EXHIBIT A

Project Overview

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1. **Background:**

The Yakama Nation Fisheries (Owner) Upper Columbia Habitat Restoration Program (UCHRP) is requesting bids for an in-stream salmon habitat restoration project for ESA listed salmonids in the upper Wenatchee River (River Mile 40.8) in July of 2017. This project, known as Meacham Flats Habitat Enhancement Project, entails a enhancing a side-channel of the upper Wenatchee River. The purpose of the project is to increase flows into the side-channel through targeted inlet excavation, add structural complexity for juvenile rearing in the form of margin wood structures (8), and adding floodplain roughness trees (6). These elements will be constructed to address the ecological concerns identified by the Regional Technical Team (RTT) for this section of the Wenatchee River.

The project site is located in the upper Wenatchee River near river mile 40.8. This is located at the end of Meacham Road (near Plain, WA) and is on private property.

All project specifications including technical specifications, engineered plan sheets, material standards, and quantities are contained within the attached **Exhibit D – Project Plans**. Contractor must follow BMPs addressed in Exhibit D as well as follow the Conservation Measures listed in **Exhibit E – General Conservation Measures** of the HIPIII permit. No changes to the Project Plan will be allowed without prior approval from the Designated Representatives.

The attached **Exhibit B** provides the contract Line Item Budget which is referenced to the work tasks described in this Scope of Work, and **Exhibit C** provides a payment schedule and requirements. **Exhibit D** provides the Engineer's Construction Plan Set and special provisions by which the work tasks are based.

For environmental permitting purposes, this project will be conducted during the in-water work window prescribed by the Washington Department of Fish and Wildlife for this section of river. The in-water portion of the project will be conducted between the dates of **July 15th thru Aug 15th, 2017**. Mobilization and staging may be allowed prior to the start of the in-water work window. Chinook salmon (a federally endangered species), Steelhead, and Bull trout (federally threatened species) may be in the area, so turbidity control will be of the upmost importance. The winning contractor will understand the magnitude of this project and be equipped to perform all necessary elements for a project of this type within a critical habitat stream. The winning contractor must possess and use a vibratory pile driver to successfully complete the work. Contractor must also have extensive experience in the following: building

cofferdams, constructing log jams, and especially de-watering of site by following NMFS fish screening protocols.

2. **Location**

The project will take place on the upper Wenatchee River (River Mile 40.8) in North Central Washington. Section 36, Township 26N, Range 17E, Chelan County.

Wood for the habitat structures for this project will be supplied for the construction contractor. The contractor will be responsible for hauling logs from the staging area and moving to the project location. The wood is currently being stored off of 20950 Beaver Valley Rd, Leavenworth, WA at the Yakama Nation's Natapoc site and will need to be hauled to the project location located at the very end of Meacham Road, Leavenworth, WA. To get to the log storage area, head west on the Chumstick Hwy/Beaver Valley Rd (from Plain, WA) for 4mi and turn right onto a dirt lane. Drive past the USFS Sooper Pit and follow the lane through a locked gate and logs will be located on the right. If approaching from the west (Hwy 2), turn onto Hwy 207 at Coles Corner. Continue for 3.8mi and turn right onto the Chumstick Hwy/Beaver Valley Rd, continue for ~ 0.8 mi, and turn left onto the dirt lane to get to the staging area.

To get to the project location, head west on the Chumstick Hwy/Beaver Valley Rd out of Plain, WA. Immediately after crossed the Wenatchee River outside of Plain, turn left on River Rd. Follow River Rd south for ~4mi and turn left onto Meacham Rd. Follow the road to its end and project location is located on the right (north of end of road). From the staging area, turn east onto the Chumstick Hwy/Beaver Valley Rd and follow for 3.5mi before turning onto River Rd. Continue to project site as previously described.

3. **Project Tasks:**

All tasks will be completed as per **Exhibit D**. Major project elements include but are not limited to the following:

- Mobilize materials from YN staging location to project location (~9mi)
- Install stream crossing, per project plans
- Sediment Control Plan and Implementation
- Turbidity Control Plan and Implementation
- Traffic Control, if necessary
- Attain DNR IFPL fire waiver
- Diversion/Dewatering and Fish Salvage of the Construction Site as Needed, or as Determined by the Designated Representative
- Temporary Cofferdams
- Excavation and Backfill
- Placement of Wood in Floodplain for Floodplain Roughness
- Install Wood Structures and Vertical Piles
- Hauling, Dumping, and Proper Disposal of Excavated Spoils
- Grade Topsoil at Disturbed Areas

- Site Cleanup and Project Closeout
- Clean up/repair Meacham Road to pre-project condition

4. **Project Schedule and Key Deliverables:**

- In-water work window is 15 July – 15 August, 2017
- Construction timing will generally be from one hour after sunrise to one hour before sunset to be in compliance with local ordinances.
- Side-channel inlet excavation (~20CY)
- In channel wood habitat structures (8)
- Floodplain roughness wood (6)
- Contractor shall perform tasks identified in "Section 4", above, as well as identified and defined in **Exhibit A – Scope of Work and Exhibit D – Project Plans**.

5. **Contractor Obligations:**

Contractor must provide a "Sani-Can" to the project site for the duration of the project. It must also be removed during project clean-up and prior to final project close-out.

Pre-Project:
The contractor shall fill out and return Exhibit B – Budget. This bid must be signed, dated, and state that it bid is valid for 180days.

The contractor is responsible for submitting a project timeline.

For the Project:
The contractor shall furnish all supervision, labor, equipment and tools necessary to complete the project as described in **Exhibits A and D**.

The contractor is responsible for attaining mats used in stream crossing, as per project plans (**Exhibit D)**.

The contractor shall be respectful of neighbors and drive safely and slowly while coming to and from project location.

The contractor shall provide dust abatement on Meacham Road, as necessary, and at project location.

The contractor shall provide a **vibratory pile driver** to install vertical piles for the structures.

The contractor bid must also include a temporary crossing, as per project plans, to be used for side channel crossing. Mats for crossing can be rented from US Mats Systems Inc. on Hwy 2 (or similar, approved source).

The contractor must allow site access for an additional contractor to come drop planting materials while stream crossing is in place. This will be coordinated between construction contractor, Owner, and revegetation contractor. This will be brief access and will be coordinated to not obstruct and/or delay construction efforts.

Equipment must also be fitted with non-toxic hydraulic fluids at no additional cost.

Final Cleanup:
The Contractor shall perform final cleanup to the Owner's satisfaction. The Owner will not establish the Physical Completion Date until this is done. The work areas and access routes, material sites, and all ground the Contractor occupied to do the Work shall be left neat and presentable. The Contractor shall:

- Remove all rubbish, surplus materials, discarded materials, temporary structures, equipment, debris and other unsightly matter.
- Contractor shall be solely responsible for acquiring and complying with any and all applicable permits, laws or regulations for disposal of materials off site.
- Shaping the ends of cuts and fills to fit adjacent terrain and to enhance the area's appearance.
- Obliterating abandoned roads and reshaping the areas to blend naturally with surroundings.
- Fill holes, decompact soils at the direction of the Owner, smooth and contour the ground to landscape ready condition.
- Meacham Road will be repaired to pre-construction condition.

6. **Consistent Satisfactory Progress**

Consistent satisfactory progress in this project will be required. Satisfactory progress will be measured by both the quality and quantity of work. If for any reason no work is performed, the Contractor may be given a notice of contract cancellation. Consistent satisfactory progress will also be determined by the Contractor's demonstrated ability to perform all work tasks described in **Exhibit A**. If it appears that the Contractor is unable to complete the project tasks within the permitting work window, the Contractor may be given a notice of contract cancellation. The Yakama Nation's designated representative will monitor progress closely.

7. **Fish Removal**

In-water construction activities will require fish removal of all isolated in-water work sites. Fish removal will be conducted in a timely manner by the Owner's Designated Representatives and the time taken to implement proper fish removal protocols will be considered incidental to the contractor's work tasks.

8. **Fire Suppression**

The contractor will be familiar with and prepared for the requirements associated with IFPL Levels II & III and the restrictions associated with those. The contractor may seek to acquire IFPL shut down exemptions to allow work to continue on schedule.

9. **Road Signage**

The Contractor will observe all road signage regulations regardless of the project location and as per Exhibit D if applicable.

10. **Utilities Location**

The Contractor will locate all utilities prior to any excavation.

11. **Communication with Landowners**

The Contractor expressly agrees that Contractor and his staff will not communicate with the Landowner in any manner, whether it be in regard to the project or otherwise, without express permission from, or the presence of the Designated Representative.

12. **Exclusivity**

During the term of this Agreement, including time taken for mobilization and demobilization of construction equipment, Contractor shall not conduct any work on the property designated in this Agreement unless so directed by the Designated Representative. Contractor shall require in all contracts with subcontractors that subcontractors not conduct any work on the property designated in this Agreement unless so directed by the Designated Representative. Any additional work conducted on the property designated in this Agreement by Contractor without the express consent of the Designated Representative shall constitute a material breach of this Agreement, thereby relieving the Yakama Nation from all payment obligations to the Contractor.

13. **Applicable Documents:**

The following exhibits will be included in bid document:

- Exhibit A – Project Overview/SOW
- Exhibit B – Budget Bid Sheet
- Exhibit C – Payment Schedule
- Exhibit D – Project Plans
- Exhibit E– General Conservation Measures (from HIP III Permit)
- Exhibit F – Daily Equipment Standby Rate
- Exhibit G – Certified Payroll
- Exhibit H – Treaty Tax Cover and Certificate
- Exhibit I – Pre-bid Construction Walk-Through Notes (available online after walk-through)

14. **Standby Time Information**

The contractor shall notify the Owner in advance of any intent to charge for standby time. Prior to invoicing for any standby time, the contractor must receive notice in writing from the Owner's Designated Representatives that standby time is an applicable charge due to construction halting events related to environmental or permitting conditions outside of the control of the Owner or the Contractor. Standby time will be calculated at the daily rate per piece of equipment as per the Contractors bid price. Standby time charges will only apply to full work days where construction activities are not possible and will not be pro-rated by partial work days or hours on standby.

EXHIBIT B

Budget

Competitive Bid Sheet: Meacham Flats Please Complete and Return Also state bid due for 180days, sign, and include a tentative project sequencing/timeline with your bid.					
Use the Project Plans and the supplemental Bid Tab to produce your all-inclusive competitive bids. The contractor will be allowed to bill on a completed task basis.					
No.	Item	Quantity	Unit	Unit Price	Extended Price
1	Mobilization, Traffic Control	1	LS		
2	TESC, SPCC Plan & Implementation	1	LS		
3	Site Access/Temporary Bridge	1	LS		
4	Temporary Cofferdams, Diversions & Fish Rescue	1	LS		
5	Dewatering	1	LS		
6	All Habitat Enhancement Large Wood Structures: excavation, install LWM, vertical snag, backfill, FESL	1	LS		
7	Flood Plain Roughness Wood	1	LS		
8	Side Channel Inlet excavation	1	LS		
9	Site Restoration & Cleanup / Seed & Mulch	1	LS		
				GRAND TOTAL (No Tax)	

EXHIBIT C

Payment Plan

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1. **Payment Schedule**

☒ **Progress:** The Contractor shall submit a separate bill for each major project task element after the work has been completed, reviewed and accepted by Yakama Nation's Designated Representative. The Contractor is encouraged to invoice monthly when payment is necessary.

☐ **Percentage:** The Contractor shall invoice monthly and will be allowed to submit a bill for percentage of work completed after the work has been reviewed and accepted by Yakama Nation's Designated Representative.

☐ **Actual Work Completed:** The Contractor shall invoice monthly and will be allowed to submit a bill for actual work completed.

☐ **Alternative Schedule:** The Contractor shall invoice and be allowed to submit a bill as follow: [alternate payment plan description, e.g., 30% deposit with balance due after work has been reviewed and accepted by Yakama Nation's Designated Representative]

2. **Tax Exempt Certificate**

Due to the location and nature of the Services being provided by Contractor:

☐ The Contractor **has not** been given a Tax Exemption Certificate

☒ The Contractor **has** been given a single use Tax Exemption Certificate. Due to the nature of this Agreement, as set forth below, the Contractor should be allowed to use the tax-exempt certificate that is included with this document. This is a fishery habitat restoration project which is tax exempt.

3. **Davis Bacon Wages**

Davis Bacon Wages Apply to this contract. The winning contractor will adhere to the Davis Bacon rules and comply and submit all necessary paperwork and certified payroll to the Yakama Nation with each invoice submitted.

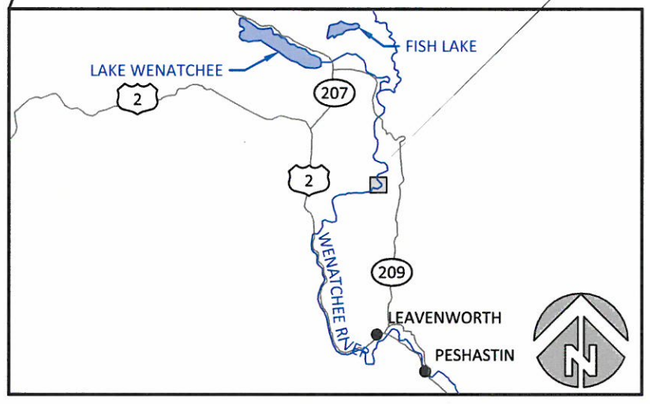
Exhibit D - Plans

UPPER WENATCHEE RIVER, MEACHAM FLATS FINAL DESIGN

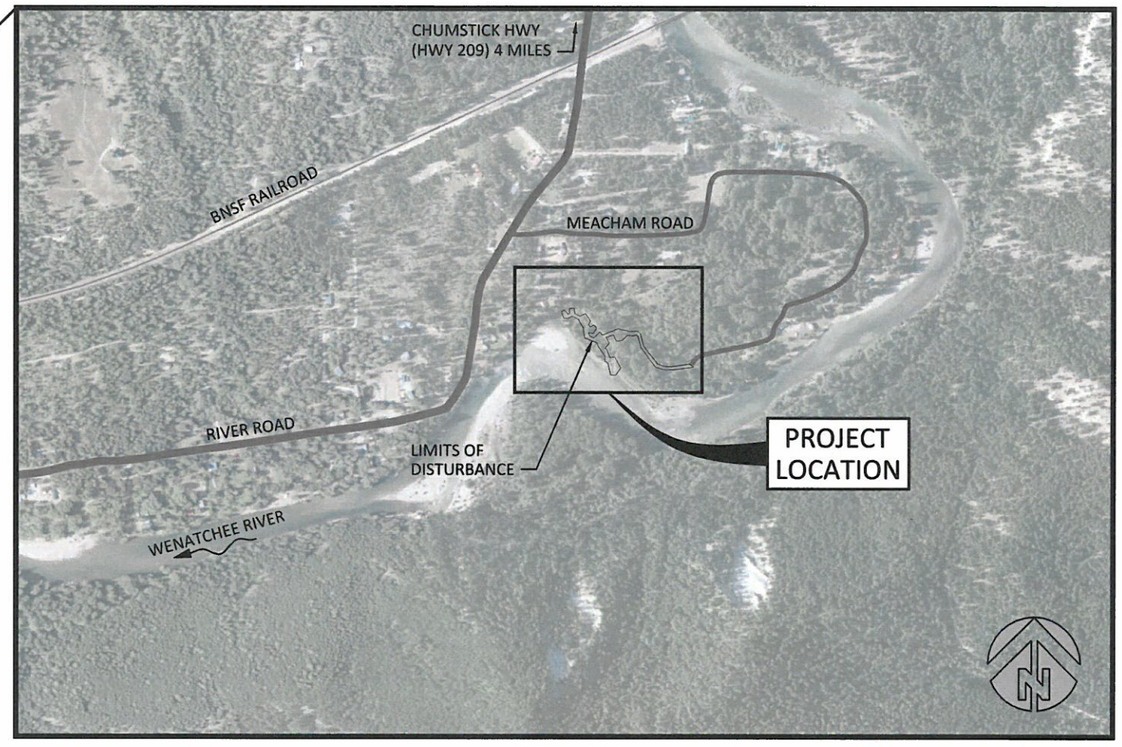
CHELAN COUNTY, WASHINGTON

December, 2016

STATE OF WASHINGTON
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE

SHEET INDEX

SITE LOCATION

LATITUDE: 47°42'43.89" NORTH
LONGITUDE: 120°39'53.71" WEST

TOWNSHIP 26N, RANGE 17E, SECTION 36

WATERBODY: WENATCHEE RIVER
TRIBUTARY OF: COLUMBIA RIVER

DANIEL S. MILLER
STATE OF WASHINGTON
34208
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES: 11/23/17

NO.	BY	DATE	REVISION DESCRIPTION

NS	DM, LH	DM
DRAWN	DESIGNED	CHECKED
DM	12/6/2016	150218
APPROVED	DATE	PROJECT

CONFEDERATED TRIBES AND BANDS OF YAKAMA NATION
UPPER WENATCHEE RIVER, MEACHAM FLATS
FINAL DESIGN

inter-fluve
501 Portway Avenue, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

COVER, SHEET INDEX & VICINITY MAP

SHEET 1 OF 13

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THE OWNER WILL PROVIDE A PRE-BID SITE TOUR. IT IS HIGHLY RECOMMENDED THE CONTRACTOR ATTEND THIS PRE-BID TOUR FOR SITE FAMILIARIZATION AND TO POSE QUESTIONS TO THE OWNER AND OWNER'S REPRESENTATIVE.

