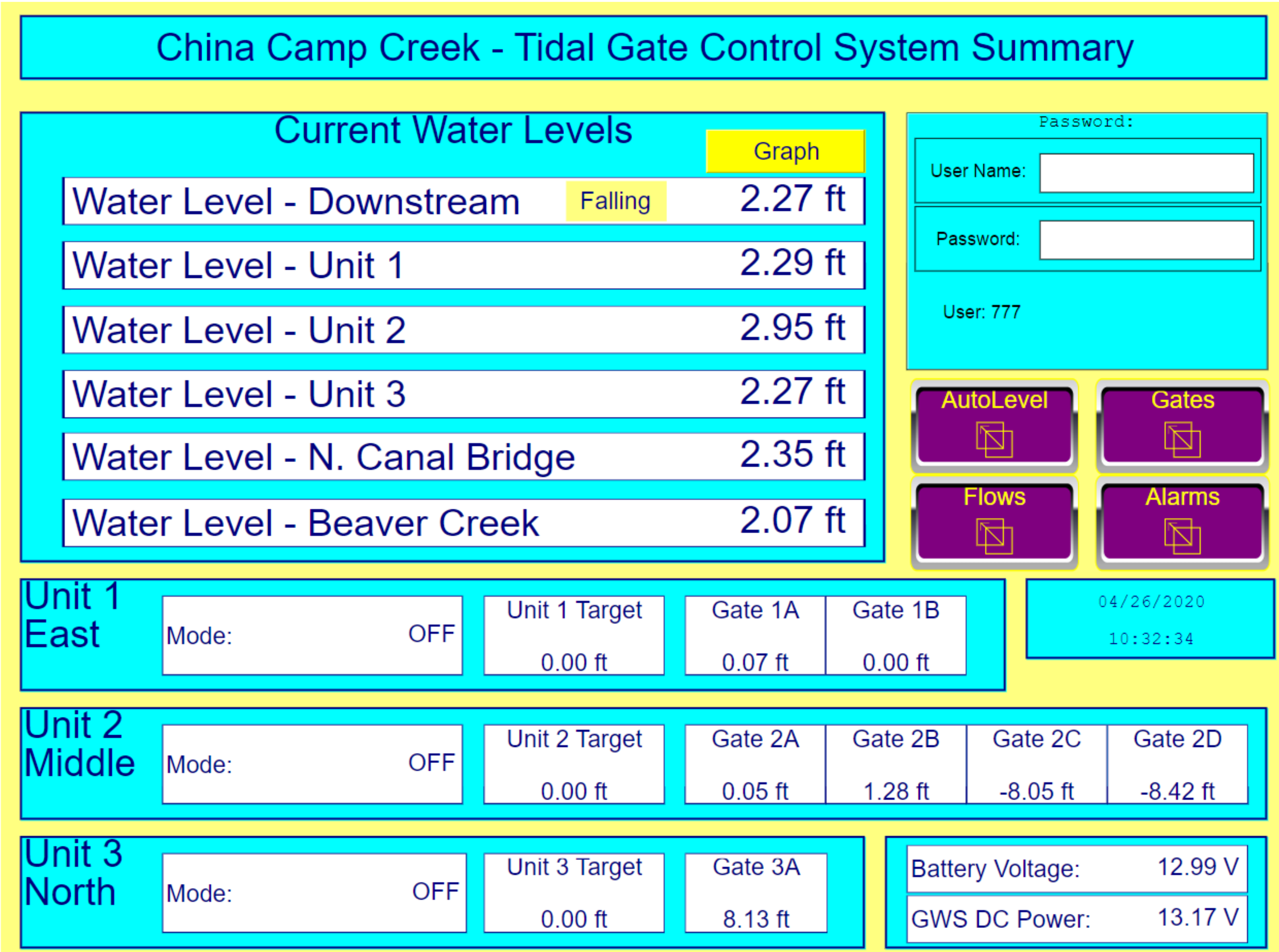

Figure 13. C3P tidegate control network readout as viewed on 04/26/20, outgoing tide 10:32hrs.

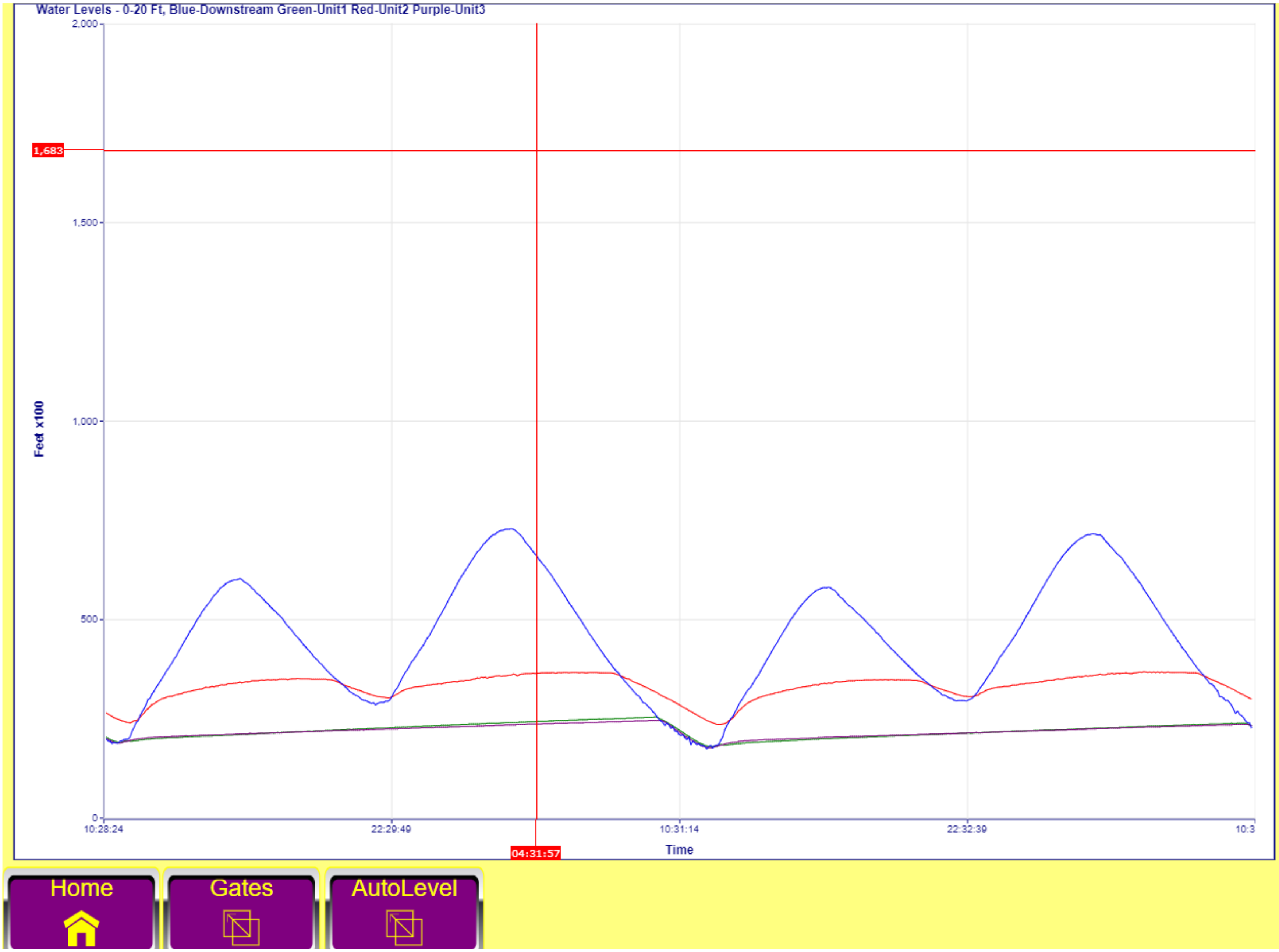

Figure 14. Water level waveforms as measured for the mainstem Coquille River and Units 1, 2, and 3 at the C3P tidegate; 04/26/20: 10:32hrs.

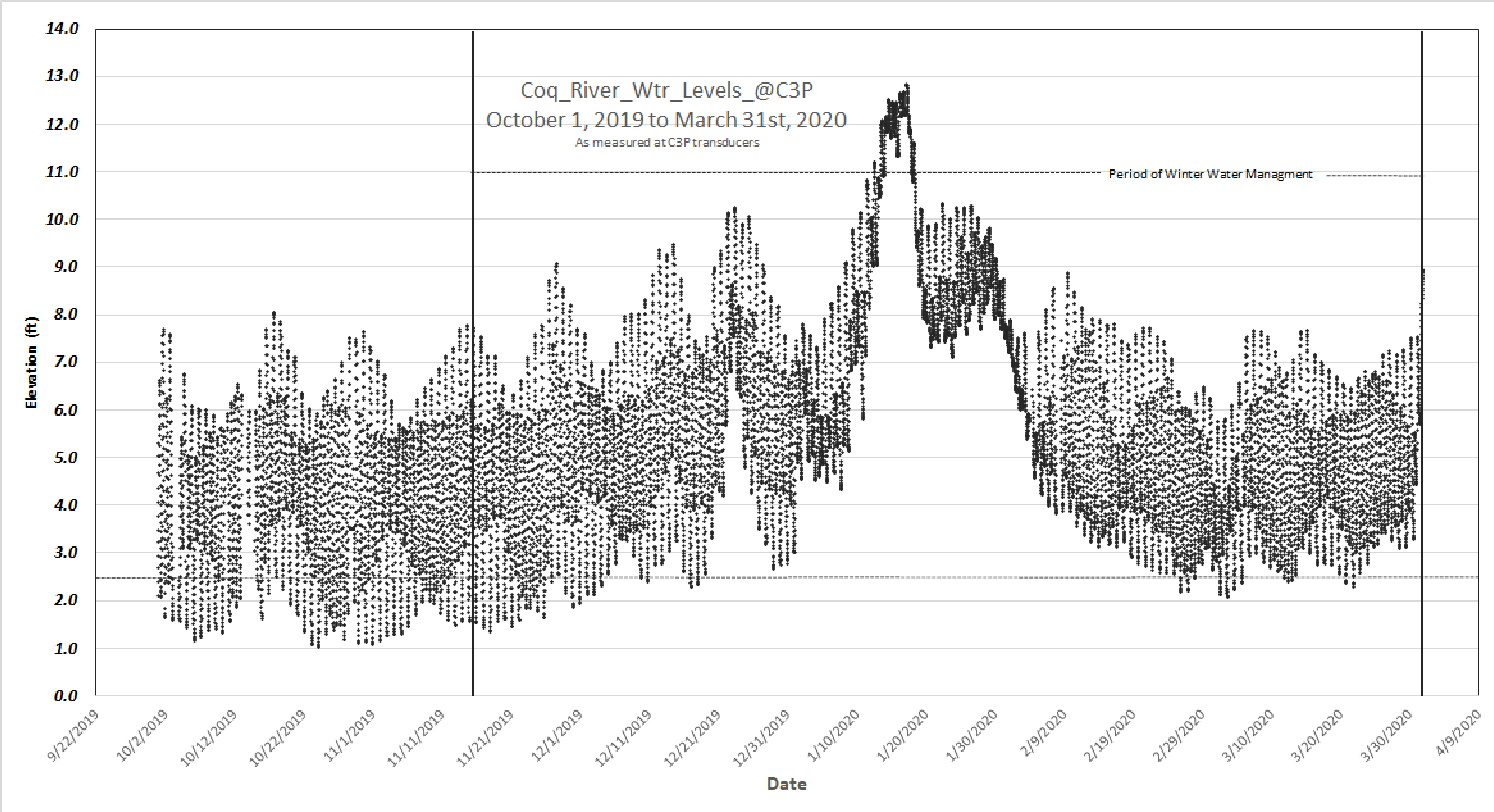

Figure 15. Coquille River Water levels as measured at the C3P tidegate from October 1, 2019 to March 31st, 2020.

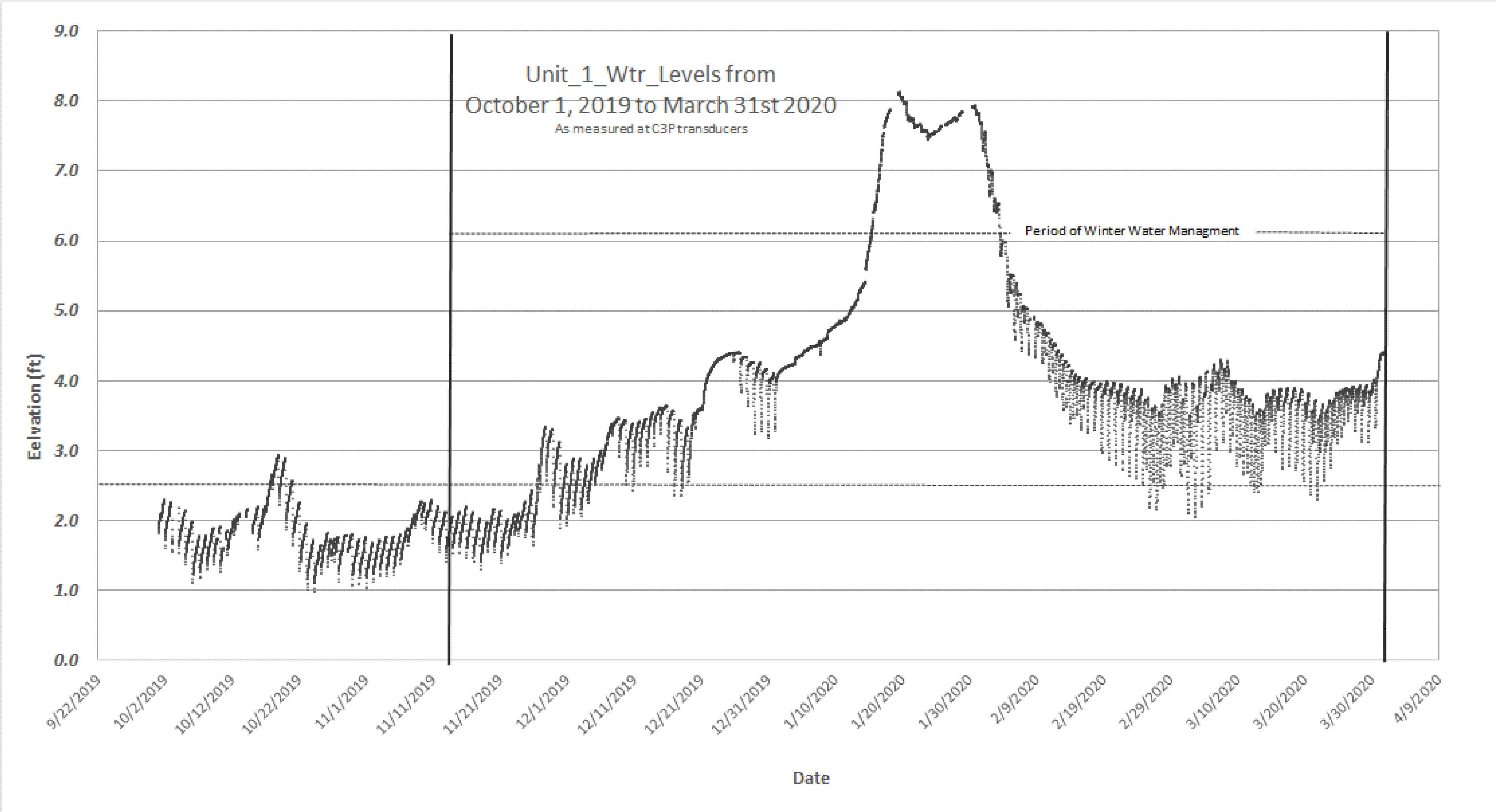

Figure 16. Unit 1 water levels from October 1, 2019 to March 31st, 2020 as measured at upstream of the C3P tidegates in Unit 1 canal.

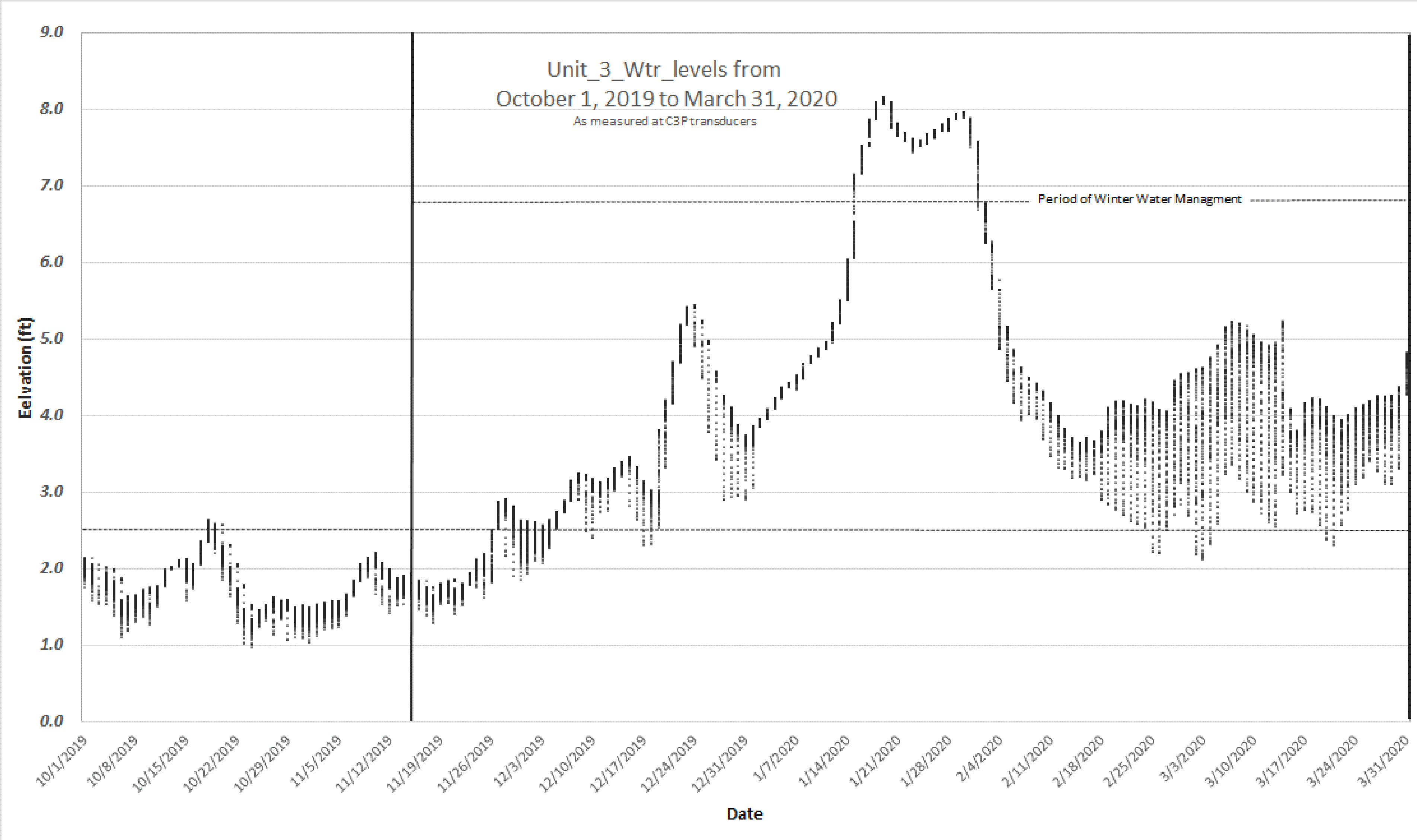

Figure 17. Unit 3 water levels from October 1, 2019 to March 31st, 2020 as measured at upstream of the C3P tidegates in Unit 3 canal.

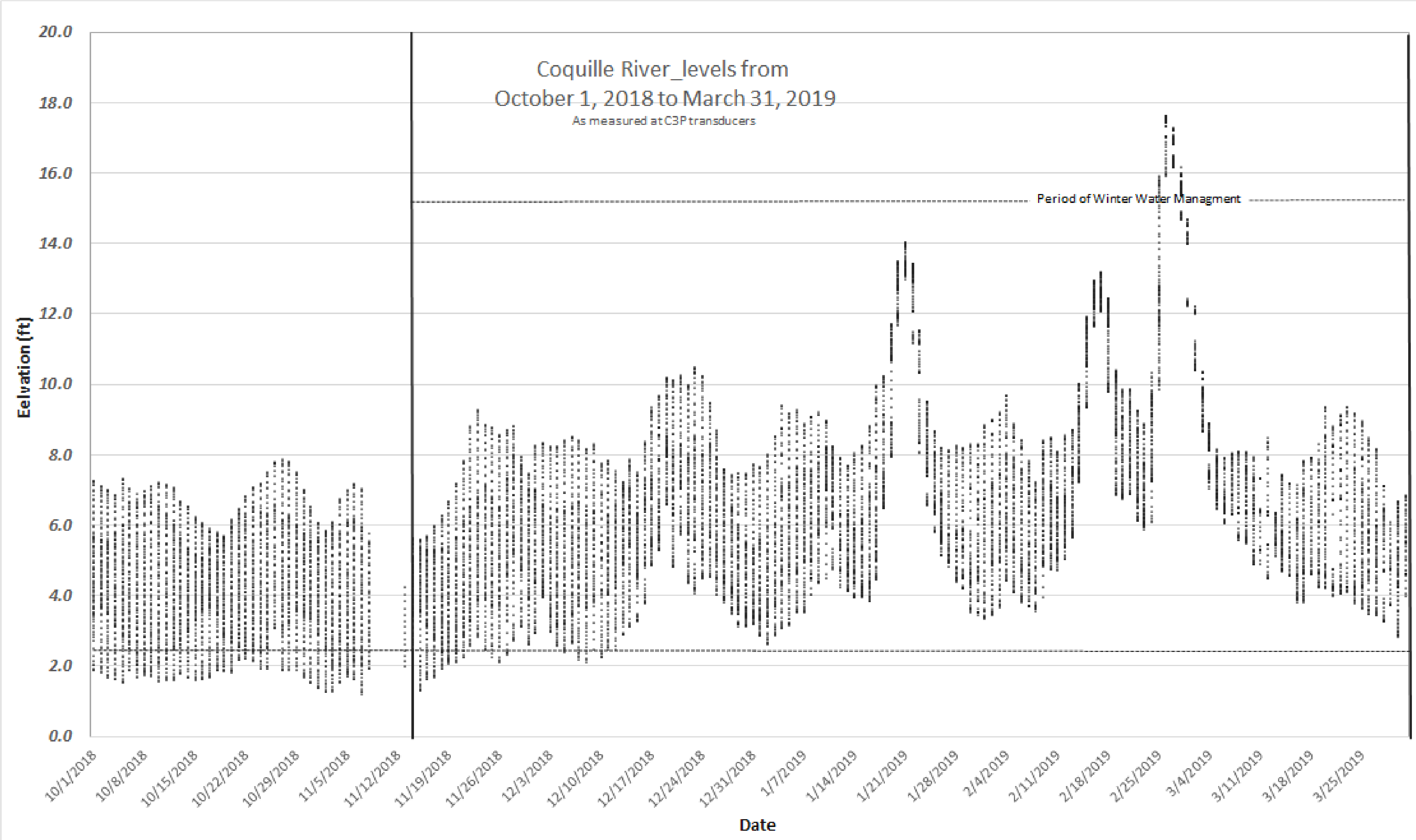

Figure 18. Coquille River water levels as measured at the C3P tidegate from October 1, 2018 to March 31st, 2019.

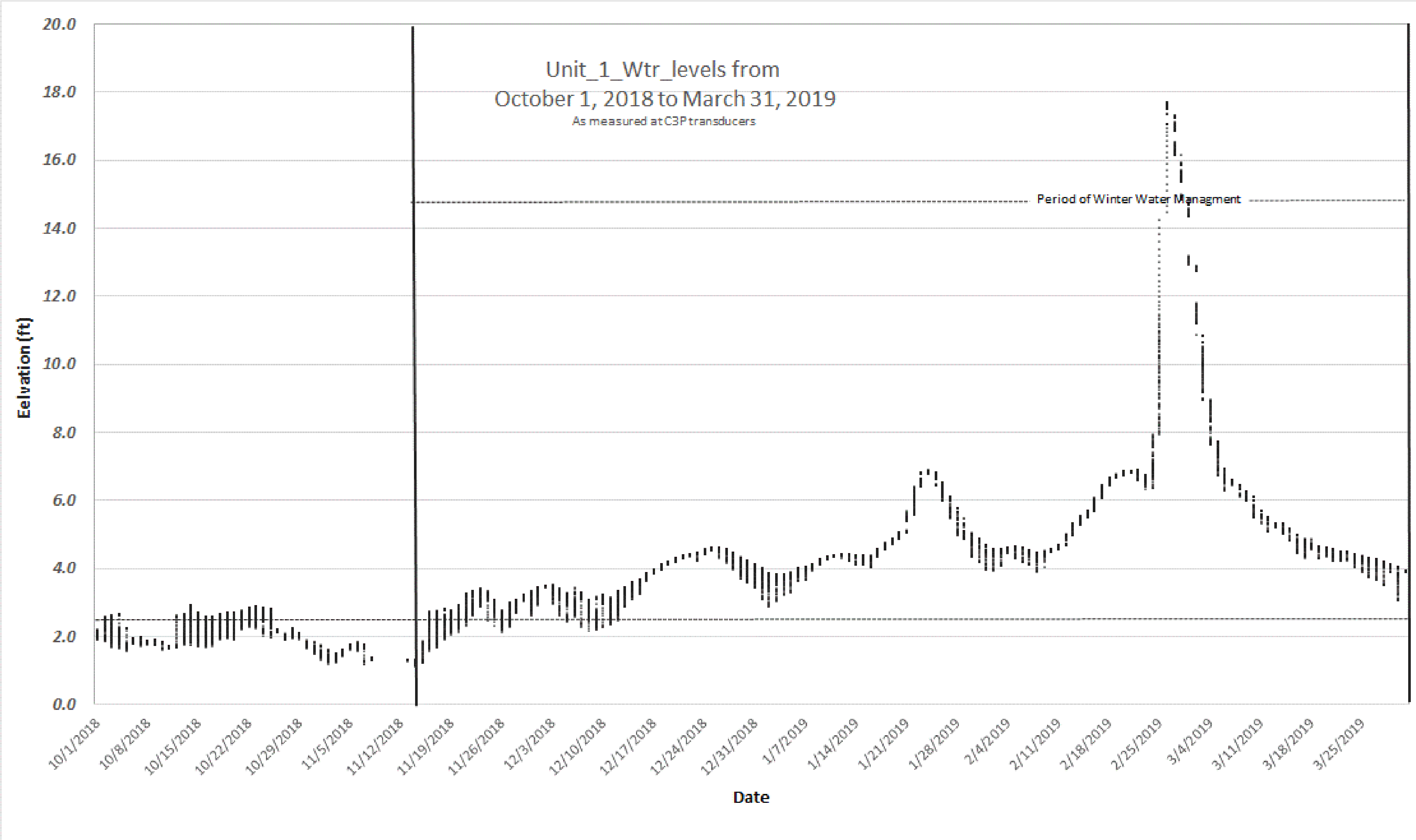

Figure 19. Unit 1 water levels from October 1, 2018 to March 31st, 2019; as measured upstream of the C3P tidegate in the Unit 1 canal.

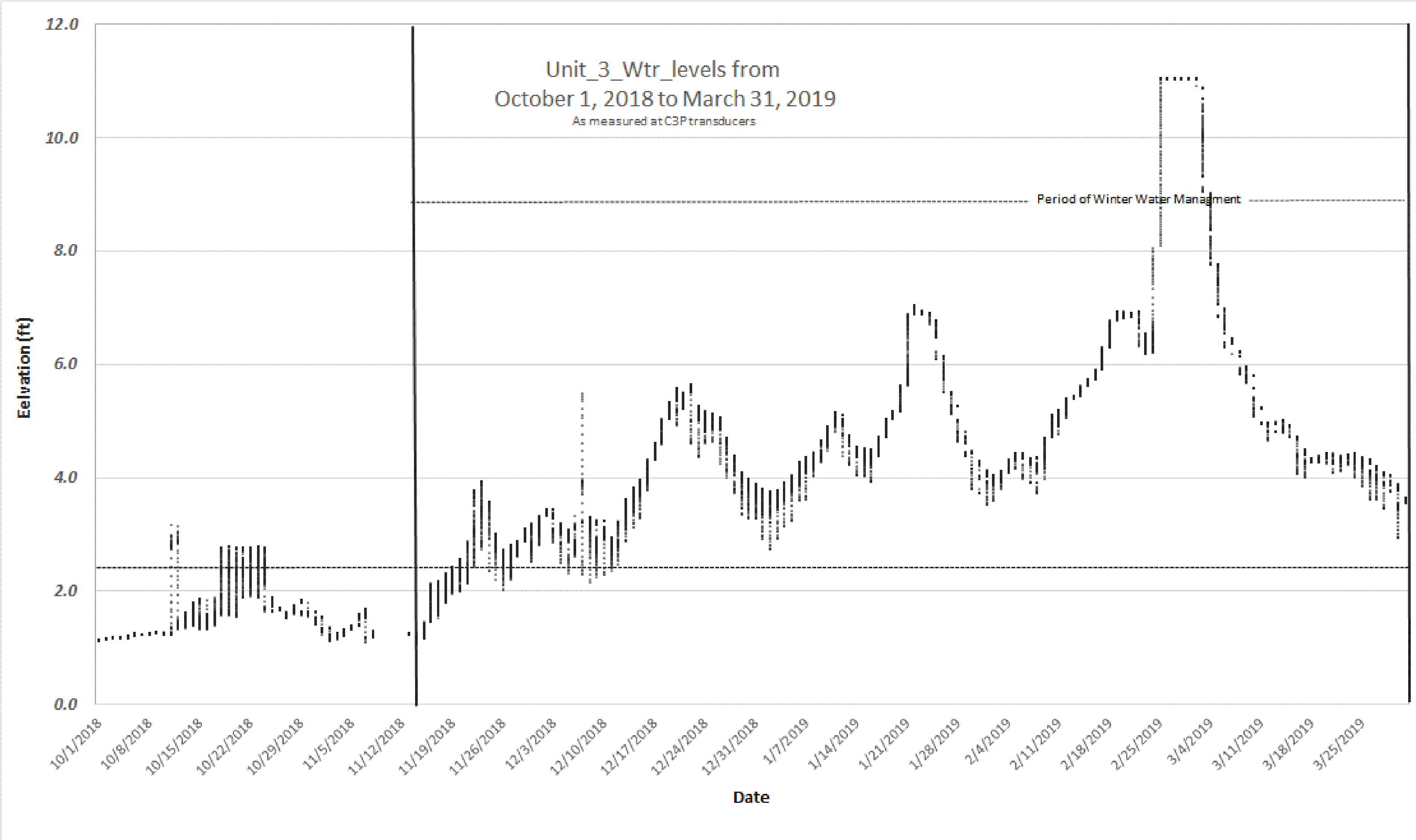

Figure 20. Unit 3 water levels from October 1, 2018 to March 31st, 2019 as measured upstream of the C3P tidegate in the Unit 3 canal.

VII. DISCUSSION

Culverts associated with interior pasture channels will be installed with invert elevation of -1.0 to 0.0ft depending on the individual culvert location on the Phase III project landscape. This will put them at an elevation where they will be backwatered continuously yearlong providing Stream Simulation conditions for fish passage that naturally occur in tidal floodplain wetlands (Appendix B Figure 1). Culverts have been sized to meet or exceed inflow/outflow needs and fish passage using three individual Technical Tactics and Synthesis of those methodologies; 1) overall C3P capacity relationships, 2) Hydraulic Capacity for 100yr floodflows, and 3). ACW relationships to 100yr floodflow and “microwatershed” pasture acreages (Streamflow and groundwater from precipitation is in the calculations). Our culvert sizing proposed exceeds the C3P tidegate inflow/outflow capacity Unit 1 by 148% and 109% in Unit 3. Using peakflow methodology the Phase III culvert sizing proposed exceeded hydraulic capacity needed on average by 215%.

