### COFFERDAM NOTES:

1. BULKBAG COFFERDAM is a pre-approved method of isolating construction work from the waterway. Alternate Cofferdam materials and configurations may be allowed but shall not be implemented without review and approval by the owner.

2. BULKBAG 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. BULKBAG COFFERDAM shall be sealed by covering the Cofferdam with plastic sheeting held in place by standard sandbags placed in rows on top of the Cofferdam and at the toe of the 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-feet 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-feet. 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 plastic sheeting and sandbags may be required to form a watertight seal.

7. BULKBAGS 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 thickness. Roll length shall be long enough to ensure that entire length of Cofferdam will be covered without a seam. Minimum 12-ft wide roll shall be used for single layer bulk bag Cofferdam. Minimum 16-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. BULKBAG COFFERDAM shall be completely removed after construction is completed and turbidity has been removed. Upon completion, some bulk bags will be opened and enclosed spawning gravel applied to the area.

11. If necessary, gaps between bulk bags shall be filled with washed gravel to seal and improve Cofferdam seal. Disposal of rock wash shall be determined by owner.
HIP GENERAL CONSERVATION MEASURES APPLICABLE TO ALL ACTIONS

THE ACTIVITIES COVERED UNDER THE HIP ARE INTENDED TO PROTECT AND RESTORE FISH AND WILDLIFE, AND MAINTAIN OR IMPROVE THE CBR PERSISTENCE OF ENDANGERED SPECIES. THE FOLLOWING GENERAL CONSERVATION MEASURES APPLY TO ALL ACTIONS OF THIS PROJECT.

1. PROJECT DESIGN AND SITE PREPARATION.

1.1. STATE AND FEDERAL PERMITS.

A. ALL APPROPRIATE REGULATORY PERMITS AND CONSENTS, AND FEDERAL AUTHORIZATION FOR SPECIFIC FEDERAL ACTIONS WILL BE INCLUDED IN A FOLLOWING SITE SPECIFIC PROJECT IMPLEMENTATION.

B. THESE PERMITS AND AUTHORIZATIONS APPLY TO SPECIFIC ACTIONS ONLY, IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING BUT NOT LIMITED TO, THE VARIETY OF NAVY REGULATIONS, MARINE ENVIRONMENTAL REGULATIONS, AND MARINE LIFE REGULATIONS.

C. PERMITS AND AUTHORIZATIONS WILL BE CONDITIONED AND MODIFIED AS REQUISITE TO AVOID, MITIGATE, OR COMPENSATE FOR ANY POTENTIAL IMPACTS TO THE MILITARY AND NAVY RESOURCES.

2. TRAFFIC AND BUILDING FENCES.

A. APPROPRIATE STATE AND FEDERAL PERMITS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

B. TRAFFIC AND BUILDING FENCES WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

C. TRAFFIC AND BUILDING FENCES WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

3. TEMPORARY ACCESS ROADS AND PATHS.

A. ACCESS ROADS AND PATHS WILL BE PERMANENTLY USED PRIOR TO PRESSURE DRAINAGE, AND THE NUMBER AND LOCATION OF TEMPORARY ACCESS ROADS AND PATHS WILL BE MINIMIZED.

B. VEHICLE USE WILL BE MINIMIZED.

C. TEMPORARY ACCESS ROADS AND PATHS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

D. TEMPORARY ACCESS ROADS AND PATHS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

E. TEMPORARY ACCESS ROADS AND PATHS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

4. TEMPORARY STREAM CROSSINGS.

A. TEMPORARY STREAM CROSSINGS WILL BE USED EXCLUSIVELY.

B. TEMPORARY STREAM CROSSINGS WILL BE IMPLEMENTED TO AVOID, MITIGATE, OR COMPENSATE FOR ANY POTENTIAL IMPACTS TO THE NAVY RESOURCES.

C. TEMPORARY STREAM CROSSINGS WILL BE IMPLEMENTED TO AVOID, MITIGATE, OR COMPENSATE FOR ANY POTENTIAL IMPACTS TO THE NAVY RESOURCES.

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B. VEHICLE USE WILL BE MINIMIZED.

C. TEMPORARY ACCESS ROADS AND PATHS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

D. TEMPORARY ACCESS ROADS AND PATHS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

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C. TEMPORARY ACCESS ROADS AND PATHS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

D. TEMPORARY ACCESS ROADS AND PATHS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

E. TEMPORARY ACCESS ROADS AND PATHS WILL BE OBTAINED FOR ALL TRAFFIC CONTROL.

9. EROSION CONTROL.

A. TEMPORARY EROSION CONTROL WILL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTIVITIES AND APPROPRIATELY INSTALLED TO PROTECT THE SURFACE FROM EROSION.