THE SELECTED CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH OWNER AND OWNER'S REPRESENTATIVE PRIOR TO MOBILIZING TO SITE AND BEGINNING CONSTRUCTION.

ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF STANDARD PLANS AND SPECIFICATIONS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT), AND LOCAL STANDARDS UNLESS INDICATED OTHERWISE BY THE CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT WILL PREVAIL.

WDFW IN-WATER WORK PERIODS

WORK SHALL OCCUR DURING THE PERMITTED IN-WATER WORK PERIOD STATED IN THE HYDRAULIC PROJECT APPROVAL.

EXISTING DATA

TOPOGRAPHIC DATA WAS COLLECTED BY INTER-FLUVE USING RTK AND TOTAL STATION IN APRIL, MAY AND OCTOBER, 2013 AND NOVEMBER 2015. HORIZONTAL DATUM: STATE PLANE NAD83 WASHINGTON NORTH, VERTICAL DATUM: NAVD88.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS (5.0 BETA 2015-09-28).

GIS DATA INCLUDING: AERIAL PHOTOGRAPHY, LIDAR, LAND OWNERSHIP AND TRANSPORTATION ROUTES PROVIDED BY VARIOUS AGENCIES.

SOILS

SOILS WITHIN THE PROJECT AREA CONSIST OF BEVERLY GRAVELLY FINE SANDY LOAM, BEVERLY VERY GRAVELLY LOAMY FINE SAND AND GODDARD COBBLY FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES; PER NRCS CUSTOM SOIL RESOURCE REPORT, MAY 2013.

IF ADDITIONAL DATA IS REQUIRED, CONTRACTOR SHALL CONDUCT THEIR OWN INVESTIGATIONS AT NO ADDITIONAL COST.

UTILITIES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES.

THE CONTRACTOR SHALL CALL (800-424-5555) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.

THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO ADDITIONAL COST.

CONSTRUCTION STAKING

OWNER'S REPRESENTATIVE WILL PROVIDE STAKING OF PROJECT LIMITS, GRADE STAKES, AND ELEVATION CONTROL POINTS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

CONTRACTOR SHALL MEET WITH THE OWNER AND OWNER'S REPRESENTATIVE TO DEFINE AND MARK LIMITS OF DISTURBANCE PRIOR TO MOBILIZATION OF EQUIPMENT OR MATERIALS ONTO THE SITE.

THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST.

CONSTRUCTION MATERIALS

OWNER PROVIDED LOGS, LOGS WITH ROOTWADS AND VERTICAL SNAGS ARE TO BE LOCATED IN THE STOCKPILE/STAGING AREA.

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOT WADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS AND MATERIAL SIZE.

ANY EXCESS CONSTRUCTION MATERIALS SHALL BE NEATLY STORED AT AN APPROVED STAGING LOCATION. UPON COMPLETION OF THE PROJECT ANY EXCESS MATERIALS, WITH THE EXCEPTION OF ANY LARGE WOODY MATERIAL (LWM), WILL BECOME THE PROPERTY OF THE CONTRACTOR AND HAULED OFFSITE IN A TIMELY MANNER AND LEGALLY DISPOSED OF.

UPON PROJECT COMPLETION, THE CONTRACTOR WILL BE RESPONSIBLE FOR HAULING ANY EXCESS LWM OFFSITE TO THE YAKAMA NATION'S APPROVED LONG-TERM WOOD STAGING AREA LOCATED AT YAKAMA NATION'S NATAPOC PROPERTY.

CONSTRUCTION ACCESS/TRAFFIC CONTROL

CONTRACTOR SHALL SUBMIT AN ACCESS, STAGING, AND STOCKPILE PLAN TO THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO MOBILIZATION.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL OR ACCESS PERMITS.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING ANY REQUIRED TRAFFIC CONTROL INCLUDING, BUT NOT LIMITED TO, SIGNAGE AND FLAGGERS.

ALL SAPLINGS AND TREES TO BE TRANSPLANTED OR REMOVED SHALL BE CLEARLY MARKED AND APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE.

ALL EQUIPMENT, MATERIALS AND PERSONNEL SHALL REMAIN WITHIN THE LIMITS OF DISTURBANCE.

THE CONTRACTOR SHALL KEEP THE WORK AREAS IN A NEAT AND SIGHTLY CONDITION FREE OF DEBRIS AND LITTER FOR THE DURATION OF THE PROJECT.

CONTRACTOR SHALL IMPLEMENT MEASURES TO CONTROL AND MINIMIZE WIND BLOWN DUST FROM THE SITE AND ACCESS ROUTES.

AT PROJECT COMPLETION, ROADS AND ACCESS ROUTES SHALL BE CLEANED AND RESURFACED TO PRE-PROJECT CONDITION PER WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION. CLEANING SHALL BE INCIDENTAL TO MOBILIZATION/DEMOBILIZATION.

ALL DISTURBED AREAS INCLUDING, BUT NOT LIMITED TO: ROADS, DRIVEWAYS, TEMPORARY ACCESS ROUTES, STAGING AREAS AND STRUCTURE LOCATIONS NEED TO BE RESTORED TO PRE-PROJECT CONDITION OR BETTER. THIS WILL INCLUDE, BUT IS NOT LIMITED TO ANY GRADING/BLADING OF DISTURBED AREAS AS WELL AS REMOVAL OF ANY TRASH AND DEBRIS. THE OWNER'S REPRESENTATIVE WILL CONDUCT A FINAL WALK THROUGH WITH THE CONTRACTOR PRIOR TO DEMOBILIZATION. A SEPARATE INDEPENDENT CONTRACTOR WILL HANDLE ALL REVEGETATION EFFORTS POST PROJECT CONSTRUCTION.

ALL DISTURBED AREAS OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST.

SPILL POLLUTION AND PREVENTION PLAN (SPCC)

THE CONTRACTOR SHALL PREPARE AND IMPLEMENT A PROJECT-SPECIFIC SPILL PREVENTION, CONTROL, AND COUNTER MEASURES PLAN (SPCC PLAN) FOR THE DURATION OF THE PROJECT. THE CONTRACTOR SHALL SUBMIT THE PLAN TO THE OWNER'S REPRESENTATIVE NO LATER THAN THE DATE OF THE PRE-CONSTRUCTION CONFERENCE. NO ON-SITE CONSTRUCTION ACTIVITIES MAY COMMENCE UNTIL THE CONTRACTING AGENCY ACCEPTS AN SPCC PLAN FOR THE PROJECT.

EROSION CONTROL

CONTRACTOR SHALL BE SOLELY RESPONSIBLE, AT OWN EXPENSE, FOR PROVIDING AND MAINTAINING ALL NECESSARY EROSION CONTROL FACILITIES TO COMPLY WITH APPLICABLE EROSION CONTROL REGULATIONS AND TO MAINTAIN CLEAN ACCESS ROUTES FOR DURATION OF PROJECT.

EROSION/SEDIMENTATION CONTROL PLAN

THE EROSION AND SEDIMENT CONTROL (ESC) PLAN PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING EROSION CONTROL MEASURES TO COMPLY WITH APPLICABLE REGULATIONS.

THE RECOMMENDATIONS FOR AN ESC PLAN INCLUDED HEREIN WILL PROVIDE A GUIDELINE FOR THE CONTRACTOR TO DEVELOP AND IMPLEMENT AN ESC PLAN.

A. THE IMPLEMENTATION OF AN ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.

B. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.

C. ESC FACILITIES, AS APPROXIMATELY SHOWN ON THIS PLAN, ARE TO BE CONSTRUCTED PRIOR TO CLEARING AND GRADING ACTIVITIES IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER SURFACE WATERS, THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER STANDARDS.

D. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED AT NO ADDITIONAL COST FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.

E. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.

F. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.

G. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT TO ENSURE ALL ACCESS ROADS ARE KEPT CLEAN AT NO ADDITIONAL COST.

CONTRACTOR'S ESC RECORD

WEEKLY REPORTS SUMMARIZING THE SCOPE OF INSPECTIONS, THE PERSONNEL CONDUCTING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN, AND ACTIONS TAKEN AS A RESULT OF THESE INSPECTIONS SHALL BE PREPARED AND RETAINED ON SITE BY THE CONTRACTOR. IN ADDITION, A RECORD OF THE FOLLOWING DATES SHALL BE INCLUDED IN THE REPORTS:

1. WHEN MAJOR GRADING ACTIVITIES OCCUR.
2. DATES OF RAINFALL EVENTS EITHER EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 INCHES/24 HOURS.
3. WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON SITE, OR ON A PORTION OF THE SITE.
4. WHEN STABILIZATION MEASURES ARE INITIATED FOR PORTIONS OF THE SITE.

ESC RECORDS SHALL BE MADE AVAILABLE TO THE OWNER AND OWNER'S REPRESENTATIVE ON REQUEST AND SHALL BE PROVIDED FOR REVIEW AND APPROVAL PRIOR TO APPLICATION FOR PAYMENT.

DANIEL S. MILLER
STATE OF WASHINGTON
34208
REGISTERED PROFESSIONAL ENGINEER

EXPIRES: 11/23/17

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NO.	BY	DATE	REVISION DESCRIPTION

NS	DM, LH	DM
DRAWN	DESIGNED	CHECKED
DM	12/6/2016	150218
APPROVED	DATE	PROJECT

CONFEDERATED TRIBES AND BANDS OF YAKAMA NATION
UPPER WENATCHEE RIVER, MEACHAM FLATS
FINAL DESIGN

inter·fluve
501 Portway Avenue, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

GENERAL NOTES

SHEET 2 OF 13

STABILIZE SOILS AND PROTECT SLOPES

FROM MAY 1 THROUGH SEPTEMBER 30, ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, HYDROSEED COVERING, OR OTHER APPROVED MEASURES WITHIN 3 DAYS OF GRADING. FROM OCTOBER 1 THROUGH APRIL 30, ALL EXPOSED SOILS MUST BE PROTECTED WITHIN 2 DAYS OF GRADING. SOILS SHALL BE STABILIZED BEFORE A WORK SHUTDOWN, HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. SOIL STOCKPILES MUST BE STABILIZED AND PROTECTED WITH SEDIMENT TRAPPING MEASURES. HYDROSEED ALL DISTURBED AREAS NOT INDICATED IN THE CONTRACT DOCUMENTS FOR OTHER PERMANENT STABILIZATION MEASURES AS SOON AS PRACTICAL.

DESIGN, CONSTRUCT, AND PHASE CUT AND FILL SLOPES IN A MANNER THAT WILL MINIMIZE EROSION. REDUCE SLOPE VELOCITIES ON DISTURBED SLOPES BY PROVIDING TEMPORARY BARRIERS. STORMWATER FROM OFF SITE SHOULD BE HANDLED SEPARATELY FROM STORMWATER GENERATED ON SITE.

AFTER FINAL SITE STABILIZATION

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BEST MANAGEMENT PRACTICES (BMPs) ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED FROM THE SITE OR INCORPORATED INTO FINISHED GRADING. DISTURBED SOIL AREAS RESULTING FROM REMOVAL SHALL BE PERMANENTLY STABILIZED.

RIVER DIVERSION

DIVERSION MAY BYPASS THE RIVER AROUND SMALLER WORK AREAS AT CONTRACTOR'S DISCRETION.

DEWATERING OF IN-CHANNEL WORK AREA(S) SHALL OCCUR CONCURRENT WITH FISH RESCUE. CONTRACTOR SHALL COORDINATE WITH THE YAKAMA NATION FISHERIES FOR FISH RESCUE. CONTRACTOR SHALL PROVIDE YAKAMA FISHERIES AMPLE TIME TO SCHEDULE FISH RESCUE. IF DIVERSION FAILS DUE TO CONTRACTOR NEGLIGENCE, FISH RESCUE SHALL BE REPEATED BY YAKAMA FISHERIES CREWS AT CONTRACTOR'S EXPENSE.

FISH RESCUE

ALL FISH RESCUE EFFORTS SHALL BE PERFORMED BY A YAKAMA NATION FISHERIES/AQUATIC BIOLOGIST EXPERIENCED WITH THE COLLECTION AND HANDLING OF SALMONIDS FROM CONSTRUCTION SITES.

ALL FISH TRAPPED IN RESIDUAL POOLS WITHIN THE PROJECT AREA WILL BE CAREFULLY COLLECTED BY SEINE AND/OR DIP NETS AND PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME OF FRESH RIVER WATER.

CAPTURED FISH SHALL BE IMMEDIATELY RELEASED DOWNSTREAM OF PROJECT AREA.

TREE SALVAGE

ALL APPROPRIATE TREE SPECIES WITHIN CLEARING LIMITS REMOVED FOR CONSTRUCTION, AS APPROVED BY THE OWNER'S REPRESENTATIVE, SHALL TEMPORARILY BE STOCKPILED WITHIN LIMITS OF DISTURBANCE. STOCKPILED TREE/SLASH SHALL BE REINCORPORATED INTO FINISHED PROJECT.

ANY REMOVED VEGETATION GREATER THAN 6 INCHES DIAMETER AND 15 FEET LONG SHOULD BE INCORPORATED INTO LOG STRUCTURES, SEE SHEET 7. CONTRACTOR IS RESPONSIBLE FOR REMOVING SMALLER CLEARING AND GRUBBING DEBRIS FROM THE SITE AND DISPOSING AT A LEGAL LOCATION AT THE END OF THE PROJECT UNLESS DIRECTED BY THE OWNER'S REPRESENTATIVE.

ALL TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOTWAD AND UTILIZED IN THE PROJECT CONSTRUCTION AS DIRECTED BY OWNER'S REPRESENTATIVE.

LIVE TREES

ALL TREES NOT MARKED FOR REMOVAL SHALL BE LEFT STANDING UNDISTURBED. CONSTRUCTION ACTIVITY SHALL NOT DEBARK OR DAMAGE LIVE TREES.

KEEP OUT OF DRIP LINE OF EXISTING TREES TO REMAIN.

CONSTRUCTION DEWATERING

IF ADDITIONAL PUMPING IS REQUIRED TO DEWATER DURING CONSTRUCTION, PUMPED DISCHARGE SHALL RELEASE SEDIMENT-LADEN WATER AT AN UPLAND DISCHARGE LOCATION IN A MANNER THAT DOES NOT CAUSE EROSION, CONTAMINATION, OR INCREASE TURBIDITY OF SURFACE WATERS.

OWNER'S REPRESENTATIVE SHALL APPROVE DEWATERING DISCHARGE LOCATION PRIOR TO IMPLEMENTATION.

CONTRACTOR SHALL PERFORM CONSTRUCTION DEWATERING IN SUCH A MANNER AS TO AVOID THE RELEASE OF TURBID OR SEDIMENT-LADEN WATER IN ORDER TO PREVENT CONTAMINATION OR INCREASE TURBIDITY OF SURFACE WATERS. SEDIMENT LADEN WATER MAY BE PUMPED TO AN UPLAND DISCHARGE LOCATION AND ALLOWED TO SHEET FLOW THROUGH EXISTING VEGETATION BEFORE INFILTRATING INTO THE GROUND. IF THIS METHOD IS NOT SUFFICIENT TO PREVENT RETURN OF TURBID WATER TO SURFACE WATERS OF THE WENATCHEE RIVER AND FLOODPLAIN, A 'DIRT-BAG' OR SEDIMENT RETENTION STRUCTURE MAY BE REQUIRED AS NECESSARY TO COMPLY WITH LAWS AND PERMIT REQUIREMENTS AT NO ADDITIONAL COST.

CONTRACTOR WILL PROVIDE ANY PUMPS, HOSES AND FITTINGS NEEDED TO PERFORM THE DEWATERING. THE PUMP EQUIPMENT SELECTED BY THE CONTRACTOR SHALL BE SUFFICIENT TO DEWATER THE SITE THOROUGHLY.

CONTRACTOR SHALL PROVIDE VISQUEEN OR GEOTEXTILE LINER, PLYWOOD, OR METAL PLATING AS NECESSARY TO DISSIPATE PUMP DISCHARGE JET TO PREVENT EROSION.

WETLANDS AND WATERS OF THE US

THE WETLAND BOUNDARIES AND ORDINARY HIGH WATER (OHW) LINES DISPLAYED IN THIS DESIGN PACKAGE WERE DETERMINED BY INTER-FLUVE STAFF. THESE LINES ARE BASED UPON ANALYSIS, MODELING, AND BEST PROFESSIONAL JUDGMENT.

THESE DO NOT NECESSARILY REPRESENT JURISDICTIONAL BOUNDARIES. WITHIN THE STATE OF WASHINGTON, THE ARMY CORPS OF ENGINEERS AND THE DEPARTMENT OF ECOLOGY HAVE THE FINAL AUTHORITY IN DETERMINING WATERS AND WETLAND BOUNDARIES AND REGULATIONS.

