TWISP TO CARLTON REACH - GOLDEN DOE
FLOODPLAIN ENHANCEMENT PROJECT

90% Design

DATE: JAN 20, 2021

MB YAKAMA NATION FISHERIES
GOLDEN DOE FLOODPLAIN PROJECT

SITE LOCATION:
LATITUDE: 48°18'51"
LONGITUDE: -120°4'9"
OKANOGAN COUNTY, WASHINGTON
WATERBODY: METHOW RIVER
TRIBUTARY OF: COLUMBIA RIVER

SEATTLE
SPOKANE
ELLENSBURG
WENATCHEE
YAKIMA

PROJECT LOCATION

SHEET LIST
1 COVER SHEET, VICINITY MAPS, SHEET INDEX
2 TYPICAL COFFERDAM
3 HIP CONSERVATION MEASURES (1 OF 3)
4 HIP CONSERVATION MEASURES (2 OF 3)
5 HIP CONSERVATION MEASURES (3 OF 3)
6 EXISTING CONDITIONS, PROPERTY LINES
7 PROPOSED CONDITIONS OVERVIEW
8 NORTH - FLOODPLAIN SMOOTHNESS LOG STRUCTURES
9 NORTH - BAR APEX LOG STRUCTURES
10 SOUTH - LOG STRUCTURES
11 TUNNEL RADIUS DETAILS
12 SPECIFICATIONS (2 OF 2)
13 SPECIFICATIONS (3 OF 2)
14 SPECIFICATIONS (1 OF 3)
1. Bulk bag cofferdam is a pre-approved method of isolating construction water from the waterway. Alternatives, cofferdam materials, and configurations may be allowed but shall not be implemented without prior approval from the owner. Contractor shall provide shop drawings and/or vendor cut sheets for substitutions.

2. Bulk bag cofferdam shall be constructed of several units of bulk bags filled with washed spawning gravel, and abutted side by side to create a row that isolates the construction site from the river.

3. If water depth exceeds 85% of the bulk bag height, an additional top row of bulk bags shall be installed, supported by two bottom rows of bulk bags.

4. Bulk bag cofferdam shall be sealed by covering the cofferdam with plastic sheeting held in place by standard sandbags placed on top of cofferdam and at toe of cofferdam. The plastic sheeting shall be draped along the channel bottom on the work area side of the cofferdam with outward edge of sheeting minimum 4 ft from toe of cofferdam. The draped portion of plastic sheeting shall be pinned to the channel bed by minimum two rows of standard sandbags.

5. The outward edge of plastic sheeting on work area side shall be toed into the channel bed minimum 1 ft. Toeing in the outward edge of plastic sheeting shall occur after the cofferdam is closed to prevent turbidity release to the waterway.

6. If possible, the cofferdam shall be extended onto a gravel bar and out of the water. If the end must be terminated at the riverbank, the cofferdam shall be tightly sealed to the ground by plastic sheeting and standard sandbags. Multiple layers of sheeting and sandbags may be required to form a watertight seal.

7. Bulk bags shall be waterproof cube-shaped polypropylene woven fabric bags with fully open top, flat bottom, four loops, minimum 2-ton weight capacity, minimum 5:1 safety factor.

8. Plastic sheeting shall be minimum 6 mil thick. Roll length shall be long enough to ensure that entire length of cofferdam will be covered without a seam. Minimum 2.5 ft wide roll shall be used for single layer bulk bag cofferdam. Minimum 6 ft wide roll shall be used for 2-layer stacked bulk bag cofferdam.

9. Contractor shall provide pumping sufficient for a net inflow to the work area, and discharge turbid water to upland floodplain.

10. Bulk bag cofferdam shall be completely removed after construction is completed and turbidity has been removed. Upon owner's request, some bulk bags will be opened and washed spawning gravel applied to the river.