B. TEMPORARY EROSION CONTROL WILL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTIVITIES AND APPROPRIATELY INSTALLED TO PROTECT THE SURFACE FROM EROSION.

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PROJECT DESIGN AND SITE PREPARATION (CONTINUED).

11. SPILL PREVENTION, CONTROL, AND COUNTERMEASURES.

A. DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING INVENTORY, STORING, AND HANDLING PROCEDURES WILL BE AVAILABLE ON SITE.

B. SPILL RESPONSE PROCEDURES FOR REPAIRING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.

C. SPILL CONTAINMENT KITS (INCLUDING INSTRUCTIONS FOR CLEANUP AND DISPOSAL) WILL BE AVAILABLE FOR THE TYPES AND QUANTITY OF HAZARDOUS MATERIALS USED AT THE SITE WHERE AVAILABLE AT THE WORK SITE.

D. ADVANCE SPILL RESPONSE TRAINING WILL BE CONDUCTED IN SPILL CONTAINMENT PROCEDURES AND WILL BE AVAILABLE TO THE LOCATION OF SPILL CONTAINMENT KITS.

E. EFFECTIVE CONTAINMENT OF THE SPILL WILL BE IMPROVED FOR THE INSTRUCTIONS FOR CLEANUP AND DISPOSAL OF HAZARDOUS MATERIALS.

F. PUMPS USED ADJACENT TO WATER WIL. BE SPILL CONTAINMENT SYSTEMS.

12. INNOVATIVE SPECIES CONTROL.

A. PROPER EMBRICA AT A LONG-TERM EXISTING CONTAINMENT AND LIMIT THE VESSEL TO A MAXIMUM INCREASE IN WATER TEMPERATURES TO 1 DEGREE CELSIUS.