QUANTITIES ESTIMATE

Location	Item	Qty	Unit
Habitat enhancement large wood structures			
	Large wood (no rootwads) hauled from staging and installed	8	EA
	Large wood (rootwads) hauled from staging and installed	16	EA
	Vertical snag installation	24	EA
	Excavation for LWM (geometry varies per structure)	240	CY
	Imported gravel/cobble/topsoil for LWM trench backfill (volume varies per structure)	200	CY
	Vegetated FES lift (length and number of tiers vary per structure)	138	LF
Floodplain roughness wood			
	Large wood (rootwads) hauled from staging and installed	6	EA
Side channel inlet			
	Excavation (17' bottom width, elevation 1744.8')	20	CY
Site restoration			
	Seed and mulch	32	MSF

CY = CUBIC YARDS
EA = EACH
LF = LINEAL FEET
MSF = 1,000 SQUARE FEET

ABBREVIATIONS

APPROX	APPROXIMATE
BMP	BEST MANAGEMENT PRACTICE
CY	CUBIC YARDS
°	DEGREE
DBH	DIAMETER AT BREAST HEIGHT
ESC	EROSION AND SEDIMENT CONTROL
FES	FABRIC ENCAPSULATED SOIL
' or FT	FOOT
GPM	GALLONS PER MINUTE
HWY	HIGHWAY
HRS	HOURS
ID	IDENTIFICATION
" or IN	INCH
LWM	LARGE WOODY MATERIAL
MAX	MAXIMUM
MFR	MANUFACTURER
MIN	MINIMUM
OHW	ORDINARY HIGH WATER
OZ	OUNCE
%	PERCENT
LBS	POUNDS
REF	REFERENCE
RD	ROAD
STD	STANDARD
TYP	TYPICAL
YD	YARD

NOTES:
ESTIMATED MATERIAL VOLUMES ARE APPROXIMATE IN-PLACE QUANTITIES AND NOT FACTORED FOR EXPANSION OF EXCAVATED MATERIAL OR COMPACTION OF PLACED MATERIAL. MEASUREMENT AND PAYMENT SHALL NOT BE BASED ON WEIGHT TICKETS OR TRUCK MEASURE WITHOUT PRIOR WRITTEN APPROVAL.

EXCAVATED MATERIAL NOT SUITABLE FOR SALVAGE AND REUSE SHALL BECOME THE PROPERTY OF THE CONTRACTOR FOR LEGAL OFF-SITE DISPOSAL.

DANIEL S. MILLER
STATE OF WASHINGTON
34208
REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 11/23/17

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APPROVED	DATE	PROJECT

CONFEDERATED TRIBES AND BANDS OF YAKAMA NATION
UPPER WENATCHEE RIVER, MEACHAM FLATS
FINAL DESIGN

inter·fluve
501 Portway Avenue, Suite 101
Hood River, OR 97031
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GENERAL NOTES, QUANTITIES & ABBREVIATIONS

SHEET 3 OF 13

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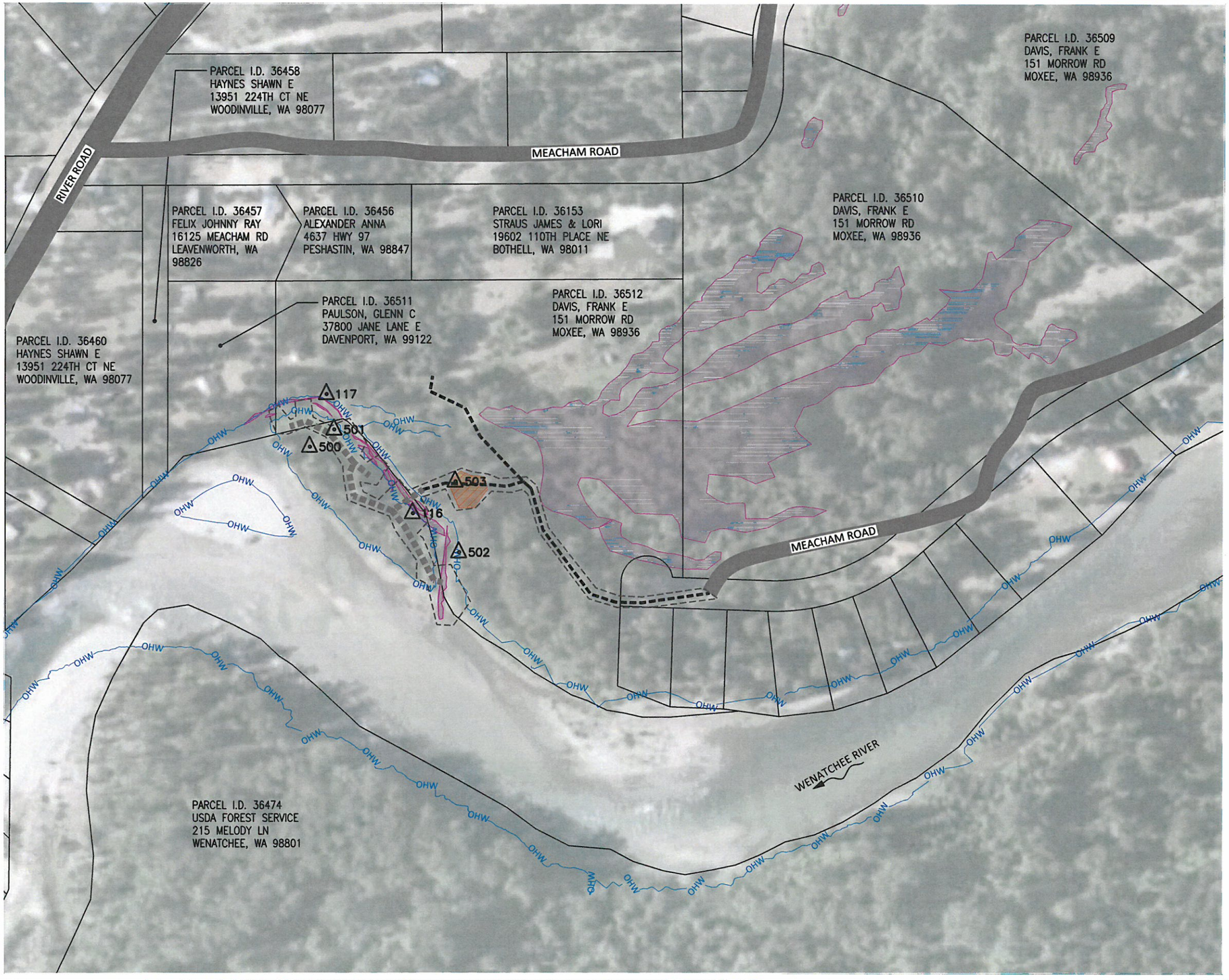

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SCALE IN FEET

LEGEND

- EXISTING CONTOURS (1FT)
- EXISTING ACCESS
- TEMPORARY ACCESS
- EXISTING TRAIL
- PROPERTY BOUNDARY
- OHW — ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- EXISTING WETLAND
- TEMPORARY STAGING AREA
- 500 — TEMPORARY SURVEY CONTROL POINT

SURVEY CONTROL

Point Number	Northing	Easting	Point Elevation
116	259792.06'	1681902.16'	1748.55'
117	260025.66'	1681735.76'	1748.06'
500	259922.16'	1681702.71'	1748.97'
501	259956.13'	1681750.30'	1748.47'
502	259715.37'	1681992.43'	1747.85'
503	259854.14'	1681985.45'	1750.16'

DANIEL S. MILLER
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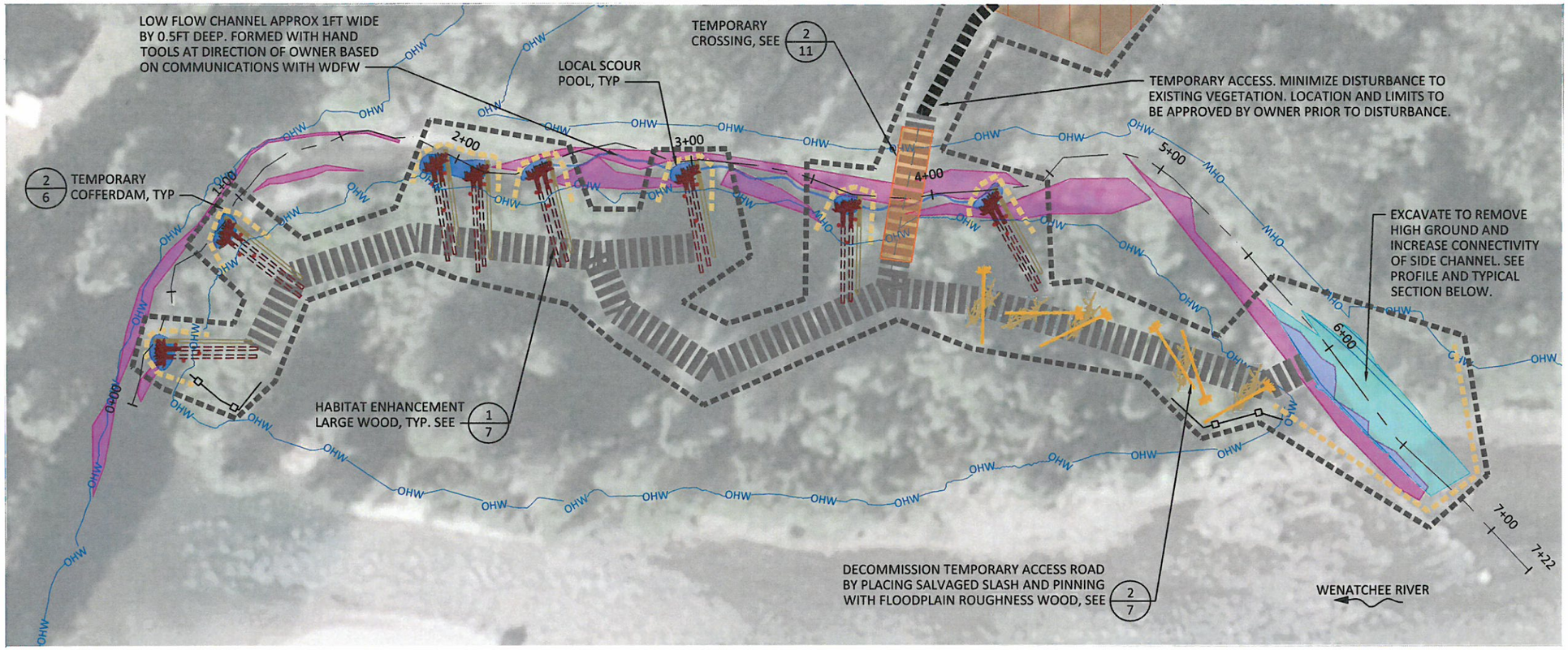
EXISTING CONDITIONS, PROPERTY OWNERSHIP AND SURVEY CONTROL

SHEET 4 OF 13



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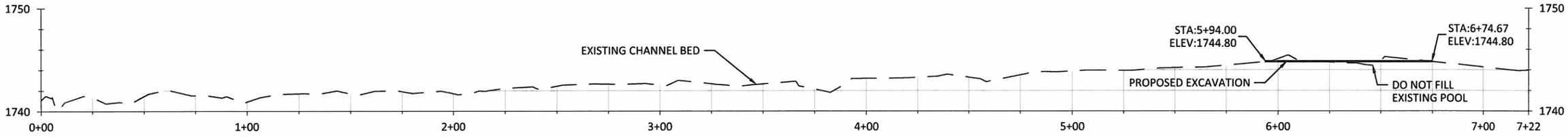
SCALE IN FEET

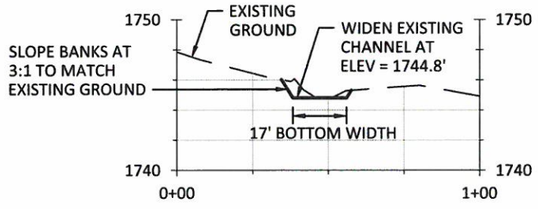
LEGEND

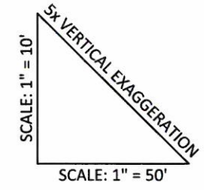
- EXISTING CONTOURS (1FT)
- PROPOSED CONTOURS (1FT)
- TEMPORARY ACCESS
- OHW — ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- 6+00 — SIDE CHANNEL ALIGNMENT
- TEMPORARY COFFERDAM, SEE
- TEMPORARY SILT FENCE, SEE 2/6
- TEMPORARY STAGING AREA 1/6
- EXISTING WETLANDS
- TEMPORARY CROSSING, SEE 2/11
- SIDE CHANNEL INLET EXCAVATION AREA
- HABITAT ENHANCEMENT LARGE WOOD, SEE 1/7
- FLOODPLAIN ROUGHNESS WOOD, SEE 2/7

PLAN



PROFILE





TYPICAL SECTION - SIDE CHANNEL INLET EXCAVATION

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SIDE CHANNEL PLAN, PROFILE & SECTION

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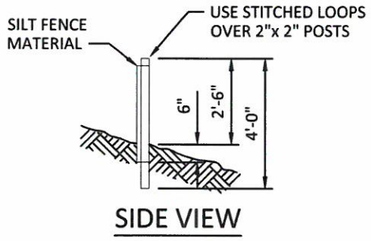
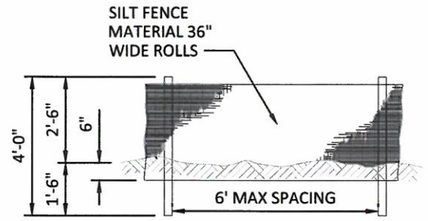
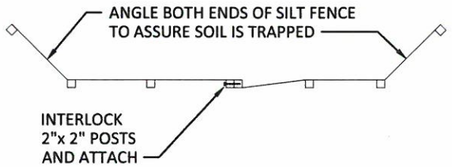


SIDE VIEW



FRONT VIEW

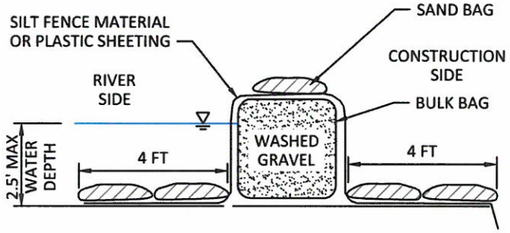


TOP VIEW

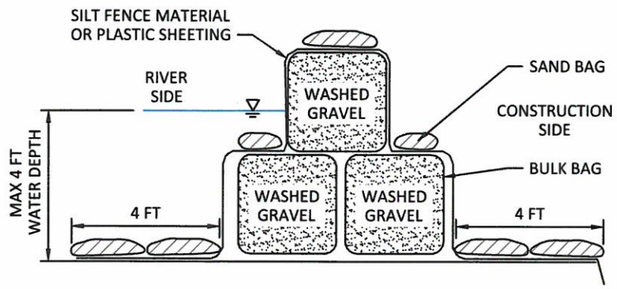
SILT FENCES:

1. THE SILT FENCE SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, SILT FENCE SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST. ALTERNATIVELY, OVERLAP AND INTERLOCK TWO POSTS WITH ATTACHED FABRIC AS REQUIRED TO MEET APPLICABLE REGULATIONS.
2. THE SILT FENCE IS TO BE INSTALLED ALONG THE DOWNHILL PERIMETER OF CONSTRUCTION AREAS AS REQUIRED TO MEET REGULATIONS AND PERMIT REQUIREMENTS. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES.
3. THE SILT FENCE SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6 INCHES. ALL EXCAVATED MATERIAL FROM SILT FENCE INSTALLATION SHALL BE BACK-FILLED AND COMPACTED ALONG THE ENTIRE DISTURBED AREA.
4. STANDARD OR HEAVY DUTY SILT FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCHES X 2 INCHES POST INSTALLATION.
5. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.

1/6 TYPICAL SILT FENCE
NOT TO SCALE



TEMPORARY COFFERDAM
DEPTHS LESS THAN 2.5'

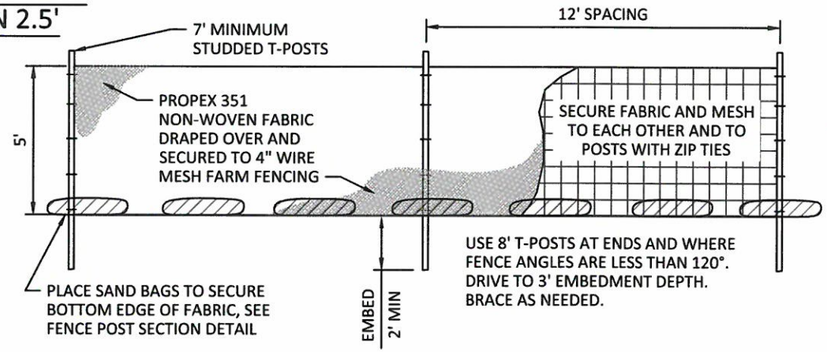


COFFERDAM SECTION IN WATER
DEPTHS GREATER THAN 2.5'

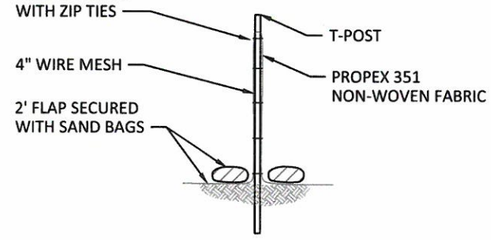
BULK BAG NOTES:

1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WDFW APPROVED 3" MINUS WASHED GRAVEL, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT ISOLATES THE CONSTRUCTION SITE.
2. 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. BULK BAG COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS PLACED IN ROWS ON TOP OF COFFERDAM, AND AT TOE OF COFFERDAM.
3. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON BOTH SIDES OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING A MINIMUM OF 4-FEET FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY A MINIMUM OF TWO ROWS OF STANDARD SANDBAGS.
4. THE CONSTRUCTION SIDE EDGE OF PLASTIC SHEETING SHALL BE TOED INTO THE CHANNEL BED A MINIMUM OF 1 FOOT. TOEING IN THE OUTWARD EDGE OF PLASTIC SHEETING SHALL OCCUR AFTER THE COFFERDAM IS CLOSED TO PREVENT TURBIDITY RELEASE TO THE WATERWAY.
5. 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.
6. BULK BAGS SHALL BE CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.
7. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL COVER THE ENTIRE COFFERDAM WITHOUT SEAMS. 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.
8. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED. BAGS, SHEETING AND GRAVEL WILL BE HAULED OFFSITE.
9. MEASUREMENT AND PAYMENT FOR BULK BAG COFFERDAM, SAND BAGS, PLASTIC SHEETING, WASHED GRAVEL PLACEMENT, MAINTENANCE AND REMOVAL OF ALL MATERIALS SHALL BE INCIDENTAL TO THE LUMP SUM ALL INCLUSIVE COST FOR DIVERSION AND DEWATERING.
10. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.