11. If necessary, gaps between bulk bags may be filled with washed gravel to seal and improve cofferdam seal. Removal of rock wash shall be determined by owner.
WORK AREA ISOLATION AND FISH SALVAGE (CONTINUED)

1. DEWATERING:
   A. DEWATERING WILL OCCUR AT A SLOW BLOW TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA.
   B. PRIOR TO RAISING FISH, SPUMPS WILL NOT BE INSTALLED TO AVOID POSSIBLE DEPRAVATION AND SALVAGING.
   C. WHEN FISH IS PRESENT, PUMPS WILL BE SCREENED TO ACCOMMODATE NATIVE FISHERIES, DREDGING, OR ENGINEERING WORK. APPROVAL WILL BE OBTAINED FOR PUMPS TO FLOOD THE STREAM.
   D. EXHAUST FLOW ENERGY AT THE FISHES EXHAUST WILL BE PROCESSED TO PREVENT DAMAGE TO THE STREAM CHANNEL, AND MINIMAL VEGETATION.
   E. SEWAGE WASTES WILL BE PUMPED TO A TEMPORARY TREATMENT AND TREATMENT UV FOR SET SETTLEMENT AND UV SETTLEMENT AT THE PERMITTED FLOW, AND VEGETATION PRIOR TO RESTORATION TO THE STREAM CHANNEL.

CONSTRUCTION AND POST CONSTRUCTION CONSERVATION MEASURES:

7. FISH PASSES:
   A. FISHERIES WILL BE PROVIDED FOR ROSS, AND AREAL FISH AS LIKELY TO BE PRESENT DURING CONSTRUCTION. UNLESS PASSAGE IS NOTAGAINST CONSTRUCTION, THE STREAM IS NOT DEPROESSED, OR PASSAGE WILL NOT BE PROVIDED.
   B. FISHERIES ALTERNATIVE WILL BE APPROVED BY THE NFWC, BILL UNDER ADVISMENT BY THE NFWC.

2. CONSTRUCTION AND OPRATION WORK:
   A. SURFACE WATERBODY OR Configuration will NOT BE CONSIDERED FOR OPRATION WORKS.
   B. VEGETATION WILL BE APPROPRIATE TO THE SPECIES OR VEGETATION PRIOR TO THE RESTORATION OF THE STREAM CHANNEL.

3. TAN AND EXTEND OF VEGETATION:
   A. ARTIFICIAL VEGETATION WILL BE CONSIDERED FOR OPRATION WORKS.
   B. VEGETATION WILL BE APPROPRIATE TO THE SPECIES OR VEGETATION PRIOR TO THE RESTORATION OF THE STREAM CHANNEL.

4. CONSTRUCTION AND POST CONSTRUCTION CONSERVATION MEASURES:
   A. THE PROJECT SPONSOR WILL PROVIDE CONSTRUCTION MONITORING DURING IMPLEMENTATION TO ENSURE ALL CONSTRUCTION MEASURES ARE ACCURATELY CONFORMED TO THE PROJECT SPECIFICATIONS, AND NO DESTRUCTION ALTHOUGH NOT EXCLUDED.
   B. THE PROJECT SPONSOR WILL PROVIDE REPRESENTATIVE TO SUBMIT THE PROJECT COMPLETION FORM (PCF) WITHIN 90 DAYS OF PROJECT COMPLETION.
   C. THE PROJECT SPONSOR WILL COMPLETE AND RECORD THE QUALITY AND VEGETATION ON THE RESTORATION WORKS.
   D. THE PROJECT SPONSOR WILL PROVIDE REPRESENTATIVE TO SUBMIT THE PROJECT COMPLETION FORM (PCF) WITHIN 90 DAYS OF PROJECT COMPLETION.