Fish passage to the project area floodplain pastures is accommodated through both inflow and outflow rather than necessity for the weakest lifestage to swim against current outflow conditions as is present with culverts in in non-tidal stream environment conditions. As there is both tidal inflow directed under the DWMP and floodflow entry through the C3P tidegates, resultantly there are substantive periods when fish are able to move with flow into the main canal networks and pasture channels. We offer that this further assists when evaluating standard State and Federal fish passage criteria of 2fps flow velocity to provide for the weakest lifestage fish passage.

We evaluated the proposed interior culverts in regard to the surrogate ACW developed using USGS streamstats and known ACW relationships. The proposed Phase II culverts and channels were found to exceed surrogate ACW relationships, which is in alignment with ODFW 95th percentile fish passage criteria. The culverts on average were sized larger than ACW and we suggest also meet or exceed 1.5x ACW that would apply under NMFS passage TARP or SLOPES V restoration guidelines. Interior pasture channels have been designed with a minimum of 30% greater capacity than culverts and thus will not induce restriction of flow that has moved through appropriately sized culverts. We recognize that sizing based on ACW will fully accommodate precipitation outflow under State and Federal guidelines, however, we acknowledge that combining the afore mentioned culvert sizing methodology based on C3P capacity accommodates for tidal inflow/outflow as well.

The BSDD DWMP dictates the inflow patterns seasonally for Units 1 and 3 upstream of the C3P tidegates. The 35 proposed culverts (in the BSDD) will exceed the Unit 1 and 2 concrete 8.0x10ft box culvert capacity by 148% in Unit 1 and 109% in Unit 3. From the summer DWMP the C3P tidegates are managed to maintain water within the main canals and deeper pasture channels. Other than 18hrs per month when irrigation is likely to occur in June, July, August, and September water is not elevated onto pastures. This results in a condition where during the summer period inflow is managed minimally with water quality improvement strategies. However, interior pasture culverts are only engaged minimally. C3P tidegates are rarely operated during the fall/winter/spring period when native migratory fish are present with door openness >3.0ft from culvert floor or 240cfs inflow capacity. Low-lying culverts within Unit 1 (10 clvrts) exceed 240cfs by 320.8% and within Unit 3 (6 clvrts) by 118.8%. Accordingly, as these low-lying culverts will be connected to a common volume pasture of water they will work as a common assemblage to infill or outflow water from these pastures.

The overall capacity of culverts within Units 1 and 3 exceeds the capacity of C3P as permitted. The interior culvert capacity proposed for both Unit 1 and 3 that would be installed in the low-lying pastures exceeds C3P capacity and the low-lying culverts in both Units 1 and 3 exceed the DWMP inflow volumes that are predicted for the foreseeable future under the framework; accordingly, we would suggest*: a). as the C3P tidegate volume capacity is exceeded by the interior culverts served by C3P, and b). The hydraulic capacity and ACW relationships support the interior capacity methodology c). interior water control structures will be managed in accordance with the BSDD DWMP for the primary fish ingress/egress months of November through March; that the Phase III project aligns with prior Federal and State approvals for fish passage*. In alignment with approval of the C3P concrete box culverts and the BSDD DWMP in accordance with NMFS and ODFW fish passage guidance, we suggest that our supporting evaluation based on synthesis of three methodologies including interior culvert capacity flow volume in comparison to C3P capacity provides foundation for the Phase III project as proposed to meet Federal and State fish passage guidelines.

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Appendix A:

Beaver Slough Drainage District Water Management Plan and Northwest Hydrology Consultants C3P Tidegate Hydraulic Analysis

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Appendix B:

Culvert Installation Design and Water Control Structures Proposed on Interior Culverts

Appendix B.

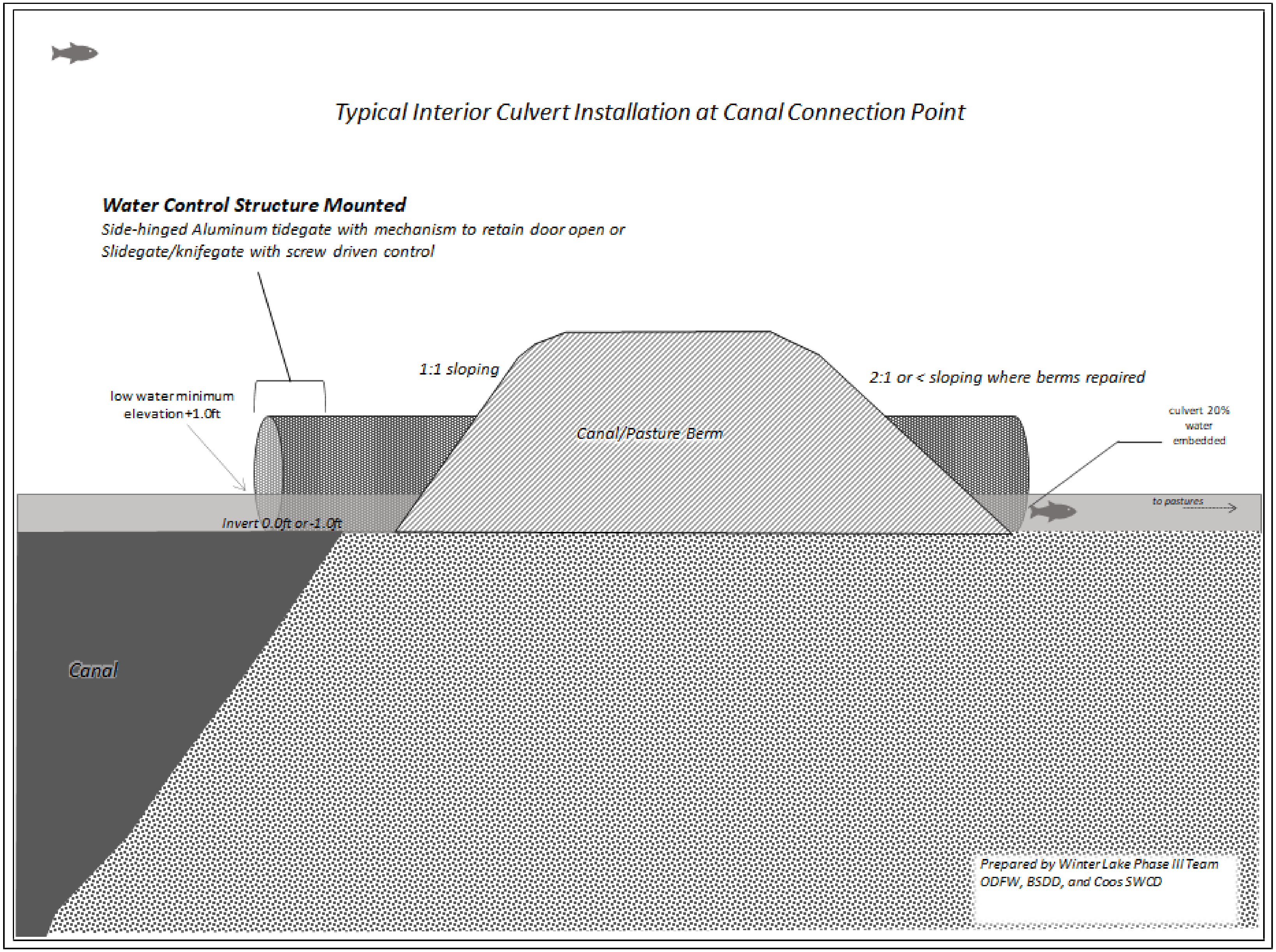

Figure 1. Winter Lake Phase III project typical interior culvert installation design.

Appendix B Cont.

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industries/product-174233-19232.html

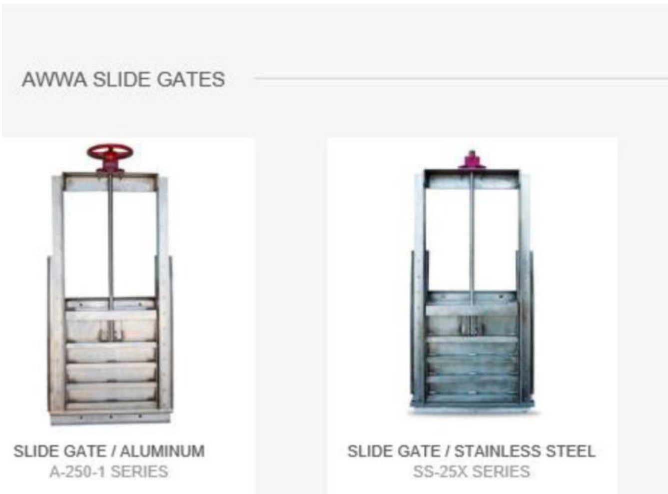

Figure 2. Slide gates proposed for selected interior pasture connection culverts.

Figure 3. Typical side-hinged aluminum tidegate mounted on 6.0ft CMP.

Appendix B Continued.

Figure 4. Side-hinged aluminum tidegate door in working location.

Figure 5. Other water control structures such as louvered gates or baffled water control structures are as of yet in the concept phase; no figure available.

Note: *The team recognizes that ODFW and NMFS will have a requirement to review design drawings of non-traditional water control structures prior to approval and perhaps inspect function of a scaled down prototype model. Non-traditional water control structures will not be installed on the project until that threshold has been met in order to assure agency staff approve that they can meet or exceed both State and Federal fish passage guidelines. Until that time only traditional water control structures will be installed.*

(To Be designed)

Appendix C:

Fish Passage Hydraulic Engineering Tables for Culvert Capacity

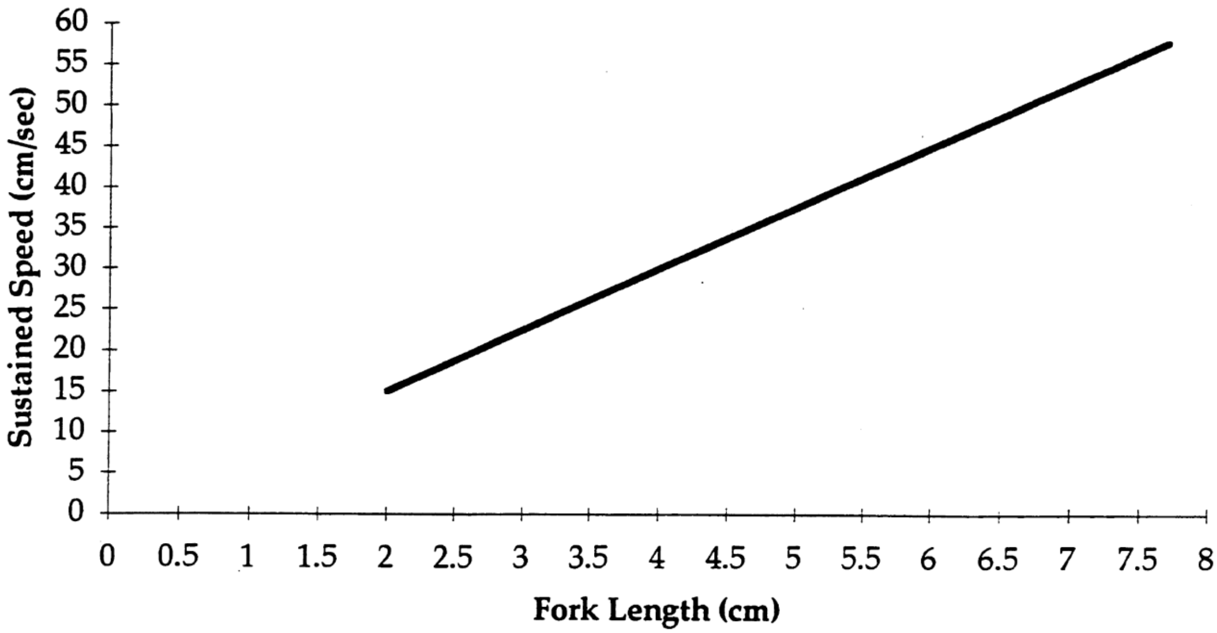

Figure 1. Sustained speed versus fork length for juvenile salmon (Modified Figure 2.2 from USDA Forest Service, 1978). From Barber, M. E. and R. C. Downs 1996.

Table 1. Flow capacity for circular and pipe-arch culverts (Robison and others 1999). Table 23 in Foltz, Randy B., P. R. Robichaud, and H. Rhee 2009. A synthesis of post-fire road treatments for BAER Teams: Methods, treatment effectiveness, and decision making tools for rehabilitation. Gen. Tech. Rep. RMRS-GTR-228. Fort Collins CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 2009: 152p.

Circular culverts[a]			**Pipe-arch culverts[a]**		
Diameter	**Cross-section area culvert**	**Maximum flow in culvert**	**Span × Rise**	**Cross-section area culvert**	**Maximum flow in culvert**
(inches)	(ft^2)	(cfs)	(ft and/or inches)	(ft^2)	(cfs)
15	1.2	3.5	22″ × 13″	1.6	4.5
18	1.8	5	25″ × 16″	2.2	7
21	2.4	8	29″ × 18″	2.9	10
24	3.1	11	36″ × 22″	4.3	16
27	4	15	43″ × 27″	6.4	26
30	4.9	20	50″ × 31″	8.5	37
33	5.9	25	58″ × 36″	11.4	55
36	7.1	31	65″ × 40″	14.2	70
42	9.6	46	72″ × 44″	17.3	90
48	12.6	64	6′-1″ × 4′-7″	22	130
54	15.9	87	7′-0″ × 5′-1″	28	170
60	19.6	113	8′-2″ × 5′-9″	38	240
66	23.8	145	9′-6″ × 6′-5″	48	340
72	28.3	178	11′-5″ × 7′-3″	63	470
78	33.2	219	12′-10″ × 8′-4″	85	650
84	38.5	262	15′-4″ × 9′-3″	107	930
90	44.2	313			
96	50.3	367			
102	56.7	427			
108	63.6	491			
114	70.9	556			
120	78.5	645			
132	95	840			
144	113.1	1,000			

Table 2. Flow Capacity for Circular Culverts and Pipe Arch culverts. Table 6 From E. George Robison, A. Mirati, and M. Allen 1999. Oregon Road/Stream Crossing Restoration Guide: Advanced Fish Passage Training Version.

CIRCULAR CULVERTS			***PIPE-ARCH CULVERTS***		
DIAMETER (inches)	Cross-Section Area Culvert (ft^2)	MAX FLOW in Culvert (cfs)	**SPAN x RISE** (feet and/or inches)	Cross-Section Area Culvert (ft^2)	MAX FLOW in Culvert (cfs)
15	1.2	3.5	22" x 13"	1.6	4.5
18	1.8	5	25" x 16"	2.2	7
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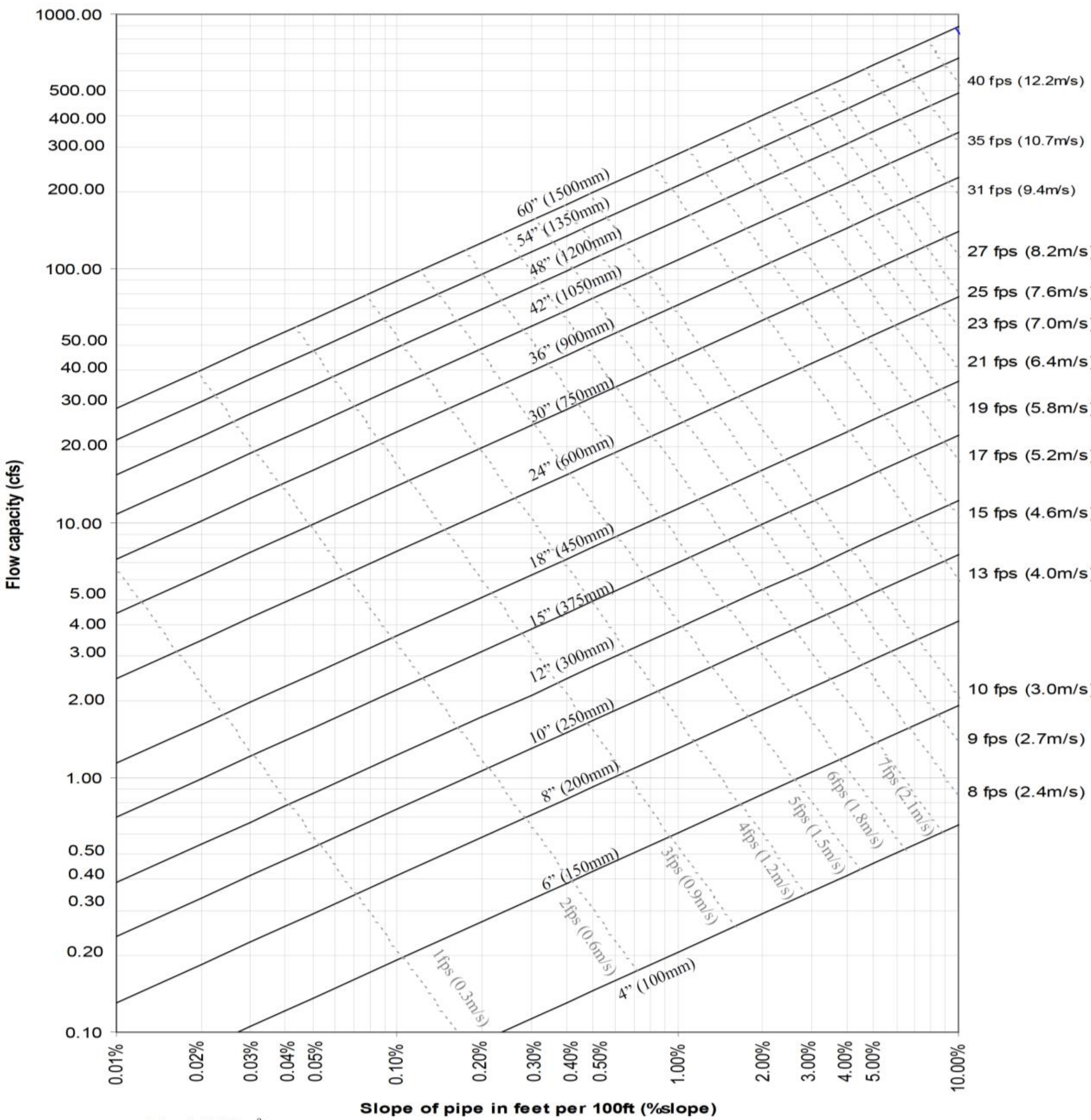

1cfs = 0.02832 m^3/s
1ft/s = 0.30480 m/s
1% = 0.01 ft/ft

1. Applicable products: N-12®, MEGA GREEN®, N-12 STIB, N-12 WTIB, HP STORM, SaniTIte®, SaniTite HP, N-12 Low Head

Note: Based on a design Manning's "n" of 0.012.
Solid lines indicate pipe diameters. Dashed lines indicate approximate flow velocity.
Redeveloped from FHWA HDS 3 – Design Charts for Open-Channel Flow[2]

Figure 2. Figure 3-1 in ADS Inc. Drainage Handbook; discharge rates from ADS corrugated pipe with smooth interior liner.

Appendix D:

Phase III Action Impact Benefit Table

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 2yrs 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 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.*
Berm Reconstruction		Yes, soil disturbance	**Low**	**Yes**	**Neutral by year 3**	**Neutral by year 3**	*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 (Figure xxx). Tree species will be either Oregon Ash, Black Cottonwood, or Spruce.*

Net Ecological Benefit by Year 1	**Medium**
Net Ecological Benefit by Year2	**High**

Winter Lake Phase III
Tidal Restoration Project

Tidal Area Restoration Programmatic
(TARP)
Project Design Criteria - General Construction Measures
Assessment

Christopher W. Claire; Oregon Dept. of Fish and Wildlife
and
Caley Sowers; Coos SWCD
02/03/23

Project Summary

The Winter Lake Phase III Tidal Restoration project developed by the Coos Soil and Water District has been specifically designed tomaximize ecological uplift while retaining early summer/summer/fall pasture grass farming operations. The site located at RM 20.5 in the Coquille River estuary. The project area is upstream of the C3P tidegates and C3P provides the overarching water control under the Beaver Slough Drainage District (BSDD) NMFS/ODFW water management plan. The land area, 1,290 acres below elevation 8.0ft and two pastures comprising 99 acres) within the Coaledo Drainage District (CDD) were historically a tidal forested freshwater complex with elevations that were predominantly below elevation 8.0ft. The project area has complex hydrology dominated by tidal amplitudes in dryer months, however, heavily influenced by rising river levels and floodwater in winter. The site plant species historically included red alder (Alnus rubra), however, predominantly Oregon ash (Fraxinus latifolia) and willow (Salix spp.). Vegetative species typified by slough sedge (Carex obnupta), small fruited bullrush (Scirpus microcarpus), and bur reed (Sparganium Americanum). This vegetative community would have in turn provided a strong detrital macroinvertebrate energy source. The site conditions as examined by LiDAR imagery indicate that there were substantial tidal channels penetrating the project area from the mainstem Coquille Riverprior to human alteration. These channels would have provided the rearing habitat for native salmonid and estuarine fish to feed within the marsh plain on the heavy loading of macroinvertebrate food items that were produced. In 1907-1908 pathways were cleared through the wetland forest, a new exit location was excavated through the Coquille River natural levee, tidegates were installed, the land area was drained during dry months and burned to create grazing land pastures.

The Project Team has proposed installing over 90,000ft of new/reconstructed channel. The project will address 42 aging culverts with fish passage obstructive top-hinged tidegates. These culverts are placed to provide for individual water management precision through interior low elevation berms. Culverts will be upsized to appropriately meet the site hydrology (see Hydrologic Assessment). Tidegates will be replaced with side-hinged aluminum tidegates fitted with devices to allow doors to be held open in the fall/winter/early spring allowing for maximization of fish passage into reconstructed channels. The full network of channels upstream of C3P main tidegates is under the BSDD Water Management Plan. Overall the project is anticipated to have a substantive ability to increase access for juvenile coho production and other native fish compared to the current conditions.

No new berm/dike will be constructed and repairs will be limited to the need for providing water management within individual water management units.

Feedback for Project Actions in Regard to TARP Guidelines

Note: *The Project Team has sought to address the Design Criteria with Specific Relevance for the project.*

Tide/Flood Gate2 Removal, Replacement, or Retrofit

This project will replace 42 culverts (consolidate 3) and associated tidegates with culverts that meet hydrology capacity for the individual pasture/water management units. Side-hinged aluminum tidegates that meet or exceed NMFS/ODFW fish passage criteria will be installed on new culverts. The winter water management strategy will be to manage the 39 tidegates in an open position during winter/spring months to maximize tidal inflow/outflow and fish access to the floodplain habitats. Overall the project is designed to meet NMFS criteria noted in TARP, "Habitat is benefited by increases in tidal inundation depth and duration during critical juvenile rearing or out-migration periods. Upstream passage is benefited by decreasing pipe velocity or increasing the duration of gate openness during critical migration periods."

#1-3. *Not applicable for this project*

#4. Review and Verification

NMFS, ODFW, other action agencies responsibility. The Project Team has previously had three Zoom style meetings on the design/development of the project with NMFS and ODFW. Additional coordination meetings are scheduled as the permitting works through USACE, DSL, NMFS, DEQ, and ODFW.

#5-7. *NMFS and coordinating agency guidance. No feedback needed.*

#8. Project Design

a). Current and regional climate considerations have been considered. With sea level rise expected to reach 1.0ft by 2032. The main C3P large 8.0ft x 10ft tidegates at the Coquille River are anticipated to continue to provide sufficient water management through 2032 for operations of the grazing, with only beneficial effects from higher base water elevations for production of fish. The creation of the new/reconstructed channel network will address access for fish to interior pasture feeding location, greatly reduce/eliminate stranding locations, and provide for increased hydrologic "breathability." Streamflows on the Oregon coast are expected to decline approximately ~30% during the drier months, however, these changes will not affect project function.

b). The project area was historically, a tidal dendritic network forest floodplain with high channel configuration per acre. The location has not been under industrial use at any point and no known chemicals that are toxic are known to exist on the site. There are few available records for the uses of the site since Euro-human development, however, anecdotal information from the long-term ranchers of the community indicates that the pastures have been in pasture grass production since tidegates were installed in the early 1900's, the forest was cleared, and pasture grasses were established.

c). The project Team has submitted or is in progress on the following permits for the project:

- *Oregon Dept. of State Lands: 404 Fill and Removal Permit application.*
- *U.S. Army Corps of Engineers: 404 Fill and Removal Permit application, Project Work Plan/Design and Engineering.*
- *State Historical Preservation Office (SHPO) archeological survey report (in development).*

- *Coos County Planning: 404 Fill and Removal Permit application*
- *Oregon Dept. of Fish and Wildlife: The project Team is coordinating with ODFW for state fish passage approval. The following additional information provides support: 404 Fill and Removal Permit application; SHPO Documentation/Eligibility forms (in development), Project Work Plan.*

#9. Site Layout and Flagging

a). Before significant ground disturbance the travel routes from the staging that will minimize impacts to work areas will be made known to the contractor. The site work areas are considered wetland status and show accordingly as wetland under the National Wetland Inventory developed by USFWS. Discussion will be incorporated with the Team and contractor(s) prior to work to ensure that tactics are employed to minimize impacts to wetlands. i. Specifically, much of the site is considered sensitive, thus contractors will be guided to perform work that minimizes permanent impacts; ii. Equipment entry and exit points are: from Hwy 42 and from N.B. Lane on the west; iii. Stream/tidal channel crossings only occur along main routes (see Additional Materials in 404 permit application); iv. Staging, storage, and stockpile areas will be denoted to contractors hired to complete work and are noted in Additional Materials.

#10. Staging, Storage, and Stockpile Areas

Staging areas are denoted as the C3P tidegate work area, the entrance off of Hwy 42, the riverbank road along the Coquille River (see the Design/Engineering and 404 Fill and Removal permit application for notation of entry/exit points and staging/stockpile locations.

a). No hazardous materials, other than fuel and hydraulic fluids will enter the project area. Fueling will occur 150ft from open water/streams. There are three entry points to the site: 1). From North Bank Lane on the west; and 2). Hwy 42 on the eastern boundary of the project area; 3). Riverbank road to through Roseburg Forest Products.

b). No permanent stockpiling of material that will be used later will occur. The project is designed to be "Zero" cut and fill balance.

c). Staging areas and stockpile sites will be seeded and mulched following the project implementation and prior to heavy winter rains.

#11. Erosion Control

a, b). The project Team has developed a Workplan that delineates the routes of travel from North Bank Lane, Hwy 42, and the Riverbank road to the project work areas. Work will occur from top of bank with the excavator. If soils are softer than will support equipment crane matting will be utilized. The project may incorporate use of a low ground pressure Maruka dump truck if deemed that a traditional truck will sink into soft pasture soils. Construction of the berm at the tidegate location will be feathered to blend with the existing berm/dike and seeded and mulched following installation of the tidegate. Disturbed soils south of the tidegate installation location will receive jute or other erosion control matting with seed either embedded or spread on berm repair area prior to installation of the matting. The project area will be dewatered and isolated from tidal inflow/outflow during the work period of July 1 to September 15th. All Work below Ordinary High Water to connect the project main channel with the mainstem Coquille River will occur on low tide and low incoming tide. These measures will work to keep turbidity at a minimum and within the work area.

c). For hire contractors will be asked to submit a workplan that: i. Denotes that all work in sensitive wetland areas will be completed efficiently and prior to fall rains and the fall deadline for the In-Water Work *window. ii. No work will occur where the excavator or other equipment is actively inundated under the tracks of machinery. Work will cease in the fall on September 15th (In-Water) unless upstream of an interior closed water control structure that prevents fish into the active work area. iii, iv, v. The Project Team will manage contractors to work within channel locations so as work will be performed in the dry or on a low incoming tide, such that turbidity is captured within the work area and not transported downstream to the Coquille River. This will minimize the duration of In-Water work that will have potential to generate turbidity. During incoming tide work will be ceased when water elevation and depth increase to the threshold where excavation begins to generate turbidity that escapes the immediate work area. vi. Water quality inspection will be completed using either "visual above background" or turbidimeter following DEQ guidelines by SWCD or ODFW staff when work will occur In-Water or where sediment may be produced near water. Seeding and mulching will be incorporated on all disturbed soils following construction. Soil stability and effectiveness of seeding/mulching will be monitored during the first substantive rain events. Additional measures to correct issues will be incorporated as necessary. A contractor spill kit will be available on site during periods when machinery with hydraulic fluid and fuels are being operated.*

#12. Hazardous Material Spill Prevention and Control
a). The contract language for all hired contractors will specify in writing that: i.- iii. The project will maintain a spill containment kit at the site during occupancy onsite. Staff trained in the use of the kit will be available at all times.

#13. Equipment, Vehicles, and Power Tools
a). We anticipate the contractor(s) will utilize a 20,000 or 30,000lb series excavator for the project, dozers, and standard dump trucks. The excavator size class will not be excessively impactive to the wetland soils and the site conditions comparably to larger machines. The culverts and tidegates will be either ferried to the installation locations with the use of the excavator or on flatbed trailers as the pasture area is sufficiently dry in summer months for vehicle travel. Track machines incur only modest impact to wetland soils due to the high level of surface area. The soils on site are relatively dry during summer months, however, if deemed necessary a Maruka style low ground pressure dump truck will be employed to move riprap from the road to the work area if wetland soils will be negatively impacted.
b). i. Equipment will be brought to the site clean, without leaks, and or seeds/plants/soils from off location. ii. Contractors and private landowner operators will be required any machine that works below Ordinary High Water (OHW) will need to be free of oil, fuel, or hydraulic leaks or operating with biodegradable hydraulic fluid.

d). Only excavators will work below OHW during to develop the new/reconstructed channels, remove/install new culverts and tidegates and place riprap.

e). All waders, boots, and hand equipment will be inspected to ensure they are free of plants, soil, or other organic material from offsite.

#14. Temporary Access Roads and Paths
a-b. Road access to work areas is from Hwy 42 on the east, North Bank Lane on the Western side of the project area, and the Riverbank Rd. through Roseburg Forest Products, which are all existing paved or gravel routes. Interior access will be gained on the road to the C3P tidegate and pasture drive pathways during periods when soils are sufficiently dry for vehicular access. c-d. No riparian vegetation is present along canals or channel locations where work will occur, thus removal of riparian vegetation is not expected. e. The site is near zero slope and any temporary access routes will be across pastures without improvements. f. There are no access routes that are steeper than 30% grade on the project area; see item e writeup. g. Seeding and mulching of soils will occur where road access results in disturbance that exceeds

the native grass on site from regrowing in the first fall period following disturbance. h. Temporary access routes will be across dry pasture location and not expected to create rutting or sufficient soil disturbance where local grasses will not regrow. However, seeding and mulching will be used to restore vegetation following disturbance. Any rutting will be recontoured to the existing wetland pasture form. The minimum number of trips needed to transport materials and equipment from the staging areas to the work locations will be incorporated to reduce wetland impacts. Following construction any excavator track furrows will be smoothed and disturbed soils seeded and mulched.

#15. Dust Abatement

a-f. The site is currently well vegetated with pasture grass species. It is not anticipated that the quantity of travel on the pasture access drive-path will result in dust conditions that affect North Bank Lane travel or create issues with adjacent landowners. However, if dust abatement is necessary application will be completed with either use of a water truck application.

#16. Temporary Stream Crossings

a-f. No temporary stream crossings will be used for this project.

#17. **Surface Water Withdrawal**

a-b. The project does not anticipate the need for use of surface water.

#18. Construction Water Discharge

a-b. The project actions may require some pumping of water to dewater existing channels. Only clear non-sediment laden waters will be pumped to the mainstem Coquille River. Sediment laden waters from any pumping will be delivered to pasture locations where vegetation will filter the water prior to entering a stream/waterway. Waters will not contain any pollutants.

#19. Fish Passage

a. There are not anticipated to be salmonid fish present within the project area during the proposed July 1 to September 15th work period as the thermal conditions exceed tolerance (>72°F). There are no fish bearing streams that enter the project area, accordingly fish passage is not a factor within the scope work for this project. b. The new side hinged aluminum tidegates and appropriately sized culverts in regards to hydrology are anticipated to meet or exceed ODFW and NMFS fish passage criteria. The main C3P tidegate is a separate previously completed project, however, the C3P tidegate Water Management Plan guides water levels within the project area. The project will address 42 interior culverts/tidegates. During winter/early spring months interior gates will be managed fully open to maximize fish passage.