2/6 TEMPORARY COFFERDAM
NOT TO SCALE



ELEVATION



SECTION

3/6 TURBIDITY CURTAIN TYPICAL DETAILS
NOT TO SCALE

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TYPICAL DETAILS - EROSION CONTROL & COFFERDAMS

SHEET 6 OF 13

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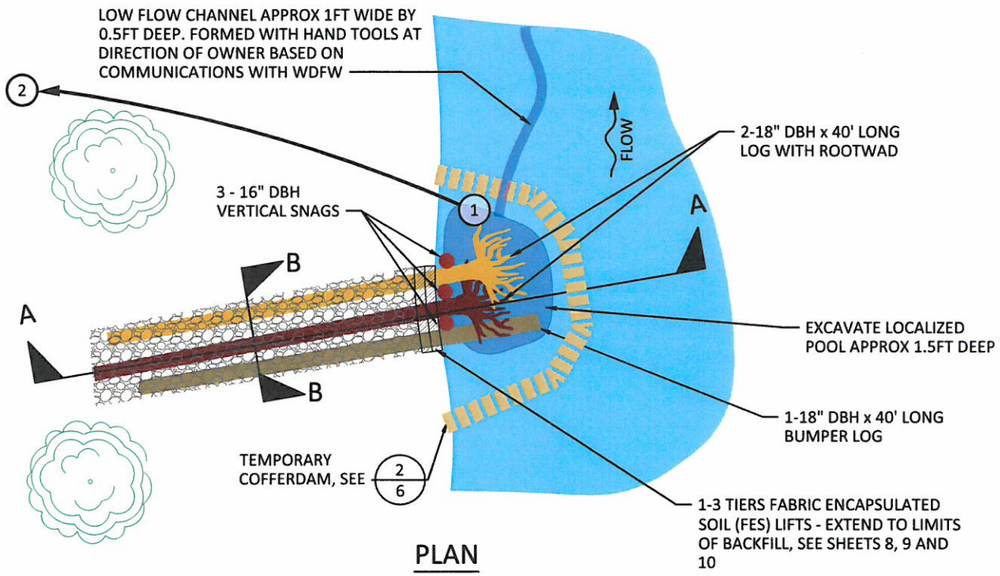
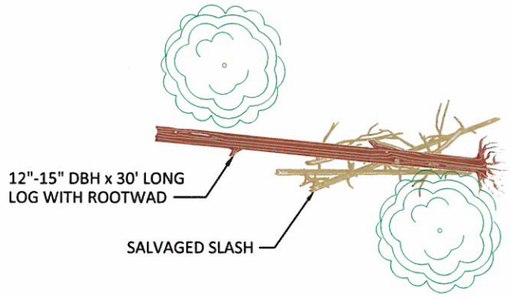


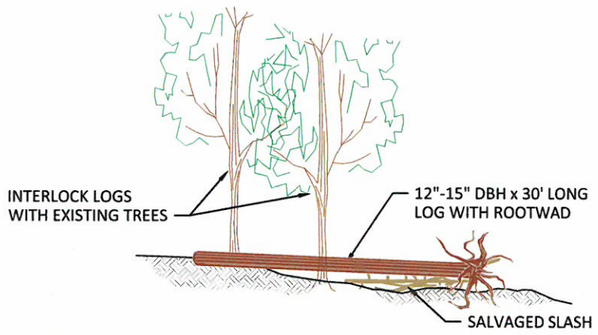
PLAN

DEWATERING NOTES:

1. CONSTRUCTION DEWATERING SUMP. CONTRACTOR SHALL PROVIDE PUMP TO DRAW DOWN WATER LEVEL SUFFICIENTLY FOR PLACEMENT OF LWM.
2. CONSTRUCTION DEWATERING DISCHARGE LOCATION. CONTROL DISCHARGE TO PREVENT EROSION AND RETURN OF TURBID WATER TO SURFACE WATERS.



PLAN



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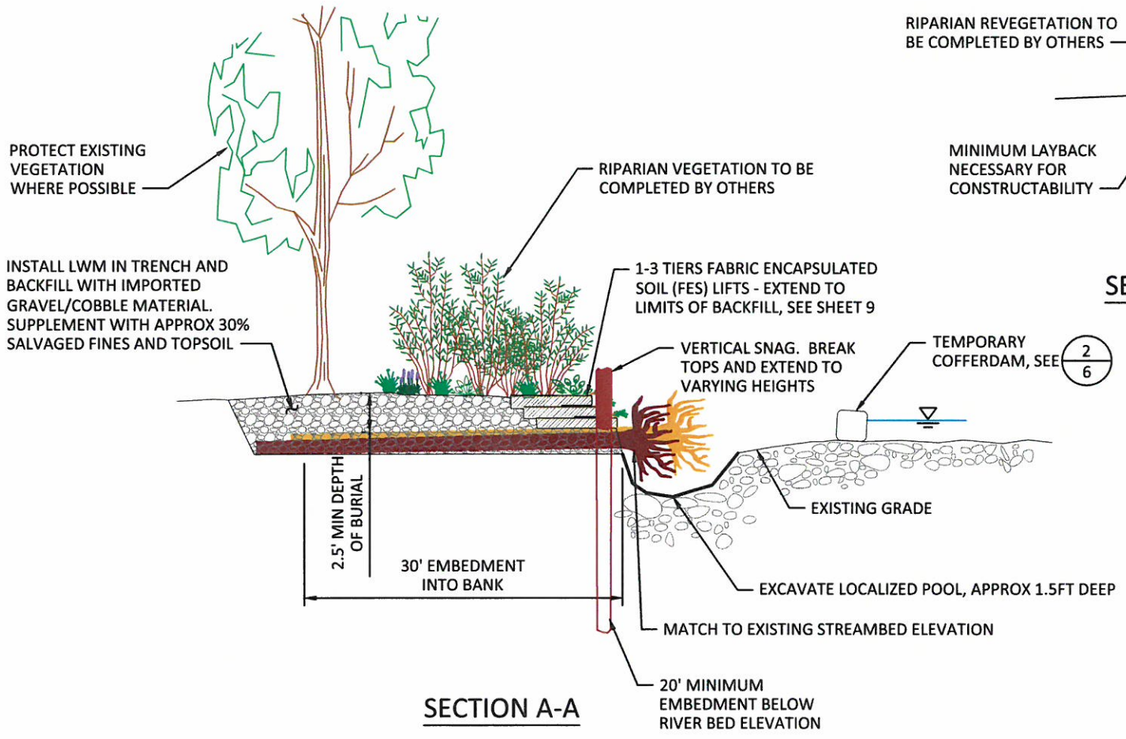
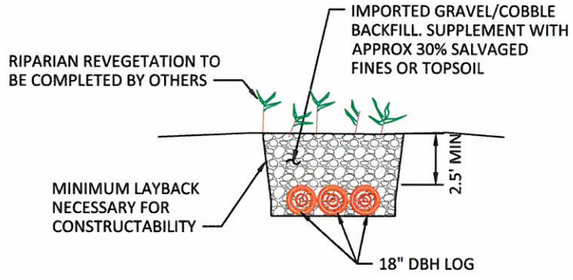


SECTION A-A



SECTION B-B

HABITAT ENHANCEMENT LARGE WOOD STRUCTURES			
STATION	BED ELEVATION	ELEVATION AT TOP OF LOGS	NUMBER OF TIERS
4+25	1743.4	1746.1	1
3+65	1742.4	1744.1	2
3+00	1742.5	1745.3	1
2+40	1742.2	1744	1
2+10	1741.9	1743.4	2
2+00	1741.5	1743	3
0+90	1741.3	1743.2	3
0+30	1740.7	1743.2	2

NOTES:

SPECIFIC ORIENTATION OF LOGS AND BALLAST MATERIALS MAY VARY FROM TYPICAL DRAWINGS DEPENDING ON SIZE AND SHAPE OF MATERIAL DELIVERED OR SALVAGED.

BRACING TO EXISTING TREES OR INSTALLED VERTICAL LOGS WILL OCCUR AT LOCATIONS IDENTIFIED IN THE FIELD TO PROVIDE HORIZONTAL STABILITY.

ALL VERTICAL SNAGS SHALL BE INSTALLED USING VIBRATORY PILE DRIVING EQUIPMENT. INSTALLATION BY EXCAVATION, HAMMERING OR VIBRATORY PLATE COMPACTOR SHALL NOT BE ALLOWED.

ACCEPTABLE MINIMUM VIBRATORY PILE DRIVING EQUIPMENT SHALL INCLUDE: HMC MOVAC SONIC SIDE GRIP VIBRATORY PILE DRIVER-MODEL SP80 OR EQUIVALENT.

1/7 TYPICAL DETAIL - HABITAT ENHANCEMENT LARGE WOOD STRUCTURES
NOT TO SCALE

2/7 TYPICAL DETAIL - FLOODPLAIN ROUGHNESS WOOD
NOT TO SCALE

DANIEL S. MILLER — STATE OF WASHINGTON — 34208 — REGISTERED PROFESSIONAL ENGINEER
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TYPICAL DETAILS - HABITAT ENHANCEMENT & FLOODPLAIN WOOD

SHEET 7 OF 13

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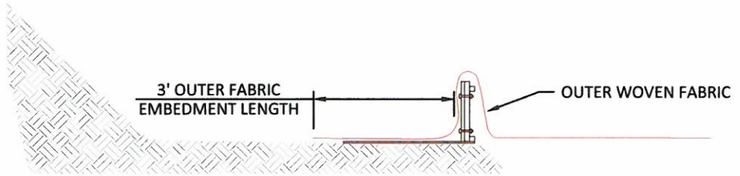
A.

B.



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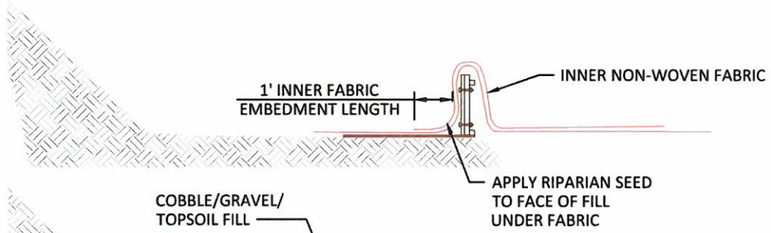

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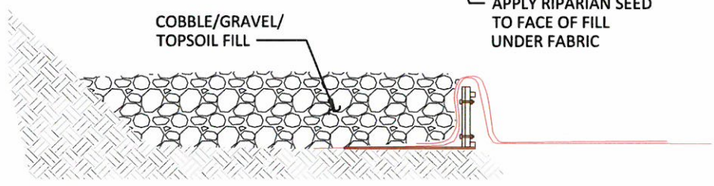

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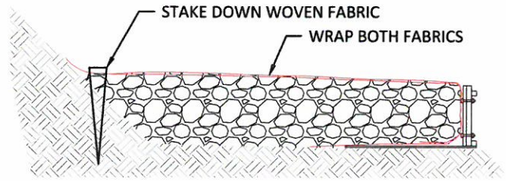

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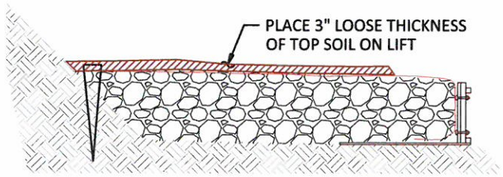

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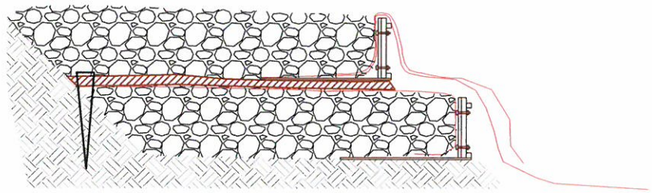
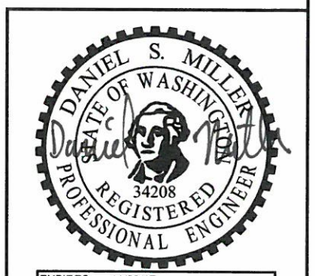


NOTE:

ORDINARY HIGH WATER (OHW) ELEVATION IS BELOW FES LIFTS.

GENERAL INSTRUCTIONS FOR CONSTRUCTING FABRIC ENCAPSULATED SOIL LIFTS

1. LIFTS WILL BE CONSTRUCTED TO ENCAPSULATE TRENCH BACKFILL. EXTEND TO WIDTH OF EXCAVATED TRENCH AND BACKFILL.
2. UNROLL THE OUTER FABRIC (WOVEN COIR) PARALLEL TO THE LONG AXIS OF THE CHANNEL AND POSITION IT SO THAT 3 FEET EXTENDS FOR EMBEDMENT ON THE BANK SIDE OF THE FORMS (FIG B), AND A MINIMUM 3 FEET EXTENDS LENGTHWISE BEYOND THE LAST FORM FOR OVERLAP. EXTEND FABRIC 3 FEET BEYOND THE ENDS OF THE LIFT TO THE BOX-FOLD ENDS. DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE (FIG B).
3. UNROLL THE INNER FABRIC (NON-WOVEN COIR) OVER THE TOP OF THE OUTER FABRIC AND POSITION IT SO THAT AT LEAST 1 FOOT OF THE INNER FABRIC EXTENDS AS AN EMBEDMENT LENGTH ON THE BANK SIDE OF THE FORMS (FIG C). DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE AND ALIGN THE LONG EDGES OF THE INNER AND OUTER FABRICS. STRETCH AND PULL THE FABRIC LAYERS TO REMOVE WRINKLES.
4. PLACE COBBLE GRAVEL MIX WITH APPROX 30% TOPSOIL FILL OVER THE FABRIC ON THE BANK SIDE OF THE FORMS TO A COMPACTED DEPTH OF 12 INCHES.
5. RIPARIAN SEED SHALL BE PLACED ON SOIL AND BENEATH FABRIC ON ALL EXPOSED SURFACES.
6. FOLD THE LOOSE ENDS OF THE TWO FABRIC LAYERS BACK OVER THE COMPACTED FILL MATERIAL AND STRETCH TIGHTLY TO REMOVE WRINKLES (FIG E). SECURE WITH WOODEN STAKES.
7. PLACE 3" OF LOOSE TOPSOIL ON LIFT. REPEAT STEPS 2-6 TO REACH FULL BANK HEIGHT.
8. ON THE TOP LIFT, EXCAVATE A KEY TRENCH 1.5 FEET WIDE AND 0.5 FEET DEEP ALONG THE LAND-WARD EDGE OF THE OUTER FABRIC LAYER, PARALLEL TO THE FORMS. SECURE FABRIC IN THE KEY TRENCH WITH WOODEN STAKES.
9. BACKFILL & COMPACT THE KEY TRENCH WITH TOPSOIL AND CONTINUE TO APPLY TOPSOIL TO SMOOTHLY MERGE WITH EXISTING CONTOURS.