STAGED DEWATERING:

1. DEWATERING WORKS WILL OCCUR AT A SLOW BLOW TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA.

2. BUFFER ZONE REQUIREMENT:
   A. BUFFER ZONE REQUIREMENTS WILL BE DETERMINED AND APPLIED TO THE BUFFER ZONE REQUIREMENTS.
   B. BUFFER ZONE REQUIREMENTS WILL BE DETERMINED AND APPLIED TO THE BUFFER ZONE REQUIREMENTS.
   C. BUFFER ZONE REQUIREMENTS WILL BE DETERMINED AND APPLIED TO THE BUFFER ZONE REQUIREMENTS.

3. SITE RESTORATION:
   A. OBTAIN IN-LINE SYSTEMS. VEGETATION WILL BE CLEANED UP AND RESTORED TO IMPROVED PROJECT CONDITIONS.
   B. PROJECT-RELATED WASTE WILL BE REMOVED.
   C. TEMPORARY VEGETATION IS COMPACTED AND RESTORED. BOLTED VEGETATION IS LOCKED IN PLACE FOR RESTORATION OR WATER PERMEABILITY.
   D. THE PROJECT SPONSOR WILL RETAIN THE RIGHT TO REASONABLE ACCESS TO THE SITE TO REMOVE AND MAINTAIN THE SITE OVER THE LIFE OF THE PROJECT.

4. VEGETATION:
   A. PLANTING AND SEEDING WILL OCCUR PRIOR TO THE BEGINNING OF THE FIRST GROWING SEASON AFTER CONSTRUCTION.
1. The access route is typical. Access route will be adjusted in field to minimize impacts to vegetation.
2. Log locations, size, and alignments depicted here are typical. Some adjustments in the field may occur based on actual materials.
3. Avoid damaging existing trees and shrubs.
4. Incorporate slash from Alder Creek Project site into each floodplain roughness structure.
5. Timber piles shall have varying heights above ground, varying angles, and roughened or broken tops.

Legend:
- Legend
- Limits of Disturbance
- Log placements

Notes:
- Access route is typical. Access route will be adjusted in field to minimize impacts to vegetation.
- Log locations, size, and alignments depicted here are typical. Some adjustments in the field may occur based on actual materials.
- Avoid damaging existing trees and shrubs.
- Incorporate slash from Alder Creek Project site into each floodplain roughness structure.
- Timber piles shall have varying heights above ground, varying angles, and roughened or broken tops.

Jurisdictional Area Impacts:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Impact Location</th>
<th>Duration of Impact</th>
<th>Volume of Material Placed or Removed</th>
<th>Length (ft) of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Wood Placement</td>
<td>Water</td>
<td>Permanent</td>
<td>48 Logs (120 CY)</td>
<td>200 LF</td>
</tr>
</tbody>
</table>

Yakama Nation Fisheries
Golden Doe Floodplain Project
90% Design

Access from Staging Area

Access to North Bar Apex Area

North - Floodplain Roughness Log Structures
1. The access route is typical. Access route will be adjusted in field to minimize impacts to vegetation.
2. Log locations, size, and alignments depicted in this area are typical. Minor adjustments in the field may occur due to on-site material availability.
3. Collect nearby slash and woody debris and incorporate these materials into each log structure.
4. Timber piles shall have varying height above ground, varying angles, and roughened or broken tops.
5. Avoid damaging existing trees and shrubs.
6. Collect nearby slash and woody debris and incorporate these materials into each log structure.
BOLTED CONNECTION NOTES

PIN LOGS TO LOGS

1. DRILL 1-1/8" DIA HOLE THROUGH LOGS.
2. INSERT 1" DIA THREADED ROD.
3. INSTALL STEEL PLATES AND HEAVY HEX NUTS. SECURE NUTS BY CHISELING THREADS OR MUSHROOMING EXPOSED ENDS OF ROD.
4. FILE OR GRIND OFF SHARP EDGES.