#20. Timing of In-Water Work

a). The project will be completed in the June 1 to September 15th period, with all in-water work from July 1-Sept 15. The Project Team has consulted with appropriate agencies and the project actions are considered to be within reasonable impacts and accommodated by weather conditions during July 1- Sept 15th. b. N/A, c. N/A, d. The Project Team will submit any In-Water extensions for work at least two weeks prior to the time period needed.

#21. Work Area Isolation

a-d). Work activity impact minimization for all actions below OHW will be completed through working with the tidal cycles for the site and or working in the dry from locations that are dry for new/reconstruction of channels and connecting with the minimal number of excavator buckets possible. The period chosen to complete work is July 1-Sept 15th. For the final connection of the new/reconstructed tidal channels to the main canal networks dry periods of August or September with the lowest water levels possible will be *chosen. Sequencing connections will also consider tidal amplitude as this will allow for work on low tide cycles that are sufficiently low to allow for work in minimal water depth. Work will be conducted in a manner where excavation will follow the tidal cycles downward, completing final excavation or fill/placement of riprap during the extent of low tide and incoming tide. There will not be a need for a coffer dam or isolation sheet piling for any sites with this project as the existing dikes will remain in place where culverts will be installed through to the main canals.*

- ***Excavation/installation of the new culvert/tidegates:*** *The new culverts/tidegates will be prepared as a single unit and installed simultaneously. Large amplitude tidal cycles will be chosen in late August or September for most locations where new culverts with attached tidegates will be installed to connect pasture channels to main canals. The berms/dikes will be excavated down following the declining tide and old failing culverts/tidegates will be removed and placed temporarily within pasture locations adjacent to the work area prior to disposal at an approved landfill or waste transfer. The lowest elevation earthen work will occur at the lowest ebb tides and on the low incoming tide. Work to install the culverts will be completed on a single low tide event, with riprap installed on subsequent low tide series.*

#22. Fish Capture and Release

a-i). Work below OHW will be on the declining low tide period. Salmonids and other fish are not expected to be within the active work area due to high stream temperatures (72°+F) from June 15th through September 15th. Native three spined sticklebacks will be present at some culvert/tidegate replacement locations and will be salvaged and released into the mainstem canals upstream of C3P. A qualified fisheries biologist from ODFW staff or the Coos Watershed Association will manage fish salvage and work area isolation. Electroshocking is not a viable means of fish capture due to salinities. While the project actions are designed with sequencing that will minimize fish salvage, capture of sticklebacks and other native fish in interior channels and construction locations will be completed using dipnetting and seining methods. Fish captured will be retained the minimal time possible in buckets. Aeration will be provided as needed. Fish numbers in buckets will be maintained at levels where excessive stress is not incurred. If salmonids are observed or captured, they will be released into the main China Creek canal or Beaver Creek where temperatures are amiable. For fish such as sticklebacks with a temperature tolerance range that accommodates summer regimes they will be released into main canals.

#23. Invasive and Non-native Plant Control

a-s. This project focuses on tidal channel restoration and fish passage. No herbicide spraying is planned as part of project actions. Following project actions, soils that have been disturbed will be seeded with a mixture of annual rye grass, perennial rye grass, and Kentucky bluegrass. Mulch will be also applied where there is erosion potential due to slope or poor native grass recovery. The existing grass species (largely bentgrass) present and seeding and mulching tactics are expected to fully revegetate the site. Vegetation will resist colonization of the site by non-native invasive plants. Currently there is not a problem with non-native invasive vegetation on the site. No use of herbicide or specific soil excavation to remove invasive plants is planned during the project.

#24. Piling Installation

a-d). No new piling are anticipated to be installed with this project. Poles have been inserted at most of the existing culvert/tidegate locations. As these are not needed with the new culvert/tidegate infrastructure these will be removed. Most of these are only into substrates 5-6ft and removal with an excavator is not considered likely to encounter difficulty. Non are known to have been treated with creosote..

#25. Broken or Intractable Pile

a-d. No treated piling or piling older than 50yrs in age are planned for removal. Some wooden poles may be removed. As these are not chemically treated and are natural Douglas fir, if they break off below the surface of the soil this will not result in negative effects for site environmental conditions.

#26. Projects Requiring Post-Construction Stormwater Management (PCSM)

a-d). This project is within the historical tidal floodplain. Soils are silt/clay/sand for all locations where excavation will occur. These silt/clay/sand materials are the primary constituent for repair of the berm/dike and construction of the earthen berm cirque that will encompass the new culver/tidegate. These soils will be excavated will be placed in location and compressed to construction standards that provides stability, however, their particle size and compaction levels will fully continue to allow precipitation penetration. The Project Team does not anticipate PCSM need for this project as no impermeable surface will be expanded or created. That said, as part of the project permitting actions a 1200C stormwater plan will be developed and DEQ 1200C permitting obtained.

#27. Site Restoration

a. Berm repair will occur in at least five locations within the project area and be confined to reaches on berms that are <200ft in length. Seeding and mulching is fully expected to manage restablization of soils and erosion control matting will not be needed.
b). No waste or trash will be left on the work area. The old 12" culvert removed will be ferried to the staging area in the pasture just off of North Bank Lane Hwy for later disposal at an appropriate landfill.
c). All drive paths on the project area are on existing pasture grass vegetation. No new roads will be constructed. Pasture drive paths are expected to revegetate fully following disturbance from remaining grass root-stock. As needed, seed and mulch will be applied to drive paths where soils are disturbed to the point where grasses may be substantively weakened.
d). Compacted soils will be loosened in areas that are compacted by machinery inadvertently, using the teeth on the excavator bucket. This will facilitate seed germination microsites and reestablish pasture grasses.
e). i-vi. Riparian fencing will be installed along ~30,000ft of new/reconstructed larger channels. Some reaches of new channels will be "Skip Planted (see Additional Materials) where individual cages will provide for planting of 6 native trees per cage. Within fencing native trees/shrubs will be planted (see 404 Fill and Removal app and Engineering/Design). The Project Team will be inspecting the site during construction to minimize overall disturbance and will implement vegetative recovery tactics (seeding/mulching/planting) to ensure that soils are stabilized and ecological function is maximized upon completion of soil disturbance. Monitoring photos of work will be completed on year 1 and 3 post construction to ensure that recovery is meeting goals.

#28. Revegetation

a-h). (see previous section) All disturbed soils subject to erosion as a result of the project will be seeded with the specifically designed mix including annual rye grass, perennial rye grass, Kentucky bluegrass, and tall fescue, and mulched as needed with hay or straw. The current vegetative community in pastures is comprised of primarily bentgrass with individual locations of reed canary grass on the dike. No fertilizer will be applied with the project. The effectiveness of the seeding and mulching will be inspected following the first three precipitation events with >0.5" of rainfall and as deemed necessary thereafter. If soil stability issues are noted additional measures will be incorporated to resolve the issue. Jute matting is not anticipated to be needed to develop stabilization of disturbed soils, due to minimal pasture slopes and the modest height of berm repairs, which results in minimal sloping.

***#29.* "Flexible Uplift"**
This project is designed specifically to develop substantive increase in hydrologic function and fish passage. Flexible Uplift is not considered as needed to meet project goals.

#30. Tide/Flood Gate Removal, Replacement or Retrofit
a). The USACE is the action agency, however, ODFW staff are working directly to assure the project meets both State and Federal fish passage guidelines. The new culvert and tidegates will be appropriately sized and include features such as the aperture to provide for maintaining the door open to meet water and fish passage management goals. Culverts/tidegates will either be replaced in their existing location or moved several hundred feet. No new watershed areas will be encaptured.

b). The fish passage through the existing culvert/top-hinged tidegates into pasture channels is considered "very poor" to "poor" depending on location. The top-hinged tidegate is a style that allows only a limited degree of tidegate angle openness due to gravity and the need for water forces to push the door open fully from vertical, which is the closed position. i. Culverts are primarily a mix of PVC and corrugated metal with sizes ranging from 1.5-5.0ft. ii. The site has potential to provide habitat for, coho, juveniles, cutthroat trout (adult/juvenile), and three-spined stickleback. iii. The project will establish a hub and utilize the NAVDD88 datum in order to properly set new culverts at elevations of -0.5 to -1.0 depending on location. iv. Tidal information is collected on the C3P tidegate computer network. This information is available to assist with determining the elevations on site. v. Existing passage for top-hinged tidegates is known to be poor. No side-hinged tidegates currently are in use within the project area. Accordingly the project is anticipated to develop substantial increase in functionality for native salmonid fish.

c). Historically the Winter Lake project area was strategically important for overwinter/spring rearing of juvenile coho, fall Chinook, cutthroat trout, and to some degree juvenile steelhead. This rearing occurred within the fully connected tidal channels within forested floodplain. Following tidegate installation, deforestation, and construction of linear channels that transverse historical channels; passage of juvenile fish into the site was obstructed, water quality deteriorated due to limited tidal exchange thermal conditions deteriorated during summer months, macroinvertebrate food availability decreased, and stranding potential developed in low lying disconnected locations. This project will address connectivity for juvenile fish access into the pasture floodplain through installation of new appropriately sized culverts with side-hinged aluminum tidegates that provide a much greater degree of "door openness" over current condition and reconstruction of tidal channels that are on grade. Design sloping of the channel banks will be 2:1 or 1:1, which will reduce cattle hoof actions effects. ~30,000ft of larger channels will be fenced and planted contributing to improved spring/summer/early fall temperature regimes.

d). A Hydrologic Assessment has been developed by the Project Team. All culverts were sized individually based on two methods and a third overarching factor: 1). Drainage area/elevation served and the rainfall precipitation that would emanate upstream of those culvert locations; 2). The Active Channel Width relationship to engineering culvert capacity calculations; and 3). The overall capacity of C3P. Ultimately the new culvert networks combine to provide more capacity than the main downstream control point (C3P) in a full open condition. C3P is rarely operated and only for flood equilibration in a full open condition, thus interior culverts networks combine to substantially exceed the standard Water Management Plan operations at C3P. As designed the combined culvert capacity exceeds the volumetric delivery capacity of the main C3P tidegates (see Hydrologic Assessment).

e). The goals of the project are to restore a strong degree of tidal connectivity to the project area through: i. The project culvert/tidegate inverts have been developed/designed with substantial knowledge of river *and tidal elevation information for this reach of the Coquille River. Culvert sizing will exceed the tidal inflow capacity of the main C3P tidegates that control water inflow to the interior pastures. Fish passage has been considered and management of the new tidegates will be to maximize fish access into new/reconstructed pasture tidal channels. The new infrastructure will provide for increased capacity to manage water for pasture grazing operations during the summer period when native salmonid fish are not present tidegate will be connected with an MTR to allow for controlled tidal inflow.*

ii and iii. The new tidegates will have devices to manage the 39 new side-hinged aluminum tidegates in an open condition during months when fish are needing to access habitats. The Beaver Slough Drainage District NMFS and ODFW approved Water Management plan provides the structure for tidal inflow of waters into the site. For this particular site the WMP is designed to work to increase the water inflow during winter/early spring months and time that tidegate doors are open in order to accommodate entry of native salmonid fish, primarily juvenile coho. Coos SWCD, and ODFW staff will work collaboratively to manage the adjustment of the interior 39 interior tidegates with individual landowners on this Working Landscapes Project.

The tidegate, and MTR will be maintained. The maintenance strategy includes the following information.
1). <u>Responsible Parties:</u> Individual landowners on land parcels
2&3). <u>Operating and Monitoring Protocol/Frequency</u>: Landowners of individual tidegates will be informed by BSDD of the need to have tidegate doors opened in late fall. ODFW and SWCD will work with the BSDD and landowners to reach tidegate door management goals. The BSDD WMP has framework that encompasses the interior water levels through the annual period by quarter. Water levels can be monitored by download of data at the C3P computer output. Additional notation of annual individual landowners will be documented by Coos SWCD.
3). <u>Modification process if passage or habitat conditions fail to meet project goals:</u> The landowner will contact Coos SWCD who will in turn contact ODFW staff and coordination will occur to resolve fish passage or the installation to fail to meet habitat water delivery goals.
4). <u>Reporting Protocol:</u> The landowner will report all failures in function of the tidegate to provide fish passage or function to meet habitat goals to Coos SWCD staff for initial coordination with other pertinent entities, initially ODFW.
5). <u>Adaptive Management Process:</u> The Coos SWCD and ODFW will coordinate with the permit holder (BSDD) to address any need to adjust tactics and day to day interior tidegate operations to fully meet project goals.

#31. Set-Back or Removal of Existing Dikes, or Levees
a., b. This project will not set-back or remove existing dikes or levees. That said the project is designed to restore floodplain hydrologic function to the degree reasonable within this Working Landscape. Channels will be constructed on grade with bank sloping that reduces cattle hoof action deterioration. Channel layout has been designed to align with historical channel locations to provide for most efficient access and limited stranding of fish into the floodplain network.

#32. Large Wood (LWD) and Engineered Logjams (ELJ)
a. i-x.The project may install ~50 pieces of Large Woody Debris (LWD) in larger channels on various landowners. LWD will be installed with rootwads in the channel crux joint of selected new/reconstructed tidal channels in alignment with the NMFS Salmonid Passage Facility Design 2011. They will be installed at a 45° angle from the vertical or less, with insertion into the soils at least to a minimum depth of eight feet. This insertion and angle will prevent horizontal leverage flotation forces from dislodging them through time. They will be installed with the rootwad upward to maximize their ability to provide cover for fish

rearing in the channels. These LWD segments will mimic historical condition logs that would have become incorporated into the soft estuarine substrates through time on transport events. These placements are well within the normal range of historical variability. Conifer species will be used for LWD, most likely Douglas fir from a local source, however, other conifer species (i.e. white fir) may be used if availability is greater.

#33. Dam and Legacy Structure Removal

No dams or large hydrologically related structures will be removed with this project. A total of 42 interior culverts with associated top-hinged tidegates will be replaced with appropriately sized (see Hydrologic Assessment) new culverts and associated side-hinged aluminum tidegates.

#34. Channel Reconstruction/Relocation

a-c). The project will install over ~90,000 of new/reconstructed tidal channel. Channels will be constructed to slowly grade from an elevation of -0.5 or -1.0ft elevation at the new culverts/tidegates to the upper extent and or hydrologic bulbs. (see Engineering/Design). Linear channels constructed on the project area in the early 1900's traversed across historical channels. This project will realign channel networks to be in locations where historical channel networks were aligned. The project is specifically designed to restore a substantive component of floodplain function and more closely mimic historical conditions. Channel design features are denoted within the project design engineering (see 404 Fill and Removal permit application). Function of all channels will be monitored initially by SWCD and ODFW staff for the first three months following construction of the project and then by the landowner seasonally (4 times annually) to ensure the channel is functioning as designed. At a minimum the following inspection will include: 1) Integrity of bank walls; 2). Sediment transport regimes; 3). Proper transport of water; 4). Overall stability and function to meet project goals.

Hired contractors will develop and provide: 1). As-built information on culverts/channels and 2). Coos SWCD and ODFW will compare these to design information. SWCD and ODFW will manage the project during implementation so as project features align with the designs. Any performance issues with the project features (Channels/Culverts/Tidegates) and or management will be addressed through Adaptive Management strategies following identification of the issue and coordination with SWCD, ODFW, and the BSDD.

#35. Off- and Side-Channel Habitat Restoration

No off-channel or side channel habitats will be created or affected by this project. All new and reconstructed channels are directly connected and functionally linked to inflow outflow hydrology of the main tidal channel network (see Engineering/Designs).

#36. Streambank Restoration

a-f). This project will not incorporate streambank restoration as a project action. Berm repairs are adjacent to canals. These locations will be seeded and mulched following disturbance. Willow or tree planting on berms/dikes can result in root penetration and damage the berm soils, thus is not considered as a strategy.

#37. Livestock Fencing, Stream Crossings and Off-Channel Livestock Watering Facilities

a-c). Approximately 30,000ft of fence are proposed for installation on the project area following culvert/tidegate/channel restoration. Fences will have a minimum 10-12ft setback from the Ordinary Tidal Water level within the channels. a. i. Channel conditions in the floodplain are very stable and migration zone is not considered an issue. ii. The site is currently vegetated by pasture grasses and there are no trees that will be removed in order to clear for fence construction. iii. All fencing will provide for transport of LWD at various flow levels. LWD often moves vertically and then horizontally as floodwaters rise on the site. No *water gaps will be needed for this project through the fence. b. i-x. Livestock will be able to move across channel locations outside of fenced reaches. Interior culverts will be installed to facilitate crossings in a manner that reduces environmental impacts to water quality and turbidity. All interior culverts will be sized appropriately to provide for fish passage and water conveyance at the location and pasture area that is upstream of the location. c. i-viii. Nine off-site interior pasture livestock watering locations have been proposed and are noted in the 404 Fill and Removal permit app. The total number may be reduced depending on landowner preference for watering tactics. Water availability has been identified by Oregon Water Resources Proper fish screening for withdrawal from canals in order to provide water for troughs will be incorporated. Tanks will be specifically placed in locations that assist with minimizing livestock effects to channels and active flow. Individual landowners within the BSDD have water rights for irrigation. Oregon Water Law provides that livestock watering does not require a Water Right as relegated to landowners under ORS 537.141; https://oregon.public.law/statutes/ors_537.141.*

#38. Piling and other Structure Removal

a-b). Removal of piling is not planned with this project. Short piling associated with tidegates on existing culverts will be removed at the individual culvert installation locations.. No piling are known to be within the project area that have been treated with creosote. It is thought that these poles that have been inserted to support chain networks for top-hinged tidegates have only been inserted to a depth of 5-6ft, thus removal with an excavator should proceed without event.

39. Beaver Habitat Restoration

This project will not incorporate Beaver Habitat Restoration as a project action. That said the development of new/reconstructed tidal channels and planting within fenced areas are anticipated to improve conditions for beaver use of the project area.

#40. Wetland Restoration

The overall goals of this project include restoration of tidal wetland function. The site grading plans (see Engineering/Designs) work with the existing landscape topography to create a connective tidal floodplain. The project is designed with "Zero" fill-removal framework where no fill is imported or hauled off-site. No wetland habitats will be converted to new upland that does not already exist. Five wetland mounds will be constructed to provide the ability to plant Sitka spruce (Picea sitkensis), which increase wetland habitat diversity. The maximum elevation of these mounds (8.0ft) will not exceed water elevations where the feature is altered to no longer be wetland habitat.

New and reconstruction of tidal channels will provide tidal network densities that mimic historical condition, while allowing for the landowners to maintain a level of pasture haying or grazing production. The excavation plan will not result in hydrology where fish will become stranded or water will be entrapped, which would produce summer salt marsh (Aedes dorsalis) mosquitoes. Grading will also not create new upland that does not already exist or eliminate habitat types that are currently found on the project area. The project area is currently Freshwater Emergent wetland PEM1Ch and PEM1Ah and Shrub Scrub.

The installation of the new culverts/tidegates will allow for tidal inflow that is controlled through the main downstream C3P tidegates. The Water Management Plan for C3P has been designed to provide for a higher elevation in winter months (see BSDD Water Management Plan) and lower elevations in late spring/summer/early fall. These elevations provide for increased access for native salmonid fishes in the winter months and pasture grazing water management in the summer/early fall. (see Hydraulic Assessment). Improved hydrologic connectivity is anticipated to improve conditions for native wetland vegetative species that historically would have been wetted twice daily by tides followed by dewatering on *low tides. The creation of the hydrologic bulbs at the upper extent of a number of channel networks will allow for more natural tidal inflow outflow providing high value juvenile coho rearing habitat more continuously during winter months due to the excavation depth below pasture level. The invert elevation of most bulbs is around +2.5ft NAVDD 88, which will continue to allow for Freshwater Emergent plant community species to develop. The bulbs will also provide hydrologic force to prevent sediment accumulation in the channel networks, and this is intended to exempt the need to reexcavate to clean channels in the future.*

All project area soils that exhibit risk for erosion or moving into water courses will be seeded and mulched where applicable following construction. No construction waste or derelict culverts or other materials will be left on site. The Water Management Plan will be administered by the BSDD with Technical Guidance of Coos SWCD and ODFW staff to ensure that hydrological goals are achieved.

Winter Lake Phase III Restoration Project

Assessment of Project Actions and Coos County Planning/Zoning

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Introduction

The Winter Lake Phase III project is a working lands infrastructure rehabilitation project proposed on 1,290 acres of the 1,790 acre Beaver Slough Drainage District and two additional parcels totaling 99 acres in the Coaledo Drainage District. The project will replace/consolidate a total of 42 pasture culverts with associated tidegates, install over 90,000ft of new and reconstructed tidal/farm drainage channel, repair five segments of failing berm, excavate deposited sediments from China Camp Creek, and install up to nine heavy use watering site troughs (see 404 Fill and Removal permit application and associated Additional Materials). The project area is fully within properties that are zoned as EFU, EFU/CREMP, and or EFU/IND. As such the proposed actions to rehabilitate drainage infrastructure for farming use are facilitatively allowed under the Coos County Planning Code. The lands are within the FEMA floodway Zone A. An engineer floodplain certification application documenting that the project complies with FEMA guidelines is in preparation for submission separately to accompany the 404 Fill and Removal permit application materials to the County Planning Dept. All potentially affected parcels are noted in Table 1. Herefore, this report is written feedback for specifically applicable planning criteria that directly guide project actions within these zoning codes. Ownership documentation in Appendix A.

Table 1. Winter Lake Phase III taxlot parcels within and included in project action area.

Owner Name	TLID	Tax Account #	Plan Zoning
BRIDGES FOUNDATION LANDS	27S13W29TL0010300	99916787	EFU , CREMP
BRIDGES FOUNDATION LANDS	27S13W20TL0150300	99916790	EFU*
BRIDGES FOUNDATION LANDS	27S13W29TL0010100	717600	EFU , CREMP
BRIDGES FOUNDATION LANDS	27S13W28TL0040000	717402	EFU
BRIDGES FOUNDATION LANDS	27S13W28TL0060000	717401	EFU
BRIDGES FOUNDATION LANDS	27S13W27TL0040000	716702	EFU
BRIDGES FOUNDATION LANDS	27S13W27TL0050000	716800	EFU
BRIDGES FOUNDATION LANDS	27S13W28TL0070000	717500	EFU
EVERETT-ONA ISENHART RANCH,INC; ETAL	27S13W33TL0010000	721202	EFU , CREMP
ISENHART, JOHN & LAURA J TTEE	27S13W33TL0020000	721200	EFU , CREMP
FRED MESSERLE & SONS, INC.	27S13W34TL0080000	722300	EFU , CREMP
FRED MESSERLE & SONS, INC.	28S13W03TL0010000	898300	EFU , CREMP
FRED MESSERLE & SONS, INC.	27S13W35CTL0090000	724600	EFU
OREGON DEPARTMENT OF FISH/WILDLIFE	27S13W21TL0240500	712904	IND, EFU
STATE OF OREGON	27S13W34TL0089900	7715000	EFU

Responses to Applicable Coos Planning Code Criterion

Criterion One

SECTION 3.3.710, pg 491 ADMINISTRATIVE CONDITIONAL DEVELOPMENT AND USE:

The following uses and their accessory uses may be allowed as administrative conditional uses in the "CREMP-EFU" zone subject to applicable requirements in Sections 3.3.730 and 3.3.740.

1. *Diking (construction and maintenance). CREMP Policies #14, #18, #19, #22, #23, and #27.*
2. *Drainage and tide-gating. CREMP Policies #14, #18, #19, #22, #23, and #27.*
3. *Fill. CREMP Policies #14, #18, #19, #22, #23, and #27. Use not permitted in Segment 26.*
5. *Dredge material disposal. CREMP Policies #14, #18, #19, #20, #22, #23, and #27. DMD is to include stabilization measures to control run-off and prevent sloughing. Use not permitted in Segment 26.*

13. Shoreland structural stabilization. Flood elevation certificate required. CREMP Policies #9, #14, #23, #27, #18, #19, and #22. Use not permitted in Segment 47.

Winter Lake Phase III Project Information in regard to Criterion One

<u>Response items #1-5):</u>

- *The Winter Lake Phase III project will address insufficient culvert size at 42 existing interior pasture drain culverts upstream of the Winter Lake Phase I control point large tidegates installed in 2017 and upstream of the Coaledo Tidegates upgraded last in the 1990's. Project actions are within Zoning codes EFU, EFU/IND, and EFU/CREMP. The full suite of project actions, tactics, and Best Management Practices are illuminated in detail within the 404 Fill and Removal permit application and associated Additional Materials submitted with this assessment.*
- *The project will address rehabilitation of five segments of existing dike, installation of new larger culverts and upgraded tidegates, place fill to 3" depths in accordance with Oregon Department of State Lands (DSL) and U.S. Army Corps of Engineers (USACE) guidelines, and dispose of dredge fill through 3" thinspread in alignment with DSL/USACE. All actions are designed to minimize effects to the floodplain and estuary habitat in accordance with the National Marine Fisheries Service (NMFS) Tidal Area Restoration Programmatic (TARP), which requires construction actions within tidal areas to be implemented with specific tact and measures to minimize negative effects.*
- *The project materials will include (in progress) an engineer Flood certification (in progress) for submission to the County providing documentation the project will align with the FEMA Floodway guidelines for the project area, which is designated Zone A.*

Criterion Two

SECTION 3.3.730, pg 495 CRITERIA AND REVIEW STANDARDS FOR CONDITIONAL USE PERMITS (BOTH ADMINISTRATIVE AND HEARINGS BODY)

A use may be allowed provided the following requirements are met:

1. Such uses will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use.

2. Will not significantly increase the cost of accepted farm or forest practices on lands devoted to farm or forest use.

3. Siting Standards for Dwellings and Structures in the EFU Zone. The following siting criteria shall apply to all dwellings, including replacement dwellings and structures in the EFU zone. Replacement dwellings may be sited in close proximity to the existing developed homesite. These criteria are designed to make such uses compatible with forest operations and agriculture, to minimize wildfire hazards and risks and to conserve values found on agricultural lands. These criteria may include setbacks from adjoining properties, clustering near or among existing structures, siting close to existing roads, and siting on that portion of the parcel least suited for agricultural uses, and shall be considered together with the requirements in Section 3.3.740 to identify the building site. Dwellings and structures shall be sited on the parcel so that:

a. They have the least impact on nearby or adjoining forest or agricultural lands;

b. The siting ensures that adverse impacts on forest operations and accepted farming practices on the tract will be minimized;

c. The amount of agricultural lands used to site access roads, service corridors, the dwelling and structures is minimized; and

d. The risks associated with wildfires are minimized.

Winter Lake Phase III Project Information in regard to Criterion Two

Response items #1-3):

- *The Winter Lake project is designed specifically to improve the functional production of forage grasses, while allowing for increased ecological productivity. The project will provide substantial benefit to the farming/ranching operations. The project is expected to improve irrigation water delivery and benefit operations costs of ranching/farming. No dwellings, barns, or similar structure will be installed/sited within the project area as part of the project.*

Criterion Three

SECTION 3.3.740, pg 496 DEVELOPMENT AND USE STANDARDS

Development Standards *All dwellings and structures approved shall be sited in accordance with this section.*

Winter Lake Phase III Project Information in regard to Criterion Three

Response:

- *The Winter Lake Phase III project will not implement installation of any housing, dwelling, barn, or other similar infrastructure. The project is designed to minimize removal of riparian woody vegetation. The actions of the project will include installation of 72,000ft of fencing to provide for planting of native riparian woody species (willow, cottonwood, ash) along selected reconstructed/new channels. This riparian enhancement is a critical component of the design of the project with the goal of improving water quality (temperature and dissolved oxygen).*

Criterion Four

SECTION 4.6.200, EXCLUSIVE FARM USE – USE TABLES:

Table II identifies the uses and activities in the Exclusive Farm Use (EFU) zone. The tables describe the use, type of review, applicable review standards and Section 4.6.210 Development and Siting Standards. Properties that are located in a Special Development Consideration and/or overlays shall comply with the applicable review process identified by that Special Development Consideration and/or overlay located in Article 4.11.

Winter Lake Phase III Project Information in regard to Criterion Four

<u>Response:</u>

- *The Winter Lake Phase III project will enhance riparian habitat through project actions which in compliance with the CREMP goals. The channel excavation, installation of interior field drain culverts/tidegates and fence construction are allowed actions under the Exclusive Farm Use.*

Criterion Five

SECTION 4.6.210, *pg 142* ADMINISTRATIVE CONDITIONAL DEVELOPMENT AND USE:

The following uses and their accessory uses may be allowed as administrative conditional uses in the "Exclusive Farm Use" zone and "Mixed Use" overlay subject to the applicable requirements in and applicable siting and development requirements. Additional conditional use review criteria can be found in § 4.6.230 and must be addressed unless otherwise specified by the ordinance.

i. Creating of, restoration of, or enhancement of wetlands. The removal of high value farmland from agricultural production for the purpose of creating wetlands except within 35 feet of the mean high water mark (extended riparian vegetation area). The applicant must address floodplain requirements.

Winter Lake Phase III Project Information in regard to Criterion Five

<u>Response</u>***:***

- *The project will improve inflow outflow drainage from the Beaver Slough Drainage District (BSDD) and Coaledo Drainage District (CDD) lands where work will be completed. Improvement of drainage will be accomplished by replacing undersized culverts with new appropriately sized infrastructure addressing issues at 42 locations in the Winter Lake floodplain and reconstructing/installing a greatly increased channel network.*

- *The project is designed to enhance Exclusive Farm Use and Coquille River Estuary Management Plan (EFU/CREMP) habitat function for native fish and wildlife. The improved drainage will facilitate reduced water souring of pasture soils and allow for appropriate irrigation in the summer months. Management of water during winter through the new tidegates*

- *The proposed project actions have been reviewed and evaluated for relationship to the 100 year floodflow levels. The project floodplain certification is currently in progress by the project engineer to delineate that the project will not result in greater than 1.0ft of floodwater rise associated with the 100yr flood.*

Criterion Six

SECTION 4.6.230,* 4.6.230, pg 194 *CRITERIA AND REVIEW STANDARDS FOR CONDITIONAL USE PERMITS (BOTH ADMINISTRATIVE AND HEARINGS BODY):

A use may be allowed provided the following requirements are met:

1. *Such uses will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use.*
2. *Will not significantly increase the cost of accepted farm or forest practices on lands devoted to farm or forest use.*
3. *Siting Standards for Dwellings and Structures in the EFU Zone. The following siting criteria shall apply to all dwellings, including replacement dwellings and structures in the EFU zone. Replacement dwellings may be sited in close proximity to the existing developed homesite. These criteria are designed to make such uses compatible with forest operations and agriculture, to minimize wildfire hazards and risks and to conserve values found on agricultural lands. These criteria may include setbacks from adjoining properties, clustering near or among existing structures, siting close to existing roads, and siting on that portion of the parcel least suited for agricultural uses, and shall be considered together with the requirements in § 4.6.240 to identify the building site. Dwellings and structures shall be sited on the parcel so that:*

   a. *They have the least impact on nearby or adjoining forest or agricultural lands.*

   b. *The siting ensures that adverse impacts on forest operations and accepted farming practices on the tract will be minimized.*

   c. *The amount of agricultural lands used to site access roads, service corridors, the dwelling and structures is minimized.*

   d. *And The risks associated with wildfires are minimized.*

Winter Lake Phase III Project Information in regard to Criterion Six

- *The Winter Lake Phase III project is designed to improve the drainage and irrigation capacity for the lands that are in the project area. Accordingly, the project goals will maintain or increase function for farming use. There is not forestry use on the project area. Project actions will not have offsite effects to neighboring properties.*

- *The project actions (reconstructed/new channels, culverts, water control structures) will provide infrastructure that will reduce the effort of the agricultural landowners to manage water levels that occur from flooding and rainfall on the pastures. In that context the cost to manage the lands will be maintained or reduced over current levels.*

- *No structures such as houses, barns, sheds, or other will be constructed as part of this project.*

Criterion Seven

SECTION 4.6.240, **pg 194** ***DEVELOPMENT AND USE STANDARDS***

Development Standards *All dwellings and structures approved shall be sited in accordance with this section.*

Winter Lake Phase III Project Information in regard to Criterion Seven

1). The Winter Lake Phase III project will not implement construction of houses, barns, or similar structures or roads, thus this Section 4.6.240, 1-9 are not applicable.