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NO.	BY	DATE	REVISION DESCRIPTION

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DM	12/6/2016	150218
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UPPER WENATCHEE RIVER, MEACHAM FLATS
FINAL DESIGN

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TYPICAL DETAILS - FES LIFT CONSTRUCTION SEQUENCE

SHEET 8 OF 13

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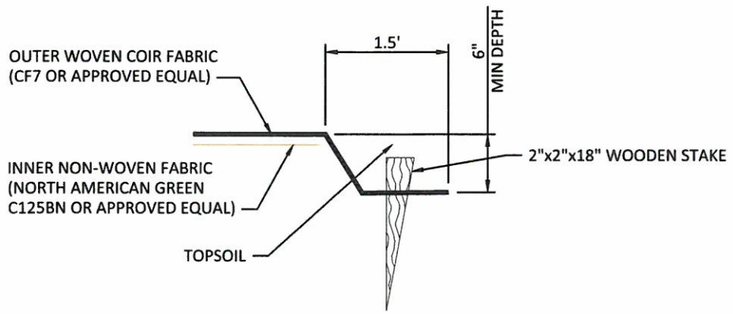
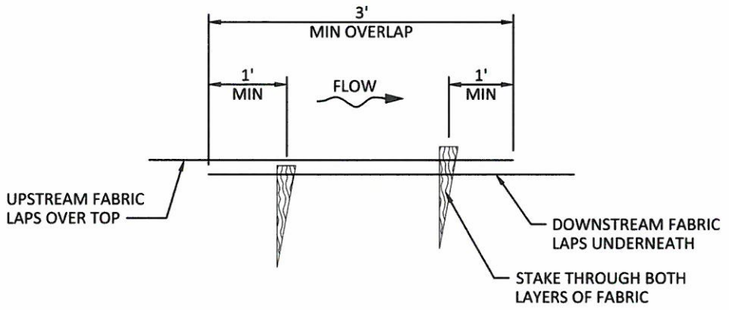
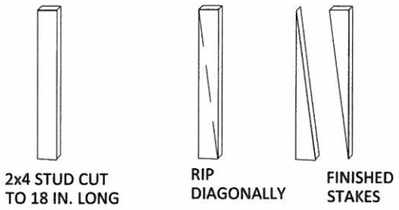


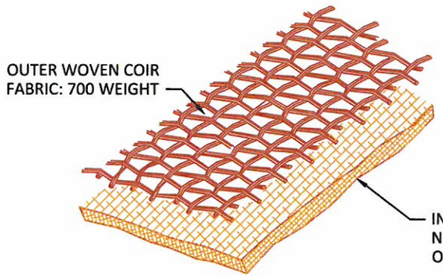
A/9 FABRIC EDGE
NOT TO SCALE



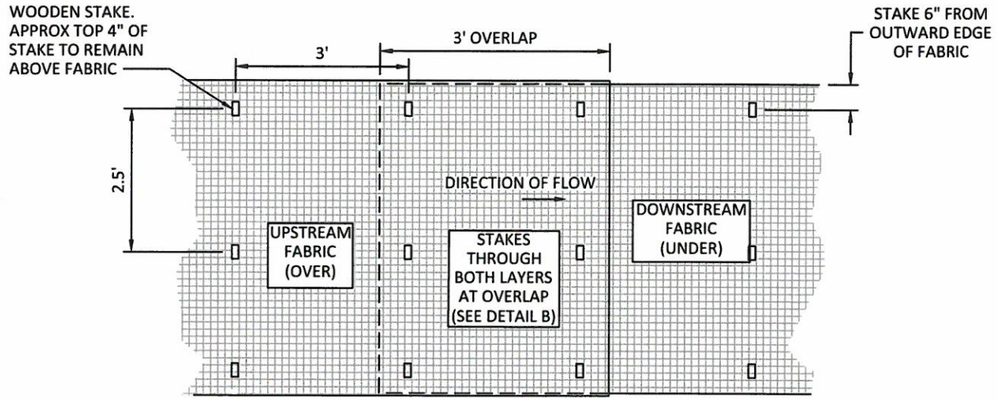
C/9 FABRIC OVERLAP
NOT TO SCALE



B/9 WOODEN STAKE CONSTRUCTION
NOT TO SCALE

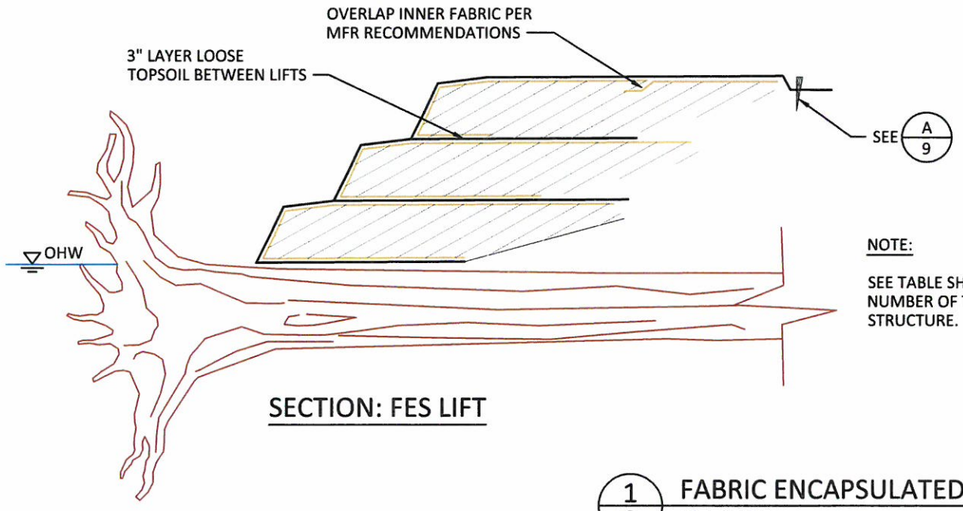


D/9 FABRIC LAYERING
NOT TO SCALE



PLAN VIEW

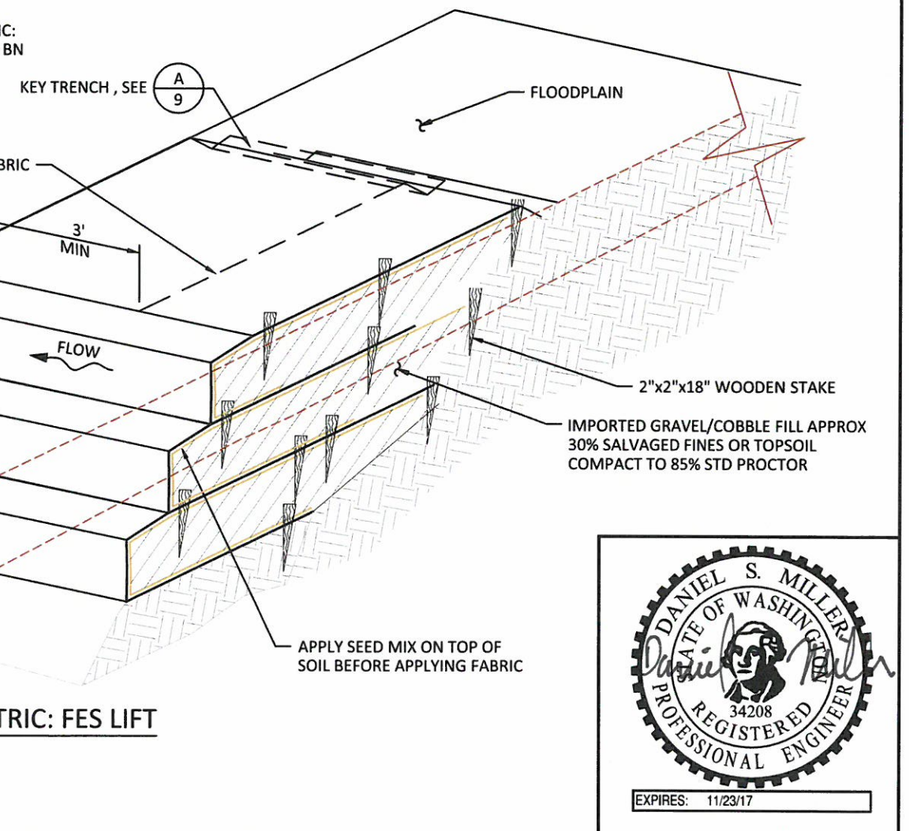
E/9 FABRIC LAYOUT AND STAKING DETAIL
NOT TO SCALE



SECTION: FES LIFT

NOTE:

SEE TABLE SHEET 7 FOR NUMBER OF TIERS PER STRUCTURE.



ISOMETRIC: FES LIFT

1/9 FABRIC ENCAPSULATED SOIL (FES) LIFT
NOT TO SCALE

DANIEL S. MILLER
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EXPIRES: 11/23/17

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TYPICAL DETAILS - FES LIFTS

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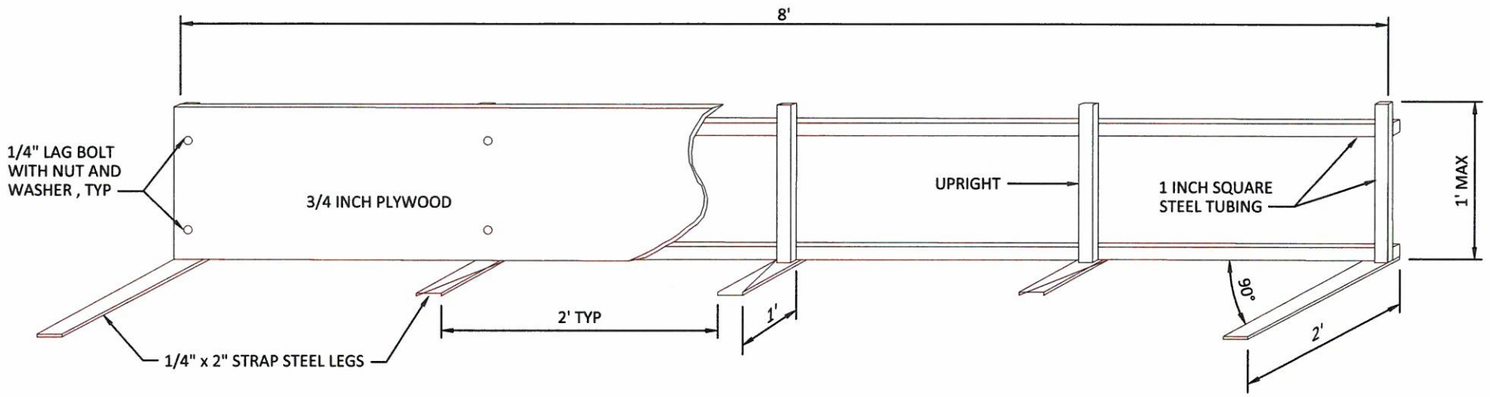
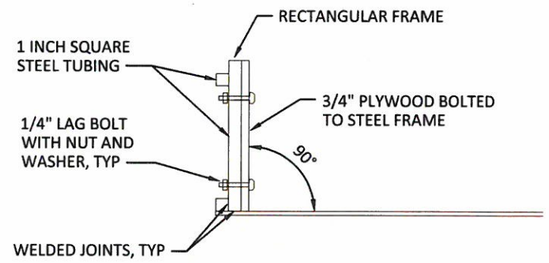
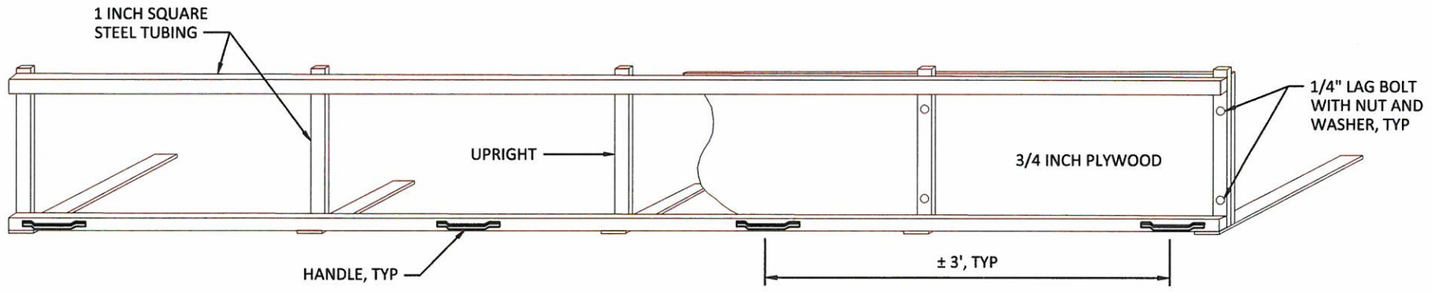


ISOMETRIC VIEW FROM REAR



END VIEW



ISOMETRIC VIEW FROM FRONT

1/10 FABRIC WRAPPED SOIL CONSTRUCTION FORM
NOT TO SCALE

GENERAL NOTES ON FABRICATION OF FORMS FOR FABRIC WRAPPED SOIL CONSTRUCTION

1. FABRICATE FORMS BY WELDING 1 INCH TUBULAR STEEL TOGETHER TO CREATE A 1 x 8 FOOT RECTANGULAR FRAMEWORK.
2. WELD LENGTHS OF 1/4 x 2 INCH STEEL STRAP AT 90 DEGREES TO THE FRAME EVERY 2 FEET.
3. ATTACH A PIECE OF 3/4 INCH PLYWOOD TO THE FRAME USING 1/4 INCH DIAMETER LAG BOLTS OR EQUIVALENT.
4. REMOVAL AND TRANSPORT OF THE FORMS IS FACILITATED IF HEAVY DUTY HANDLES ARE ATTACHED TO THE FRAME AS SHOWN.

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TYPICAL DETAILS - FES LIFT FORM FABRICATION

SHEET 10 OF 13

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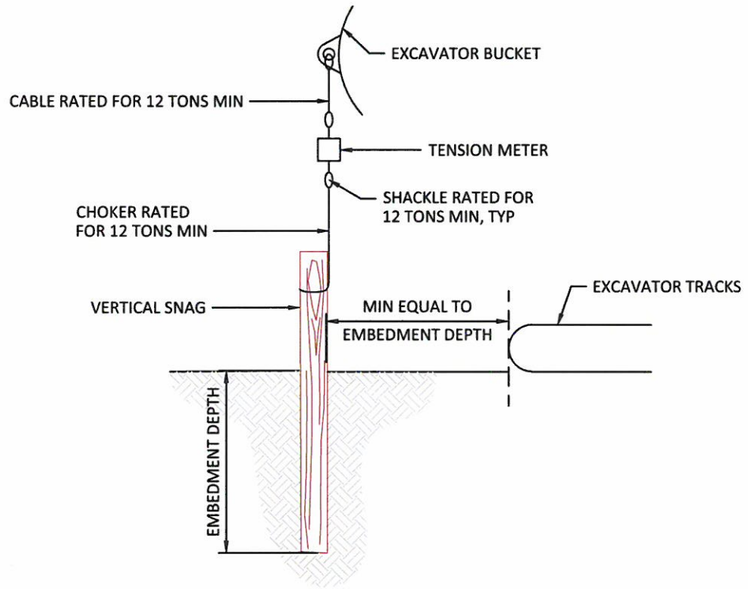


1/11 VERTICAL SNAG PULLOUT TESTING
NOT TO SCALE

VERTICAL SNAGS

ALL VERTICAL SNAGS SHALL BE INSTALLED USING VIBRATORY PILE DRIVING EQUIPMENT. INSTALLATION BY EXCAVATION, HAMMERING OR VIBRATORY PLATE COMPACTOR SHALL NOT BE ALLOWED.

ACCEPTABLE MINIMUM VIBRATORY PILE DRIVING EQUIPMENT SHALL INCLUDE: HMC MOVAX SONIC SIDE GRIP VIBRATORY PILE DRIVER - MODEL SP80 OR EQUIVALENT.

VERTICAL SNAGS SHALL BE A MAXIMUM OF 16" DIAMETER AT BREAST HEIGHT, WITH NO BARK.

RIGGING

RIGGING FOR VERTICAL SNAG TESTING SHALL CONFORM TO THE TENSION SCALE MANUFACTURER'S RECOMMENDATIONS.

CHOKERS, CABLES AND AND SHACKLES SHALL HAVE MINIMUM WORKING LOAD RATING OF 12 TONS. FITTINGS SHALL BE SIZED ACCORDINGLY

TESTING

TESTING OF VERTICAL SNAGS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER.

EACH VERTICAL SNAG TEST SHALL HAVE UPWARD LOAD GRADUALLY INCREASED AND AS CLOSELY ALIGNED TO AXIS OF VERTICAL SNAG AS POSSIBLE. RECORD THE VERTICAL SNAG DIAMETER, EMBEDMENT DEPTH AND MAXIMUM FORCE REQUIRED TO MOVE THE VERTICAL SNAG. UP TO A TOTAL OF THREE LOADINGS MAY BE REQUIRED AT EACH EMBEDMENT DEPTH.

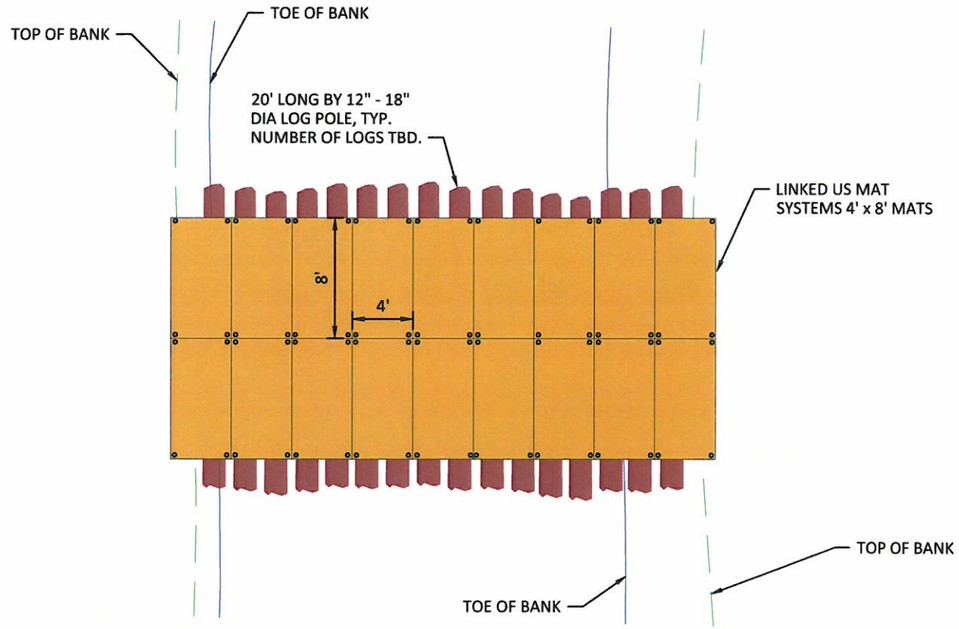
PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS TO BE DETERMINED IN THE FIELD. AS A GUIDELINE TEST EMBEDMENT DEPTHS MAY INCLUDE 6', 8', 10', AND 12'.