PRE-DRILL 1-1/8 IN. DIA. HOLE, FOR 1 IN. DIA. THREADED ROD

EXCAVATOR BUCKET
SHACKLE
SHORT CABLE
LOAD CELL
SHACKLE
SLING
TIMBER PILE

EXCAVATOR TRACKS
~30 FT

TIMBER PILE NOTES:

GENERAL

1. THE RESULTS OF ON-SITE PULLOUT TESTS WILL INFORM THE ENGINEER OF THE ACTUAL PERFORMANCE OF SUBSURFACE SOILS, WHICH WILL INFORM THE REQUIRED EMBEDMENT DEPTH. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SAFETY.

RIGGING

1. RIGGING FOR PILE TESTING SHALL CONFORM TO THE TENSION SCALE MANUFACTURER'S RECOMMENDATIONS.
2. CHOKERS, CABLES AND SHACKLES SHALL HAVE WORKING LOAD RATING OF 12 TONS. FITTINGS SHALL BE SIZED ACCORDINGLY.

TESTING

1. TESTING OF PILES SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER. UP TO FOUR LOAD TESTS SHALL BE APPLIED TO EACH TESTED PILE. EACH OF THE FOUR LOAD TESTS SHALL BE APPLIED TO THE PILE WITH A DIFFERENT INSTALLED DEPTH. PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS. DEPTHS SHALL BE DETERMINED IN THE FIELD. AS A GUIDELINE, TEST EMBEDMENT DEPTHS MIGHT INCLUDE 8 FT, 10 FT, 11 FT, AND 12 FT.
2. EACH PILE TEST SHALL HAVE UPWARD LOAD GRADUALLY INCREASED AND AS ALIGNED TO THE LONG AXIS OF THE PILE. RECORD THE PILE DIAMETER, EMBEDMENT DEPTH AND MAXIMUM FORCE REQUIRED TO MOVE THE PILE VERTICALLY APPROXIMATELY 1 INCH. THEN DRIVE THE PILE TO A NEW DEPTH. APPLY NEW LOAD AND RECORD MAX FORCE THAT CAUSES THE PILE TO MOVE VERTICALLY 1 INCH. REPEAT FOR THIRD AND FOURTH TEST.
3. EXCAVATOR SHALL BE NO CLOSER TO PILE THAN NEEDED TO GENERATE DESIRED LOADING. LIMIT COMPRESSIVE LOADING OF THE TRACKS ON THE GROUND BY DRIVING THE EXCAVATOR ONTO LOGS LAID ON THE GROUND TO DISTRIBUTE THE WEIGHT OVER A LARGER AREA.
4. UP TO 10% OF PRODUCTION PILINGS SHALL BE PROOF TESTED. IF RESULTS VARY MORE THAN 50% THEN IT SHOULD BE ANTICIPATED THAT UP TO 25% OF THE PRODUCTION PILINGS SHALL BE PROOF TESTED.
5. PILE EMBEDMENT DEPTH SPECIFIED IN THESE DRAWINGS MIGHT BE INCREASED AT NO ADDITIONAL COST TO THE OWNER PENDING PULL OUT TEST RESULTS. ASSUMED RESISTANCE IS 20,000 POUNDS. IF TESTING RESULTS FIELD PULLOUT RESISTANCE VALUES THAT ARE LESS THAN THE ASSUMED VALUES, PILES MAY BE REQUIRED TO BE DRIVEN UP TO 5 FT DEEPER THAN INDICATED IN PLANS.
**ABBREVIATIONS**

- APPROX
- CY
- °
- DIA or Ø
- DBH
- EA
- EL or ELEV
- ESC
- EXIST
- FT or ' 
- FTR
- HORIZ
- IN or "
- INV
- LWM
- MAX
- MIN
- OHW
- %
- RMx
- STA
- TBD
- TYP
- VERT
- WSE
- YR

**INVERT**

**LARGE WOODY MATERIAL**

**MAXIMUM**

**MINIMUM**

**ORDINARY HIGH WATER**

**PERCENT**

**RIVER MILE x**

**STATION**

**TO BE DETERMINED**

**TYPICAL**

**VERTICAL**

**WATER SURFACE ELEVATION**

**YEAR**

**SPECIFICATIONS**

**12/1/2021 – TIES, SPEC PLAN AND BID INFORMATION**

**Description**

This work shall provide for preparation, implementation, removal of a Temporary Gravels Siltation Control (TESC) plan, and for the preparation and implementation of a Spill Prevention Control and Environmental Protection (SPCP) plan in accordance with Section 11.05.15 of the Washington Department of Transportation Standard Specifications (Standard Specifications), and as amended by these Special Provisions.