2. The project area has few if any trees, however, riparian sedges and grass vegetation will be impacted through excavation actions that will be used to construct channels, rebuild berms, and install new culverts. ODFW guidance for the project has been incorporated to develop tactics and strategies that minimize impacts to the riparian vegetation and wetlands. ODFW technical oversight is noted as an approved pathway for compliance with the county ordinance 4.6.240 (10)(d).

Criterion Eight

SECTION 4.11.125, **4.11.125(3), pg 228** ***SPECIAL DEVELOPMENT CONSIDERATIONS:***

The considerations are map overlays that show areas of concern such as hazards or protected sites. Each development consideration may further restrict a use. Development considerations play a very important role in determining where development should be allowed In the Balance of County zoning. The adopted plan maps and overlay maps have to be examined in order to determine how the inventory applies to the specific site.

Winter Lake Phase III Project Information in regard to Criterion Eight

Section 1, 2, 4, and 7 not applicable

Section 3. Historical, Cultural and Archaeological Resources, Natural Areas and Wilderness (Balance of County Policy 5.7): The Winter Lake Phase III project area has legacy berms/dikes that were constructed in 1908 and 1909 when the interior pasture canals were excavated (see DSL/USACE 404 Fill and Removal permit application). These berms have been altered repeatedly over the years through repair and additional excavation events. These berms will not be permanently altered in character or nature during rebuilding as the rebuilt sections will be blended in to match with those segments that need no repair.

Section 5. 5. Non-Estuarine Shoreland Boundary (Balance of County Policy 5.10)

- *Riparian Vegetation*
- *Wetlands under agricultural use*

The Winter Lake Phase III project is designed to reconstruct and install channels, replace existing culverts, and water control structures that will improve the wetland hydrology and facilitate a more functional level of pasture management. Riparian vegetation in the project area consists of sedges and grasses. These cover types and all channel adjacent vegetation will be benefitted by the more natural inflow/outflow tidal regimes that will be able to be incorporated as a goal of the project.

Section 6. Significant Wildlife Habitat (Balance of County Policy 5.6): The wetland pastures comprise the majority of the work area (other than berms). These pastures are able to serve as high quality habitat for juvenile anadromous fish. The current undersized culverts and lack of channel networks inhibit full wetland function and access for anadromous fish. This project has as a major goal incorporated features that will improve the access for juvenile anadromous fish to rear and feed in the wetland pastures. As such the project proposed actions fully support County Planning goals in Section 6 of 4.11.125, 4.11.125(3).

Criterion Nine

SECTION 4.11.217, pg 249; PROCEDURAL REQUIREMENTS FOR DEVELOPMENT WITHIN SPECIAL FLOOD HAZARD AREAS:

4. Other Development. Includes mining, dredging, filling, grading, paving, excavation or drilling operations located within the area of a special flood hazard, but does not include such uses as normal agricultural operations, fill less than 12 cubic yards, fences, road and driveway maintenance, landscaping, gardening and similar uses which are excluded from definition because it is the County's determination that such uses are not of the type and magnitude to affect potential water surface elevations or increase the level of insurable damages.

Review and authorization of a floodplain application must be obtained from the Coos County Planning Department before "other development" may occur. Such authorization by the Planning Department shall not be issued unless it is established, based on a licensed engineer's certification that the "other development" shall not:

a. Result in any increase in flood levels during the occurrence of the base flood discharge if the development will occur within a designated floodway. or,

b. Result in a cumulative increase of more than one foot during the occurrence of the base flood discharge if the development will occur within a designated flood plain outside of a designated floodway.

Winter Lake Phase III Project Information in regard to Criterion Nine

1). The Winter Lake Phase III project designs and proposed actions have been developed by ODFW, the Coos Soil and Water District, the Beaver Slough Drainage District, and are under review by an Oregon Licensed engineer. The Oregon licensed engineer is currently developing information to support the proposed designs do not have attributes or features incorporated into the project that will: a). Not raise the base flood discharge; and b). Will not result in a cumulative increase of more than one foot during the occurrence of the base flood discharge. (see attached floodplain certification).

Criterion Ten

SECTION 4.11.231, pg 255; ALTERATION OF WATER COURSES:

If a development application proposes a stream, creek or other water body relocation or alteration, Coos County shall:

1. *Notify affected cities and the State Coordinating Agency (Department of Land Conservation and Development – DLCD) and other appropriate state and federal agencies prior to any alteration or relocation of a water course, and shall submit evidence of such notification to the Federal Insurance Administration at the following address (or if the office moves, at any subsequent address):*

   Federal Insurance Administration
   500 C Street SW

   Washington, DC 20472

2. *Require that maintenance is provided within the altered or relocated portion of said water course so that the flood carrying capacity is not diminished.*

Winter Lake Phase III Project Information in regard to Criterion Ten

Note: The Winter Lake Phase III project will realign tidal/drainage channels, however, they are within the control and upstream of the Winter Lake Beaver Slough Drainage District C3P tidegate. As such the realignment of drainage networks is subservient hydrologically to that tidegate structure and the associated Water Management Plan.

- *The project will install numerous additional on grade channels within agricultural wetland pastures that follow historical tidal channel paths and provide hydrologic connectivity that mimics conditions that were present pre-European settlement.*
- *These channels and increased culvert sizes on pasture channels will provide for improved pasture drainage and designs have been evaluated to not have potential to raise the floodflows as is specified with FEMA guidelines.*
- *There will not be impacts to adjacent properties associated with the project actions.*
- *Channels and culverts will increase the outflow capacity improving hydrologic function. Channels will be inspected by landowners annually for drainage function and if there is an accumulation of material that needs cleaned it will be addressed.*

ATTACHMENT B

Exhibit 1 Krall Comments

Exhibit 2 Hempstead Comments

Exhibit 3 Verna Rose Testimony ACU-23-...

Exhibit 4 Waterman Ranch comments

Exhibit 5 Olson - Testimony

Exhibit 6 Hopmans-Vandereek Comments

Exhibit 7 Jackson comments

Exhibit 8 Graham Comments

Exhibit 9 Verna Rose Testimony 3-14-24

Exhibit 10 Coquille Indian Tribe

Exhibit 11 AMAC

Exhibit 12 Nikki Harris- VDCI

Exhibit 13 Trout Unlimited

Exhibit 14 Team Responce

Exhibit 15 Chris Claire

Exhibit 16 Verna Rose

Exhibit 17 Mark Villers Testimony (Coos S...

Exhibit 18 Grant

Amy Dibble

From: Catherine Krall <cathyewelch@aol.com>
Sent: Wednesday, February 21, 2024 1:50 PM
To: Planning Department
Subject: Notice of Coos County Public Land Use Hearing

This Message originated outside your organization.

We are owners of property located directly across from the acreage included in Winter Lake Phase III. Expansion of the project will further exacerbate the mosquito problem making it impossible for Coquille residents to enjoy any outdoor activities from the beginning of August and into fall of the year. It is our position that no further expansion should be taken until the mosquito problem that was created by the first part of the project is resolved.

John Krall
Catherine Krall
57926 Johns Dr.
Coquille, OR 97423
541-290-6255

Amy Dibble

From: Benny Hempstead <bennyhempstead@gmail.com>
Sent: Wednesday, February 21, 2024 5:21 PM
To: Planning Department
Subject: Winter Lake Phase 3 project

This Message originated outside your organization.

Hello, Board of Commissioners,

Regarding: Notice of Public Use Land Hering; Item A File # ACU-23-074/FP-23-012

I own tax lot 2300 Industrial / EFU, The Old Chromite Mill. I have received a notice of a meeting in regards to future work to be done in the area surrounding my property in three directions: north, south, and west.

A few years back there was a project immediately west of my Tax Lot 2300, on Tax Lot 2100 owned by ODFW. The project lowered the dike on the west of what was referred to as The Old Luckman Parcel on Tax Lot 2100, opened up areas of the dike and installed two bridges allowing waters from the channels west of the dike to flow onto and flood the easterly areas of Tax Lot 2100, and deepened the water channels significantly from the main channel under bridges, and throughout the Old Luckman Parcel (now owned by ODFW).
That project has permanently damaged my EFU land by allowing the flow of water through Tax Lot 2100 to flow on to my Tax Lot 2300, as a dike or berm on the east side of Tax Lot 2100 abutting my property was never constructed. Water that never reached my parcel is now allowed to flow freely and flood. No effort to prevent flooding on parcel 2300 was attempted.

I am writing this letter to notify the Board that I do not approve any work to be done on or through Parcel 2300 which could create flooding, deposits of soils, or modify water flows. Additionally I am not in favor of projects adjacent to my property that could now or in the future possibly cause damage or a loss of value to, due to activities created from any private project, permitted project, or Agency projects/work. I am in support of projects such as restorations of lands designated for such projects, however I am not a supporter of over-reach of State or Federal agencies making significant modifications which create a negative impact on private properties. I have a financial stake in the development of this land.

It is my hope that ODFW would provide the required water dike on the westerly side of my land to protect my parcel 2300 from previous projects. The same for future projects as to the one being given notice to.

"Anyone entering a signed petition(s) into the record is responsible for providing individual notice to the signee(s) of the petition(s). Please be aware that failure to raise an issue prior to the close of the evidentiary record, in person or by letter, or failure to provide statements or evidence sufficient to afford the decision makers an opportunity to respond to the issue, precludes appeal to the Land Use Board of Appeals based on that issue. An appeal of a Hearings Body decision shall be made pursuant to Article 5.8 of the CCZLDO.

Further explanation concerning any information contained in this notice can be obtained by contacting the Planning Staff members at (541) 396-7770, or by visiting the Planning Department Website. This notice was posted, mailed and published."

I raise concern that any such project could adversely impact adjacent properties. A recommended potential impact study including surveys of all adjacent properties be completed to ensure such activities are contained within the proposed work boundaries and ensure the adjacent lots are not affected,.along with post construction survey and verification. I request additional information providing the full parameters for the proposed activities be provided specifying the grades and water flows at all lot boundaries.

Sincerely,

Benny Hempstead
541-297-5600

Verna L. Rose

58392 Garden Valley Road

Coquille, Oregon 97423

Coos County Community Development

250 North Baxter Street

Coquille, Oregon 97423

Response to ITEM A-File ACU- ourout23-074/FP-23-012

I oppose any changes in the remove of a

Land out of Beaver Slough Drainage District for any reason unless they honor my request and remove my land from this District. I was told numerous times that all I, have to do is summit the request and would be removed. That was done to the Drainage District guidelines, many years ago. All kinds of delays of answers such as, not working on that now, not on the agenda. Even one statement we can't change the acres in a district. It's not fair to each landowner that the big landowners have all the control over the all the lands. The financial impact of levying bonds and how tax money only goes to the larger landowners on the West side of route 42. The landowners on the East side of route 42, only get to pay taxes to district, without any benefit. The Broad of directors on many occasions have stated openly they will not ever do anything for landowners on the east side of route 42. This isn't a fair district. These landowners have rights or say. I've paid taxes for decades to this district. I've submitted my request to be removed from this district so if you grant their request then you should honor my request for removal. Beaver Slough Drainage District which were submitted all the paperwork but didn't process them. There were other landowners who submitted the forms to their guidelines.

SO, NO MORE BENEFITS FOR THE BIG LANDOWNERS ON THE WEST SIDE OF ROUTE 42 IN THE DISTRICT. NO REMOVAL OF LANDS EVEN FOR WILDLIFE TRUST. Unless other individuals get their land out of the Beaver Slough Drainage District and their tax control and land control.

I would guess this is part of estate planning on the part of the large landowners and not just wildlife preservation. Also, they have used that land for income properties and their homes are not on them. Larger landowners paid a different tax base than the small landowners. My taxes paid to the drainage hasn't benefited me at all in over 50 years from this district. I do not want to still pay taxes to this district for the remaining landowner or owners on the west side of route 42. They were supposed to let the landowners out and repay the taxes and remove us from the Large Bond they voted in that the small land owner could stop. Get me out of this self-serving large landowner district. This is my home with land in a district that cost without help from them. The land west of 42 in the valley, large landowners are doing commercial business, as at until now that want to put it into wildlife trust.

This change isn't any benefit to me at all. Since they have been, doing their changes in the past few years. There has been more insects and mosquitoes than ever. My father used to say," wow you don't have flies or mosquitoes, I'm surprised you living so close to ocean".

I pray, my comments don't go to deaf ear and but go to ones that can hear what is fair to other landowners and not vote for their request without the Beaver Slough Drainage District releasing me and others from the district as they said they would.

Sincerely,

Verna Rose

February 23, 2024

Coos County Planning Department
2250 North Baxter
Coquille, Oregon 97423
Emailed to: planning@co.coos.or.us

RE: File # ACU-23-074/FP-23-012: Winter Lake Phase III

Dear Coos County Planning Department and Coos County Board of Commissioners:

We have a house on North Bank Lane and property in the Coaledo Drainage District. Thank you for the public meeting notice and the opportunity to comment on the proposed Winter Lake Phase III.

After reviewing the application, it makes me wonder if this is all pre-wetland work under the guise of irrigation, water quality and fish habitat. Oregon Department of Fish and Wildlife already is moving forward with acquisition of the Bridges Foundation property. The attached "Attachment A, Figure 12b" shows, in black and white, a considerable amount of grazing land will be removed from production to build channels but it does not show the fence and planting buffers which take up more grazing land in the project area. What agriculture producer can afford such a loss of forage land if your heart is truly for agriculture?

Since I have a rental house near the proposed project, my major concern is mosquitos. The numerous "hydrologic bulbs" being built throughout the project area are concerning. "At the endpoints of selected channels, 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." "Hydrologic bulbs at the terminus of larger channel networks that provide a small basinal low area excavated to provide fish habitat in winter and channel flushing to move any accumulation of sediments from the channel network." These excavated "bulbs" (approximately 22 of them) will be filled with water during irrigation and rain events (Figure 12 & page 45 of 81). The concern is that the bulbs will retain water during hot summer weather especially after irrigation events and the water pools (bulbs) will enhance mosquito habitat. **No one wants more mosquitos.**

It has been mentioned that "parrot feather" is choking the waterways in the wetland. Its dense growth provides a breeding ground for mosquitos and it can degrade both water quality and habitat for fish and wildlife. There is concern with the potential for spread of this invasive on lands adjacent to the CVWA wetland. Where did the parrot feather come from? Could it have been brought in on the equipment used for the Unit 2 restoration or could it have been planted in the wetland?

My recommendation is the Board of Commissioners and/or Coos County Planning require the following "conditions" on this Application:

1) ODFW should be required to utilize their CVWA Management Plan (mosquito section) and Vector Control Guidance for Sensitive Areas policy to treat the mosquitos in the existing wetland. BTI is one tool.

2) BSDD landowners, Bridges Foundation, and ODFW should also be required to ensure all hydrologic bulbs have connectivity to the channels. The hydrologic bulbs should be designed to drain completely after each irrigation event to reduce the creation of more mosquito habitat.

3) Invasive species (parrot feather and others) in the project area need to be eradicated prior to the beginning of the work. All equipment must be thoroughly cleaned and free from invasive species prior to entering the site.

Who wants to rent a house or live in an area where mosquitos are creating such a huge issue? No one wants a rerun of the Bandon Marsh which was a concern of many when the ODFW presented the CVWA wetland to the public. These mosquito outbreaks have the potential to reduce the property value in the area. They have a huge impact on the lives of the people who actually live in the area. I have attached the article on the West Nile Virus which was news during the mosquito outbreak in Bandon. Wetlands are not compatible with rural residential and ranching community.

Thank you for your consideration.

Respectfully,

Sharon Waterman

Sharon Waterman, Landowner

Attachments: A, Figures 12b and 12 from DSL Joint Permit
Hydrologic Bulb Layout Cross-Section
Winter Lake Phase III; Tidal Restoration Project, TARP, Page 1
West Nile Virus article
Table I: Fish sampling summary

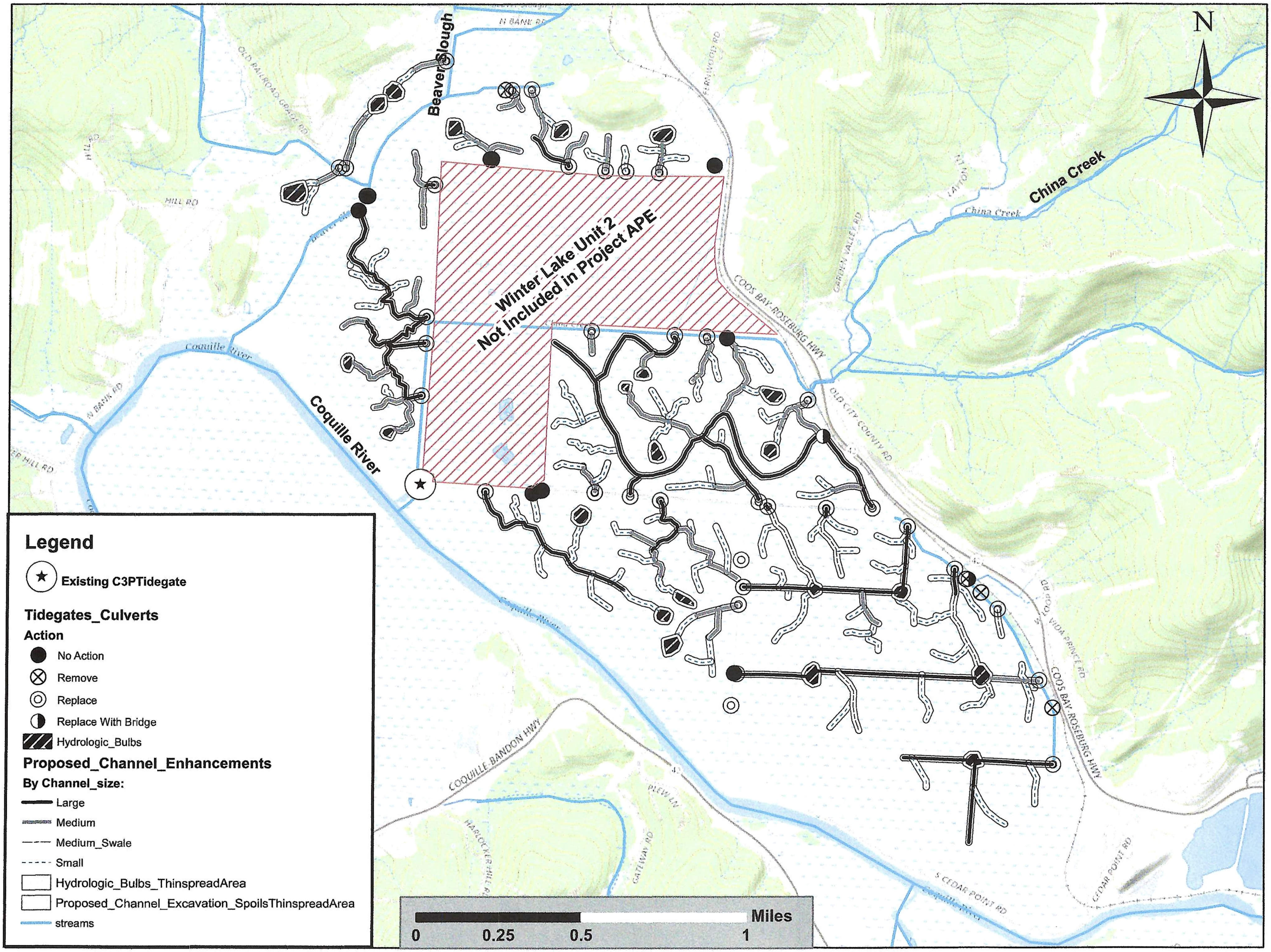


Figure 12.b Geographic Extent of Excavated Spoils

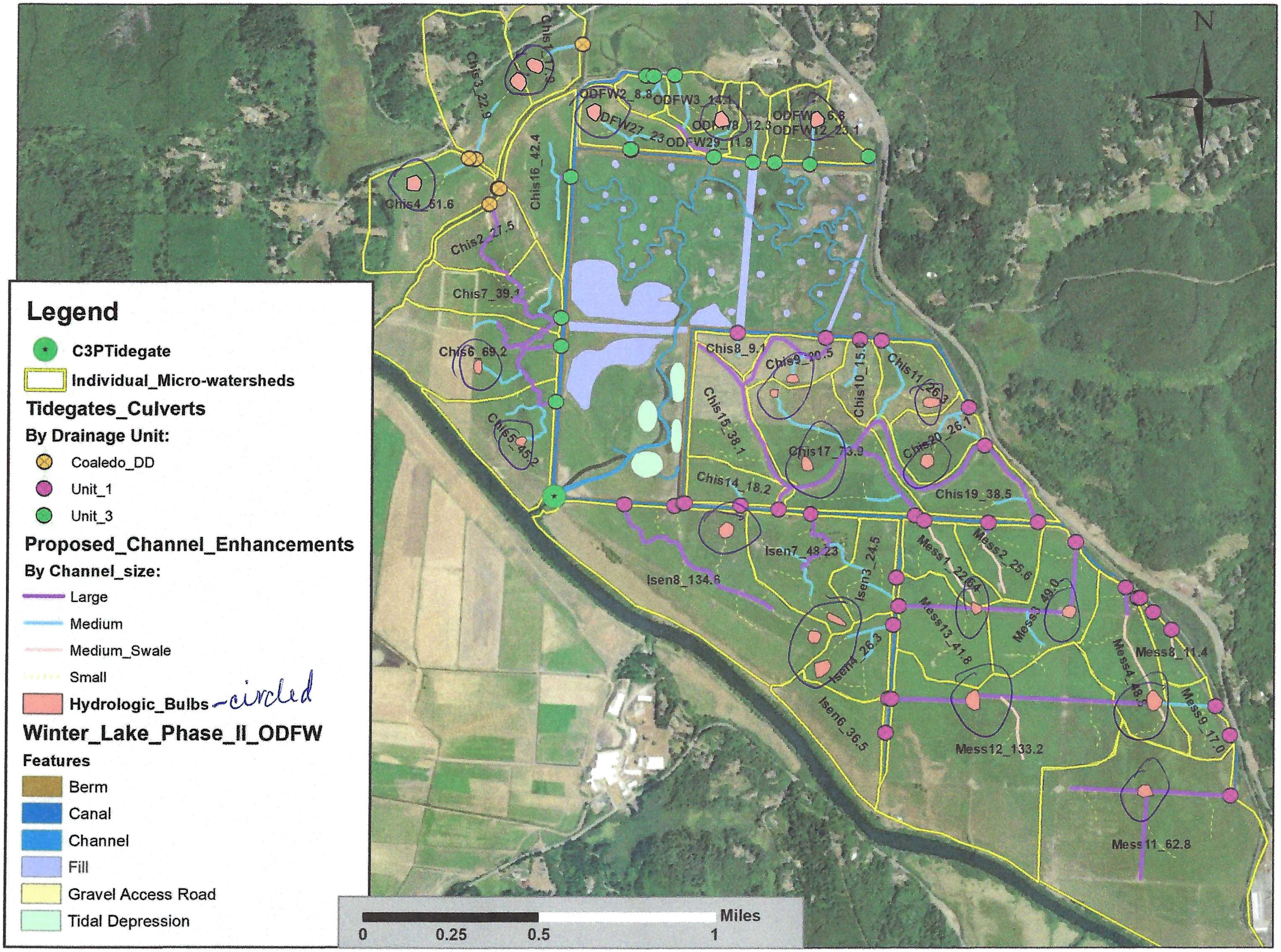
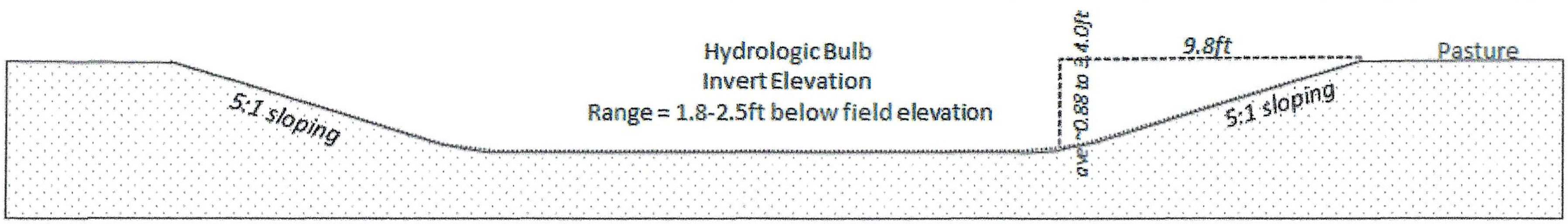


Figure 12. Individual micro-watersheds associated with culverts and proposed channel enhancements

Hydrologic Bulb Layout Cross-Section

Hydro Bulb I.D.	Channel Connect Size	Distance frm Connect Chan (ft)	NAVDD88 Invert (ft)	Field Elevation (ft)	Excavate Depth (ft)	Acres	Sq ft	Excavate Volume CY
Isen8a2	Small	3,995	2.5	3.85	1.35	0.73	31,799	1,827
Mess1a2	Medium-S	1,571	1.8	4.35	2.55	0.7	30,492	3,112
Mess11d	Large	1,250	2.5	4.67	2.17	0.74	32,234	2,841
Mess1c2	Large	1,075	2.5	3.84	1.34	1.19	51,836	2,883
Isen7a3	Small	2,137	2.0	4.27	2.27	0.61	26,572	2,511
Mess2a	Large	1,215	1.8	2.99	1.19	0.46	20,038	1,081
Chis5b	Medium	837	2.1	3.74	1.64	0.43	18,731	1,331
Chis19c3	Small	688	1.8	2.88	1.12	0.8	34,848	1,686
Chis20c	Small	1,130	1.8	2.91	1.11	0.76	33,106	1,604
Chis5d	Medium	895	2.0	5.39	3.39	0.39	16,988	2,311
Chis19c	Small	1,500	2.3	4.33	2.03	0.28	12,197	1,071
Chis7c	Medium	902	3.5	4.79	1.28	0.47	20,473	1,172
Chis12b	Small	550	1.8	3.14	1.34	1.12	48,787	2,675
Mess1e	Small	880	2.5	3.96	1.46	1.14	49,658	2,990
Isen4a2	Small	1,333	2.0	4.62	2.62	1.05	45,738	4,631
Isen8d	Small	732	2.5	3.65	1.15	0.92	40,075	1,972
ODFW12a	Medium	655	1.0	2.71	1.71	1.2	52,272	3,627
ODFW3a	Small	422	1.0	2.89	1.89	0.94	40,946	2,866
ODFW27a:	Small	230	1.0	3.23	2.23	0.941	40,990	3,666
Chis1b	Small	377	1.5	3.82	2.32	0.94	40,946	3,790
Chis4b	Small	338	1.5	4.18	2.68	0.85	37,026	3,939
Chis3c	Small	516	1.5	4.94	3.44	1.9	82,764	10,921
			Totals			*18.56*	*808,517*	*64,505*



Prepared by Winter Lake Phase III Team
ODFW, BSDD, and Coos SWCD

Sheet 26 of 26

Winter Lake Phase III
Tidal Restoration Project

Tidal Area Restoration Programmatic
(TARP)
Project Design Criteria - General Construction Measures Assessment

Christopher W. Claire; Oregon Dept. of Fish and Wildlife
and
Caley Sowers; Coos SWCD
02/03/23

Project Summary
The Winter Lake Phase III Tidal Restoration project developed by the Coos Soil and Water District has been specifically designed tomaximize ecological uplift while retaining early summer/summer/fall pasture grass farming operations. The site located at RM 20.5 in the Coquille River estuary. The project area is upstream of the C3P tidegates and C3P provides the overarching water control under the Beaver Slough Drainage District (BSDD) NMFS/ODFW water management plan. The land area, 1,290 acres below elevation 8.0ft and two pastures comprising 99 acres) within the Coaledo Drainage District (CDD) were historically a tidal forested freshwater complex with elevations that were predominantly below elevation 8.0ft. The project area has complex hydrology dominated by tidal amplitudes in dryer months, however, heavily influenced by rising river levels and floodwater in winter. The site plant species historically included red alder (Alnus rubra), however, predominantly Oregon ash (Fraxinus latifolia) and willow (Salix spp.). Vegetative species typified by slough sedge (Carex obnupta), small fruited bullrush (Scirpus microcarpus), and bur reed (Sparganium Americanum). This vegetative community would have in turn provided a strong detrital macroinvertebrate energy source. The site conditions as examined by LiDAR imagery indicate that there were substantial tidal channels penetrating the project area from the mainstem Coquille Riverprior to human alteration. These channels would have provided the rearing habitat for native salmonid and estuarine fish to feed within the marsh plain on the heavy loading of macroinvertebrate food items that were produced. In 1907-1908 pathways were cleared through the wetland forest, a new exit location was excavated through the Coquille River natural levee, tidegates were installed, the land area was drained during dry months and burned to create grazing land pastures.

The Project Team has proposed installing over 90,000ft of new/reconstructed channel. The project will address 42 aging culverts with fish passage obstructive top-hinged tidegates. These culverts are placed to provide for individual water management precision through interior low elevation berms. Culverts will be upsized to appropriately meet the site hydrology (see Hydrologic Assessment). Tidegates will be replaced with side-hinged aluminum tidegates fitted with devices to allow doors to be held open in the fall/winter/early spring allowing for maximization of fish passage into reconstructed channels. The full network of channels upstream of C3P main tidegates is under the BSDD Water Management Plan. Overall the project is anticipated to have a substantive ability to increase access for juvenile coho production and other native fish compared to the current conditions.

West Nile infects Bandon man

■ Health officials urge protection, not panic

By Daniel Simmons-Ritchie
The World

NORTH BEND – An elderly Bandon man has become the first person in Coos County history to be infected with West Nile virus.

The man, and a woman in Malheur County, each were confirmed to have the illness Tuesday by health officials. The pair are Oregon's first human cases since 2009.

Lena Hawtin, Coos County's communicable disease co-ordinator, said the Bandon man was bitten by a mosquito near his home last month. He later experienced muscle weakness and was diagnosed at Oregon Health and Science University in Portland.

Hawtin said he is expected to fully recover.

"I talked to him yesterday," she said.

"He seemed like he was doing better. He was able to talk, and it seems like he's doing pretty good."

County first

Oregon joins a national surge in infections of the mosquito-borne virus. The Centers for Disease Control and Prevention says this year's outbreak is on track to be America's worst.

Hawtin said, with only one reported case in Coos County, it is unclear how pervasive West Nile virus is among local mosquitoes.

Although human infections in Oregon are rare, the virus is found each year in a small number of

SEE WEST NILE | A8

WEST NILE

Continued from Page A1

birds and mammals.

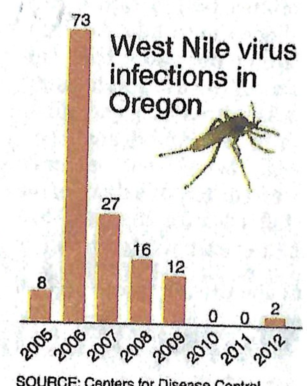
Hawtin said residents should remain cautious but calm. Eighty percent of those infected show no symptoms. Others experience only mild fever, headaches, or nausea.

In less than 1 percent of cases, the disease can cause convulsions, disorientation, and affect the central nervous system.

Elders at risk

Hawtin said the Bandon man and the Malheur County woman were more likely to experience severe symptoms because they were older than 49. Elderly people generally have higher blood pressure and weaker immune systems than the general population.

Frances Smith, the county's public health director, says the virus would likely have spread to Coos County mosquitoes through migrat-



SOURCE: Centers for Disease Control and Prevention
By Jeff Trionfante, The World

How to protect against mosquitoes

- Eliminate sources of standing water that are a breeding grounds for mosquitoes, including watering troughs, bird baths, clogged gutters and old tires.
- When outdoors at dusk or dawn when mosquitoes are most active, protect yourself by using mosquito repellents that contain DEET (N,N-diethyl-meta-toluamide), oil of lemon eucalyptus, or picaridin, and follow the directions on the container.

Table 1. Fish sampling summary from the Dec 2020-May 2021 sampling season.