B. WATERCRAFT, PADDERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN WATER WIL. BE DISINFECTED AND CLEANED.

C. ALLOY BOOTS WIL NOT BE USED TO LIMIT THE PROBABILITY OF ENDING IN THE TRANSFER OF INVASIVE SPECIES.

D. WATER SYLLOGISTIC GUIDELINES FOR BOW TROUT, LAUREL, BASS, AND NATIVE FISH.

1. CONSIDER SURVEY TO ESTABLISH A PROPER SURVEY.

2. PREPARE SPECIFIC SPECIES AT projection TO ESTABLISH A PROPER SURVEY.

3. MEASURE THE BOW TROUT TO ESTABLISH A PROPER SURVEY.

4. A PROPER SURVEY TO ESTABLISH A PROPER SURVEY.

5. MEASURE THE LAUREL TO ESTABLISH A PROPER SURVEY.

6. LAUREL TO ESTABLISH A PROPER SURVEY.

7. LAUREL TO ESTABLISH A PROPER SURVEY.

8. LAUREL TO ESTABLISH A PROPER SURVEY.

9. A PROPER SURVEY TO ESTABLISH A PROPER SURVEY.

10. MEASURE THE LAUREL TO ESTABLISH A PROPER SURVEY.

11. LAUREL TO ESTABLISH A PROPER SURVEY.

12. LAUREL TO ESTABLISH A PROPER SURVEY.

13. MEASURE THE LAUREL TO ESTABLISH A PROPER SURVEY.

14. LAUREL TO ESTABLISH A PROPER SURVEY.

15. LAUREL TO ESTABLISH A PROPER SURVEY.

16. LAUREL TO ESTABLISH A PROPER SURVEY.

17. LAUREL TO ESTABLISH A PROPER SURVEY.

18. MEASURE THE LAUREL TO ESTABLISH A PROPER SURVEY.

19. LAUREL TO ESTABLISH A PROPER SURVEY.

20. MEASURE THE LAUREL TO ESTABLISH A PROPER SURVEY.
### JURISDICTIONAL AREA IMPACTS

<table>
<thead>
<tr>
<th>Activity Impact</th>
<th>Location</th>
<th>Duration of Impact</th>
<th>Volume of Material Placed or Removal</th>
<th>Length (LF) of Impact</th>
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</thead>
<tbody>
<tr>
<td>Cofferdam</td>
<td>Water</td>
<td>Temporary (30 Days)</td>
<td>- 175 LF (3350 SQ FT Impounded Area)</td>
<td>175 LF</td>
</tr>
<tr>
<td>Side Channel Inlet Water</td>
<td>Permanently</td>
<td>40 CY Removal</td>
<td>110 LF</td>
<td></td>
</tr>
<tr>
<td>Inlet Log Structure Water</td>
<td>Permanently</td>
<td>31 Logs (93 CY Placed)</td>
<td>50 LF</td>
<td>(1,700 SF)</td>
</tr>
<tr>
<td>Inlet Log Structure Water</td>
<td>Permanently</td>
<td>Gravel Backfill (200 CY Placed)</td>
<td>50 LF</td>
<td>(1,700 SF)</td>
</tr>
<tr>
<td>Cofferdam</td>
<td>Water</td>
<td>Temporary (30 Days)</td>
<td>- 30 LF</td>
<td></td>
</tr>
<tr>
<td>Side Channel (Near Outlet) Water</td>
<td>Permanently</td>
<td>365 CY Removal</td>
<td>2270 SQ FT</td>
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<tr>
<td>Side Channel Excavation Wetland</td>
<td>Permanently</td>
<td>1980 CY Removal</td>
<td>0.31 AC</td>
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<tr>
<td>Alder Creek Log Placements Water</td>
<td>Permanently</td>
<td>78 Logs (220 CY)</td>
<td>3500 SQ FT</td>
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<tr>
<td>Excavate Swale Water</td>
<td>Permanently</td>
<td>2,500 CY Removal</td>
<td>0.73 AC</td>
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</tbody>
</table>

### CONSTRUCTION AND POST CONSTRUCTION CONSERVATION MEASURES

1. **Fish Passage**
   - Fish passage should be provided for adult and juvenile fish likely to be present during construction. Unless passage does not exist before construction, the stream will remain impassable. Passage will be provided if Fish Passage Alternatives are approved by the MRP LC lead under guidance by the MRP LC lead.

2. **Construction and Clearing Work**
   - Surface waterways should be disconnected from downstream waterways only if developed sources are unavailable or inadequate.
   - Dewatering should not exceed 10% of the available flow.
   - Construction should not be conducted during construction and clearing work.
   - Excavated materials should be used as backfill or placed in a location that will not impact habitat.

3. **Water Quality Certification**
   - Water quality certification and turbidity measures should be conducted as required by the Water Quality Permit.

4. **Site Restoration**
   - Soil erosion control systems should be monitored and restored to improved conditions.
   - Stormwater discharge and management should be kept clean and free of sediment.
   - Project-related waste will be removed.
   - Non-project-related waste not removed, disposal methods, and grading will be completed as soon as possible.
   - Discontinuous access roads and channels will be decommissioned and restored.
   - The project sponsor will maintain the right of reasonable access to the site for a period of three years following project completion.

### TURBIDITY MONITORING

- **Record** by reading location and time for the background reading approximately 1/2 mile upstream of the project area using a previously calibrated turbidity meter for visual observation (HP).
- **Measure** the turbidity value at the same location and time at the measurement location.
- **Report** the turbidity value to the project sponsor and the environmental agency.

- **Thresholds** for background and project-related turbidity should be established.
- **Procedures** should be implemented to minimize turbidity impacts.

### STAGED REWATERING PLAN

When wetland or dredged materials are newly constructed channels, a staged rewatering plan will be implemented.

B. The following will be applied to all rewatering efforts:

- **Project Monitoring**
  - Additional monitoring equipment should be installed to monitor rewatering efforts.
  - Monitoring will include additional, but not limited to:
    - Turbidity monitoring
    - Flow and velocity measurements
    - Water quality indicators

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**A.** A mix of native species (unless specified) is not allowed. Appropriate to the site will be used to establish a vegetation presence within and reduce erosion. Reestablished vegetation should be at least 70% of pre-project conditions within three years.

**B.** Vegetation shall be appropriate for the site and plant species that are necessary for the project.

**C.** Sedimentation control measures may include the use of non-native species (wildlife not available). Use of certified seed, or other similar techniques.

**D.** Tree planting and seeding will occur prior to or at the beginning of the first growing season after construction.
SECTION VIEWS ARE LOOKING DOWNSTREAM. SEE SHEETS 9-10 FOR SECTION LOCATIONS.
LOG PLACEMENTS

1. PRESERVE TREES OUTSIDE OF THE LIMITS OF DISTURBANCE.
2. UTILIZE REMOVED VEGETATION AS SLASH AND SALVAGED TREES.
3. LOG LOCATIONS, SIZE, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
4. JURISDICTIONAL AREA IMPACTS ARE SHOWN AND REPORTED ON SHEET B.