The Contractor shall follow the specifications and procedures of the Washington Department of Ecology (WDE) Spill Prevention General Permit for Construction Activities associated with all applicable permits. This TESC Plan is for the protection of the project area and the environment. The TESC plan is intended to reduce the potential for siltation and sediment entering the project area. The plan shall include all the necessary design, construction, and operation requirements to prevent siltation and sediment pollution.

**Contents**

- Approvals, clearances, and permits shall be obtained in accordance with Section 11.05.15 of the Standard Specifications, and as amended by these Special Provisions.
- Site work shall provide for design, construction, and operation of the TESC plan, and for the preparation and implementation of the SPCP plan in accordance with Section 11.05.15 of the Standard Specifications, and as amended by these Special Provisions.
- The TESC plan shall be designed to minimize the potential for siltation and sediment entering the project area. The plan shall include all the necessary design, construction, and operation requirements to prevent siltation and sediment pollution.

**YAKAMONATION FISHERIES**

**GOLDEN DOE FLOODPLAIN PROJECT**

**90% DESIGN 12**

**REFERENCES**

- For further details, consult the applicable sections of the Design Report.
- The TESC plan shall be designed to minimize the potential for siltation and sediment entering the project area. The plan shall include all the necessary design, construction, and operation requirements to prevent siltation and sediment pollution.

**YAKAMONATION FISHERIES**

**GOLDEN DOE FLOODPLAIN PROJECT**

**90% DESIGN 12**
**YAKAMA NATION FISHERIES**

**GOLDEN DOE FLOODPLAIN PROJECT**

**90% DESIGN**

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**SPECIFICATIONS (2 OF 3)**

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### NEW DATE = Sheet (Project Information)

**Description**

Leak includes all work associated with locating and installation of lines with四处, sprinkler lines, shower heads, sprinkler heads, floor heads, leak detection equipment, and associated leaks. The leak detection equipment is to be installed in the project area and to installation areas, and associated leaks are to be installed by the Contractor.

**Leak**

- Leak involves all work associated with locating and installation of lines with四处, sprinkler lines, shower heads, sprinkler heads, floor heads, leak detection equipment, and associated leaks. The leak detection equipment is to be installed in the project area and to installation areas, and associated leaks are to be installed by the Contractor.

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### MDO LOG STRUCTURE

**Location**

- The Contractor shall provide and install the leak detection equipment at 1245 3rd Avenue Road, Hood River, OR, as specified in the Project. The Contractor shall provide and install the leak detection equipment in the project area and to installation areas, and associated leaks are to be installed by the Contractor.

**Leak Detection Equipment**

- The Contractor shall provide and install the leak detection equipment at 1245 3rd Avenue Road, Hood River, OR, as specified in the Project. The Contractor shall provide and install the leak detection equipment in the project area and to installation areas, and associated leaks are to be installed by the Contractor.
COTTONWOOD (located to other area)

Details:
This item consists of providing and installing, maintaining, and remove materials to bypass the natural waters of the stream around improved work area, and to prevent siltation from entering the area. Cottontree locations are at the upper 250-use cases where erosion was required to be isolated from surface water. Cottontree locations in the plans are in unacceptable method the Contractor may use the method or propose a different method that provides equal or better isolation of the work area from the flow. If a different method is proposed, Contractor shall submit drawings showing details of proposed methods for providing temporary isolation of surface water during construction activities. Review and approval of the Contractor Plan shall not relieve the Contractor from full responsibility for the accuracy of each proposal. Each proposal is not reviewed or proposed unless the work area is placed in progress by a joint recommendation by the Joint Sitting, Jefco, and Joint Sitting is not complete.