	Mainstem Sampling	Cochran[1]	Seestrom	Beaver Creek	Beaver Creek Captured, Transferred to Unit 2	Winter Lake, Unit 1[2]	Winter Lake, Unit 2[3]	Winter Lake, Unit 3
# of Sampling Events[4]	9	6	7	11	4	0	19	6
Total coho caught	54	502	570	1045	137	0	67	1
Total coho tagged	54	139	271	428	137	0	62	1
Total Chinook caught	5	20	34	0	n/a	0	41	0

1 - The first sampling event (12/11) caught 0 coho, the 4th sampling event (2/25) caught few coho because a nutria had chewed a hole through the hoop trap

2 - No trapping was completed in Unit 1 and no detections were made by the PIT array on the tide gate for tagged fish entering the site

3 - Water levels were high during trapping events, causing low densities of coho and low trapping efficiency. See ODFW Winter Lake Volume Analysis for further information.

4 - Sampling events consisted of seining (beach or purse) and hoop traps. The number of hoop traps varied between 1 and 5, CPUE was not calculated for this chart.

A total of 21 other species of fish and aquatic organisms were captured in addition to coho, listed in Table 2. Winter Lake Unit 2 had the highest number of non-native fish species, a total of 1,051 bullhead catfish *(Ameiurus nebulosus)*, 3,287 bluegill *(Lepomis macrochirus)*, 283 yellow perch *(Perca flavescens)*, and 269 largemouth bass *(Micropterus salmoides)*. All are competing for food with coho juveniles while the large non-native fish are considered a potential predator on coho juveniles. Pacific lamprey *(Entosphenus tridentata)* were captured in all Units of Winter Lake, including flooded pastures of southern Unit 1 (Cedar Pt 2). All Pacific lamprey caught, a total of 6, were ammocoetes.

A surprisingly high number of juvenile fall Chinook salmon were caught at all three tide gated project sites starting in April. During the planning phase of these restoration projects it was hypothesized juvenile fall Chinook would not use these restoration sites heavily, because they typically reside in larger channels. During the last sampling event at each project site only Chinook were captured using a beach seine and they were also the last PIT tagged salmonids to leave Winter Lake.

February 22, 2024

Coos County Planning Department
2250 North Baxter
Coquille, Oregon 97423

RE: File # ACU-23-074/FP-23-012: Winter Lake Phase III

Dear Coos County Planning Department, Planning Commissioners and Coos County Board of Commissioners:

I would like to thank you for the opportunity to comment on the Winter Lake Phrase III project application by Coos Soil Water Conservation District. I am a landowner in the Beaver Slough Drainage District and as a resident in the area, I do not want any projects which have the potential to increase the mosquito issues we are facing.

This project includes hydrologic bulbs which I believe need to be designed to drain after each irrigation event by the district so that it won't create more mosquito habitat if water is left in the bulbs during the warm summer weather.

I am against any expansion of the Coquille Valley Wildlife area and a portion of this project includes agriculture land targeted for acquisition by ODFW. ODFW has not been good neighbors. From the beginning of the Winter Lake wetland project, Beaver Slough Drainage District, Oregon Department of Fish and Wildlife and The Nature Conservancy assured us there would be no mosquito problems. As residents of the area, our lives are awful during the summer and fall due to the mosquitos. This is a new problem since the wetland project was completed. Mike Gray told us the ODFW has a stock pile of BTI but they haven't used it.

Coquille Watershed said "parrot feather" is choking the waterways in the wetland. The literature says "dense growths of parrotfeather provide breeding areas for mosquitos and will degrade both water quality and habitat for fish and wildlife."

Mosquitos carry diseases. They are impacting our physical and mental health by forcing us to stay indoors during the fly-off times during the summer and fall. Mosquitos are a hazard to drivers when mosquitos are flying around inside their cars.

Solutions: According to the ODFW Vector Control Guidance for Sensitive Areas, there is a process to resolve the mosquito problem.

The Board of Commissioners and/or Coos County Planning needs to ask for "conditions" on this Application: 1) Require the ODFW to utilize their <u>Vector Control Guidance for Sensitive Areas</u> as a guideline to treat the mosquitos in the wetland, 2)BSDD landowners and Bridges Foundation or ODFW should also be required to ensure the drainage of the hydrologic bulbs after each irrigation event to reduce the creation of more mosquito habitat, 3)Any invasive species in the project area need to be eradicated and all equipment is cleaned and free from invasive species prior to construction.

Thank you for your consideration.

Respectfully,

Gail Olsen

Gail Olsen
Garden Valley Landowner

Eric Olsen ERIC OLSEN
Garden Valley landowner

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

FACT SHEET

Freshwater Aquatic Invasive Species in Rhode Island **November 2017**

Parrot Feather

Parrot feather has rubbery leaves that stay in their form out of the water.

Parrot feather can take over a shallow pond.

Species Description and General Information

Parrot feather (*Myriophyllum aquaticum*) is a rooted aquatic plant that colonizes slow moving, nutrient rich waters. Stems rooted in the substrate grow through the water and emerge at the surface, sticking up above the surface at heights 1 inch to 1 foot in the air. Emergent leaves are bright green to bluish green and have a waxy surface. Leaves measure 1/2 inch to 2 inches long, and look like a feather divided with 6-18 leaflet pairs along the main vein of the leaf. Leaves are arranged around the stem in whorls of 4-6 leaves. Leaves are stiff and maintain shape out of water like plastic fish tank plants. Submerged leaves are slightly smaller than leaves above the water and have 10-15 leaflet pairs if present. Inconspicuous flowers form in the axils of emergent leaves. Only female flowers are present in the United States, restricting reproduction exclusively to fragmentation.

Why is Parrot Feather Considered an Invasive Species?

Because it reproduces easily by fragmentation, parrot feather can easily spread to new locations. It may establish itself in a new waterbody with only a small piece transported by birds or wildlife, or stuck to fishing gear, or boats, or trailers. Invasives grow in large abundances to quickly displace native plants, by competing for space, sunlight and nutrients. Plants can become a nuisance for recreational activities such as boating, fishing and swimming, and can slow water flow, making a breeding ground for mosquitoes.

How Did Parrot Feather Become Established in Rhode Island?

Parrot feather is native to South America. Due to its attractiveness, it was likely first introduced to the United States as an aquarium or water garden plant that escaped cultivation or was dumped into a natural water body. Parrot feather was first observed by DEM in Rhode Island at Pocasset Pond in Johnston Memorial Park, Johnston, RI in 2009. Once introduced to a water body, plant fragments carried by currents, waterfowl or boats can spread the infestation throughout a water body. Because of its robust stems and waxy leaves, plants can survive for long periods of time out of water. Thus, fragments attached to boats, trailers or fishing gear can be transported over long distances and introduced into new water bodies.

What Methods Can Be Used to Control Parrot Feather?

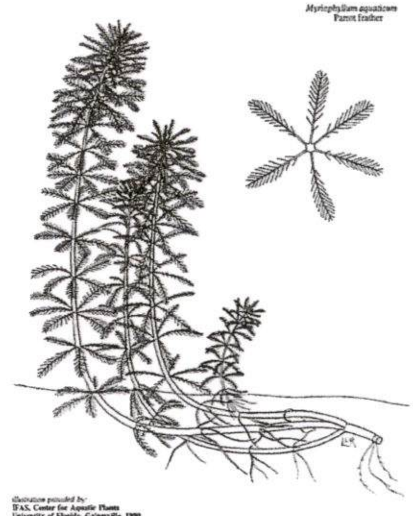


illustration provided by:
IFAS, Center for Aquatic Plants
University of Florida, Gainesville, 1990

Due to its ability to reproduce through fragmentation, physical control of parrot feather is limited. Mechanical cutting or harvesting can spread plant fragments in a water body, unintentionally exacerbating the infestation. Hand pulling small patches may be effective if entire plants are removed. By law, the manual removal of submerged aquatic vegetation is restricted to that area adjacent to, but no more than fifteen feet from, existing or permitted docks, beaches or swimming areas under the Fresh Water Regulations (Rule 6.02). Manual plant removal outside this area requires a DEM wetlands permit (contact RIDEM Water Quality and Wetlands Restoration Team).

Parrot feather is adapted to water level fluctuations and is known to survive on wet river banks and lake shores. Water level draw downs are not an effective control option.

Chemical control of parrot feather is difficult as the waxy coating of the emergent leaves is difficult for herbicides to penetrate. Thus, eradication of parrot feather in a water body is unlikely once established. Several herbicides demonstrate potential for partial control. The DEM Division of Agriculture licenses the applicators that can apply federally regulated herbicides to treat target invasive plants. Each herbicide treatment requires a specific permit from the Division of Agriculture. The most appropriate means of selecting a specific treatment plan is to consult a lake manager or licensed herbicide applicator, who can provide treatment options and estimate the associated costs. A more detailed survey of the entire water body will likely be needed to develop the most effective and cost efficient long-term management plan.

Google

mosquito habitat and parrott feather

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About 1,230,000 results (0.47 seconds)

Showing results for mosquito habitat and ***parrot*** feather
Search instead for mosquito habitat and parrott feather

Dense growths of parrotfeather provide breeding areas for mosquitoes and will degrade both water quality and habitat for fish and wildlife. It fouls intakes used to supply municipal drinking water and irrigation and becomes a navigation hazard. Parrotfeather should never be introduced to open waters.

NC Dept. of Environmental Quality (.gov)
https://www.deq.nc.gov › about › water-supply-planning

Parrotfeather (Myriophyllum aquaticum) - NC DEQ

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Parrot-Feather (Myriophyllum aquaticum)

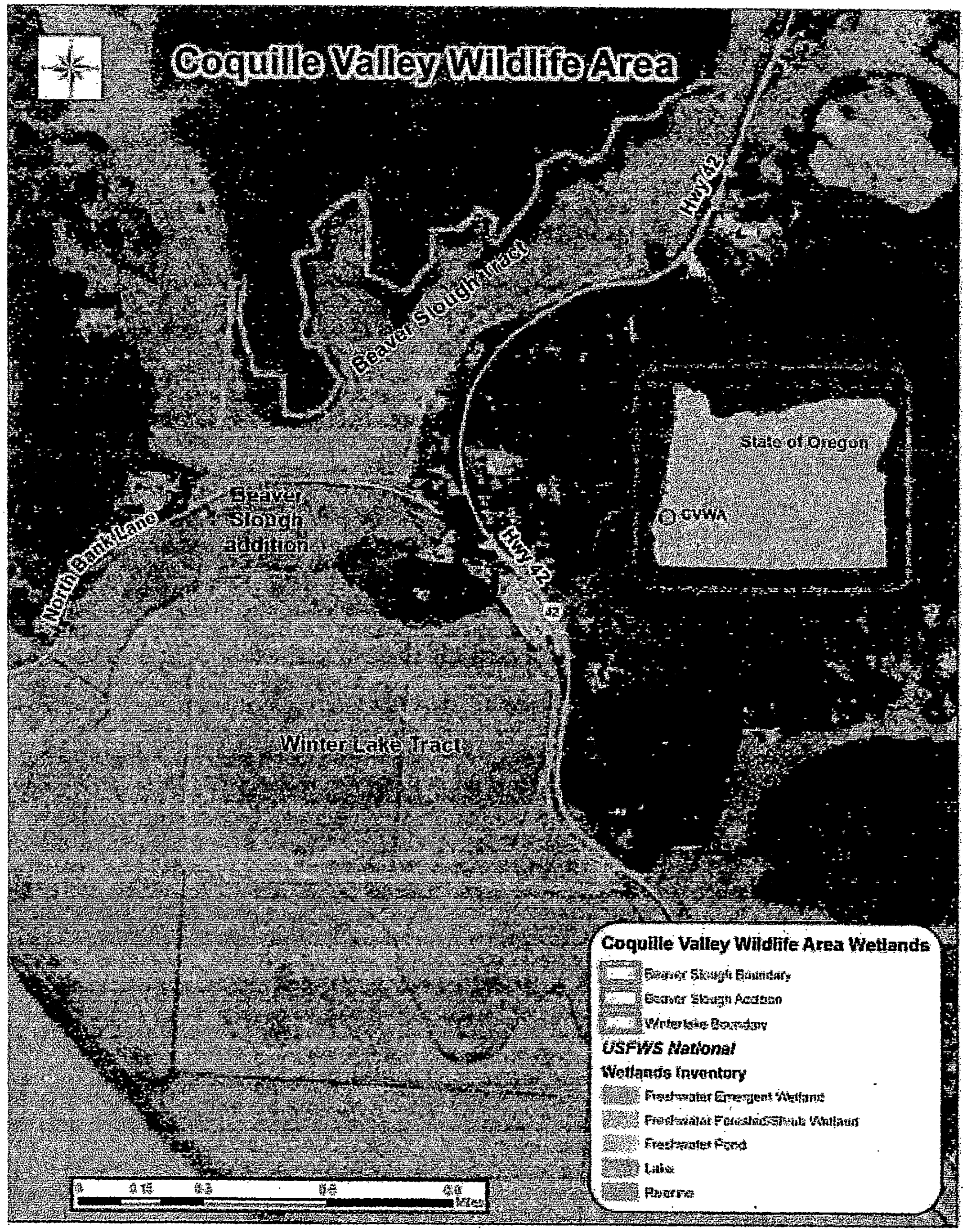
It can form dense mats and compete with native aquatic plants, especially in shallow ponds. It also provides **habitat for mosquito larvae, impedes** boats and ...

Coquille Valley Wildlife Area Management Plan

April 22, 2016

Oregon Department of Fish and Wildlife
4034 Fairview Industrial Drive SE
Salem, OR 97302

Figure 1. Coquille Valley Wildlife Area, including wetland habitat designation from USFWS National Wetlands Inventory.



Monitoring Section

winter and spring (early December through May). Monitoring will provide a better understanding of migration patterns through and within CVWA, abundance, changes to fish species composition over time and the quality of habitat.

Although the fish monitoring plan is not yet finalized, the following is a list of parameters that will likely be monitored:

- water temperature,
- dissolved oxygen (DO),
- water velocity,
- riparian shading,
- pool availability,
- large wood availability,
- fish passage,
- relative fish abundance,
- species composition.

Fish biologists have established index sites for evaluating fish use based on habitat types and will establish basic monitoring protocols. Continued monitoring efforts will be overseen by UWD. Fish habitat parameters such as water quality and dissolved oxygen can be monitored using passive data loggers. These have been deployed and are periodically downloaded by UWD.
Fish use and presence is monitored through a variety of collection methods, depending on the sites selected and effectiveness of techniques. Methods have included (and likely will continue to include) the following; electrofishing, beach seines, fyke traps, hoop traps, or other nets/traps. Some of the work may be conducted by contractors, graduate students, researchers, or other entities like watershed councils. ODFW is seeking funding and outside expertise to develop and implement scientific studies evaluating both habitat change and fish response to restoration efforts.

Plants
Vegetation photo points are useful for documenting vegetative response to restoration activities. Photo points have been established in Winter Lake Tract to document the progress of restoration activities. Measurements of tree height in areas of vegetative plantings may be established to monitor seedling establishment and survival of willow, ash and other tree and shrubs. These photo points and surveys may also be used to identify exotic plants and direct removal efforts.

Wildlife
Shortly after CVWA lands were acquired by ODFW, wildlife surveys were initiated to begin documenting species and relative abundance of individuals using CVWA lands. These surveys were point count surveys of wildlife species along specific survey routes. These surveys will continue for the life of this plan on a quarterly basis. (See Appendix 1)

Ground-based point count surveys along two transects (one in Beaver Slough and one in Winter Lake) will be conducted to document water bird and other wildlife use of the project area. During these surveys, we will record wildlife species and approximate number of individuals seen. Twelve surveys will be conducted in different months to represent wildlife use during all seasons of the year. After each monthly representative survey has been accomplished, these surveys will continue as quarterly surveys to monitor wildlife response to habitat restoration efforts. Wildlife surveys began before the initiation of restoration activities in Winter Lake Tract and will continue through the life of this plan.

Burrowing and feeding activities by some wildlife (beaver and muskrat) can damage berms, and tree and shrub plantings as well as neighboring private property. Beaver and muskrat populations will be monitored as part of a population management program.

Wildlife Diseases

ODFW will cooperate with the Coos County Health Department and the USFWS to monitor wildlife diseases. Animals showing signs of disease may be tested as they are reported by the public or ODFW depending on the suspected disease involved. Wildlife diseases that may occur in the project area include West Nile Virus (*Flavivrus sp.*), Avian Influenza (*Influenza*), Avian Botulism (*Clostridium botilinum*), Avian Cholera (*Pasturella multocida*), Deer Hair Loss Syndrome and others. ODFW district bioloigsts will coordinate as appropriate with the ODFW veterinarian to respond appropriately to disease issues that arise.

Mosquitoes

Restoration and management of the CVWA are being planned to minimize the possibility of enhancing mosquito populations. ODFW and our restoration partners have consulted with mosquito experts who indicate that proposed management should not create an abundance of salt marsh mosquito (*Aedes sp.*). However, some mosquitoes may respond to the restoration of aquatic habitats on the CVWA. If mosquitos do become an issue, we will follow the ODFW Vector Control Guidance for Sensitive Areas (February 13, 2014).

Engineering of the restoration project will ensure that all lands inundated with tide water will either drain on each tide cycle or will be connected daily with water in the channel on Winter Lake Tract where fish populations exist. This will cause mosquito larvae to be accessible by fish and other predators. Three-spined Stickleback and Mosquitofish populations exist in the waters of CVWA, and these fish are known to effectively reduce mosquito production. If any disconnected water bodies are inadvertently created during the restoration project, ODFW will connect these areas hydrologically in an effort to allow natural predators of mosquitos to access mosquito larvae. If this is not effective for controlling mosquitoes or if hydrologic connection is not possible for some reason, ODFW will release fish, such as Three-spined Stickleback, into these water bodies to prey on mosquito larvae.

Methods that have been successful in controlling mosquitoes at Bandon Marsh National Wildlife Refuge include the use of *Bacillus thuringiensis isreaelensis* (BTI) and controlling tidal inundation and connectivity in areas where mosquito reproduction is likely to occur. (William Bridgeland, USFWS Pers. Comm). BTI is a bacteria that kills mosquito larvae living in water bodies. Also, the ability to control the extent of tidal inundation on land can be useful in creating a situation that is not advantageous for mosquito reproduction (Dr. Daniel Markowski, Pers. Comm). ODFW intends to explore employing these techniques on CVWA to control mosquito reproduction and plans to monitor effectiveness through trapping mosquito adults and sampling larvae throughout the reproductive season on Winter Lake Tract as appropriate. Depending on need, ODFW may progressively use more aggressive means to control mosquitos.

Water Distribution

Water distribution will be monitored using wells, hydrographs, and water height gages placed in key locations. With neighboring landowner approval and coordination, monitoring sites may include neighboring lands.

Cultural Resources

The Coquille Valley is an area where a significant amount of historic and prehistoric human activity has occurred. Radio carbon dating of archeological sites found in the Coquille Valley indicates Native Americans were present and subsisting in the area at least as far back as 140 A.D. to 420 AD. Middens, or locations where shells and remains of wildlife used for human subsistence have been uncovered in the Coquille Valley, indicate that these people relied on the river, associated wetlands and estuary to find food. During the development of the Ni-les'tun Unit of Bandon Marsh National Wildlife Refuge, many significant archeological sites and objects were found which were related to the history of Native American people stretching far back into prehistory. ODFW is sensitive to the significance of these findings and is committed to preserving and protecting any archeological sites on CVWA. To detect and appropriately protect these sites, ODFW and project contractors will coordinate and consult with the Coquille Indian Tribe, the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians, and the Oregon State Historic Preservation Office.

European Settlement of the Coquille Valley

According to the book *A Guide to the Oregon South Coast History* (Douthit 1999), the first Europeans to settle the Coquille Valley did so in the late 1850s for the purpose of establishing small farms that produced a variety of crops. One of the major crops was hay with livestock such as cattle (*Boss sp.*) and pigs (*Sus sp.*) also being important products. Douthit noted, "By the mid-1890s, dairying had become next in importance to crop production." Douthit also state that "By

Comment – Coos County Board of Commissioners regarding Coos County Conditional Land Use Application: ACU-23-074/FP-23-012 Winter Lake Phase III project

Name: Jan Hopmans and Mieke Vandenreek

Mailing address: 1120 NW 17th street, Corvallis, OR 97330

For reasons outlined below, we ask for the proposal submitted by BSDD to be amended to consider inclusion of plans that would minimize mosquito invasions in Garden Valley, as the proposed expansion of habitat restoration in the Coquille Valley Wildlife Area (CVWA) would likely result in continued and increasing mosquito populations.

In 2015, we bought a 5-acre property at 58494 Garden Valley Rd, which is within the boundaries of the Beaver Slough Drainage District (BSDD). As a side note, for many years Garden Valley residents that own land within the boundaries of BSDD have petitioned to withdraw their properties from the boundaries of BSDD.

Let me start by stating that in principle we are very supportive of land restoration efforts such as in the CVWA, and in fact had plans initially to propose restoration of China Creek in Garden Valley (GV). However, our main concern is that since completion of the Unit 2 restoration, mosquitos have been a major nuisance and health issue in the past 4 years for the Garden Valley residents.

Over time, as I learnt about the restoration plan of Unit 2 of the Winter Lake area and the need to replace the tidal gate for better control of irrigation, flooding and drainage in the Winter Lake area. The construction of the new tidal gate was completed in the fall of 2018. Until that time, after my purchase of the GV property in 2015, there had been no mosquito issue at any time during those years. However, GV residents started complaining about the mosquito issue in August of 2019, the year after the completion of the tidal gate construction. We expressed concerns about this to the BSDD and speculated that it was caused by the restoration of Unit 2. We also inquired with ODFW and contacted with Chris Claire. He agreed that mosquitos are likely to breed in non-fish bearing breeding pools, through flooding of non-connected valleys. But he also indicated that it could be explained by the hot summer and the lack of strong summer winds that year.

Since 2019, the mosquitos have been a major issue starting in July of every year. Repeated complaints have not made any difference, and if anything, the mosquito invasions have increased and were of longer duration. Therefore, when learning about the expansion of the CVWA restoration to Units 1 and 3, is it my expectation that the mosquito problem in Garden Valley will become an even greater issue. It is therefore that I urge BSDD and ODFW to include assurances in their proposal to address the mosquito issue heads on in their application.

The lack of addressing the mosquito issue is contrary to the 2016 ODFW's five-year Management Plan of the CVWA that specifically addresses mosquitos and plans to minimize the possibility of increasing mosquito populations. In this Plan[1], it states that "some mosquitoes may respond to the restoration of aquatic habitats on the CVWA.' The same Plan states that "Restoration and management of the CVWA are being planned to minimize the possibility of enhancing mosquito populations." In their Plan, ODFW provides a series of solutions, including enhancing the population of mosquito-attacking fish such as Stickleback and Mosquito fish, after connecting nonflowing waters, so that this fish can prey on the mosquito larvae. If all else fails, ODFW stated to introduce bacteria such as BTI which was successful in controlling mosquitoes at Bandon Marsh. ODFW concluded in this 2016 Plan that "depending on need, ODFW may progressively use more aggressive means to control mosquitos". However, to our knowledge no or little action was taken by ODFW in the past years towards mitigating mosquito populations in the CVWA.

Regarding actions taken by the BSDD, their response has been that their ability to drain the Winter Lake area has been compromised by the faulty tidal gate not allowing to control water drainage when needed. In their responses, they have stated that much improved water level management will be possible after the tidal gate's repair, hopefully this year.

To conclude, I would like for the proposal to include provisions for ODFW to ensure that mosquito mitigating plans are included in the proposal and that such plans will be executed when needed. Moreover, for BSDD to ensure that all lands inundated with tidal water will be connected hydrologically so that mosquito larvae be accessible by fish and other predators.

Jan W. Hopmans   Jan Hopmans

February 24, 2024

[1] Coquille Valley Wildlife Area Management Plan, April 22, 2016. Oregon Department of Fish and Wildlife, 4034 Fairview Industrial Drive SE, Salem, OR 97302

22 February 2024

To: Coos County Commissioners, Coquille OR

From: Jeffrey Jackson, Resident, Coquille OR

RE: File Number ACU-23-074, Winter Lake Phase III Project

Dear Commissioners,

This letter indicates support for the Beaver Slough Drainage District's and Coos Soil and Water Conservation District's application for infrastructure upgrades as outlined in the Winter Lake Phase III project. As a fish biologist with nearly 25 years of experience working for federal, state and non-profit organizations in Oregon, Alaska and California, I write to you that there is no doubt whatsoever that habitat restoration projects such as Winter Lake not only benefit salmon to a great degree, but also benefit drainage that increases use and productivity by agricultural landowners.

Recent research at Winter Lake conducted by the Coquille Watershed Association has shown how incredibly productive off-channel areas are to coho salmon. Juvenile coho move downstream and seek areas to over-winter, get out of heavy winter flows and find food and shelter. Replacing internal tidegates will facilitate water movement and help juvenile salmon find their way out of the channels and canals as water temperatures become too high later in the spring. A suite of native fish and amphibians thrive in Winter Lake: steelhead, Cutthroat trout, Pacific lamprey can all be found there seasonally. And while it is true that a variety of non-native fish are present, active water management makes this a less hospitable environment for them to flourish.

In addition to the natural resources benefits afforded by this project, Winter Lake Phase III will replace aging and non-functional infrastructure that will greatly benefit grazing and pasture management. As spring turns into summer, native fish move out of the project area, water can be drawn down, and Winter Lake goes into another mode of production – for livestock. Landowners can't turn their animals out until the land is dried out, and upgraded infrastructure will facilitate maximum use. That's the beauty of projects such as this: promote agricultural use in the summer and salmon in the winter.

Here's the bottom line: Winter Lake Phase III is completely, legally, environmentally and administratively within the scope, scale and intent of Coos County Planning and Land Use Ordinances. Landowners, natural resource specialists, fisherman and anyone who knows about fish and grazing all realize the benefits of this project. I invite the Commissioners who are opposed to this project to educate themselves by reaching out to ODFW and see first hand how the project is positively influencing the economy of Coos County.

Sincerely,

Jeff Jackson

Jeffrey Jackson

1390 N. Gould

Coquille OR

March 5, 2024

Coos County Board of Commissioners:

We have lived on Garden Vally Road for 20 years. The last two years since Fish and Game took over the so-called "wet lands", we have been bombarded with thousands of mosquitoes. It has been simply overwhelming. We can't go outside from the time they start hatching in spring until late fall when the temperature causes them to die. We have purchased electric mosquito killer machines which help somewhat, but we spend hours killing them in the house in the evening

Adding more wetlands will certainly NOT help this situation, but only make it worse!

Please, please find some solution to this problem so that we can enjoy our lives, work outside, and not be miserable all summer! It is an **unbearable** way to have to live.

Thank you,

Susan Graham

Susan and Lawrence Graham

58803 Garden Valley Rd.

Coquille, OR 97423

Beaver Slough Drainage District Proposal.

VR
Verna Rose <verna.l.rose@gmail.com>
To Bob Main; Rod Taylor; John Sweet; Planning Department Thu 3/14

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I do not believe any zone changes or project go forward without in depth discussions as to which way these ditches are flowing water. Are they really draining water out Coquille Valley and adjoining lands to the river and ocean, or is this project rerouting water to certain areas for the benefit of the large landowners wants and needs. Will the tide gates be used to let water flow back to Coquille River or hold water in the Coquille Valley and adjoining lands?
My concern is this project will not drain the water from Garden Valley or the Coquille Valley and there will be damages caused by standing water or the forming of a lake. If the water can not flow out of Garden Valley it will backup causing many problems to the homes in Garden Valley. Those in the Beaver Slough Drainage District as well as those who are not in this Drainage District. It could possibly cause health issues and possibly stop the flow of water draining from our drinking water. We need flow in China Creek so our drinking water doesn't backup and become stagnant and cause problems with it. Is the Beaver Slough Drainage District garranteeing the continual flowing of water out Garden Valley by China Creek?
We already know about the mosquitoes problems. What else is going be a health problem in the future.?

My first and most concern is getting out of this Beaver Slough Drainage District under ORS: 198.883. Being less than 5% income to this District, less than 5% acreage in this District and have received NO BENEFIT from this District.
I've filled out all their paperwork and was told several times I'd be let put of the Beaver Slough Drainage District. As was many of the small landowners within the Beaver Slough Drainage District. The Board of Directors need to honor their words and release me and others who complied them with their request to withdrawal.
As I stated before the this Beaver Slough Drainage District is only for the large landowners (5 or 6) who are the Board of Directors with all the voting power or rights. This ISN'T a fair District to Everyone in it. IT IS TAXATION WITHOUT RESENTATION. IT ONLY BENEFIT THOSE five or six.
IF FLOW OF WATER DOES NOT DRAIN TO WATER BACK INTO RIVER then it is Not a Drainage District. Dissolve this District and let those five or six large landowners form a District with them only in. Whether it is grazing land or wildlife.
Quit being a dictatorship District for your self benefit. You have stated many times that all taxes and funding goes only to the large Coquille Valley Landowners and never has and never will provide funding anywhere else in the Beaver Slough Drainage District.

Where is small landowners freedom and rights being upheld in this kind of special district?

Beaver Slough Drainage District

VR
Verna Rose <verna.l.rose@gmail.com>
To Bob Main; Rod Taylor; John Sweet; Planning Department Thu 3/14

You forwarded this message on 3/19/2024 8:12 AM.
If there are problems with how this message is displayed, click here to view it in a web browser.

I'm opposed to any changes to Beaver Slough Drainage District by zoning or their current project of changes water flow. It needs more information about how the water draining is going to flow. Is the water going to flow back into Coquille Rriver or will it be directed to other areas in the Coquille Valley for self purposes of the large landowners and Board of Directors of Beaver Slough Drainage District.
Will these changes allow the water to flow for drainage or will it be directed to keep land wet for certain large landowners?
Does these changes effect the small landowners in or out of Beaver Slough Drainage District? Will the water from Garden Valley and other landowners opposite of Coquille Valley, will the water be route to drain or does this project stop the water draining to Coquille River?
Will China Creek water out of Garden Valley be able to flow to Coquille River or will a tide gate hold water so it back up farther into Garden Valley? It seemed to me that's what it implied. That the gate was to hold water so it did not flow to lower land. Is that right or wrong?
The flow of water from China Creek in Garden Valley is very important to the landowners in Garden Valley. Some are in the Beaver Slough Drainage District but others are not.
There is many concerns with the water flow of China Creek. If the water can not flow out to the Coquille River, it can create several problems for the homeowners. There bottom land getting wetter. Stagnant water from back water, causing health issues and contamination of drinking water..
Do you have all the answers to this project? The effects to land, health issues and financial effects of small landowners in and out of this Beaver Slough Drainage District?
We already know about the mosquitoes we have. What else is yet to come is the question.
If the flow of water in this project isn't to drain the water from the Coquille Valley and adjoining lands by Beaver Slough Drainage District, THEN THIS IS NOT A DRAINAGE DISTRICT ANYMORE. It should be dissolved and the five or six large landowners form another district that is for their grazing of cattle, estuaries, wildlife, or gun clubs. Leave the homeowner homes and land out of their district.

As you know, I want out of this Beaver Slough Drainage District. It has not ever or will not ever provide a benefit to my land or my home.
I own less than 5% of acreage in the Beaver Slough Drainage District and provide less than 5% of the income to this District.
Under ORS 198.882, I should be or could be removed from Beaver Slough Drainage District. This District has all my paperwork and request and has verbally stated that I could be removed. They also have other landowners requests and paperwork but won't do whatever they need to do to go forward.
They also stated that they would repay the taxes and bond funds paid by the landowners who asked to be removed from the Beaver Slough Drainage District. I personally want out of this Beaver Slough Drainage District. They can keep what I've paid so far to the Beaver Slough Drainage District. JUST STOP ALL TAXES AND BOND ASSESSMENT FROM 2024 ON PLEASE.
It's an unfair taxation and bond levy.

Five or six large landowners, who are the Board of Directors control all the voting power, get all the benefits from the taxation and bonds they place upon everyone else in this District. It is an unfair Special District. The small landowners has no way of stopping project or financial burden from this Beaver Slough Drainage District. .