EXCAVATOR CONDUCTING PULL OUT LOADING SHALL BE POSITIONED NO CLOSER THAN EMBEDMENT DEPTH OF VERTICAL SNAG IF POSSIBLE. IF A CLOSER POSITIONING IS REQUIRED, EXCAVATOR SHALL BE NO CLOSER THAN THAT REQUIRED TO GENERATE DESIRED LOADING WITH DISTANCE FROM VERTICAL SNAG NOTED IN THE TEST RECORD.

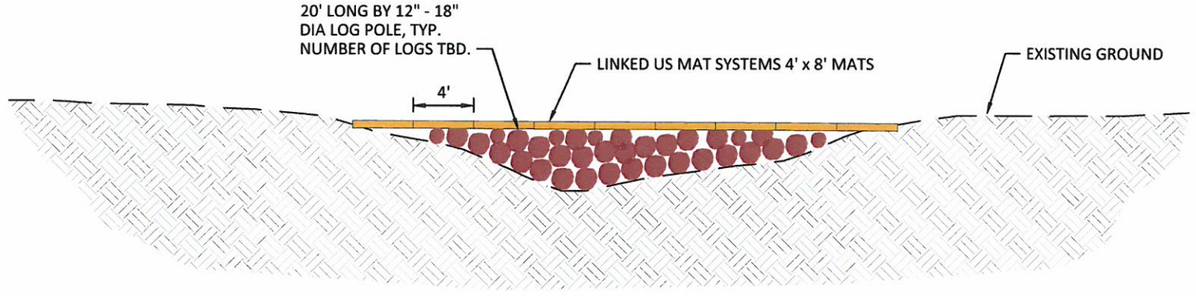
PULL OUT RESISTANCE READING SHALL BE COMPARED AGAINST EXCAVATOR MAX LIFT OFFSET TABLE.

10% OF PRODUCTION VERTICAL SNAGS SHALL BE PROOF TESTED. IF RESULTS VARY MORE THAN 50% THEN IT SHOULD BE ANTICIPATED THAT UP TO 25% OF THE PRODUCTION VERTICAL SNAGS SHALL BE PROOF TESTED.

CONSTRUCTED DRIVEN VERTICAL SNAG EMBEDMENT DEPTH SPECIFIED IN THE PLANS MAY BE REDUCED OR INCREASED, PENDING PULL OUT TEST RESULTS, AT NO ADDITIONAL COST.



PLAN VIEW



SECTION VIEW

2/11 TEMPORARY CROSSING
NOT TO SCALE

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34208
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES: 11/23/17

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TYPICAL DETAILS - SNAG PULLOUT TEST & TEMPORARY CROSSING

SHEET 11 OF 13

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Provisions

INTRODUCTION

The *Washington State Department of Transportation's Standard Specifications for Road, Bridge and Municipal Construction 2014* (WSDOT Standard Specifications) shall apply unless otherwise noted in the following special provisions. The "Contracting Agency" or "Owner" shall be the Confederated Tribes and Bands of the Yakama Nation. Additional specifications in the following contract sections are included for items not covered by the WSDOT Standard Specifications.

DIVISION 1 - GENERAL REQUIREMENTS

Sections 1-02, 1-03, and 1-08 (except 1-08.6, 1-08.7, 1-08.8) of the Standard Specifications do not apply.

ESC, SPCC PLAN AND IMPLEMENTATION

Description

This work shall provide for preparation, implementation, and removal of a temporary Erosion Sediment Control (ESC) plan and for the preparation and implementation of a Spill Prevention Control and Countermeasure (SPCC) plan in accordance with Section 1-07.15 of the Standard Specifications, and as amended by these special provisions.

1. Biodegradable hydraulic fluid shall be installed into each piece of heavy machinery working within 50 feet of the Wenatchee River and side channel.
2. Silt fence or cofferdams shall be installed between water and work areas shown in the plans.
3. Staging, stockpile, and access areas are shown in the plans. The irregular shape of these areas is intended to provide large areas but that also avoid impacts to existing trees. The owner will flag a corridor to delineate trees that shall be avoided. The contractor shall install high visibility fence along the flagged corridor. Areas within the footprint of project earthwork can also be used as staging & stockpile areas.
4. This item includes erosion control measures, including the maintenance or replacement of spent erosion control measures.

Measurement

"ESC, SPCC Plan and Implementation," including the above amendments to the item will be measured by lump sum.

Payment

Payment will be made in accordance with Section 1-09.9 for the following bid items: "ESC, SPCC Plan and Implementation" per lump sum.

MOBILIZATION

This item consists of work in accordance with Section 1-09.7 of the Standard Specifications.

Measurement

"Mobilization" will be measured by lump sum. Demobilization shall be incidental to "Mobilization".

Payment

"Mobilization", lump sum.

TRAFFIC CONTROL

Temporary traffic control requirements shall include barricades and construction signage at the entrance to the project site and any other measures per Section 1-10 and local regulations.

Measurement

"Traffic Control" will be measured by lump sum.

Payment

"Traffic Control", lump sum.

DIVISION 2 - EARTHWORK

CLEARING AND GRUBBING

This item consists of clearing and grubbing for construction as shown on the plans including those areas required for temporary access routes and in accordance with Section 2-01 of the Standard Specifications, and as amended by these special provisions.

1. Areas for clearing and grubbing shall be the minimum necessary and within the limits of disturbance shown on the plans. These areas will be flagged in the field by the owner prior to clearing and grubbing work. Clearing and grubbing shall not occur outside of the designated limits.
2. Disturbance to river banks and riparian vegetation shall be minimized and shall only include those areas marked by the owner.
3. Included in this item are the removal and salvage of trees, varying in size. Salvaged trees shall be reused as woody material. Trees to be salvaged will be identified in the field by the owner's representative.
4. Shrubs removed during clearing and grubbing shall be left on site and placed outside of the limits of disturbance to be used as slash during installation of LWM.
5. Vegetation protection and restoration per Section 1-07.16(2) shall be incidental to clearing and grubbing.

Measurement

Removal and salvage of trees and shrubs shall be considered incidental to clearing and grubbing bid item. Measurement and compensation for the installation of salvaged trees is described under "LWM" and paid under that item. No additional compensation will be allowed.

"Clearing and Grubbing," including the above amendments to the item will be measured by lump sum.

Payment

Payment will be made in accordance with Section 1-09.9 for the following bid items: "Clearing and Grubbing" per lump sum.

COFFERDAM

This section is added.

8-31.1 Description

The work consists of furnishing, installing, monitoring, maintaining, and removing cofferdams, and coordinating with the owner for fish salvage relocation activities.

8-31.2 Materials

8-31.2(1) The contractor shall provide all required materials for the project. Materials for bulk bag cofferdam are described in the project plans.

8-31.2(2) If contractor elects to use an alternate method for temporary cofferdam, contractor shall provide to the owner shop drawings and/or vendor cut sheets for substitutions and submit cofferdam/diversion plan for review prior to implementation.

8-31.3 Construction Requirements

8-31.3(1) Cofferdams

The contractor shall isolate the work area from the waterway by installing cofferdams per the plans. No turbidity from construction activities shall enter the waterway. Cofferdams shown on the plans are a suggested method. Contractor shall determine own method and submit a cofferdam and diversion plan for review and approval.

If bulk bag cofferdam is the selected method, bulk bag cofferdam construction requirements are described in the plans.

8-31.3(2) Coordination with Fish Rescue

The contractor shall provide minimum 3 days advance notice to the owner before each cofferdam installation date. The contractor shall understand that cofferdam installation requires coordination with the owner and only after the owner has completed fish rescue can the cofferdams be completed.

8-31.4 Measurement

Measurement will be based on the item from the bid list installed and the work for that portion completed.

"Cofferdam" will be measured by lump sum.

8-31.5 Payment

Payment will be made in accordance with Section 1-09.9 for the following bid items: "Cofferdam" per lump sum.

PUMPING

This section is added.

8-32.1 Description

The work consists of furnishing, monitoring, operating, maintaining, and removing pumps, and installation of control of water BMPs.

8-32.2 Materials

8-32.2(1) One 6" pump, with pumping capacity greater than 600 gpm, assuming 12 feet of vertical lift and 300 feet of discharge hose. To prevent turbidity from entering the river, pumps may need to run 24 hrs or until water is clear. Pumps shall have soundproofing. Electric pumps with generators and quiet packs are a preferred and approved method.

8-32.2(2) 500 feet of 6 inch discharge hose.

8-32.2(3) One or more 2-inch (or larger) trash pumps, with at least 200 feet of discharge hose.

8-32.2(4) Environmental protection measures such as straw bales, perforated pipe for discharge flow distributors, geotextiles, filter bags, or other means of controlling water and turbidity. No turbidity shall be allowed to enter the river or surface waters.

8-32.3 Construction Requirements

8-32.3(1) Pumps

Groundwater and surface waters are expected to be encountered during excavations. Pumping shall prevent groundwater that has mixed with construction water from entering the river and dewater construction areas.

1. To help prevent turbidity from leaking through the cofferdams at the downstream end of the project, the contractor shall provide and operate pump(s), up to 6" in size, to lower the water surface within the isolated area and discharge to an infiltration area.
2. During side-channel construction, construction water shall be pumped away from work areas and be infiltrated into the ground and without entering the waterway.

8-32.3(2) Environmental Protection Measures

If infiltration becomes an ineffective means to control turbidity, additional and alternative methods, such as pumping into stilling basins or filtration geotextile fabric shall be required at the contractor's expense.

8-32.4 Measurement

Measurement will be based on the item from the bid list installed and the work for that portion completed.

"Pumping" will be measured by lump sum.

8-32.5 Payment

Payment will be made in accordance with Section 1-09.9 for the following bid items: "Pumping" per lump sum

The unit contract prices for "Pumping" shall be full compensation for all costs incurred for equipment, materials and labor for furnishing, installing, operating, securing, maintaining and removal of pumping equipment as outlined in the plans. If additional environmental protection measures are required to control turbidity, they shall be considered incidental to pumping and no additional compensation will be made.

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STATE OF WASHINGTON
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PROFESSIONAL ENGINEER

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SPECIFICATIONS

SHEET 12 OF 13

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LWM
This section is added.

8-33.1 Description
All references to large woody material (LWM); logs; logs with root wads; vertical snags; excavation; backfill; imported gravel/cobble with fines or topsoil; salvaged trees; or slash within the plans and these special provisions shall be considered work associated with this item. This item consists of installing LWM and includes movement from stockpiles to installation areas, excavation and backfill to partially bury LWM and installation of vertical snags as shown on the plans.

8-33.2 Materials

8-33.2(1) Logs
Logs have been supplied by the owner to the Yakama Nation Natapoc property and consist of logs, logs with root wads, and vertical snags. Quantities of owner supplied logs are shown on sheet 3 quantities estimate.

8-33.2(2) Salvaged Trees
Trees flagged by the owner for clearing from the access route will be alder and miscellaneous species 6inch DBH or greater.

8-33.2(5) Slash
Slash will be brush and small trees up to 6inch DBH cleared from the access route and excavation areas.

8-33.3 Construction Requirements

8-33.3 (1) Locations of logs, logs with root wads and vertical snags shall generally be as indicated on the plans. However, final location will depend upon the size, shape and quantity of material delivered or salvaged. Installation of LWM shall be understood to require a "fit in the field" approach as directed by the owner's representative.

8-33.3 (2) LWM shall be stabilized as shown in the plans and directed by the owner's representative.

8-33.3 (3) Vertical snags shall be placed in approximate numbers indicated on the plans at specific locations in the field as directed by the owner's representative. Vertical snags shall be installed using vibratory pile driving equipment. Pre-approved equipment includes HMC Movac sonic side grip Model SP80 or approved equal. Installation by hammer pile driver, vibratory plate compactor or excavation shall not be allowed. Vertical snags shall require embedment depth as indicated on the plans. Vertical snags will be tested as indicated on the plans. Vertical snags shall have broken tops, and diversity in angles and heights above ground to provide a natural appearance.

8-33.3(4) Slash shall be pulled from stockpiles outside of limits of disturbance and incorporated into LWM structures or spread onto the constructed surfaces.

8-33.4 Measurement
"LWM" will be measured by lump sum.

Measurement shall include all items required to place and install logs including but not limited to: 1) excavation, haul and off-site disposal of unsuitable material, 2) import of gravel and cobble mixed with approximately 30% of fines or topsoil for burial of logs and 3) installation of LWM, logs, logs with rootwads, vibratory driven vertical snags, vertical snag testing and vertical snag top treatments.

8-33.5 Payment
Payment will be made for the bid item "LWM" per lump sum.

The unit contract prices for "LWM" shall be full compensation for all costs incurred for equipment, materials and labor for installing and securing LWM as outlined in the plan.

Fabric Encapsulated Soil (FES) Lifts

This section is added.

8-34.1 Description
All reference to fabric encapsulated soil (FES) lifts, FES lifts or FES shall include placement of biodegradable fabric encapsulated soil lifts along the stream bank face within the back fill area for LWM placements. FES lifts are a combination of excavation, non-woven and woven coir fabrics, construction forms, fill, seeding and wooden stakes arranged as shown on the plans. The contractor shall provide all labor, materials, and equipment necessary for the construction and installation of FES Lifts as shown on the plans.

8-34.2 Materials

8-34.2 (1) Coir Fabric
Coir fabrics shall consist of 100% biodegradable materials. Nylon or synthetic fiber material in any of the coir fabrics is not acceptable. Only those coir fabrics specified will be accepted unless otherwise reviewed and approved by the owner.

Each roll of coir fabric shall be packaged individually in a suitable sheet, wrapper, or container to protect the fabric from damage to ultraviolet light, moisture, and mud during normal storage and handling.

Each roll of coir fabric shall be identified with a tag or label securely affixed to the outside of the roll on one end. The label shall include the manufacturer or supplier, the style number, and the roll and lot numbers.

Store all coir fabrics elevated off the ground and ensure that they are adequately covered to protect the material from damage and exposure to moisture and sunlight. Protect coir fabrics from sharp objects which may damage the fabric. Coir fabrics damaged during transport, storage or placement shall be replaced at the contractors expense.

The owner may randomly select and obtain samples from rolls of coir fabric after arrival on the site and prior to installation to compare to previously submitted samples.

8-34.2 (1a) Non-woven Coir Fabric
The non-woven coir fabric shall be North American Green (NAG) style C125BN 100% biodegradable coconut fiber mat or equal as reviewed and approved by the owner. The fabric shall be delivered in 2 meter (minimum) roll widths and shall meet or exceed the following criteria:

Thickness	ASTM D1777	0.251 inches
Dry Tensile Strength	ASTM D4632	20.7 lbs
Elongation	ASTM D463	26.6%
Wet Tensile Strength	ASTM D4632	22.2 lbs
Elongation	ASTM D4632	14.1%
Weight	ASTM D3776	10.7 oz/yd
Open Area	Measured	7%
Roll Width	Measured	2 meters (minimum)
Roll Length	Measured	108 feet

8-34.2 (1b) Woven Coir Fabric
The woven coir fabric shall be a high strength 700 weight coir (100% coconut fiber), continuously woven mat with no seams and the following minimum average roll properties:

Thickness	ASTM D1777	0.35 inches
Wet Tensile Strength	ASTM D4595	1488 lb/ft x 1032 lb/ft
Weight	ASTM D3776	23 oz/yd
Open Area	Measured	48%, maximum
Roll Width	Measured	4 meters
Roll Length	Measured	25 meters

The woven coir fabric shall have no seams and shall be Bon Terra CF-7, DeKoWe 700, Nedia KoirMat 700, Rolanka BioDMat 70 or, approved equal.

8-34.2 (2) Wood Stakes
Wood stakes shall be used to anchor all coir fabrics. Stakes shall be wooden stakes solid and free of knots or defects. Stakes shall be minimum 18" in length. Stakes shall be wedge shaped with a minimum equivalent diameter equal to 1.5" at the top and should come to a point at the bottom. Stakes should be constructed by cutting a standard grade 2"x 4" lumber lengthwise along the diagonal to create wedge shaped stakes or by some other method resulting in a stake of dimensions reviewed and approved by the owner.

8-34.3 Construction Requirements

FES lifts shall be constructed as shown on the design plans and specified below.

1. FES lifts shall be placed along the river bank the full width of the trench excavated (subgrade) for placement of LWM.
2. Place forms along the bank in locations to achieve the lines and grades shown on the plans.
3. Roll woven coir fabric along the streambank and place fabric against the subgrade and (vertical) form face with embedment lengths as shown on the plans.
4. Roll non-woven coir fabric along the streambank and place on top of the woven coir fabric to achieve the embedment length shown on the plans.
5. Remove all wrinkles in coir fabric and ensure that fabrics rest tightly against the subgrade and form face with the proper embedment lengths. Allow excess coir fabric to drape over the form toward the stream channel.
6. Apply seed mix as specified by the owner to that portion of non-woven coir fabric that is placed against the vertical face of the form.
7. Place the appropriate soil and compact to 85% standard proctor. Soil lift shall be a maximum 1.0 foot thick.
8. Apply seed mix specified by the owner as shown on the plans to the soil lift.
9. Pull coir fabrics that are draped over the form back over seeded soil. Pull coir fabrics tight and stake according to the specifications and plans.
10. Remove forms. Note, forms can be removed by hand, or pried with a bar if necessary. Contractor shall not use equipment to remove forms.
11. Repeat 2-10, above, to achieve the lines and grade shown on the plans.