Cottontree shall be suitably offset from work area as to not interfere with log placement or build-up conditions. The work includes coordinating with the Owner for fuel usage and reduction activities. Contractor is to plan placement shall not occur until the Owner completes fuel reduction.

SPECIFICATIONS

The Contractor shall provide all required materials for the project. If Ball shall Cottontree in the method to be used, one section for Ball shall Cottontree is on the plans.

Seeds filled with green ground on stream panel. Sale panel will not be stolen.

Construction Requirements:
The Contractor shall install the work area from the river by installing Cottontree past the place. If Cottontree with construction activities shall enter the area, Cottontree shown in the plans are in acceptable method. If Contractor elects to use alternate methods for temporary isolation of surface water, Contractor shall provide to the Owner or Cottontree/Contractor plan for review prior to implementation.

1. Cottontree
   a. Construction methods for Ball shall Cottontree are described in the project plans.
   b. Coordination with Fish Passage

2. The Contractor shall provide samples of 3-day advance notice to the Owner before each Cottontree installation date. The Contractor shall understand that Cottontree installation requirements with the Owner and only after the Owner then complies with Cottontree use the Cottontree be completed. The Contractor is advised that Cottontree may take up to 2 days per Cottontree.

Management and Finishes

Cottontree shall be avoided to the upper 250-use cases.

FISHING (located to other area)

This item includes designing and controlling siltation within construction areas isolated from the river by Cottontree.

Description:
The work consists of furnishing, installing, operating, maintaining, and removing pumps, coordinating with the Owner for fuel usage reduction activities, and elimination or control of siltation (SALT).

NOTE: G.9. Flood pump with pumping capacity greater than 500 gpm, requiring 12 feet of vertical lift and 300 feet of discharge tube. To prevent siltation from entering the river, pumps may need to be 24 feet or displace water 15.

Each water intake shall have a filter screen installed, opened, and maintained according to CANADA Water Quality Regulations (WQP) and the Pacific Flyway (WQP) 2002. No pumping out shall occur and all intake screen from being approved by Owner prior to installation.

Pumps shall be placed within 100 feet of the river and be used to control water and siltation. Pumps shall be stored as needed or required.

Environmental Protection measures such as stone tube, perforated pipe for discharge flow distribution, gaskets, filter, and other means of controlling water and siltation. All siltation shall be avoided to enter the river or markets.

Construction Requirements

1. Pumps
   a. Standards will be maintained during operations. During construction of side-channel, construction water shall be pumped away from work area to be confined into the ground and shall enter the river.
   b. To help prevent siltation from leaking through Cottontree, the Contractor shall provide and operate 6" (round pump) to lower the water surface within the confined area and discharge to an infiltration area.

2. Environmental Protection Measures
   a. A channel or unpaved waterway downstream of standard or pump discharge in excess of 10% above the upstream threshold visual observation or measurement, the activity shall be monitored to reduce siltation. Continue to monitor any activities.
   b. A siltation area more than two consecutive measuring times (after 4 hours), the activity must stop until the siltation area reaches 0.05. This activity must be monitored until the siltation area is at 0.05.
   c. If any time, monitoring, inspections, or observations/samples show that the siltation control is ineffective, immediately initiate work crews to repair, replace, or maintain control as necessary. Additional and alternate methods, such as pumping any existing bottom or infiltrate, groundwater intake shall be required at the Contractor’s expense.

3. Measurement and Payment
   a. Measurement will be based on the work that is completed during the construction period. The work is completed during the construction period. The work is complete when the Owner is satisfied with the work.
   b. All additional costs related to water and siltation control, shall be considered incidental to pumping and no additional compensation will be made.

4. Pumping shall be avoided to the upper 250-use cases.