I will be at the meeting and probably have more comments.
Verna Rose

COQUILLE INDIAN TRIBE

3050 Tremont Street North Bend, OR 97459
Phone: (541) 756-0904 Fax: (541) 756-0847
www.coquilletribe.org

March 25, 2024

Coos County Community Development
Land Use Planning Department
60 E. Second Street
Coquille, Oregon 97243

RE: Comments of Coquille Indian Tribe for Administrative Record in Support of ACU 23-074/FP 23-012 – Beaver Slough Drainage District/Winter Lake Phase III

I. Introduction and Background

The Coquille Indian Tribe is a federally recognized Indian Tribe, with lands of historic and modern interest encompassing a broad swath of Southwest Oregon. Since time began, the Coquille River and the full of the Coquille River watershed have been central to the identity, culture, and survival of Coquille people. The Coquille people are the original stewards of the Coquille River basin, and restoring its once abundant salmon, steelhead, lamprey, other native populations and ecological function and health is an urgent priority. Furthermore, the Coquille Indian Tribe is a cooperative manager ("co-manager") of the fish and wildlife resources in Coos, Curry, Douglas, Jackson, and Lane Counties pursuant to the Coquille Indian Tribe/State of Oregon Memorandum of Agreement (*See* Oregon Administrative Rules 635-800-0100).

The Coquille Indian Tribe, a sovereign co-manager of fish and wildlife resources in the Coquille River basin, employs a traditional ecological knowledge based, holistic philosophy to protection and restoration of native species and their habitats in the Coquille River basin. The Tribe seeks to implement, and support, an array of activities that will restore an abundance of salmon, steelhead, and all native aquatic species to the Coquille River. Categories of such actions include habitat protection and restoration, water quality improvements, and hatchery practices. The Coquille Tribe's holistic, abundance-based management philosophy will restore the Coquille River's once mighty salmon runs for the benefit of tribal members, all Coos County residents, and the many others that will visit our region to fish, boat, and enjoy the beauty and abundance of our shared homelands.

The Tribe's vision of restored and shared abundance requires that we use all the tools at our disposal that have proven to be effective in salmon restoration – not one single tool or approach will suffice to restore healthy, harvestable populations of salmon. The Winter Lake project deploys one of the necessary restoration tools – a "working lands" construct - where private property agriculturalist landowners partner with fisheries restoration agencies like the Tribe and Oregon Department of Fish and Wildlife to enhance the productivity of their lands for agriculture, while also providing key benefits to native species such as coho salmon. Even more, this private landowner/restoration agency partnership model leverages very significant amounts of "outside" federal, state, and Tribal funding to enhance both the agricultural and fisheries economic sectors of Coos County at a scale and pace that the County simply cannot fund.

The Coquille Tribe has invested itself in the Winter Lakes project. Over the last fifteen years, the Tribe has provided foundational support including technical expertise, special projects funding, and in-kind staff resources. In 2016 and 2017 the Tribe secured and committed two large federal funding grant awards totaling over $700,000 for Winter Lake project implementation. Further, during this time the Coquille Tribe Natural Resources Office staff have attended many project-related public meetings, held Tribal Council informational meetings, and offered Tribal community meetings to educate and provide valuable information to our local communities on the complexities and benefits of these types of habitat restoration projects. Coquille Tribe Natural Resources Office staff have been technical advisors working with the Beaver Slough Drainage District (BSDD), ODFW, The Nature Conservancy, the Bridges Foundation, and others to ensure that the work being conducted is fiscally and scientifically sound, and inclusive of traditional knowledge.

II. **Procedural History Regarding the BSDD Permit Application**

The Beaver Slough Drainage District, through its District Manager Fred Messerle, and authorized agent Caley Sowers, Coos Soil and Water Conservation District, District Manager, submitted ACU-23-074/FP-23-012 (hereinafter, "BSDD Application") to the Coos County Planning Department (hereinafter, "CCPD") on February 9, 2023 (*See* County Commission Workshop Staff Report, February 27, 2023, Appendix A) (hereinafter, "County Staff Report - 2/27/24"). The "Coos County Conditional Use Land Use Application" form provided by the Coos County Planning Department was utilized and completed by the BSDD applicant. It is necessary for the Board of County Commissioners (and public) to clearly understand who the real party in interest applicant is for ACU 23-074/FP 23-012 – it is the Beaver Slough Drainage District on behalf of its landowner patrons. There are multiple consulting technical and funding partners assisting the BSDD in its project, but the one and only applicant in this matter are the agricultural landowners and producers of the BSDD.

The Board of County Commissioners conducted a public workshop/hearing in Coquille, Oregon on March 5, 2024. The CCPD provided public notice of the workshop/hearing on February 7, 2024, and a written Staff Report was made publicly available. That Staff Report identified, for the interested public, each of the criteria that the BBSD permit application was subject to under the Coos County Land Development Code. Additionally, that Staff Report included the full detailed BSDD permit application for public inspection.

The primary purpose of the March 5, 2024, workshop was to provide the Board of County Commissioners an opportunity to engage the permit applicant, its partners including the Tribe, and the general public about the work that BSDD seeks to enable with the ACU. The Staff Report states: "In this case, there appears to be some controversy with this matter which led to the decision to have the Board of Commissioners review the matter to see if they would be the decision-maker in place of the planning department." (*See* Staff Report, February 27, 2024, p. 9). While the Staff Report does not elaborate on the nature or extent of the "controversy" causing the Board of County Commissioners to take the uncommon step of a public hearing to determine if it will supplant the Planning Director as the decision maker on this ACU, it does include seven letters from the public – six of which generally express some concern about possible effects of the Winter Lake Phase III project (principally mosquito production and water incursion) and one letter expressing strong support for the project. Likewise, the Staff Report did not provide the written findings and conclusions relative to the Coos County applicable criteria. As noted in the Staff Report: "In this report, staff is providing the criteria and explaining what needs to be addressed. A full analysis will be completed once the Board of Commissioners chooses a pathway for review." (Staff Report, p. 13).

The March 5, 2024 workshop/hearing lasted over two hours. The first hour was dedicated to BSDD and project partners providing a detailed explanation of the Winter Lake project, and the Phase III element subject to the ACU permit application. Thereafter, every member of the public wishing to comment or having questions was permitted an opportunity to address the Board of Commissioners and/or BSDD and partner representatives. Ultimately, and after a motion by one Commissioner to forego exercising the Board's preemption authority and allow the Planning Director to make the decision on the ACU in the normal course failed for lack of a second, the Board decided to exercise is preemptive authority and act as the decision maker for the BSDD permit application. The hearing/workshop was recorded. (By this reference, CIT incorporates the recording of the March 5, 2024, session as an appendix to these comments, and in doing so makes that recording a part of the administrative record for the Board's action on the BSDD application, and for any and all appeal/review proceedings that might follow. https://www.youtube.com/watch?v=9TNeUaNt4TA.

On March 7, 2024, the CCPD posted and mailed public notice of the Board of County Commissioners hearing on the BSDD application set for March 28, 2024, in Coquille, Oregon inviting written comment/testimony on the BSDD permit application. The Coquille Indian Tribe offers these written comments and testimony for the official record.

III. The BSDD Application has Been Deemed "Complete" by Coos County – This Means that BSDD has Presumptively "*Adequately Addressed*" All Applicable Coos County Zoning and Land Use Criteria and Standards.

The Coos County Conditional Land Use Application Form completed by the BSDD applicant contains clear instructions that the Commissioners must be mindful of as it exercises its preemption authority to make the decision on the permits requested by BSDD:

> D. ATTACHED WRITTEN STATEMENT. With all land use applications, the "burden of proof" is on the applicant. It is important that you provide information that clearly describes the nature of the request and indicates how the proposal complies with all of the applicable criteria within the Coos County Zoning and Land Development Ordinance (CCZLDO). **You must address each of the Ordinance criteria on a point-by-point basis in order for this application to be deemed complete.** A planner will explain which sections of the Ordinance pertain to your specific request. The information described below is required at

> the time you submit your application. **The processing of your application does not begin until the application is determined to be complete**. An incomplete application will postpone the decision or may result in denial of the request. Please mark the items below to ensure your submittal is complete. (Emphasis added).
>
> I. PROPOSAL AND CRITERIA. A written statement of intent, attached to this application, with necessary supporting evidence which fully and factually describes the following:
>
> 1. Project summary and details including timelines.
> 2. **A complete explanation of how the request complies with the applicable provisions and criteria in the Zoning Ordinance**. A planner will explain which sections of the Ordinance pertain to your specific request. **You must address each of the Ordinance criteria on a point-by-point basis in order for this application to be deemed complete**. This shall be addressed on the supplemental criteria page (see staff for criteria). (Emphasis added).

Further, the CCLDZO requires that the BSDD permit application be "deemed complete" before it can be "acted upon" by the decision-maker – in this case the Board of County Commissioners:

> SECTION 5.0.200 APPLICATION COMPLETENESS (ORS 215.427): 1. An application will **not be acted upon** until it has been **deemed complete** by the Planning Department. In order to be deemed complete, the application must comply with the requirements of Section 5.0.150, **and all applicable criteria or standards must be adequately addressed in the application.** (Emphasis added).

The Commissioners should take careful note of the requirements of the Coos County ACU permit application document instructions, as well as County staff and Commission actions on the BSDD application to date. In particular:

- The BSDD application has been deemed "**complete"** by Coos County.
- Because the BSDD application has been deemed complete, it is (and has been) subject to "**processing**" by Coos County. The "processing" of the application includes the following actions taken by Coos County: 1) the CCPD developed a preliminary Staff Report (February 27, 2024), 2) conducting a publicly noticed workshop/hearing (March 5, 2024), 3) CCPD issued Notice of Public Hearing on merits of BSDD application (set for March 28, 2024), and 4) CCPD completed a subsequent Staff Report (March 21, 2024).
- The March 28, 2024, hearing before the Board of Commissioners is being conducted so that the application may be "**acted upon**" by the Board.

As stated repeatedly in the CCZLDO, and in the Coos County ACU permit application the BSDD application must have **already "adequately addressed"** the applicable criteria in order for it to be subject to the "processing" actions already taken by the County. (*See* ACU permit application, Section D, above). Likewise, CCZLDO section 5.0.200 (above) provides that the County will "act[] upon" the BSDD application **only** if "**all applicable criteria or standards [are] adequately addressed in the application**." Because the BSDD application has been subject to "processing", and further, because the Board of Commissioners has set a public hearing for March 28, 2024, so that it may "act upon" that application, the County has **necessarily already presumptively found that the BSDD has, "on a point-by-point basis" "adequately addressed all applicable criteria/standards" on the face of the submitted ACU application.** The BSDD has consistently stated this to be its position - that its ACU permit application, by itself, has adequately addressed all applicable criteria.

The plain reading of the CCLDZO demonstrates that the BSDD ACU permit application could not be processed and may not be acted upon by the County at or after the March 28, 2024, hearing if BSDD had not **already** adequately addressed all applicable criteria. Said another way, the fact that the Board has set a hearing so that it may act upon the application means that BSDD has already met its "burden of proof" with respect to compliance with the CCLZDO and ACU permit requirements. BSDD has met its burden of proof with information and evidence already in the record. The CCZLDO makes it clear that we could not be at this stage of application processing and ready for decision action if BSDD had failed to adequately address any applicable criteria. Therefore, the "burden of proof" has **shifted** to opponents of permit issuance (if any) to demonstrate how the application falls short in meeting the applicable criteria. Without substantial and "point by point" evidence submitted at the hearing that one or more applicable criteria are not met by BSDD, the Board may not deny the BSDD application under the CCZLDO.

IV. The CCPD Staff Report Findings Are that BSDD Has Satisfied All Applicable CCZLDO Criteria and Standards.

The Tribe agrees that the CCPD Planning Director's March 21, 2024, Staff Report identifies all criteria and standards applicable to the BSDD permit application. (By this reference, and link below, Coquille Indian Tribe incorporates the March 21, 2024 Staff Report as

an appendix to these comments, and in doing so, makes that report a part of the administrative record for the Board's action on the BSDD application, and for any and all appeal/review proceedings that might follow.
https://www.co.coos.or.us/sites/default/files/fileattachments/community_development/page/24140/acu-23-074_staffreport_for_hearing_3-21-24.pdf). In addition, with the caveat below related to discussion in the Staff Report related to compliance with Section 3.3.730, the Tribe agrees that with the March 21, 2024, Staff Report "Findings" in Section II and Section III. That is: **the BSDD has provided substantial evidence and information affirmatively demonstrating full compliance with, and satisfaction of all applicable criteria.**

With respect to CCLZDO 3.3.730, the ultimate Finding and Conclusion is that BSDD has demonstrated compliance. That ultimate Finding and Conclusion states:

> **Overall, the wetland enhancement project is not likely to bring significant changes to accepted farm or forest practices and associated costs for adjacent landowners. The applicants have provided a comprehensive study to show that the project does not intend to have any significant changes to adjacent accepted farm or forest practices or significantly change the cost of Farm or Forest Practices. The applicant did provide additional information specific to the reductions of mosquito population as a result of this project. Therefore, the applicant has addressed the criteria**. (Staff Report, p. 22.).

Although the official Finding and Conclusion is that BSDD has complied with the criteria, the Report includes a fair amount of discussion not germane to CCLZDO 3.3.730. This appears to be motivated by an effort to respond to eight comment letters received that express some measure of concern about possible effects of the Winter Lake Phase III project to be permitted. It is laudable that the County has heard and spoken in depth in its Staff Report to these citizens. However, we believe that it is important to remember that the County Code was developed to protect the property rights of all landowners, including those that are patrons of the BSDD that seek to improve the agricultural productivity of their lands. There is, and must always be balance, and the County's adopted code must guide how that balance is stricken so that citizens and landowners have certainty for the use of their private property – those "rules" can't change permit by permit, landowner by landowner, or as Commissioners or staff come and go over time. The plain and clear code and strict application of its language is what provides the stability.

In addition, the Tribe believes that BSDD and all of its project partners have heard the speculative concerns made by several landowners and have designed a project that has proactively addressed the concerns about mosquitos and invasive weed species. Again, the Tribe respects the County's attention to the concerns expressed, and will continuously encourage BSDD and our Winter Lake project partners to be good neighbors with the full of the community once and if negative unintended consequences should emerge in the future. This should be done simply as good neighbors. In this case, we are confident that a great pro-Ag/pro-salmon project has been designed and the concerns imagined now will not be realized.

That being said, we do believe it should be noted how some of the narrative in this portion of the Staff Report strays a good bit from the criteria of Section 3.3.730, which provides:

> **Criteria and Review Standards for Conditional Use Permits (Both Administrative & Hearings Body**: A use may be allowed provided the following requirements are met:
>
> 1. Such uses will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use.
> 2. Will not significantly increase the cost of accepted farm or forest practices on lands devoted to farm or forest use.
> 3. Siting Standards for Dwellings and Structures in the EFU Zone. (Not Applicable)

The Staff Report, Pp. 21 - 22, includes narrative drawn from comment letters organized in subsections 1-4. However, the Staff Report narrative does not adequately and specifically address the criteria at hand. First, it does not indicate which, if any, of the commenters own land in farm/forest zoning. While it is fair for any landowner to raise concerns with governmental entities, including those with residential properties, this criteria relates only to lands with farm or forest zoning. Second, the staff narrative does not indicate if any of the concerns raised in comments are from surrounding landowners who are not only in the relevant zoning designations but also currently devoting their land to farm use – as the Staff Report notes on page 14, "farm use" is defined by ORS 215.203, and the key element is that the "primary purpose" of the land is dedicated to obtaining profit through specified agricultural endeavors. The Staff Report does not link its narrative to any evidence in the record about possible effects on specific lands currently devoted to the primary purpose of agricultural enterprise profit-making. It is possible that there are such landowners and properties, but these linkages required by 3.3.730 needed to be made for this portion of the report to be considered at all by the Commissioners. It is literally impossible to conclude that a "significant change . . . in use" will be "force[d]" on surrounding property farm use without these specific facts and linkages.

Next, in this portion of the Staff Report narrative (Pp. 21-22, items 1-4) the staff narrative is overly speculative. It repeatedly uses the phrasing "*landowners **may** need*" to take some type of responsive action as a consequence of the project. Again, it is laudable for the County to hear its citizens, and this "worst case scenario" discussion is understandable to an extent as a "good government" approach. However, it misses the mark of the County Code and evidence that its application requires. The code is in place to protect the property rights of all landowners, including BSDD patrons, ODFW, and others. This is almost certainly why the ultimate Finding and Conclusion is that BSDD has fully satisfied the 3.3730 standard. Without credible and substantial <u>evidence in the record</u> that the permitted project <u>**will force**</u> significant cost increases on lands currently devoted to profit production from "farm use" (ORS 215.203) the staff discussion cannot bear on the Board of Commissioners' decision.

Last, the staff discussion that is item 4 on page 22 about loss of agricultural land does not appear to be germane to 3.3.730. We are unable to reconcile the discussion with the plain and clear standards of this criterion being analyzed by the staff. Again, the County Code is the complete package of local regulation that strikes a balance and provides all landowners with certainty about how they may use and enjoy their properties. Building in a new and additional "no ag-land loss" standard to 3.3.370 is not appropriate. That said, the BSDD has explained in detail and repeatedly how completing Phase III of this project will enhance agricultural productivity on project lands, and if loss of agricultural productivity is considered at all by the Board, the increase in agricultural productivity in the County is the only evidence in the record it has to entertain this non-code issue.

In summary, the Tribe appreciates the obvious amount of hard work and time that went into the creation of the March 21, 2024, Staff Report. It also respects the landowners who have voiced concerns with this project, and as a partner in the project, it will remain mindful of the issues raised and be an advocate with its partners to find ways to address any unintended negative impacts on neighbors if they materialize in the future. We are all in this together and have the same vision – bringing our once abundant salmon runs and fishing opportunities back to the Coquille River **and** supporting private property rights and agriculture in Coos County. We also applaud the County for giving so much transparency and public input – this is not typical for an Administrative Conditional Use permit application where the vast majority of actions planned are outright permitted uses on the EFU zoned properties. We concur with the Staff Report's ultimate Findings and Conclusions that BSDD has met all applicable criteria. We respectfully submit that these ultimate Findings and Conclusion should be adopted by the Board of Commissioners and the BSDD ACU 23-074/FP 23-012 be approved.

Sincerely,

/s/ John Ogan

John Ogan
Executive Director, Natural Resource Office
Coquille Indian Tribe

THE AMERICAN MOSQUITO CONTROL ASSOCIATION

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22 March 2024

Christopher W. Claire
Habitat Protection Biologist
Oregon Dept. of Fish and Wildlife
P.O. Box 5003
63538 Boat Basin Drive
Charleston, OR 97420

Dear Mr. Chris Claire,

I appreciate the opportunity to review the design of the proposed Winter Lake Phase III project that was developed by Beaver Slough Drainage District (BSDD), the Coos Soil and Water Conservation District (Coos SWCD), Oregon Department of Fish and Wildlife (ODFW), and the Nature Conservancy (TNC). In my capacity as the Technical Advisor for the American Mosquito Control Association (AMCA), I am very often asked to speak to the design, implementation, and efficacy of mosquito surveillance and management actions of districts and programs. With a couple decades experience managing mosquito populations throughout the country, I offer the following comments for you and your partner agencies. As I understand the Winter Lake Phase III objectives, this project is designed as both an ecological restoration and agricultural improvement project that will complement the previously completed Winter Lake Phase I and Phase II projects.

As an expert in mosquito biology and the transmission dynamics of the pathogens they may transmit, I cannot comment on the capacity of this project to restore habitat for salmonid fish species or improve agricultural use. However, I do understand the past and current concern that this restoration project may have to produce excessive mosquito populations. It is highly encouraging that the project designers are considering the potential for these restorative efforts to create extreme mosquito annoyance and disease transmission issues. I further understand that according to the project plans, the primary focus of Phase I was the installation of seven new tide gates to replace the previously existing and undersized and top-hinged gates. This work was completed in 2017, and the new gates have increased the capacity for water movement into and out of the 1,700-acre BSDD site by 300%. Furthermore, the Winter Lake Phase II project was undertaken in 2018 and added a total of 31,000 feet of tidal channels in 407 acres of the designated Unit 2 portion of the project.

Upon completion of these two phases, however, it is understood that there remains 1,399 acres in areas designated as Units 1 and 3. These Units had no previous internal restorative actions. More importantly, these Units still suffer from rampant hydrologic discontinuity. It is my understanding that Winter Lake Phase III primarily proposes to remediate this hydrologic discontinuity by replacing 42 existing undersized culverts and associated old style top-hinged tide gates with 38 new culverts and redesigned channels. In review of the provided Winter Lake Phase III Project Action documents, there are multiple design concepts that should limit mosquito production on the site.

It is understood that the project plans to install a total of 38,090 smaller swale type channels designed to provide fish ingress/egress to locations with low areas that could generate stagnant water. These channels may be the key parameter of the Phase III workplan that would decrease mosquito production. I know that, through our work together on the Bandon NWR, Ni'les-tun Unit, you have extensive experience in the remediation of mosquito production on a restored marsh. Together, we spent countless hours on that project discussing the various features that can result in excessive mosquito production. In essence, mosquito production will occur if water is delivered into certain low elevation areas that lack proper water transfer during the warmer months of the year. These areas are locations where tidal water is able to breach berms and other physical features and enter depressions and other lower elevation areas. Then as the water recedes, fish and other natural predators (if they are even able to access these areas of the marsh) can become stranded and eventually die during late spring from warmer temperatures and predation. Mosquitoes are evolutionarily adept at finding these shallow, water holding areas that lack natural predators and lack proper tidal flow. As a result, they can prolifically breed. This mosquito production is exacerbated when tidal flow is further restricted to the 1 or 2 highest lunar tides each month. The addition of 38,090 smaller swale type channels would likely develop an extensive channel network and allow routine tidal water to enter these low lying, potential mosquito production areas. These channels should ensure areas of lower elevations that have trapped water can drain as waters recede on low tide recession.

It is also beneficial to increase tidal water inflow, outflow and mixing throughout the entire site. This more frequent tidal flushing of the march should eliminate the stagnation of water that is favored by multiple local mosquito species. The construction of on-grade tidal/floodplain channels throughout Units 1 and 3 should decrease mosquito production by improving nutrient and energy cycling and decreasing overall water temperatures; thereby, allowing for more fish access to the many low depressions and areas of currently diminished hydrologic function. In addition, the connection of these larger and smaller on grade channels to hydrologic bulbs within low-lying floodplain areas should prevent the stranding risk for juvenile coho throughout the project site. Although important for the ecological restoration of the site, juvenile coho can also be considered excellent predators for mosquito larvae.

Finally, replacing the existing undersized culverts should allow for proper tidal flow to currently underserved areas of Unit 1 and 3. When combined with the intended increased channeling, strategically placed hydrologic bulbs, the increased tidal flow to these currently underserved areas should provide greater ability to replenish nutrient-rich water and drain low-lying areas that have potential for mosquito production.

It is worth noting that continued monitoring of Units 1 and 3 should be implemented to ensure that the designed channel networks connect all low-lying areas properly. If any areas are not properly connected, the result could be extended periods of standing water and mosquito production sites. Additionally, channel networks should be continually monitored to ensure that they remain properly on-grade and do not become partially filled and thus do not allow for sediments to be transported properly. In looking at the overall Phase III design, I would suggest implementing detailed monitoring in Unit 1's southern extents. In reviewing the designs, there are multiple channels that appear to be designed to provide proper tidal flow and drainage of the area. In particular, channel Mess12a, feeds Mess12b, mess12b2, and Mess4f; channel mess9 feeds Mess12e. In addition, channel Mess11a feeds and connects Mess11b and Mess11d; channel Mess11c feeds Mess11c2. Because this channel network would serve a relatively large floodplain that could have numerous micro depressions or ruts, I would prioritize monitoring efforts to this portion of the project during and after channel construction.

Furthermore, it should be noted that in the many figures provided, there is a sizeable marsh immediately across the Coquille River that is not part of the project. Much of this property appears to be in an elevation zone that could be conducive to mosquito production. Without accessing the property and conducting larval surveillance in the summer month, I cannot be certain if there are areas that are producing mosquitoes. However, it may be beneficial to contact the property owner and seek such permissions to better understand the mosquito production areas that may be along the Coquille River and/or adjacent to the site. The primary pestiferous mosquito species produced in these habitats can fly many miles, if needed, in a day.

In summary, I would like to thank you, again, for the opportunity to comment on the proposed Winter Lake Phase III project. I hope that my assessment of the proposed project is useful to you and your partner agencies. As an individual that spent a great amount of time combatting the mosquitoes in the area, it is genuinely refreshing to see such care and thorough thought dedicated to the reduction of mosquitoes inherent in the project's design. If our past experiences have illuminated anything, it is that restoration projects like this are essential for our well-being and through proper design and forethought we can dramatically minimize the risk of excessive mosquito production. I look forward to walking the site with you upon completion, discussing the many obstacles, and lessons you've learned. Based upon the many design elements included in the presented plan, it is not anticipated that we would encounter a significant population of mosquitoes resultant from the restoration efforts.

Sincerely,

Daniel Markowski, PhD
Technical Advisor
American Mosquito Control Association

Nikki Harris
Contract Manager
Vector Disease Control
International
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Nharris@vdci.net
208-914-4851

23 March 2024

Beaver Slough Drainage District

Coquille, OR

Dear Beaver Slough Drainage District,

I have reviewed the Winter Lake Phase III project design information. I am writing to with my review noting the strong attributes of the proposed plan with the extensive excavation of new and reconstructed channels to eliminate mosquito breeding habitats within the Winter Lake area. As a program manager for a mosquito control district at Vector Disease Control, I have thoroughly reviewed the plan and believe it offers an effective solution to address the persistent issue of mosquito infestation in the units of Winter Lake. Having worked with mosquito control districts for the last ten years, across multiple states in the Northwest, I have had the opportunity to be involved in projects that have utilized similar processes as proposed in this plan.

Mosquitoes pose significant health risks to both humans and livestock, as they are vectors for numerous diseases such as malaria, dengue fever, and West Nile virus. Agricultural lands, with their abundance of standing water sources like irrigation ditches, ponds, and puddles, often become prime breeding grounds for mosquitoes. Therefore, implementing strategic measures to eliminate these breeding habitats is crucial for safeguarding public health and maintaining agricultural productivity.

The proposed plan outlines the excavation of channels strategically designed to drain stagnant water and disrupt mosquito breeding sites. By carefully mapping out the areas prone to water accumulation and implementing a systematic approach to dig channels, we can effectively reduce the mosquito population while minimizing disruption to agricultural activities. This plan focuses on reconstructing channels to grade and sizing culverts appropriately to fully allow for the inflow and drainage of water.

Furthermore, the plan emphasizes environmentally sustainable practices, ensuring minimal disturbance to the surrounding ecosystem. It takes into consideration factors such as soil erosion, wildlife habitats, and water conservation, demonstrating a commitment to responsible land management practices. Focusing on preventing erosion on the sides of the channels and properly using the tidal flows will allow the constructed channels to last and continue to maintain a healthy operating condition preventing the stagnant pools of water that contribute to mosquito populations. This would also assist in preventing the stranding of juvenile coho during the warmer months and increase tidal exchange during the winter months leading to a healthier habitat.

If best water practices are followed in this unit, the addition of these channels at the proper grade will allow for water to exchange with high tides. This influx of new tidal water, combined with a better ability to drain would lead to less mosquito habitat. It appears that this would repair the current hydrologic discontinuity that is present in Units 1 and 3. The resolution of hydrologic discontinuity, for agricultural purposes, would potentially benefit juvenile coho as well which would also benefit mosquito management, as they are great predators for mosquito larvae.

In addition to its immediate benefits in controlling mosquito populations, this plan offers long-term advantages for agricultural productivity and community well-being. By reducing the prevalence of mosquitoes and mosquito-borne diseases, farmers can experience higher yields, lower healthcare costs, and improved quality of life for residents in rural areas.

It is worth noting that nature doesn’t always work perfectly with these plans. The expansive area that these channels are encompassing could lead to some situations that should be monitored. It is best practice to monitor after the creations of these channels to watch for areas that may not drain properly. Sediment wash out may build up in the channels before there is a good flow process.

I am confident that implementing this plan will yield positive results and contribute to the overall health and prosperity of the community. After spending so much time combatting the mosquito population on the Ni’les’tun Unit of the Bandon Marsh, it is great to see the agencies and local Soil and Water District putting in so much time and thought to this process. With the designs that are in Phase III and surveillance after the implementation of the project, this should greatly reduce the mosquito habitat that is present on the Winter Lake Phase III project area.

Thank you for the ability to comment on the proposed project. Should you have any further questions or require additional information, please do not hesitate to contact me.

Sincerely,

Nikki Harris
Contract Manager
Vector Disease Control International

Dean Finnerty
Northwest Director – ACP

155 Burchard Drive
Scottsburg, Oregon 97473
Phone: 541.214.0642

e-mail: dfinnerty@tu.org

March 19th, 2024

Coos County Board of Commissioners

Dear Sirs,

Trout Unlimited is the largest and oldest cold water conservation organization in the United States with over 350,000 members and supporters nationwide, of which Oregon boasts more than 4000 members. We also have approximately 15 full-time staff members working across the state on habitat projects and policy initiatives at the state and federal level.

I am writing to you today to share our strong support for the "Winter Lake Phase III project".

Trout Unlimited has made a number of investments in the Coquille River over the past 6+ years. Our staff and volunteers have worked with staff from ODFW, the Coquille Indian Tribe and other stakeholders, to monitor and remove invasive bass from the river, participating in multi-day events such as the "Bass Blitz" to address the bass issue.

Trout Unlimited supports the recent effort to establish a conservation hatchery on the lower Coquille to help prevent the extirpation of the fall Chinook salmon.

Since the inception of the Winter Lake Project on the Coquille River, Trout Unlimited staff and volunteers have also committed resources of volunteer and staff time, working side by side with ODFW during the pre-project monitoring phase and providing comments and participating at several public hearings in the early stages of the project.

Trout Unlimited staff are subject matter experts in a variety of areas related to cold water conservation, particularly in the area of habitat restoration. Staff in Oregon over the past ten years have completed a large number of cold water restoration projects across the State. Improving habitat for Trout, Salmon and Steelhead on hundreds river miles. We know that habitat restoration works!

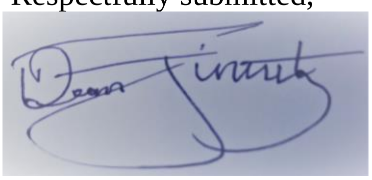
Unfortunately, many of our iconic runs of salmon and steelhead in Oregon are in decline. This trend has recently been exacerbated by the effects of climate change, poor ocean conditions and predation. Fall Chinook, Spring Chinook, Winter and Summer Steelhead generally, are all trending downward. One bright spot is our runs of Coho Salmon.

The tremendous efforts and investments in habitat restoration here in Oregon over the past two plus decades has started to really make improvements in our Coho populations. They are the one pacific salmon specie that has been trending in the right direction over the past several years.

Restoration projects like the one at Winter Lake, and others like it - is what’s really turning the tide for our Coho. These salmon provide a wonderful recreational fishery, not only on our rivers, but also along our near shore coastal communities, infusing much needed tourism and recreational dollars for our “cash strapped” southwest Oregon communities. A 2021 study by the American Sportfishing Association calculated that statewide, anglers contributed $1.5 billion to the economy and supported 13,120 jobs. Gas stations, hotels, restaurants, area fishing guides and other tourism industry services ALL benefit from increased returns of coho, provided by the habitat created at Winter Lake.

We enthusiastically support the continuation of the Winter Lake project and look forward to the benefits that will be realized when its completed.