Finished FES lifts shall have no loose coir fabric. Areas with loose coir fabric shall be staked with tapered wooden stakes to hold coir fabrics firmly to underlying soil. If coir fabric folds are required around channel bends, the fold shall be in the direction of flow and coir fabric shall be staked at the folds.

8-34.4 Measurement
Measurement for FES lifts shall be lump sum. All equipment, labor and materials required to complete FES lifts shall be incidental to "FES Lifts".

8-34.5 Payment
Payment shall be lump sum for item "FES Lifts".

DANIEL S. MILLER
STATE OF WASHINGTON
34208
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES: 11/23/17

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NO.	BY	DATE	REVISION DESCRIPTION

NS	DM, LH	DM
DRAWN	DESIGNED	CHECKED
DM	12/6/2016	150218
APPROVED	DATE	PROJECT

CONFEDERATED TRIBES AND BANDS OF YAKAMA NATION
UPPER WENATCHEE RIVER, MEACHAM FLATS
FINAL DESIGN

inter·fluve
501 Portway Avenue, Suite 101
Hood River, OR 97031
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SPECIFICATIONS

SHEET
13 OF 13

Exhibit E

HIP III GENERAL CONSERVATION MEASURES APPLICABLE TO ALL ACTIONS

DOCUMENTATION: TO BE POSTED ONSITE BY THE CONTRACTOR IN A LOCATION VISIBLE TO THE PUBLIC.
- A) NAME(S), PHONE NUMBER(S), AND ADDRESS(ES) OF THE PERSON(S) RESPONSIBLE FOR OVERSIGHT.
- B) A DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING INVENTORY, STORAGE, AND HANDLING PROCEDURES.
- C) PROCEDURES TO CONTAIN AND CONTROL A SPILL OF ANY HAZARDOUS MATERIAL GENERATED, USED OR STORED ON-SITE, INCLUDING NOTIFICATION OF PROPER AUTHORITIES.
- D) A STANDING ORDER TO CEASE WORK IN THE EVENT OF HIGH FLOWS EXCEPT AS NECESSARY TO MINIMIZE RESOURCE DAMAGE (ABOVE THOSE ADDRESSED IN THE DESIGN AND IMPLEMENTATION PLANS) OR EXCEEDANCE OF TAKE OR WATER QUALITY LIMITATIONS.

SITE PREPARATION

1) SITE LAYOUT AND FLAGGING: PRIOR TO CONSTRUCTION, THE ACTION AREA WILL BE CLEARLY FLAGGED TO IDENTIFY THE FOLLOWING:
- A) SENSITIVE RESOURCE AREAS, SUCH AS AREAS BELOW ORDINARY HIGH WATER, SPAWNING AREAS,SPRINGS, AND WETLANDS;
- B) EQUIPMENT ENTRY AND EXIT POINTS;
- C) ROAD AND STREAM CROSSING ALIGNMENTS;
- D) STAGING, STORAGE, AND STOCKPILE AREAS; AND
- E) NO-SPRAY AREAS AND BUFFERS.

2) TEMPORARY ACCESS ROADS AND PATHS:
- A) EXISTING ACCESS ROADS AND PATHS WILL BE PREFERENTIALLY USED WHENEVER REASONABLE, AND THE NUMBER AND LENGTH OF TEMPORARY ACCESS ROADS AND PATHS THROUGH RIPARIAN AREAS AND FLOOD PLAINS WILL BE MINIMIZED TO LESSEN SOIL DISTURBANCE AND COMPACTION, AND IMPACTS TO VEGETATION.
- B) TEMPORARY ACCESS ROADS AND PATHS WILL NOT BE BUILT ON SLOPES WHERE GRADE, SOIL, OR OTHER FEATURES SUGGEST LIKELIHOOD OF EXCESSIVE EROSION OR FAILURE. IF SLOPES ARE STEEPER THAN 30%, THEN THE ROAD WILL BE DESIGNED BY A CIVIL ENGINEER WITH EXPERIENCE IN STEEP ROAD DESIGN.
- C) THE REMOVAL OF RIPARIAN VEGETATION DURING CONSTRUCTION OF TEMPORARY ACCESS ROADS WILL BE MINIMIZED. WHEN TEMPORARY VEGETATION REMOVAL IS REQUIRED, VEGETATION WILL BE CUT AT GROUND LEVEL (NOT GRUBBED).
- D) AT PROJECT COMPLETION, ALL TEMPORARY ACCESS ROADS AND PATHS WILL BE OBLITERATED, AND THE SOIL WILL BE STABILIZED AND RE-VEGETATED. ROAD AND PATH OBLITERATION REFERS TO THE MOST COMPREHENSIVE DEGREE OF DECOMMISSIONING AND INVOLVES RE-COMPACTING THE SURFACE AND DITCH, PULLING THE FILL MATERIAL ONTO THE RUNNING SURFACE, AND RESHAPING TO MATCH THE ORIGINAL CONTOUR.
- E) TEMPORARY ROADS AND PATHS IN WET AREAS OR AREAS PRONE TO FLOODING WILL BE OBLITERATED BY THE END OF THE IN-WATER WORK WINDOW.

3) TEMPORARY STREAM CROSSINGS:
- A) EXISTING STREAM CROSSINGS WILL BE PREFERENTIALLY USED WHENEVER REASONABLE, AND THE NUMBER OF TEMPORARY STREAM CROSSINGS WILL BE MINIMIZED.
- B) TEMPORARY BRIDGES AND CULVERTS WILL BE INSTALLED TO ALLOW FOR EQUIPMENT AND VEHICLE CROSSING OVER PERENNIAL STREAMS DURING CONSTRUCTION.
- C) EQUIPMENT AND VEHICLES WILL CROSS THE STREAM IN THE WET ONLY WHERE:
  - I. THE STREAMBED IS BEDROCK; OR
  - II. MATS OR OFF-SITE LOGS ARE PLACED IN THE STREAM AND USED AS A CROSSING.
- D) VEHICLES AND MACHINERY WILL CROSS STREAMS AT RIGHT ANGLES TO THE MAIN CHANNEL WHEREVER POSSIBLE.
- E) THE LOCATION OF THE TEMPORARY CROSSING WILL AVOID AREAS THAT MAY INCREASE THE RISK OF CHANNEL RE-ROUTING OR AVULSION.
- F) POTENTIAL SPAWNING HABITAT (I.E., POOL TAILOUTS) AND POOLS WILL BE AVOIDED TO THE MAXIMUM EXTENT POSSIBLE.
- G) NO STREAM CROSSINGS WILL OCCUR AT ACTIVE SPAWNING SITES, WHEN HOLDING ADULT LISTED FISH ARE PRESENT, OR WHEN EGGS OR ALEVINS ARE IN THE GRAVEL. THE APPROPRIATE STATE FISH AND WILDLIFE AGENCY WILL BE CONTACTED FOR SPECIFIC TIMING INFO.
- H) AFTER PROJECT COMPLETION, TEMPORARY STREAM CROSSINGS WILL BE OBLITERATED AND THE STREAM CHANNEL AND BANKS RESTORED.

4) STAGING, STORAGE, AND STOCKPILE AREAS:
- A) STAGING AREAS (USED FOR CONSTRUCTION EQUIPMENT STORAGE, VEHICLE STORAGE, FUELING, SERVICING, AND HAZARDOUS MATERIAL STORAGE) WILL BE 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND, OR ON AN ADJACENT, ESTABLISHED ROAD AREA IN A LOCATION AND MANNER THAT WILL PRECLUDE EROSION INTO OR CONTAMINATION OF THE STREAM OR FLOODPLAIN.
- B) NATURAL MATERIALS USED FOR IMPLEMENTATION OF AQUATIC RESTORATION, SUCH AS LARGE WOOD, GRAVEL, AND BOULDERS, MAY BE STAGED WITHIN THE 100-YEAR FLOODPLAIN.
- C) ANY LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL DISPLACED BY CONSTRUCTION WILL BE STOCKPILED FOR USE DURING SITE RESTORATION AT A SPECIFICALLY IDENTIFIED AND FLAGGED AREA.
- D) ANY MATERIAL NOT USED IN RESTORATION, AND NOT NATIVE TO THE FLOODPLAIN, WILL BE REMOVED TO A LOCATION OUTSIDE OF THE 100-YEAR FLOODPLAIN FOR DISPOSAL.

5) EQUIPMENT: MECHANIZED EQUIPMENT AND VEHICLES WILL BE SELECTED, OPERATED, AND MAINTAINED IN A MANNER THAT MINIMIZES ADVERSE ON THE ENVIRONMENT (E.G., MINIMALLY-SIZED, LOW PRESSURE TIRES; MINIMAL HARD-TURN PATHS FOR TRACKED VEHICLES; TEMPORARY MATS OR PLATES WITHIN WET AREAS OR ON SENSITIVE SOILS). ALL VEHICLES AND OTHER MECHANIZED EQUIPMENT WILL BE:
- A) STORED, FUELED, AND MAINTAINED IN A VEHICLE STAGING AREA PLACED 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND OR ON AN ADJACENT, ESTABLISHED ROAD AREA;
- B) REFUELED IN A VEHICLE STAGING AREA PLACED 150 FEET OR MORE FROM A NATURAL WATERBODY OR WETLAND, OR IN AN ISOLATED HARD ZONE, SUCH AS A PAVED PARKING LOT OR ADJACENT, ESTABLISHED ROAD (THIS MEASURE APPLIES ONLY TO GAS-POWERED EQUIPMENT WITH TANKS LARGER THAN 5 GALLONS);
- C) BIODEGRADABLE LUBRICANTS AND FLUIDS SHOULD BE USED, IF POSSIBLE, ON EQUIPMENT OPERATING IN AND ADJACENT TO THE STREAM CHANNEL AND LIVE WATER.
- D) INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND; AND
- E) THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER, AND AS OFTEN AS NECESSARY DURING OPERATION,TO REMAIN GREASE FREE.

6) EROSION CONTROL: EROSION CONTROL MEASURES WILL BE PREPARED AND CARRIED OUT, COMMENSURATE IN SCOPE WITH THE ACTION, THAT MAY INCLUDE THE FOLLOWING:
- A) TEMPORARY EROSION CONTROLS.
  - I. TEMPORARY EROSION CONTROLS WILL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTION SITE AND APPROPRIATELY INSTALLED DOWN SLOPE OF PROJECT ACTIVITY WITHIN THE RIPARIAN BUFFER AREA UNTIL SITE REHABILITATION IS COMPLETE.
  - II. IF THERE IS A POTENTIAL FOR ERODED SEDIMENT TO ENTER THE STREAM, SEDIMENT BARRIERS WILL BE INSTALLED AND MAINTAINED FOR THE DURATION OF PROJECT IMPLEMENTATION.
  - III. TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE FIBER WATTLES, SILT FENCES, JUTE MATTING, WOOD FIBER MULCH AND SOIL BINDER, OR GEOTEXTILES AND GEOSYNTHETIC FABRIC.
  - IV. SOIL STABILIZATION UTILIZING WOOD FIBER MULCH AND TACKIFIER (HYDRO-APPLIED) MAY BE USED TO REDUCE EROSION OF BARE SOIL IF THE MATERIALS ARE NOXIOUS WEED FREE AND NONTOXIC TO AQUATIC AND TERRESTRIAL ANIMALS, SOIL MICROORGANISMS, AND VEGETATION.
  - V. SEDIMENT WILL BE REMOVED FROM EROSION CONTROLS ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE CONTROL.
  - VI. ONCE THE SITE IS STABILIZED AFTER CONSTRUCTION, TEMPORARY EROSION CONTROL MEASURES WILL BE REMOVED.
- B) EMERGENCY EROSION CONTROLS. THE FOLLOWING MATERIALS FOR EMERGENCY EROSION CONTROL WILL BE AVAILABLE AT THE WORK SITE:
  SUPPLY OF SEDIMENT CONTROL MATERIALS; AND AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER IS PRESENT.

7) TIMING OF IN-WATER WORK: APPROPRIATE STATE (OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW), WASHINGTON DEPARTMENT OF FISH AND WILDLIFE (WDFW), IDAHO DEPARTMENT OF FISH AND GAME (IDFG), MONTANA FISH WILDLIFE AND PARKS (MFWP) GUIDELINES FOR TIMING OF IN-WATER WORK WINDOWS (IWW) WILL BE FOLLOWED.
- A) BULL TROUT - WHILE UTILIZING THE APPROPRIATE STATE DESIGNATED IN-WATER WORK PERIOD WILL LESSEN THE RISK TO BULL TROUT, THIS ALONE MAY NOT BE SUFFICIENT TO ADEQUATELY PROTECT LOCAL BULL TROUT POPULATIONS. THIS IS ESPECIALLY TRUE IF WORK IS OCCURRING IN SPAWNING AND REARING AREAS BECAUSE EGGS, ALEVIN, AND FRY ARE IN THE SUBSTRATE OR CLOSELY ASSOCIATED HABITATS NEARLY YEAR ROUND. SOME AREAS MAY NOT HAVE DESIGNATED IN-WATER WORK WINDOWS FOR BULL TROUT OF IF THEY DO, THEY MAN CONFLICT WITH WORK WINDOWS FOR SALMON AND STEELHEAD. IF THIS IS THE CASE, OR IF PROPOSED WORK IS TO OCCUR WITHIN BULL TROUT SPAWNING AND REARING HABITATS, PROJECT PROPONENTS WILL CONTACT THE APPROPRIATE USFWS FIELD OFFICE (SEE APPENDIX B IN THIS BO) TO INSURE THAT ALL REASONABLE IMPLEMENTATION MEASURES ARE CONSIDERED AND AN APPROPRIATE IN-WATER WORK WINDOW IS BEING USED TO MINIMIZE PROJECT EFFECTS.
- B) LAMPREY - THE PROJECT SPONSOR AND/OR THEIR CONTRACTORS WILL AVOID WORKING IN STREAM OR RIVER CHANNELS THAT CONTAIN PACIFIC LAMPREY FROM MARCH 1 TO JULY 1 IN LOW TO MID ELEVATION REACHES (<5,000 FEET). IN HIGH ELEVATION REACHES(>5,000 FEET), THE PROJECT SPONSOR WILL AVOID WORKING IN STREAM OR RIVER CHANNELS FROM MARCH 1 TO AUGUST 1. IF EITHER TIMEFRAME IS INCOMPATIBLE WITH THE OTHER OBJECTIVES, THE AREA WILL BE SURVEYED FOR NESTS AND LAMPREY PRESENCE, AND AVOIDED IF POSSIBLE. IF LAMPREYS ARE KNOW TO EXIST, THE PROJECT SPONSOR WILL UTILIZE DE-WATERING AND SALVAGE PROCEDURES OUTLINED IN US FISH AND WILDLIFE SERVICE (2010).
- C) EXCEPTIONS TO ODFW, WDFW, MFWP, OR IDFG IN-WATER WORK WINDOWS WILL BE REQUESTED FROM NMFS AND THE FWS. AN IWW VARIANCE REQUEST (PRE-COORDINATED WITH STAFF BIOLOGISTS) WILL BE E-MAILED FROM AN APPROPRIATE REPRESENTATIVE OF THE ACTION AGENCY TO THE NMFS HABITAT BRANCH CHIEF AND THE FWS FIELD OFFICE SUPERVISOR FOR THE PROJECT AREA. WORK WILL NOT PROCEED OUTSIDE THE IWW UNTIL THE EXCEPTION IS APPROVED BY E-MAILS FROM NMFS AND/OR THE FWS.

8) DUST ABATEMENT: THE PROJECT SPONSOR WILL DETERMINE THE APPROPRIATE DUST CONTROL MEASURES (IF NECESSARY) BY CONSIDERING SOIL TYPE, EQUIPMENT USAGE, PREVAILING WIND DIRECTION, AND THE EFFECTS CAUSED BY OTHER EROSION AND SEDIMENT CONTROL MEASURES. IN ADDITION, THE FOLLOWING CRITERIA WILL BE FOLLOWED:
- A) WORK WILL BE SEQUENCED AND SCHEDULED TO REDUCE EXPOSED BARE SOIL SUBJECT TO WIND EROSION.
- B) DUST-ABATEMENT ADDITIVES AND STABILIZATION CHEMICALS (TYPICALLY MAGNESIUM CHLORIDE, CALCIUM CHLORIDE SALTS, OR LIGNINSULFONATE) WILL NOT BE APPLIED WITHIN 25 FEET OF WATER OR A STREAM CHANNEL AND WILL BE APPLIED SO AS TO MINIMIZE THE LIKELIHOOD THAT THEY WILL ENTER STREAMS. APPLICATIONS OF LIGNINSULFONATE WILL BE LIMITED TO A MAXIMUM RATE OF 0.5 GALLONS PER SQUARE YARD OF ROAD SURFACE, ASSUMING A 50:50 (LIGNINSULFONATE TO WATER) SOLUTION.
- C) APPLICATION OF DUST ABATEMENT CHEMICALS WILL BE AVOIDED DURING OR JUST BEFORE WET WEATHER, AND AT STREAM CROSSINGS OR OTHER AREAS THAT COULD RESULT IN UNFILTERED DELIVERY OF THE DUST ABATEMENT MATERIALS TO A WATERBODY (TYPICALLY THESE WOULD BE AREAS WITHIN 25 FEET OF A WATERBODY OR STREAM CHANNEL; DISTANCES MAY BE GREATER WHERE VEGETATION IS SPARSE OR SLOPES ARE STEEP).
- D) SPILL CONTAINMENT EQUIPMENT WILL BE AVAILABLE DURING APPLICATION OF DUST ABATEMENT CHEMICALS.
- E) PETROLEUM-BASED PRODUCTS WILL NOT BE USED FOR DUST ABATEMENT.