INLET LOG STRUCTURE

190' COFFERDAM
29 LOGS WITH ROOTS
3 LOGS
12 TIMBER PILES
~3 SALVAGE TREES
12 THREADED RODS

FLOW SITE ACCESS

LEGEND

TYPICAL LOW WATER
LOG BURIAL AREA
COFFERDAM
TIE-ROD
LOG WITH ROOTS
BUCKET LOGS
BACKFILL
EXISTING GROUND
SUBGRADE 1467'

METHOW RIVER
SIDE CHANNEL
TIMBER PILE
COFFERDAM

LIMITS OF DISTURBANCE

100% DESIGN 10

YAKAMA NATION FISHERIES
ALDER CREEK FLOODPLAIN PROJECT
1. PRESERVE TREES OUTSIDE OF THE LIMITS OF DISTURBANCE.

2. THE ACCESS ROUTE IS TYPICAL. ACCESS ROUTE WILL BE ADJUSTED IN FIELD TO MINIMIZE IMPACTS TO VEGETATION. SAWDUST LEFT TO VEGETATION TO LOG INSTALLATION SITES FOR SLASH.

YAKAMA NATION FISHERIES
ALDER CREEK FLOODPLAIN PROJECT
90% DESIGN

SCALE IN FEET
0 200 100

LEGEND
EXISTING WETLAND
TYPICAL LOW WATER
CHOP
LIMITS OF DISTURBANCE
LOG PLACEMENTS

SITE ACCESS FROM SIDE CHANNEL AREA
SWALE

1800 Portway Avenue, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

DATEBYNO.
REVISION DESCRIPTION
PROJECT
CHECKED
APPROVED
DRAWN
DATE
DESIGNED

YAKAMA NATION FISHERIES
ALDER CREEK FLOODPLAIN PROJECT
90% DESIGN

SHEET 11 OF 18
NOTES
1. PRESERVE TREES OUTSIDE OF THE LIMITS OF DISTURBANCE.
2. THE ACCESS ROUTE IS TYPICAL, ACCESS ROUTE WILL BE ADJUSTED IN FIELD TO MINIMIZE IMPACTS TO VEGETATION. HAUL REMOVED VEGETATION FOR ACCESS TO LOG INSTALLATION SITES FOR SLASH.
3. LOG LOCATIONS, SIZE, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
1. Trees and shrubs within clearing limits shall be salvaged and reused as logs and slash in habitat structures to the extent practicable. Preserve branches and roots on trees removed during clearing and grubbing.

2. Wood structures shall be stabilized. Stabilization methods include partial burial, bracing against standing trees, or timber piles.

**NOTES:**

- Trustees and shrubs within clearing limits shall be salvaged and reused as logs and slash in habitat structures to the extent practicable. Preserve branches and roots on trees removed during clearing and grubbing.

- Wood structures shall be stabilized. Stabilization methods include partial burial, bracing against standing trees, or timber piles.
**BOLTED CONNECTION NOTES**

1. **PIN LOGS TO LOGS**
   1. Drill 1" dia. hole through logs.
   2. Insert 7/8" 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

---

**TYPICAL DETAIL**

**LOG-PILE CONNECTIONS**

**NOT TO SCALE**

**EMBEDMENT DEPTH**

- Min. 15 ft
- ~10 ft

**PILE PULL OUT TEST**

**NOT TO SCALE**

**CHOKER RATED FOR 12 TON WORKING LOAD**

**SHORT CABLE RATED FOR 12 TON WORKING LOAD**

**TENSION METER**

**SHACKLE RATED FOR 12 TON WORKING LOAD**

**EXCAVATOR TRACKS**

**LOG PILE**

**EXCAVATOR BUCKET**

**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.

2. Rigging for pile testing shall conform to the tension scale manufacturer’s recommendations.

3. Chokers, cables and shackles shall be 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 adjusted to the length 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 not be closer to pile than needed to generate desired loadings. Unit compressive loadings 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 20% of production piles shall be proof tested. If results vary more than 5% then it should be anticipated that up to 25% of the production piles shall be proof tested.

5. Pile embedment depth specified in these drawings might be increased at no additional cost to the owner pending pullout test results. Assumed resistance is 20,000 pounds. If testing reveals field pullout resistance values that are less than the assumed values, piles may be required to be driven up to 5' deeper than indicated in plans.

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**DATE**

**BY NO.**

**REVISION DESCRIPTION**

**PROJECT**

**CHECKED**

**APPROVED**

**DRAWN**

**DESIGNED**

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**YAKAMA NATION FISHERIES**

**ALDER CREEK FLOODPLAIN PROJECT**

**90% DESIGN**