Respectfully submitted,



Dean Finnerty
Trout Unlimited

America's Leading Coldwater Fisheries Conservation Organization
Washington, D.C. Headquarters: 1300 North 17th St., Ste. 500, Arlington, VA 22209-2404
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Winter Lake Phase III Team
Response to Coos County Development
Staff Report on File # ACU-23-074/FP-23-012
Directly in Regard to the Impacts Analysis Findings

Date of Staff Report
Thursday March 21, 2024

Prepared by

Caley Sowers
Coos SWCD Director

Christopher W. Claire
Oregon Department of Fish and Wildlife

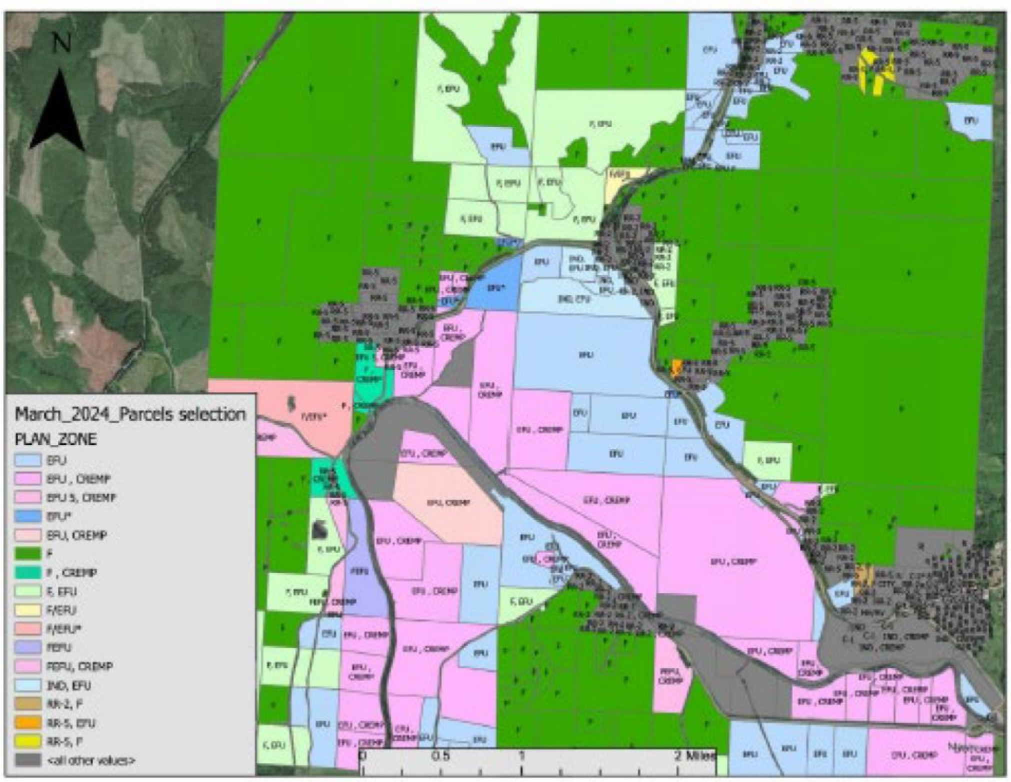
County Planning Finding in 03/21/24 Staff Report

FINDING: The applicant is required to do an impacts analysis showing that the proposed use will not force a significant change in accepted farm or forest practices on surrounding properties zoned and devoted to farm or forest. The applicant shall address how the proposal will not increase the cost of accepted farm or forest practices on lands devoted to farm or forest use. The analysis is required to define the study area, look at current practices within that area and then make a determination if the current proposal will significantly force a change in accepted farm and forest practices and if it would increase the cost of accepted farm or forest practices. The applicant submitted this information on March 19, 2024. The full results of the study are found at Attachment A, Application Submittal.

The methodology used by the applicant is as follows:

The Geographic Scope of this analysis includes all parcels within an approximate 1-mile radius of the project area. For this analysis, only lands zoned for farm and/or forestry practices were considered. Properties with industrial, commercial, rural residential, or other zoning were not evaluated for impacts unless combined with a farm or forest plan zoning. It should be noted here that most of the Garden Valley area parcels are zoned RR-5 and were not analyzed according to the selected evaluation criteria.

The results provided a total of 234 parcels for consideration, 15 of which are already included in the proposed project area. Project Area parcels were evaluated separately (see applicants Appendix A. Winter Lake Phase III Project Area and Surrounding Lands Impacts Analysis Tables 1. And 2.) as well as in combination with surrounding land parcels.



Based on the provided details of this enhancement project within the Beaver Slough Drainage District and the Coaledo Drainage District, here are the anticipated significant changes in accepted farm or forest practices and associated costs for adjacent landowners that have been raised:

1. **Altered Drainage Patterns and Loss of Water Sources: The replacement and consolidation of pasture culverts, installation of new drainage channels, and repair of failing berms may alter the drainage patterns within the affected areas. This could impact the way adjacent landowners manage water on their properties, potentially requiring adjustments to irrigation systems, drainage infrastructure, water sources or land grading practices. Landowners may need to invest in new equipment or infrastructure to adapt to the changed drainage conditions.**

Winter Lake Project Team Response 03/26/24
The project is specifically designed to establish more natural pathways of drainage in the low-lying elevations. This process incorporated using LiDAR and contracted engineering in the ground surveys. The new and reconstructed channel density will be roughly 2x the existing density per acre over the current and with extended distribution in order to both deliver water during irrigation effectively, however, more importantly to provide for greatly improved drainout in spring and following rainfall or irrigation. These advancements in the channel layout will have strongly positive effects for water management and pasture irrigation on the action area lands. Adjacent lands are not affected by the Phase III actions. The Winter Lake C3P main tidegate controls water delivery to the project area in the Beaver Slough Drainage District (BSDD) and the Coaledo Tidegate serves as the control in the Coaledo Drainage District (CDD). The proposed Phase III work is subservient to the main tidegates and the 39 culverts that will be installed serve internal pastures, not main delivery routes to adjacent properties. The pastures served by the Phase III culverts and tidegates are within pastures with berms. Surrounding lands of pastures within the project area are largely upslope (above elevation 8.0ft) or not directly connected hydrologically in a manner where project actions have potential to cause water delivery effects. Berm repairs are aligned along interior project land parcels. These repairs are not boundary berms between adjacent lands and thus are only control features for irrigation and floodwater controls on the project area.

Through the past 25+yrs no channel cleaning has occurred in the action area. This has resulted in filling of channels through time. The pasture areas have become very difficult to drain in some locations with strong increases in non-palatable pasture plants. Without reestablishing the drainage within the project area EFU pasture operations are economically decreasing in productive capacity. The continued inability to implement Phase III proposed actions will incur an undue forced economic decline on the project area ranchers. All landowners within the project area are ground level advocates for the actions that will provide for improved water management.

The drainage networks that will be reconstructed through Phase III are not directly connected to adjacent lands. The project will install 9 new watering locations for livestock in the project area that has 4 watering locations currently, thus an overall increase. Water delivery to other off-project lands for livestock is not hydrologically connected at the summer elevations and thus unaffected. Irrigation on the project lands are through passive tidal inflow. Neighboring off-project area lands do not irrigate currently or where it does occur are not using either the Coaledo or BSDD C3P tidegate. No new infrastructure will be necessary for off-site landowners related to current and future actions within the Phase III project area.

2. **Increased Maintenance Responsibilities: The installation of new infrastructure, such as tidegates, drainage channels, and watering site troughs, may require ongoing maintenance by adjacent landowners. This could involve tasks such as cleaning debris from channels, inspecting and repairing tidegates, or managing vegetation around watering sites. Landowners may need to allocate resources for regular maintenance activities and potentially invest in equipment or labor to ensure the proper functioning of the infrastructure.**

Winter Lake Project Team Response 03/26/24
The Phase III project will install advanced culverts with new long-life HDPE materials (as noted in the 404 Fill and Removal permit application). These culverts have a 50yr lifespan, which is 100% longer than any existing steel culverts on site and roughly 40% longer than the ADP culverts in use currently. The new side-hinged aluminum tidegates are aircraft grade aluminum with a 50yr life expectancy. As is shown in the image on the cover sheet of this document, the existing wooden infrastructure is undersized and largely wooden tidegate materials with a lifespan of 10-12yrs maximum. The project is anticipated to result in a greatly reduced maintenance effort on the project area.

The existing channel networks on the project area are largely linear and do not follow the low-lying topography alignment with acuity. This results in areas following rainfall, irrigation, or flooding where fish can become stranded and water stagnate unmoving with potential for mosquito production. Sticklebacks, mosquitofish, and juvenile coho all eat mosquito larvae. However, with the current channel networks largely filled with years of sediment and failing to follow topography, fish instinctively will not leave canals where they reside continuously and travel long distances to interior pasture locations. Additionally, the low-lying areas where water ponds currently, are not connected to main and secondary interior channels with fish present. The deteriorating infrastructure on the project area (channels filled with sediment/vegetation, failing tidegates, degrading berms) are all components that are not providing adequate water management for agricultural actions on the project land area. A notable number of the interior culverts are perched, which does not allow for the current channel networks to be on-grade with the low point at the downstream delivery to main canals. Accordingly, there is greatly reduced ability to provide for both drainout and delivery of irrigation waters. These perched pipes also reduce the time period for fish passage during tidal and flooding cycles. All culverts on site are currently undersized for the hydrology. Without addressing these issues economic output for the landholders will continue to be damaged and in decline. The new/reconstructed channel networks are designed with on-grade slope from interior locations to the main canals. This was not the original construction design in 1908. The on-grade designs will allow for transport of sediment that accumulates to prevent premature clogging of channels.

The project lands are installing internal infrastructure that is within bermed topography. No actions through Phase III will occur at the BSDD C3P main tidegate or the Coaledo tidegate. Winter flooding eliminates all controls as berms are overtopped and thus the 39 culverts/tidegates are irrelevant with flooding above elevation 5.0ft. The infrastructure that will be installed in the project area serves internal pastures of project area lands and these channels do not serve as through pathway infrastructure to other adjacent lands. Thus no costs are maintenance changes are possible for adjacent lands through Phase III actions. There are no tidegates within the Winter Lake Phase III interior pasture network culverts or tidegates that are not being replaced through the project. Few if any tidegates are presently in operation on any adjacent lands. No allocation need for additional maintenance on adjacent lands infrastructure will be incurred by Phase III.

3. **Potential Pest and Invasive Plant Management: Wetlands can serve as breeding grounds for mosquitoes and other pests, which may pose a nuisance to adjacent landowners, particularly during certain times of the year. The change the land may also bring in invasive plants and that can spread to adjacent properties. Landowners may need to implement pest and/or invasive plan management strategies to mitigate the impact of increased pest or plant populations on their farming or forestry activities. This could involve measures such as insecticide application, pesticide applications, habitat modification, or the installation of mosquito control devices, which may entail additional costs.**

Winter Lake Project Team Response 03/26/24
Many tidal wetlands inherently do not produce many mosquitoes. This is due to the factors needed to produce mosquitoes. In order for a water feature to provide habitat suitable for mosquito production three factors are necessary:

a). Water must remain <u>non-moving</u> in a stagnant state during warmer months for the life-cycle of larvae.
b). The location where larvae are hatched must remain fishless until pupae transform into adults after stage-5, otherwise they will be predated on as mosquito larvae are a high value food item for fish;
c). The water must not dry up or soak into the ground prior to fly-off following stage-5. This is a minimum 7-8 days and at a maximum under cooler conditions 14-20 days;

If any of the conditions are not met, larvae may hatch, however, then be consumed by fish or the habitat will dry up prior to sufficient time for them to become adults or moving water will reduce algae/food production or egg hatching. The Winter Lake Phase III project will address all three factors linked to mosquito production. The extended and on-grade channel networks will prevent ponding of rainwater/floodwater/irrigation water in locations where currently there are ponding conditions. The new and reconstructed channel networks will provide for movement of water, which will disrupt the life-cycle. The project is also designed to allow for much greater distribution of native three-spined sticklebacks and non-native mosquitofish to potential locations where mosquitoes might hatch and then be consumed. The Witner Lake Phase III project is directly engineered to address mosquito production habitats eliminating the need for direct chemical pest management actions. Overall, the Winter Lake Phase III project will directly improve conditions for pasture grass production, which is benefitted by actions that reduce ponded water areas where mosquitoes are able to be successful.

It has been noted that other invasive species such as Brazilian Water-Milfoil, a.k.a. parrot feather (Myriophyllum aquaticum), may colonize the Winter Lake project area. None of the project actions will enhance the ability for this plant or other non-native invasive plant. Parrot feather has been present in the Coquille Valley since at least 2009 in a lake in the lower Coquille River. Likely released as from a home aquarium. In the Coquille River basin it has been noted as heavily established in Johnson Mill pond. Photos from 2002 identified Milfoil sp. in mid-winter in Johnson Mill pond with stem features typical of parrot feather during winter (Figure 1), however, positive I.D. was not made at the time. Brazilian Water-Milfoil is known to be heavily present in Johnson Mill Pond currently (Figure 2). Brazilian Milfoil is spread only by vegetative reproduction when a portion of stem is broken, such as during floodwaters and transported to a new location where it roots. The population of Brazilian Milfoil in Johnson Mill Pond is located where floodwaters are able to carry broken stems to all lands downstream of that location that are connected to the main Coquille River.

Figure 1. Milfoil sp. in Johnson Mill Pond, image taken December of 2002.

Figure 2. Brazilian Water-Milfoil in late winter emergent stage. Johnson Mill Pond, March 23, 2024.

4. **Loss of Agricultural Lands: The project could contribute to the ongoing loss of agricultural lands due to various factors. Firstly, the installation of new infrastructure and drainage systems may require the conversion of agricultural land into construction sites or water management areas, directly reducing the available acreage for farming activities. Additionally, alterations in drainage patterns and the introduction of wetlands as part of the project may render certain portions of agricultural land less suitable for cultivation, further diminishing the overall area available for farming. Furthermore, the potential increase in maintenance responsibilities for adjacent landowners could divert resources and attention away from agricultural activities, leading to reduced productivity or abandonment of agricultural land.**

Winter Lake Project Team Response 03/26/24
The Winter Lake Phase III project has been specifically designed to provide strong economic benefits for agricultural landowners within the project area and with special consideration to eliminate effects/impacts to adjacent landowners. The new channel on-grade design and installation on the landscape will provide for invigorated improvement in pasture grass production without substantive effects to total acreage of grass. Without the new channel networks and cleaning of the remainder, existing sediment filled channels will continue to fail to provide for proper drainage. Pasture grasses are struggling on large areas of the action area due to excessively wet conditions into early summer from poor transport channel capacity and connectivity to main outflow canals. The project will also provide strong access for overwintering juvenile coho into high value rearing habitat. During winter drainout is impossible due to higher river levels and thus use by fish is considered a strong and collaborative "Working Lands" benefit. Recreational fisheries are estimated to generate $280 per adult salmon caught to the Oregon economy through angler purchase of motels, food, fuel, boats, vehicles, and fishing equipment.

The project will not implement any actions on adjacent non-participating landownerships. The action area construction sites are temporary staging areas, most of which are upland off of North Bank Lane or Highway 42, where there currently is not EFU pasture production. No long-term effects/impacts to pasture production will occur due to staging areas. Troughs installed for livestock watering will provide enhanced livestock health due to higher quality water for their consumption compared to current conditions.

The lands within the Phase III Project area are all currently classified as wetlands under the USFWS National Wetlands Inventory (https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/) . The wetland pasture grass production from these sites is due to species of grass (bent grass and reed canary grass), predominating, which are facultative wetland plants. The project is unable to and will not create any new wetlands as the project is already wetland.

Channel networks will provide more natural hydrology similar to historical that will enhance the vigor of these wetland adapted pasture grasses. The new/reconstructed channel networks are specifically aligned in a manner different "altered drainage patterns" than existing in some locations to enhance the drainout, which will improve quantifiably the pasture grass production, while protecting ecology of the lands within the CREMP for the specified goals and values. Without this project the lands will continue to decrease in economic viability due to increased retention of water, which yields more unpalatable plant species such as smartweed and Pacific silverweed.

The project action areas are within surrounding berms to elevation 5.0ft. Culverts/tidegates/chanels that will be installed are not directly connected to adjacent lands and thus will not be impacting hydrology or productive capacity of those lands. The culverts/tidegates that will be addressed with Phase III are subservient to delivery of water through the main BSDD C3P and Coaledo tidegates. No actions will occur through Phase III at those main tidegate locations.

Winter Lake Phase III Team
Additional Information for
Application # ACU-23-074/FP-23-012
Excerpts from the Coos County Comprehensive Plan

04/03/24

The Winter Lake Project Team has developed the Phase III project in the Winter Lake floodplain to align with the Coos County Zoning and Planning criteria. Those planning/zoning criteria directly are associated with the Coos Comprehensive Plan. Within the plan Section in Volume 1 Part 1 the Project Team has noted language in green highlight with relevance to the ACU-23-074/FP-23-012.

Guidance from Coos County Planning: 04/03/2024
"Comprehensive Plan: The comprehensive plan, often referred to as the master plan or general plan, is a long-term vision document that outlines broad goals, objectives, policies, and strategies for guiding future growth and development within a jurisdiction. It typically covers various aspects of community development, including land use, transportation, housing, economic development, environmental conservation, and infrastructure. The comprehensive plan reflects the community's values, priorities, and aspirations and provides a framework for decision-making by local government officials, planners, developers, and residents. It serves as a blueprint for the physical, social, and economic development of the community over a specified period, often ranging from 10 to 20 years."

GOAL

Coos County shall preserve and maintain agricultural lands for farm uses "consistent with existing and future needs for agricultural products, forest, and open space,"z except where legitimate needs for nonfarm uses are justified.

PLAN IMPLEMENTATION STRATEGIES

Volume 1 Part 1 pg 44; #3. Coos County shall cooperate with the Natural Resources Conservation Service (NRCS) and Coos Soil and Water Conservation District (Coos SWCD) and other agencies in their efforts to promote bank stabilization, preferring non-structural stabilization methods except where bank protection structures are necessary.

This strategy is based on recognition that streambank protection and stabilization are necessary to prevent the erosion of agricultural soils.

Volume 1 Part 1 pg 44; #4. Coos County shall cooperate with NRCS and Coos SWCD and drainage districts in their efforts to obtain permits and to maintain funding for drainage projects on floodplain land in agricultural use (including "wet meadows" classified by the U.S. Fish & Wildlife Service as wetlands). Such drainage projects may include improvement or maintenance of existing facilities or construction of new dikes and drainage channels.

This strategy recognizes that: (1) improved or well-maintained drainage facilities are essential to the most efficient use of Coos County's most productive agricultural lands, and (2) recently adopted Federal policies to protect wetlands for their wildlife habitat values are unduly restrictive in the case of seasonally flooded, diked wet meadows, because agricultural and wildlife habitat uses are thoroughly compatible in these wet meadow areas.

Volume 1 Part 1 pg 44; #5. Coos County shall generally support the efforts of the NRCS, Coos SWCD, Coos Watershed Association, Coquille Watershed Association, and other entities to develop water storage projects to supply additional irrigation water to improve the County's agricultural economy except where strong public opinion is presented and accompanied by documentation.

This strategy recognizes the need for additional water storage projects and that the NRCS and Coos SWCD should play a lead role in the development of such projects.

FISH & WILDLIFE HABITATS

Volume 1 Part 1 pg 55

Problem/Opportunity Statement

Coos County contains many significant fish and wildlife habitat areas; some of these areas are threatened by development that could reduce or destroy habitat.

ISSUE

Fish and wildlife have extremely important commercial and recreational economic value to the County. In addition, fish and wildlife species provide a wide variety of recreational opportunities and are essential links in the ecological system. Careful identification of significant protection of habitat must be balanced with legitimate development needs.

What can the County do to protect significant fish & wildlife habitats and still meet the economic and housing needs of the County residents?

GOAL

Coos County shall value its identified significant fish and wildlife habitat and shall strive to protect them where practicable.

PLAN IMPLEMENTATION STRATEGY

Volume 1 Part 1 pg 52. #1 Coos County shall consider as "Sc" Goal #5 resources (pursuant to OAR 660-16-000) the following:

* "Sensitive and peripheral Big-game Range" (ORD 85-08-0IOL)
* Bird Habitat Sites (listed in the following table)
* Salmonid Spawning and Rearing Areas

Uses and activities deemed compatible with the objective of providing adequate protection for these resources are all uses and activities allowed, or conditionally allowed, by the Zoning and Land Development Ordinance, except that special care must be taken when developing property adjacent to salmonid spawning and rearing areas so as to avoid, the greatest practicable extent, the unnecessary destruction of riparian vegetation that may exist along stream banks. The Oregon Forest Practices Act is deemed adequate protection against adverse impacts from timber management practices.

This policy shall be implemented by:

a. County reliance on the Oregon Forest Practices Act to ensure adequate protection of "significant fish and wildlife habitat" against possible adverse impacts from timber management practices; and

b. The Zoning and Land Development Ordinance shall provide for an adequate riparian vegetation protection setback, recognizing that "virtually all acknowledged counties have adopted a 50 foot or greater standard;"[3] and

c. (ORD 85-08-0l0L) Use of the "Special Considerations Map" to identify (by reference to the detail inventory map) salmonid spawning and rearing areas subject to special riparian vegetation protection; and sensitive and peripheral big game range; and

d. Stipulating on County zoning clearance letters that removal of riparian vegetation in salmonid spawning and rearing areas shall be permitted only pursuant to the provisions of this policy.

e. Coos county shall adopt an appropriate structural setback along wetlands, streams, lakes and rivers as identified on the Coastal Shorelands and Fish and Wildlife habitat inventory maps.

f. (ORD 85-08-0l0L) Coos County shall not permit residential densities in identified Big Game Range to exceed:

   1) one dwelling per 40 acres in Peripheral Big Game Range; or

   2) one dwelling per 80 acres in Sensitive Big Game Range.

[3] DLCD report on Coos County, November 28, 1984.

Coos County shall also consider as Goal #5 "5c" resources the following bird habitat areas:

	Township	Range	Section	Area
Bald Eagle Nests	23S	13W	23	Tenmile
	23S	llW	05	Big Creek
	23S	12W	21	Willow Point
	24S	12W	04	Palouse
	24S	13W	36	Mettman
	25S	llW	29	Bessy Creek
	25S	llW	33	Dellwood
	25S	llW	22	Rachel Creek
	25S	llW	32	Morgan Ridge
	26S	14W	14	South Slough
	27S	13W	09	
	28S	lOW	09	Brewster Gorge
	31S	12W	16	Baker Creek
	29S	14W	31	Twomile Creek
	28S	14W	11	Randolph
Great Blue Heron Colonies	24S	13W	27SW¼	
	25S	14W	24SE¼	
	23S	13W	26	Saunders Lake
	24S	13W	23	North Bay
	25S	llW	15	Weyerhaeuser
	25S	12W	31NW¼	Catching Slough
	25S	14W	24	North Spit
	26S	14W	11	South Slough
	25S	13W	24	
	26S	14W	14 NE ¼,SE ¼	
	27S	14W	35 SE½,NW ¼	Sevenmile
	26S	14W	14NW¼	
	30S	15W	15	Muddy Lake
	23S	12W	28	Templeton Arm
Band-Tailed Pigeon Mineral springs	24S	13W	24&25	Haynes
	25S	13W	24	Cooston
	26S	13W	01	
	28S	14W	10	Prosper
	29S	llW	26	
	29S	llW	35	Blueslide
	29S	llW	36	Rock Quarry

Special care must be taken when developing property adjacent to "5c" bird sites so as to avoid, to the greatest practical extent, the unnecessary destruction of, or impact upon, said bird sites. The Oregon Forest Practices Act (FPA) is deemed adequate protection against adverse impacts from timber management practices.

This policy shall be implemented by:

a. County reliance upon the FPA and the March 1984 Department of Forestry/ODFW agreement to insure adequate protection of "5c" bird sites against possible adverse impacts from timber management practices; and

b. Use of the "Special Considerations Map" and detailed inventories in the Plan to identify "5c" bird sites subject to special protection; and

c. For "5c" bird site protection, stipulating in the Zoning and Land Development Ordinance that conflicting uses shall be reviewed by the Oregon Department of Fish and Wildlife to determine that any proposed use is not expected to produce significant and unacceptable environmental impacts on any of the "5c" bird sites; and

d. Stipulating on County Zoning Clearance Letters that establishment of conflicting uses adjacent to "5c" bird sites shall be permitted only pursuant to the provisions of this policy.

Coos County shall require a location map for any development activity (except grazing or forest practices) within its regulatory scope that is determined to be within a "5c" habitat. The location map shall be referred to the Oregon Department of Fish and Wildlife requesting an opinion within 10 days as to whether the development is likely to produce significant and unacceptable impacts upon the "5c" resources, and what safeguards it would recommend to protect the resource.
ODFW's determination shall be reviewed by the Coos County Planning Director, who shall consider the ODFW findings and approve, approve with conditions, or deny an Administrative Conditional Use for the matter (ACU) based upon sound principles of conservation and appropriate balancing of the EESE consequences so if conflicting uses are allowed the resource site is protected to some extent. With regard to Bald Eagle nests, new dwellings (on identified, inventoried tax lots containing nests) shall be sited at least 300 feet from the protected nest (ORD 85-08-0lOL). The ACU shall be processed pursuant to the Zoning and Land Development Ordinance.

2. Coos County shall manage its riparian vegetation and identified non-agricultural wetland areas so as to preserve their significant habitat value, as well as to protect their hydrologic and water quality benefits (ORD 85-08-0l0L). This strategy does not apply to forest management actions, which are regulated by the Forest Practices Act.

This strategy recognizes that protection of riparian vegetation and other wetland areas is essential to preserve the following qualities deriving from these areas:

Volume 1 Part 1 pg 54

Natural Flood Control Flow stabilization of streams and rivers	**Environmental diversity** Habitat for fish and wildlife, including fish and wildlife of economic concern
Reduction of sedimentation	**Recreational opportunities**
Improved water quality	**Recharge of aquifers**

3. Coos County shall support the efforts of the Oregon Department of Fish and Wildlife to maintain a productive fishery in County streams and lakes.

This strategy recognizes the economic and recreational importance that results from maintaining adequate fish stocks.

4. Coos County shall protect for agricultural purposes those land areas currently in agricultural use but defined as "wet meadow" wetland areas by the U.S. Fish and Wildlife Service, and also cranberry bogs, associated sumps and other artificial water bodies.

Implementation shall occur through the placement of the plan designation "Agriculture" on such areas.

Volume 1 Part 1 pg 55

This strategy recognizes:

1. That agriculture is an important sector of the local economy;

11. That some of the productive lands in Coos County's limited supply of suitable agricultural lands are such seasonally flooded areas;

iii. That designation of these areas for agricultural use is necessary to ensure the continuation of the existing commercial agricultural enterprise; and

1v. That the present system of agricultural use in these areas represents a long-standing successful resolution of assumed conflicts between agricultural use and habitat preservation use, because the land is used agriculturally during months when the land is dry and therefore not suitable as wetland habitat, and provides habitat area for migratory wildfowl during the months when the land is flooded and therefore not suitable for most agricultural uses.

3/26/2024

Verna L Rose
58392 Garden Valley Road
Coquille, Oregon 97423

Oregon Department of Revenue
Cadastral Information System Unit
PO Box 14380
Salem, Oregon 97309-5075

Regarding Removal from the Beaver Slough Drainage District

I'm requesting my land out of the Beaver Slough Drainage District under ORS 198.882.

I've asked directly to the Broad of Directors of this District and there was not any reason that I couldn't be released if we filled out the paperwork. Which my husband and I did fill out in February 2016. Never a response from them back or them following through on of removing my land from their District.

The Beaver Slough Drainage District has never provided any benefits to my property or any of the homeowners in the Garden Valley area or any adjacent landowner to my knowledge.

All money collected from property taxes and bond funds they levied by the Beaver Slough Drainage District goes only to large six landowners (on The Board of Directors of Beaver Slough Drainage District) in the Coquille Valley. Their land in the Beaver Slough Drainage District does not encumber their homes and that land is income properties. Whereas the small homeowners in Beaver Slough Drainage District, land is used for personal use. The Beaver Slough Drainage District has stated openly they never or ever will provide funds for the small homeowners property in Garden Valley.

The district has 23 landowners or homeowners in the Beaver Slough Drainage District. The 6 large landowners and Board of Directors have a total of 1615.67 acres in the Coquille Valley which is adjacent to the Coquille River. Part of Garden Valley homeowners has land touching China Creek which when allow drains towards the Coquille Valley then to the Coquille River, which is a normal flow of water path. All water has a natural path from streams to creeks , to rivers and finally to the ocean no matter where you live in this world.

Not all homeowners in Garden Valley are in the Beaver Slough Drainage District, that have land touching China Creek only a proportion of us are in the District. My land is one of few if not the only one does not touch the China Creek.

My reason for wanting removed from the Beaver Slough Drainage District.
1. This District is a self-serving district to the (Six) large landowners. Who are the Board of Directors. They own 1,615.67 acres, which give them total control over the District by that many voting power because it's vote are counted by one vote per acres.
The remaining homeowners and landowners in the Beaver Slough Drainage District (Eighteen) only have 89.27 acres and that many voting votes.
2. This Board of Directors sued its members when it was in dispute with another large landowners. It cost the small homeowners in Garden Valley about $10,000. In attorney fees personally. They resolved their differences out of court finally with that landowner. But the small homeowners had still incurred attorney fee plus the funds from taxation and bond levies from the Beaver Slough Drainage District to

pay the Beaver Slough Drainage District attorney fees. Double cost on small homeowners in Garden Valley.

3. Now they have another project that is planned for the land with zoning changes. No mention of the future cost to homeowners. "Surprise"

4. Now is time to get out before they impose more financial burden on me and the my land and home.

5. I lived in my home almost 52 years and almost 77 years old. I've paid enough to this District. When my home was purchased in 1972 my tax statement didn't even mention the Beaver Slough Drainage District. What it did mention was Drainage. I thought that was for ditches along the Garden Valley Road. It wasn't until about 1995, that I found out differently, when I received a letter stating to attend a meeting about being taxed outside of this Beaver Slough Drainage District limitations. At that time I request to be removed from the District. Was told if I submitted paperwork there was more reason that I couldn't be removed. Because I was alone from my first husband's death and low funds to live I didn't complete any paperwork at that time. Then in February 2016 paperwork was completed and provide to the Beaver Slough Drainage District. We never received and further responses from them except being put on their agenda for several months and years. Never time to discuss or finalize the paperwork was only comments . It takes time will let you out when the time is right. They also told me and others the Beaver Slough Drainage District would pay back taxes and bond funds collected when removed from the Beaver Slough Drainage District. At this point. All I personally want is out of the Beaver Slough Drainage District and No further taxes or bond funds levied against my home.

6. In my opinion this Beaver Slough Drainage District is unconstitutional and should be dissolve totally. Beaver Slough Drainage District doesn't serve everyone fairly and small homeowners have no voting power to stopped anything.

7. This drainage district large landowners seem to changing their into more wetland, estuaries and wildlife lands. It appears to be this is estate planning for their benefits. It also appears they are also probably getting funds from state and federal government agencies for funding. Again funds from my state and federal taxes. No benefits for my land or home.

8. Let these large landowners put their acreage into these wetlands, estuaries and wildlife if they so choices. Make state or federal land, which can be controlled out taxation money used for everyone liking and using these types lands.

9. I opposed being taxed and someone (out of area) telling it's great project to have in area they enjoy seeing or using. It not their homes and land paying the cost.

I'm directly contacting you to remove my land out of the Beaver Slough Drainage District by ORS 198.882.

Sincerely,

Verna Louise Rose

Verna L Rose 3/26/2024

Contact information:

Cell: 503-347-4503

Email address: verna.l.rose@gmail.com

Lester F. David SR
Verna L. Rose
58392 Garden Valley Road
Coquille, Oregon 97423

February 4, 2016

Beaver Slough Drainage District
Board of Supervisors/ County and State Officials
Coquille, Coos County, Oregon

RE: Request removal of land and financial connection from Beaver Slough Drainage District.

Several months ago we summit our request to be removed from this drainage district. We would like to get this removal request signed, so we could move forward in process, as you know there is time line dates to be met for the county and state.

We don't understand the delay in receiving this removal document approval and signed. This board as early as 1995 and at a meeting in Portland during an mediation meeting stated that it would be approved for removal if we made the formal request. We provide this board with that request, plus the maps and etc.

We are as far as we know, we are the only ones making this formal request. This land does not border China Creek. We do not make any checker boards effect to the Beaver Slough Drainage District. We are far less than the five percent of the total acreage and revenue in this district, to be that much of a benefit to this district. NO benefit is provided From this drainage district in the pass or future. The state law says the land could be removed if the land is less five percent revenue and/or acreage and would not libel for any assessments. The board has in the past removed small landowners and has stated this land also could be removed. I hope you will follow though with signing the approval since it was stated it would be.

Sincerely,

Lester F David
Verna Rose

Appendix A

Notice from Taxing District

Boundary change packets must be received by the **Department of Revenue** and the **County Assessor(s)** by March 31.

For Department of Revenue use only		
Prepared by	DOR file number	
Date received	Date approved	Date disapproved
Notes		

District name Beaver Slough Drainage District

Mailing address 60196 Old Wagon Road Coos Bay, OR 97420

City Coquille

State OR

ZIP 97423

County name Coos County

Second county name (if applicable)

Contact person Fred Messerle BSDD

Second contact person (if applicable)

Phone 541-404-6105 - Cell 541-267-2997 - office

Email bsdd.bos@gmail.com

Ordinance/resolution/order

Planning file number

Election date

Effective date

Notes Request being made by ~~Verna Louise Rose under~~ ORS 198.882 TAX Relief to withdrawal. NO Benefits Received from BSDD - less than 5% Acreage in District - less than 5% INCome in District

Boundary

☐ Change ☐ Proposed change ☐ Preliminary review ☐ Delayed annexation

The change is for

☐ Formation of a new district

☐ Annexation of territory to a district

☒ Withdrawal of territory from a district

☐ Dissolution of a district

☐ Transfer

☐ Merge

☐ Establishment of tax zone

Request and paperwork smitted BSDD many times - No Action or Response from BSDD - Even after they told me and others we could be Removed.

Documents included

☐ Ordinance/Resolution/Order

☐ Map of Boundary Change (shows point of beginning and all bearings and distances.)

☐ Legal description of Boundary Change

Send to
Oregon Department of Revenue
Cadastral Information Systems Unit
PO Box 14380
Salem OR 97309-5075

Contact us
Email: boundary.changes@oregon.gov
Fax: 503-945-8737

150-504-407 (Rev. 07-14)

Lot 600

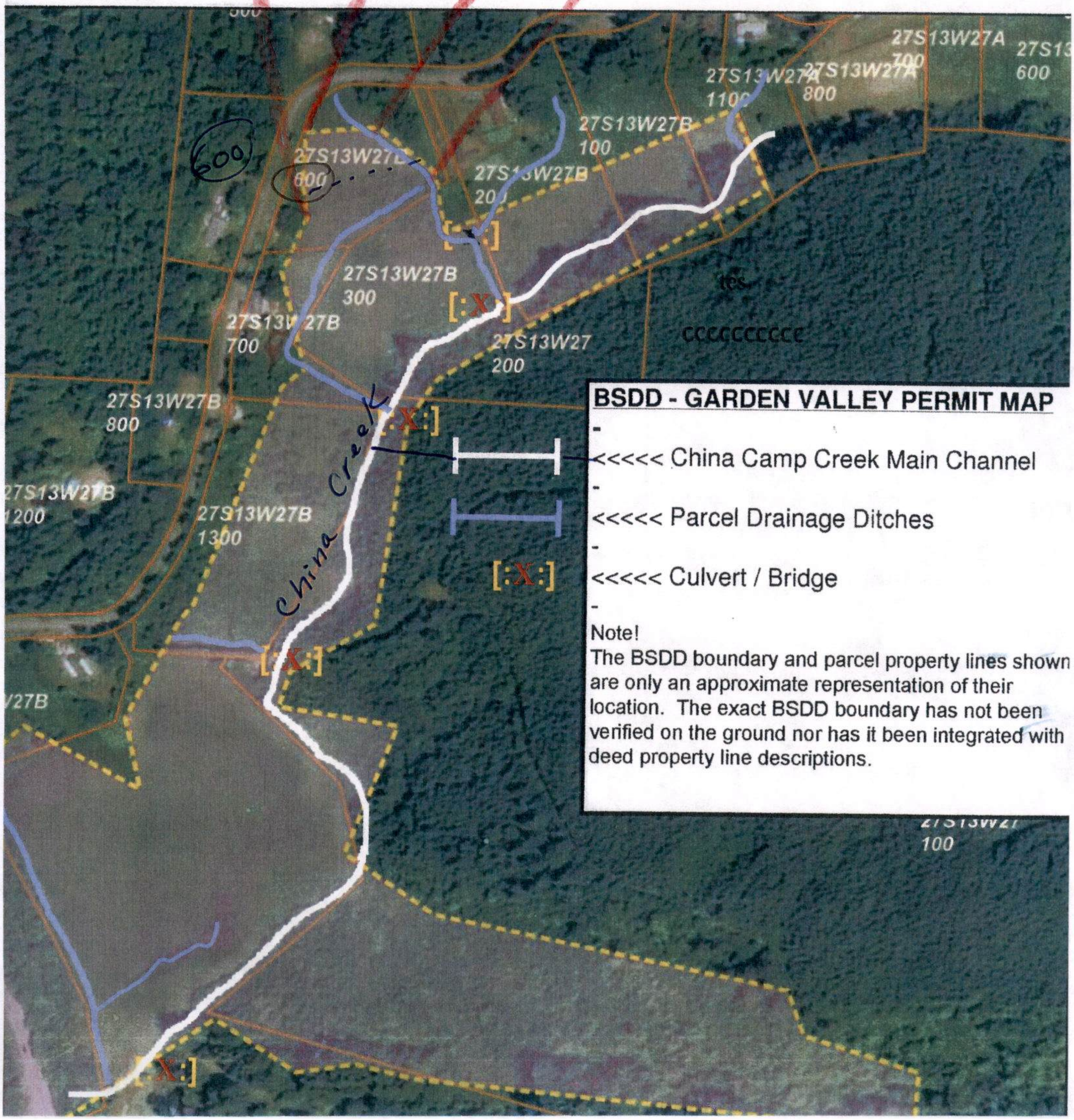
49. 132'

48. 198'

47. 198'

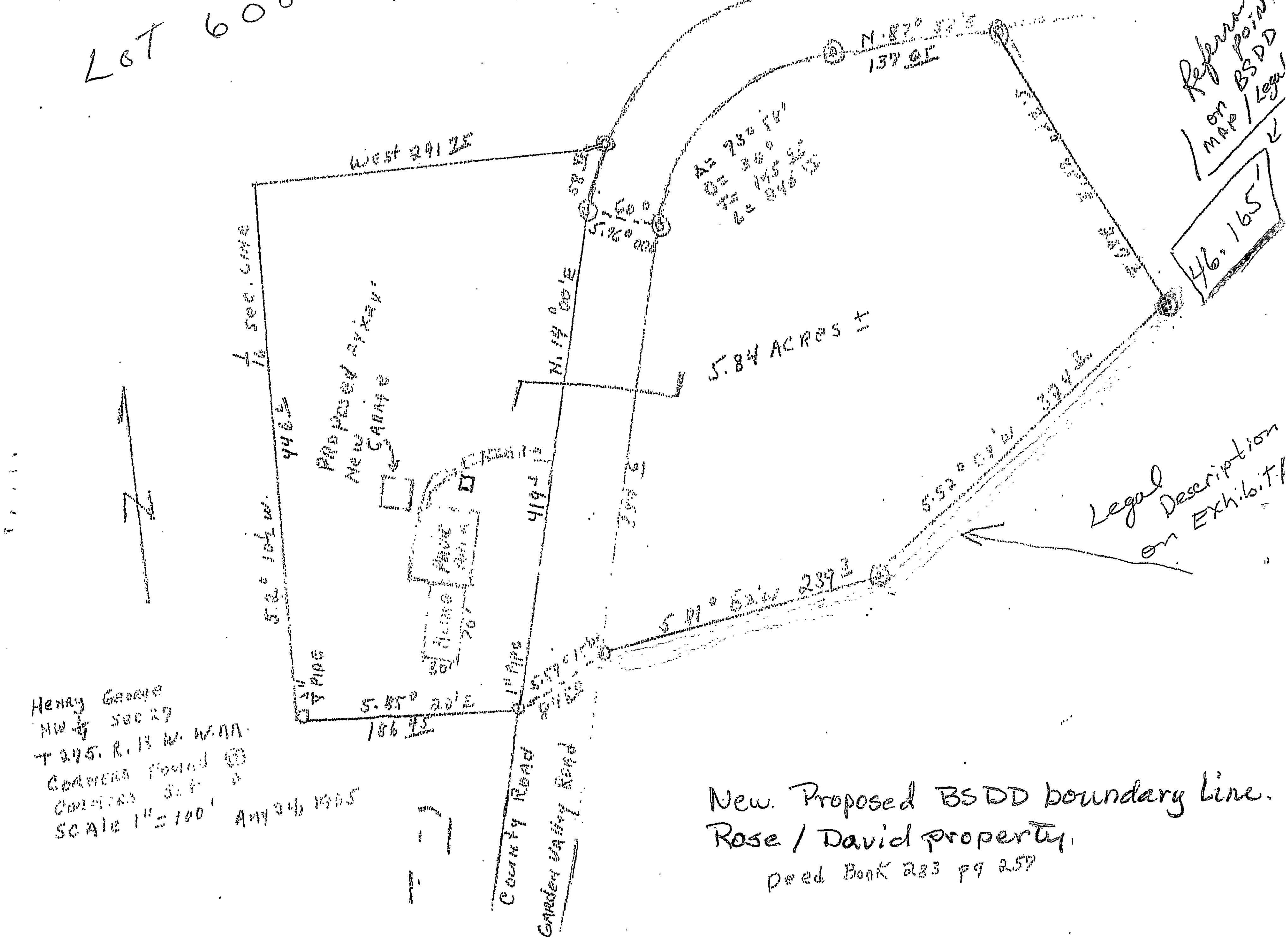
46. 165'

Yellow doted line Drainage district Lines

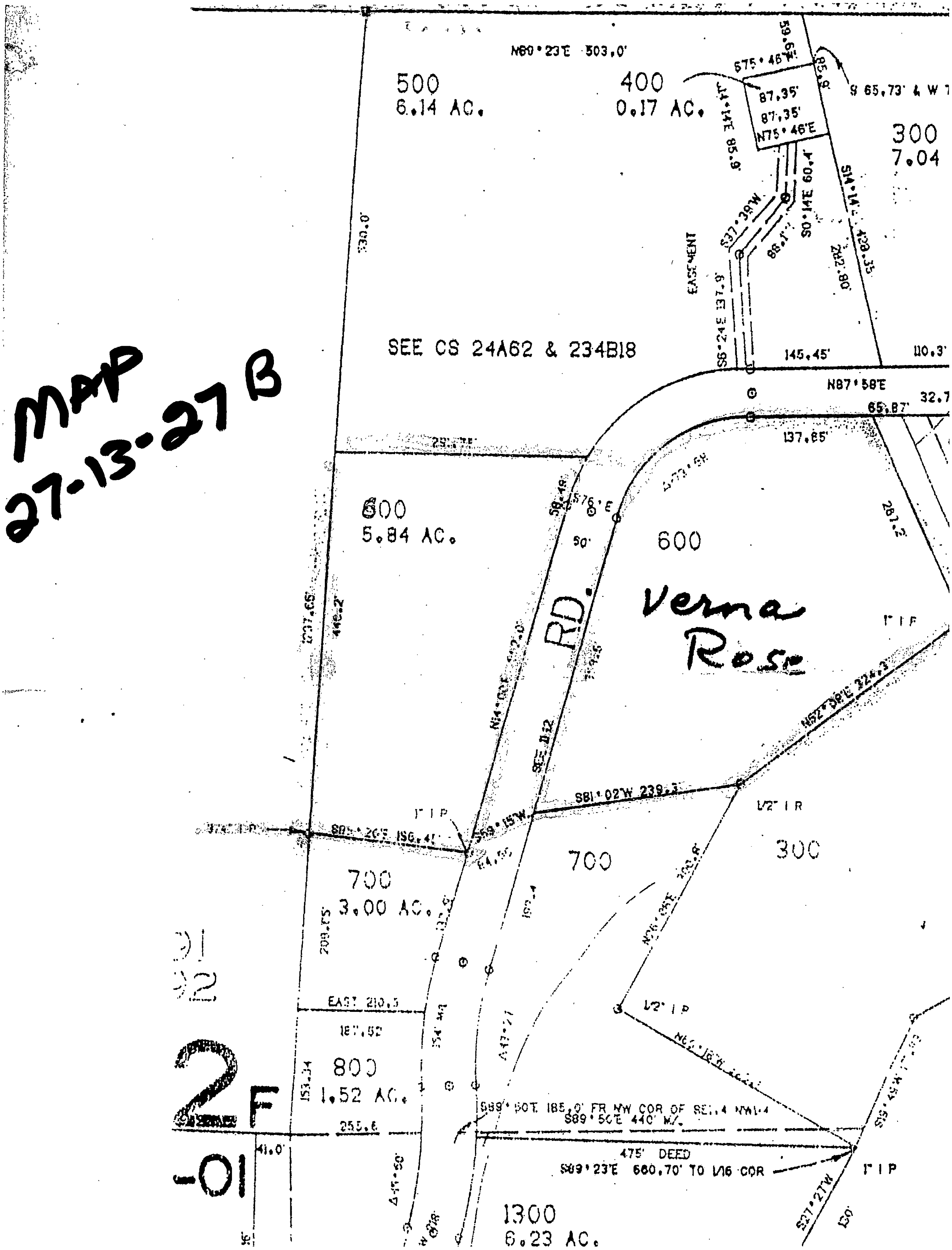


#600
27S13W27B
600
Remove
ALL This
3.43 acres of
Verna L. Rose
27S13W27B
300
27S13W27B
700
3W27B

Attachment D



New. Proposed BSDD boundary Line.
Rose / David property.
Deed Book 283 pg 257


MAP
27-13-27B
N80°23'E 503.0'
500
6.14 AC.
400
0.17 AC.
S75°46'W
87.35'
87.35'
N75°46'E
300
7.04
S 65.73' & W 7
330.0'
EASEMENT
S37°39'W
S0°14'E 60.4'
88.1'
S14°14'E 429.35
282.90'
SEE CS 24A62 & 234B18
145.45'
110.3'
N87°58'E
32.7
65.87'
137.85'
281.2
600
5.84 AC.
50'
600
RD.
Verna
Rose
1" I P
N52°08'E 224.3
S81°02'W 239.3'
1/2" I R
S89°20'E 156.41'
S89°15'W
1" I P
700
300
700
3.00 AC.
208.75
EAST 210.5
187.52
800
1.52 AC.
153.34
1/2" I P
2F
-01
255.6
41.0'
S89°50'E 185.0' FR NW COR OF SE1/4 NW1/4
S89°50'E 440' M/L
475' DEED
S89°23'E 660.70' TO 1/16 COR
1" I P
S27°27'W
1300
6.23 AC.

Attachment E

EXHIBIT A

A parcel of land situated in the Northeast quarter of the Northwest quarter of Section 27, Township 27 South, Range 13 West of the Willamette Meridian, Coos County, Oregon, being more particularly described as follows:

Beginning at a 3/4" iron pipe set on the West boundary of the Northeast quarter of the Northwest quarter North 2° 10-1/2' East 362.99 feet from the Southwest corner of the Northeast quarter of the Northwest quarter and running thence along the 1/16 section line North 2° 10-1/2' East 446.2 feet; thence East 291.75 feet to a 1-1/2" iron pipe set on the Westerly boundary of a 60 foot wide public road; thence along said road boundary along a 223.18 foot radius curve to the left the long chord of which bears South 21° 32' West 58.48 feet to a 5/8" iron rod; thence South 76° 00' East 60.0 feet to a 5/8" ironrod on the Easterly boundary of said road; thence along said road boundary around a 163.18 foot radius curve to the right the long chord of which bears North 50° 59' East 196.33 feet to a 5/8" iron rod; thence North 87° 58' East 137.65 feet to a 1" iron pipe; thence leaving said road boundary and running thence South 25° 35' East 267.2 feet to a 1" iron pipe; thence South 52° 08' West 324.3 feet to a ½" iron rod; thence South 81° 02' West 239.3 feet to a 1" iron pipe set on the Easterly boundary of said public road; thence South 59° 15' West 84.50 feet to a 1" iron pipe set on the Westerly boundary of said road; thence North 85° 20' West 186.45 feet to the point of beginning. Being 5.84 acres, more or less.

Excepting that portion of the public road crossing the above parcel.

Legal description for Rose/David property

COOS COUNTY CLERK, OREGON
TERRI L. TURI, CCC, COUNTY CLERK
TOTAL $46.00

01/26/2012 11:23:17AM
PAGE 2 OF 2

2012 572

Taxes E. Bond

ACCOUNT	OWNER	AMOUNT	SPECIAL ASSESSMENT ACRE	TOTAL ACRES
712906	BONES, TIM	$175.00	5.00	6.14
716407	BURRIS, BARBARA L	$61.95	1.77	2.77
717300	CHINA CAMP GUN CLUB, INC.	$4,200.00	120.00	121.59
716406	CHUPKA, MICHAEL JR & REGAN	$105.00	3.00	7.04
716401	COOPER, LISA	$126.00	3.60	6.23
717800	DOMENIGHINI FAMILY LTD PARTNERSHIP	$486.50	13.90	31.20
721202	EVERETT-ONA ISENHART RANCH,INC; ETAL	$6,118.00	174.80	175.68
898300	FRED MESSERLE & SONS, INC.	$502.25	14.35	43.37
724600	FRED MESSERLE & SONS, INC.	$158.90	4.54	27.00
722300	FRED MESSERLE & SONS, INC.	$16,150.05	461.43	553.55
722303	FULTS, DALE C ET AL	$70.00	2.00	2.55
716703	FULTS, DARRELL & ELLEN	$35.00	0.60	6.14
712701	HACKETT INVESTMENTS LLC	$35.00	1.00	30.15
716403	HOPMANS & VAN DEN REEK TRUST	$53.20	1.52	5.35
721200	ISENHART LIVING TRUST ET AL	$2,076.55	59.33	120.60
722302	KARL P SODERBERG REVOCABLE LIVING TRUST	$38.50	1.10	1.24
716405	KELLEY M. KINKADE REV. LIVING TRUST	$105.00	3.00	5.43
713910	OLSEN, GAIL A.	$35.00	0.80	5.00
717002	OREGON DEPARTMENT OF FISH AND WILDLIFE	$9,895.20	282.72	285.97
712904	OREGON DEPARTMENT OF FISH AND WILDLIFE	$2,776.55	79.33	109.20
716408	ROSE, VERNA LOUISE	$120.05	3.43	5.84
896802	ROSEBURG FOREST PRODUCTS CO.	$175.00	5.00	23.50
716200	ROSEBURG RESOURCES CO	$301.00	8.60	169.00
716400	ROSEBURG RESOURCES CO	$35.00	0.66	3.63
716704	ROSEBURG RESOURCES CO.	$100.45	2.87	4.55
716409	SANDERS, F. DARRELL & LINDA M.	$38.50	1.10	1.52
7715000	STATE OF OREGON	$142.10	4.06	4.06
99920212	STATE OF OREGON DEPT OF FISH & WILDLIFE	$62.65	1.79	2.05
717402	THE BRIDGES FOUNDATION	$700.00	20.00	20.00
717500	THE BRIDGES FOUNDATION	$3,500.00	100.00	100.00
717401	THE BRIDGES FOUNDATION	$2,800.00	80.00	80.00
717600	THE BRIDGES FOUNDATION	$4,596.90	131.34	148.51
99916790	THE BRIDGES FOUNDATION	$343.00	9.80	52.19
716702	THE BRIDGES FOUNDATION	$826.00	23.60	25.36
716800	THE BRIDGES FOUNDATION	$1,905.05	54.43	54.43
712901	WINTER LAKE PROPERTIES LLC	$175.00	5.00	6.24
716700	WISELY, BRETT	$744.10	21.26	51.58
		59,763.45	1,706.73	

This is the correct acreage and amount for the FY 23-24 Assessment Acreage

BEAVER SLOUGH DRAINAGE DISTRICT

Fred R. Messerle

Fred R. Messerle

Verna copy

Table 5 Summary Of Special Assessments, Fees, and Charges
Tax Year 2023-24
Coos County

Note: Do not include any Urban Renewal Tax information on this table.

District or Assessment Name (Do not include any assessment shown on Table 4a)	(1) Amount Extended Inside Measure 5 Limits	(2) Amount Extended Outside Measure 5 Limits	(3) Total Extended (#1 plus #2)	(4) Loss Due to Compression	(5) Amount Imposed (col 3 minus col 4)	(6) Percentage Schedule
BEAVER SLOUGH DRAINAGE	$59,768.45	$0.00	$59,768.45	($38,222.39)	$21,546.06	.000245626463
BEAVER SLOUGH DRAINAGE BOND	$0.00	$49,522.43	$49,522.43	$0.00	$49,522.43	.000564558872

Tax Details Extended

Tax ID 721200 Year 2023 Code Area 0892

Imposed Total $3,426.21

Primary Owner / Agent

ISENHART LIVING TRUST ET AL
ISENHART, JOHN & LAURA J TTEE
PO BOX 174
BROADBENT OR 97414-0174

Values Used To Calculate:

AV	$93,959.00
M5	$99,341.00
RFD	$93,959.00
AV Exemption	$0.00

			Imposed Amounts			Extended (Pre-Compression) Amounts		
Dist #	District Name	Rate	Government	Education	Bonds	Government	Education	Compression
3	COOS CO LOCAL OPTION LEVY	0.0002000	0	0	0.0000000	18.79	0	18.79
4	COOS COUNTY-4H/EXTENSION	0.0000882	3.25	0	0.0000000	8.29	0	5.04
5	COOS COUNTY-LIBRARY SERVICES	0.0007238	26.66	0	0.0000000	68.01	0	41.35
6	COOS COUNTY	0.0010723	39.50	0	0.0000000	100.75	0	61.25
100	SOUTH COAST ESD	0.0004401	0	40.56	0.0000000	0	41.35	0.79
150	COQUILLE SCHOOL #8	0.0042522	0	391.93	0.0000000	0	399.53	7.60
200	SW OREGON COMM COLLEGE	0.0006967	0	64.21	0.0000000	0	65.46	1.25
255	COQUILLE RFPD	0.0008670	31.94	0	0.0000000	81.46	0	49.52
500	PORT OF BANDON	0.0003249	11.97	0	0.0000000	30.53	0	18.56
515	COOS COUNTY AIRPORT	0.0002383	8.78	0	0.0000000	22.39	0	13.61
605	COQUILLE VALLEY HOSPITAL	0.0015299	56.36	0	0.0000000	143.75	0	87.39
620	COOS COUNTY URBAN RENEWAL	0.0000231	0.85	0	0	2.17	0	1.32
650	FIRE PATROL	0	0	0		0	0	0
720	BEAVER SLOUGH DRAINAGE	0	814.10	0		2076.55	0	1262.45
721	BEAVER SLOUGH DRAINAGE BOND	0	0	0		0	0	0
	Totals:	0.01045650	$993.41	$496.70	$1,936.10	$2,552.69	$506.34	$1,568.92

$ 2076.55
- 1262.45
$ 814.10 Accual Taxes paid

Example of one Landowner compression Benefit.

Bond

ACCOUNT	OWNER	AMOUNT	SPECIAL ASSESSMENT ACRE	TOTAL ACRES
712906	BONES, TIM	$145.00	5.00	6.14
716407	BURRIS, BARBARA L	$51.33	1.77	2.77
717300	CHINA CAMP GUN CLUB, INC.	$3,480.00	120.00	121.59
716406	CHUPKA, MICHAEL JR & REGAN	$87.00	3.00	7.04
716401	COOPER, LISA	$104.40	3.60	6.23
717800	DOMENIGHINI FAMILY LTD PARTNERSHIP	$403.10	13.90	31.20
721202	EVERETT-ONA ISENHART RANCH,INC; ETAL	$5,069.20	174.80	175.68
722300	FRED MESSERLE & SONS, INC.	$13,381.47	461.43	553.55
724600	FRED MESSERLE & SONS, INC.	$131.66	4.54	27.00
898300	FRED MESSERLE & SONS, INC.	$416.15	14.35	43.37
722303	FULTS, DALE C ET AL	$58.00	2.00	2.55
716703	FULTS, DARRELL & ELLEN	$29.00	0.60	6.14
712701	HACKETT INVESTMENTS LLC	$29.00	1.00	30.15
716403	HOPMANS & VAN DEN REEK TRUST	$44.08	1.52	5.35
721200	ISENHART LIVING TRUST ET AL	$1,720.57	59.33	120.60
722302	KARL P SODERBERG REVOCABLE LIVING TRUST	$31.90	1.10	1.24
716405	KELLEY M. KINKADE REV. LIVING TRUST	$87.00	3.00	5.43
713910	OLSEN, GAIL A.	$29.00	0.80	5.00
712904	OREGON DEPARTMENT OF FISH AND WILDLIFE	$2,300.57	79.33	109.20
717002	OREGON DEPARTMENT OF FISH AND WILDLIFE	$8,198.88	282.72	285.97
716408	ROSE, VERNA LOUISE	$99.47	3.43	5.84
896802	ROSEBURG FOREST PRODUCTS CO.	$145.00	5.00	23.50
716200	ROSEBURG RESOURCES CO	$249.40	8.60	169.00
716400	ROSEBURG RESOURCES CO	$29.00	0.66	3.63
716704	ROSEBURG RESOURCES CO.	$83.23	2.87	4.55
716409	SANDERS, F. DARRELL & LINDA M.	$31.90	1.10	1.52
7715000	STATE OF OREGON	$117.74	4.06	4.06
99920212	STATE OF OREGON DEPT OF FISH & WILDLIFE	$51.91	1.79	2.05
716702	THE BRIDGES FOUNDATION	$684.40	23.60	25.36
716800	THE BRIDGES FOUNDATION	$1,578.47	54.43	54.43
717401	THE BRIDGES FOUNDATION	$2,320.00	80.00	80.00
717402	THE BRIDGES FOUNDATION	$580.00	20.00	20.00
717500	THE BRIDGES FOUNDATION	$2,900.00	100.00	100.00
717600	THE BRIDGES FOUNDATION	$3,808.86	131.34	148.51
99916790	THE BRIDGES FOUNDATION	$284.20	9.80	52.19
712901	WINTER LAKE PROPERTIES LLC	$145.00	5.00	6.24
716700	WISELY, BRETT	$616.54	21.26	51.58
		49,522.43	1,706.73	

This is the correct acreage and amount for the FY 23-24 Bond Acreage

BEAVER SLOUGH DRAINAGE DISTRICT

Fred R Messerle

Fred R. Messerle

REAL PROPERTY TAX STATEMENT JULY 1, 2022 TO JUNE 30, 2023

COOS COUNTY, OREGON
250 NORTH BAXTER ST
COQUILLE, OR 97423

CODE: 0892
MAP: 27S1327-B0-00600
ACRES: 5.84
SITUS: 58392 GARDEN VALLEY RD COQUILLE

ACCOUNT NO: 716408

18362*59**G50**0.728**1/4*********AUTO5-DIGIT 97458
ROSE, VERNA LOUISE
58392 GARDEN VALLEY RD
COQUILLE OR 97423-9636

VALUES:	LAST YEAR	THIS YEAR
REAL MARKET (RMV)		
LAND	179,250	202,550
STRUCTURES	210,320	250,280
TOTAL RMV	389,570	452,830
TOTAL ASSESSED VALUE	215,910	222,380
EXEMPTIONS		
NET TAXABLE:	215,910	222,380
TOTAL PROPERTY TAX:	2,584.43	2,604.57

SOUTH COAST ESD	97.87
COQUILLE SCHOOL #8	945.60
SW OREGON COMM COLLEGE	154.93
EDUCATION TOTAL:	1,198.40
COOS CO LOCAL OPTION LEVY	44.48
COOS COUNTY-4H/EXTENSION	19.61
COOS COUNTY-LIBRARY SERVICES	160.96
COOS COUNTY	238.46
COQUILLE RFPD	186.29
PORT OF BANDON	72.25
COOS COUNTY AIRPORT	52.99
COQUILLE VALLEY HOSPITAL	340.22
COOS COUNTY URBAN RENEWAL	5.14
BEAVER SLOUGH DRAINAGE	120.05
GENERAL GOVT TOTAL:	1,240.45
~~FIRE PATROL SURCHARGE~~	~~47.50~~
FIRE PATROL	18.75
BEAVER SLOUGH DRAINAGE BOND	99.47
BONDS - OTHER TOTAL:	165.72

PAID
NOV 07 2023
COOS COUNTY TAX

ASSESSMENT QUESTIONS	(541) 396-7900
TAX QUESTIONS	(541) 396-7725

2023 - 2024 TAX (Before Discount) **2,604.57**

PAYMENT OPTIONS

Date Due	3% Option	2% Option	Trimester Option
11/15/23	2,526.43	1,701.65	868.19
02/15/24			868.19
05/15/24		868.19	868.19
Total	2,526.43	2,569.84	2,604.57

tm

TOTAL DUE (After Discount and Pre-payments) **2,526.43**

Tax Details Extended

Tax ID 716408 Year 2023 Code Area 0892

Imposed Total $2,604.57

Primary Owner / Agent

ROSE, VERNA LOUISE
58392 GARDEN VALLEY RD
COQUILLE OR 97423-9636

Values Used To Calculate:

AV	$222,380.00
M5	$452,830.00
RFD	$214,870.00
AV Exemption	$0.00

Dist #	District Name	Rate	Imposed Amounts Government	Imposed Amounts Education	Bonds	Extended (Pre-Compression) Amounts Government	Extended (Pre-Compression) Amounts Education	Compression
3	COOS CO LOCAL OPTION LEVY	0.0002000	44.48	0	0.0000000	44.48	0	0.00
4	COOS COUNTY-4H/EXTENSION	0.0000882	19.61	0	0.0000000	19.61	0	0.00
5	COOS COUNTY-LIBRARY SERVICES	0.0007238	160.96	0	0.0000000	160.96	0	0.00
6	COOS COUNTY	0.0010723	238.46	0	0.0000000	238.46	0	0.00
100	SOUTH COAST ESD	0.0004401	0	97.87	0.0000000	0	97.87	0.00
150	COQUILLE SCHOOL #8	0.0042522	0	945.60	0.0000000	0	945.60	0.00
200	SW OREGON COMM COLLEGE	0.0006967	0	154.93	0.0000000	0	154.93	0.00
255	COQUILLE RFPD	0.0008670	186.29	0	0.0000000	186.29	0	0.00
500	PORT OF BANDON	0.0003249	72.25	0	0.0000000	72.25	0	0.00
515	COOS COUNTY AIRPORT	0.0002383	52.99	0	0.0000000	52.99	0	0.00
605	COQUILLE VALLEY HOSPITAL	0.0015299	340.22	0	0.0000000	340.22	0	0.00
620	COOS COUNTY URBAN RENEWAL	0.0000231	5.14	0	0	5.14	0	0.00
650	FIRE PATROL	0	0	0		0	0	0
648	FIRE PATROL SURCHARGE	0	0	0		0	0	0
720	BEAVER SLOUGH DRAINAGE	0	120.05	0		120.05	0	0.00
721	BEAVER SLOUGH DRAINAGE BOND	0	0	0		0	0	0
	Totals:	0.01045650	$1,240.45	$1,198.40	$165.72	$1,240.45	$1,198.40	$0.00

Mark Villers (Coos SWCD)

Testimony

RECEIVED
APR 09 2024
By

Coos County Planning Department
225 North Adams St.
Coquille, OR 97423

Comment regarding the planned Hearing- ACU-23-074 Winter Lakes

I am concerned that the hearing process and even our County Commissioners, traditionally stalwart defenders of the agricultural economy of Coos County, are unintentionally obstructing continued pasture and hayfield operations within the floodplain of the Coquille River and creating anti-agriculture tension within county government.

Long overdue tidegate replacements and upgrades are desperately needed by lowland pasture managers to continue agricultural operations and must incorporate proper warm weather flushing to address stagnant ponding like that observed behind failing, decayed tidegates on many lowland pastures. Our county government should be working with ODFW, SWCD, and drainage districts to develop drainage management plans and to help farmers and ranchers navigate the complexity of permits and afford drainage infrastructure upgrades and maintenance. Our agricultural land managers provide essential economic and lifestyle benefits to residents like me, and they need our County government and BOC's help.

Please support and to the extent possible fully participate in the inventory, design, permitting, and upgrade of the tidegates that protect the public road system, make continued agriculture possible, and maximize the water holding capacity of floodplains to help attenuate flood impacts to our low-lying areas.

Thank you for your service to our community.

Barbara A Grant

Barbara Grant

58409 Clifford Road
Bandon, OR 97411

3-29-2024 (BG)