9) SPILL PREVENTION, CONTROL, AND COUNTER MEASURES: THE USE OF MECHANIZED MACHINERY INCREASES THE RISK FOR ACCIDENTAL SPILLS OF FUEL, LUBRICANTS, HYDRAULIC FLUID, OR OTHER CONTAMINANTS INTO THE RIPARIAN ZONE OR DIRECTLY INTO THE WATER. ADDITIONALLY, UNCURED CONCRETE AND FORM MATERIALS ADJACENT TO THE ACTIVE STREAM CHANNEL MAY RESULT IN ACCIDENTAL DISCHARGE INTO THE WATER. THESE CONTAMINANTS CAN DEGRADE HABITAT, AND INJURE OR KILL AQUATIC FOOD ORGANISMS AND ESA-LISTED SPECIES. THE PROJECT SPONSOR WILL ADHERE TO THE FOLLOWING MEASURES:
- A) A DESCRIPTION OF HAZARDOUS MATERIALS TO BE USED (INVENTORY & STORAGE) AND HANDLING PROCEDURES WILL BE AVAILABLE ON-SITE.
- B) WRITTEN PROCEDURES FOR NOTIFYING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.
- C) SPILL CONTAINMENT KITS (INCLUDING INSTRUCTIONS FOR CLEANUP AND DISPOSAL) ADEQUATE FOR THE TYPES AND QUANTITY OF HAZARDOUS MATERIALS USED AT THE SITE WILL BE AVAILABLE AT THE WORK SITE.
- D) WORKERS WILL BE TRAINED IN SPILL CONTAINMENT PROCEDURES AND WILL BE INFORMED OF THE LOCATION OF SPILL CONTAINMENT KITS.
- E) ANY WASTE LIQUIDS GENERATED AT THE STAGING AREAS WILL BE TEMPORARILY STORED UNDER AN IMPERVIOUS COVER, SUCH AS A TARPAULIN, UNTIL THEY CAN BE PROPERLY TRANSPORTED TO AND DISPOSED OF AT A FACILITY THAT IS APPROVED FOR RECEIPT OF HAZARDOUS MATERIALS.

10)INVASIVE SPECIES - EQUIPMENT CLEANING AND MAINTENANCE: THE FOLLOWING MEASURES WILL BE FOLLOWED TO AVOID INTRODUCTION OF INVASIVE PLANTS AND NOXIOUS WEEDS INTO PROJECT AREAS:
- A) PRIOR TO ENTERING THE SITE, ALL VEHICLES AND EQUIPMENT WILL BE POWER WASHED, ALLOWED TO FULLY DRY, AND INSPECTED TO MAKE SURE NO PLANTS, SOIL, OR OTHER ORGANIC MATERIAL ADHERES TO THE SURFACE.
- B) WATERCRAFT, WADERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN OR NEAR WATER WILL BE INSPECTED FOR AQUATIC INVASIVE SPECIES. WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES.

Designed _____ FEB 2015
Drawn C. CHRISTIANSEN
Checked X
Approved _____
Title _____

HIP III GENERAL CONSERVATION MEASURES

X
X

Bonneville Power Administration: Environment, Fish and Wildlife

File Name
HIP III GCA

Drawing No.
1

Sheet 1 of 2

WORK AREA ISOLATION & FISH SALVAGE

ANY WORK AREA WITHIN THE WETTED CHANNEL WILL BE ISOLATED FROM THE ACTIVE STREAM WHENEVER ESA LISTED FISH ARE REASONABLY CERTAIN TO BE PRESENT, OR IF THE WORK AREA IS LESS THAN 300-FEET UPSTREAM FROM KNOWN SPAWNING HABITATS. WHEN WORK AREA ISOLATION IS REQUIRED, DESIGN PLANS WILL INCLUDE ALL ISOLATION ELEMENTS, FISH RELEASE AREAS, AND, WHEN A PUMP IS USED TO DE-WATER THE ISOLATION AREA AND FISH ARE PRESENT, A FISH SCREEN THAT MEETS NMFS'S FISH SCREEN CRITERIA (NMFS 2011, OR MOST CURRENT). WORK AREA ISOLATION AND FISH CAPTURE ACTIVITIES WILL OCCUR DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS AND DEATH OF SPECIES PRESENT.

FOR SALVAGE OPERATIONS IN KNOWN BULL TROUT SPAWNING AND REARING HABITAT, ELECTRO-FISHING SHALL ONLY OCCUR FROM MAY 01 TO JUL 31. NO ELECTRO-FISHING WILL OCCUR IN ANY BULL TROUT OCCUPIED HABITAT AFTER AUG 15. BULL TROUT ARE VERY TEMPERATURE SENSITIVE AND GENERALLY SHOULD NOT BE ELECTRO-SHOCKED OR OTHERWISE HANDLED WHEN TEMPERATURES EXCEED 15 DEGREES CELSIUS. SALVAGE ACTIVITIES SHOULD TAKE PLACE DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS TO FISH SPECIES PRESENT.

SALVAGE OPERATIONS WILL FOLLOW THE ORDERING, METHODOLOGIES, AND CONSERVATION MEASURES SPECIFIED BELOW IN STEPS 1 THROUGH 6. STEPS 1 AND 2 WILL BE IMPLEMENTED FOR ALL PROJECTS WHERE WORK AREA ISOLATION IS NECESSARY ACCORDING TO CONDITIONS ABOVE. ELECTRO-FISHING (STEP 3) CAN BE IMPLEMENTED TO ENSURE ALL FISH HAVE BEEN REMOVED FOLLOWING STEPS 1 AND 2, OR WHEN OTHER MEANS OF FISH CAPTURE MAY NOT BE FEASIBLE OR EFFECTIVE. DE-WATERING AND RE-WATERING (STEPS 4 AND 5) WILL BE IMPLEMENTED UNLESS WETTED IN-STREAM WORK IS DEEMED TO BE MINIMALLY HARMFUL TO FISH, AND IS BENEFICIAL TO OTHER AQUATIC SPECIES. DE-WATERING WILL NOT BE CONDUCTED IN AREAS KNOWN TO BE OCCUPIED BY LAMPREY, UNLESS LAMPREYS ARE SALVAGED USING GUIDANCE SET FORTH IN US FISH AND WILDLIFE SERVICE (2010).

1) **ISOLATE**:
   - A) BLOCK NETS WILL BE INSTALLED AT UPSTREAM AND DOWNSTREAM LOCATIONS AND MAINTAINED IN A SECURED POSITION TO EXCLUDE FISH FROM ENTERING THE PROJECT AREA.
   - B) BLOCK NETS WILL BE SECURED TO THE STREAM CHANNEL BED AND BANKS UNTIL FISH CAPTURE AND TRANSPORT ACTIVITIES ARE COMPLETE. BLOCK NETS MAY BE LEFT IN PLACE FOR THE DURATION OF THE PROJECT TO EXCLUDE FISH.
   - C) IF BLOCK NETS REMAIN IN PLACE MORE THAN ONE DAY, THE NETS WILL BE MONITORED AT LEAST DAILY TO ENSURE THEY ARE SECURED TO THE BANKS AND FREE OF ORGANIC ACCUMULATION. IF THE PROJECT IS WITHIN BULL TROUT SPAWNING AND REARING HABITAT, THE BLOCK NETS MUST BE CHECKED EVERY FOUR HOURS FOR FISH IMPINGEMENT ON THE NET. LESS FREQUENT INTERVALS MUST BE APPROVED THROUGH A VARIANCE REQUEST.
   - D) NETS WILL BE MONITORED HOURLY ANYTIME THERE IS IN-STREAM DISTURBANCE.

2) **SALVAGE: –** AS DESCRIBED BELOW, FISH TRAPPED WITHIN THE ISOLATED WORK AREA WILL BE CAPTURED TO MINIMIZE THE RISK OF INJURY, THEN RELEASED AT A SAFE SITE:
   - A) REMOVE AS MANY FISH AS POSSIBLE PRIOR TO DE-WATERING.
   - B) DURING DE-WATERING, ANY REMAINING FISH WILL BE COLLECTED BY HAND OR DIP NETS.
   - C) SEINES WITH A MESH SIZE TO ENSURE CAPTURE OF THE RESIDING ESA-LISTED FISH WILL BE USED.
   - D) MINNOW TRAPS WILL BE LEFT IN PLACE OVERNIGHT AND USED IN CONJUNCTION WITH SEINING.
   - E) IF BUCKETS ARE USED TO TRANSPORT FISH:
     - I. THE TIME FISH ARE IN A TRANSPORT BUCKET WILL BE LIMITED, AND WILL BE RELEASED AS QUICKLY AS POSSIBLE;
     - II. THE NUMBER OF FISH WITHIN A BUCKET WILL BE LIMITED BASED ON SIZE, AND FISH WILL BE OF RELATIVELY COMPARABLE SIZE TO MINIMIZE PREDATION;
     - III. AERATORS FOR BUCKETS WILL BE USED OR THE BUCKET WATER WILL BE FREQUENTLY CHANGED WITH COLD CLEAR WATER AT 15 MINUTE OR MORE FREQUENT INTERVALS.
     - IV. BUCKETS WILL BE KEPT IN SHADED AREAS OR WILL BE COVERED BY A CANOPY IN EXPOSED AREAS.
     - V. DEAD FISH WILL NOT BE STORED IN TRANSPORT BUCKETS, BUT WILL BE LEFT ON THE STREAM BANK TO AVOID MORTALITY COUNTING ERRORS.
   - F) AS RAPIDLY AS POSSIBLE (ESPECIALLY FOR TEMPERATURE-SENSITIVE BULL TROUT), FISH WILL BE RELEASED IN AN AREA THAT PROVIDES ADEQUATE COVER AND FLOW REFUGE. UPSTREAM RELEASE IS GENERALLY PREFERRED, BUT FISH RELEASED DOWNSTREAM WILL BE SUFFICIENTLY OUTSIDE OF THE INFLUENCE OF CONSTRUCTION.
   - G) SALVAGE WILL BE SUPERVISED BY A QUALIFIED FISHERIES BIOLOGIST EXPERIENCED WITH WORK AREA ISOLATION AND COMPETENT TO ENSURE THE SAFE HANDLING OF ALL FISH.

3) **ELECTROFISHING**: ELECTROFISHING WILL BE USED ONLY AFTER OTHER SALVAGE METHODS HAVE BEEN EMPLOYED OR WHEN OTHER MEANS OF FISH CAPTURE ARE DETERMINED TO NOT BE FEASIBLE OR EFFECTIVE. IF ELECTROFISHING WILL BE USED TO CAPTURE FISH FOR SALVAGE, THE SALVAGE OPERATION WILL BE LED BY AN EXPERIENCED FISHERIES BIOLOGIST AND THE FOLLOWING GUIDELINES WILL BE FOLLOWED:
   - A) THE NMFS'S ELECTROFISHING GUIDELINES (NMFS 2000).
   - B) ONLY DIRECT CURRENT (DC) OR PULSED DIRECT CURRENT (PDC) WILL BE USED AND CONDUCTIVITY MUST BE TESTED.
     - I. IF CONDUCTIVITY IS LESS THAN 100 MS, VOLTAGE RANGES FROM 900 TO 1100 WILL BE USED.
     - II. FOR CONDUCTIVITY RANGES BETWEEN 100 TO 300 MS, VOLTAGE RANGES WILL BE 500 TO 800.
     - III. FOR CONDUCTIVITY GREATER THAN 300 MS, VOLTAGE WILL BE LESS THAN 400.
   - C) ELECTROFISHING WILL BEGIN WITH A MINIMUM PULSE WIDTH AND RECOMMENDED VOLTAGE AND THEN GRADUALLY INCREASE TO THE POINT WHERE FISH ARE IMMOBILIZED.
   - D) THE ANODE WILL NOT INTENTIONALLY CONTACT FISH.
   - E) ELECTROFISHING SHALL NOT BE CONDUCTED WHEN THE WATER CONDITIONS ARE TURBID AND VISIBILITY IS POOR. THIS CONDITION MAY BE EXPERIENCED WHEN THE SAMPLER CANNOT SEE THE STREAM BOTTOM IN ONE FOOT OF WATER.
   - G) IF MORTALITY OR OBVIOUS INJURY (DEFINED AS DARK BANDS ON THE BODY, SPINAL DEFORMATIONS, DE-SCALING OF 25% OR MORE OF BODY, AND TORPIDITY OR INABILITY TO MAINTAIN UPRIGHT ATTITUDE AFTER SUFFICIENT RECOVERY TIME) OCCURS DURING ELECTROFISHING, OPERATIONS WILL BE IMMEDIATELY DISCONTINUED, MACHINE SETTINGS, WATER TEMPERATURE AND CONDUCTIVITY CHECKED, AND PROCEDURES ADJUSTED OR ELECTROFISHING POSTPONED TO REDUCE MORTALITY.

4) **DEWATER**: DEWATERING, WHEN NECESSARY, WILL BE CONDUCTED OVER A SUFFICIENT PERIOD OF TIME TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA AND WILL BE LIMITED TO THE SHORTEST LINEAR EXTENT PRACTICABLE.
   - A) DIVERSION AROUND THE CONSTRUCTION SITE MAY BE ACCOMPLISHED WITH A COFFER DAM AND A BYPASS CULVERT OR PIPE, OR A LINED, NON-ERODIBLE DIVERSION DITCH. WHERE GRAVITY FEED IS NOT POSSIBLE, A PUMP MAY BE USED, BUT MUST BE OPERATED IN SUCH A WAY AS TO AVOID REPETITIVE DE-WATERING AND RE-WATERING OF THE SITE. IMPOUNDMENT BEHIND THE COFFERDAM MUST OCCUR SLOWLY THROUGH THE TRANSITION, WHILE CONSTANT FLOW IS DELIVERED TO THE DOWNSTREAM REACHES.
   - B) ALL PUMPS WILL HAVE FISH SCREENS TO AVOID JUVENILE FISH IMPINGEMENT OR ENTRAINMENT, AND WILL BE OPERATED IN ACCORDANCE WITH NMFS'S CURRENT FISH SCREEN CRITERIA (NMFS 20114, OR MOST RECENT VERSION). IF THE PUMPING RATE EXCEEDS 3 CUBIC FEET SECOND (CFS), A NMFS HYDRO FISH PASSAGE REVIEW WILL BE NECESSARY.
   - C) DISSIPATION OF FLOW ENERGY AT THE BYPASS OUTFLOW WILL BE PROVIDED TO PREVENT DAMAGE TO RIPARIAN VEGETATION OR STREAM CHANNEL.
   - D) SAFE REENTRY OF FISH INTO THE STREAM CHANNEL WILL BE PROVIDED, PREFERABLY INTO POOL HABITAT WITH COVER, IF THE DIVERSION ALLOWS FOR DOWNSTREAM FISH PASSAGE.
   - E) SEEPAGE WATER WILL BE PUMPED TO A TEMPORARY STORAGE AND TREATMENT SITE OR INTO UPLAND AREAS TO ALLOW WATER TO PERCOLATE THROUGH SOIL OR TO FILTER THROUGH VEGETATION PRIOR TO REENTERING THE STREAM CHANNEL.

5) **RE-WATERING:** UPON PROJECT COMPLETION, THE CONSTRUCTION SITE WILL BE SLOWLY RE-WATERED TO PREVENT LOSS OF SURFACE FLOW DOWNSTREAM AND TO PREVENT A SUDDEN INCREASE IN STREAM TURBIDITY. DURING RE-WATERING, THE SITE WILL BE MONITORED TO PREVENT STRANDING OF AQUATIC ORGANISMS BELOW THE CONSTRUCTION SITE.

6) **SALVAGE NOTICE:** MONITORING AND RECORDING OF FISH PRESENCE, HANDLING, AND MORTALITY MUST OCCUR DURING THE DURATION OF THE ISOLATION, SALVAGE, ELECTROFISHING, DEWATERING, AND REWATERING OPERATIONS. ONCE OPERATIONS ARE COMPLETED, A SALVAGE REPORT WILL DOCUMENT PROCEDURES USED, ANY FISH INJURIES OR DEATHS (INCLUDING NUMBERS OF FISH AFFECTED), AND CAUSES OF ANY DEATHS.

CONSTRUCTION AND POST-CONSTRUCTION CONSERVATION MEASURES FOR AQUATIC SPECIES

1) **FISH PASSAGE**: FISH PASSAGE WILL BE PROVIDED FOR ANY ADULT OR JUVENILE FISH LIKELY TO BE PRESENT IN THE ACTION AREA DURING CONSTRUCTION, UNLESS PASSAGE DID NOT EXIST BEFORE CONSTRUCTION OR THE STREAM IS NATURALLY IMPASSABLE AT THE TIME OF CONSTRUCTION. IF THE PROVISION OF TEMPORARY FISH PASSAGE DURING CONSTRUCTION WILL INCREASE NEGATIVE EFFECTS ON AQUATIC SPECIES OF INTEREST OR THEIR HABITAT, A VARIANCE CAN BE REQUESTED FROM THE NMFS BRANCH CHIEF AND THE FWS FIELD OFFICE SUPERVISOR (APPENDIX B OF THIS BO). PERTINENT INFORMATION, SUCH AS THE SPECIES AFFECTED, LENGTH OF STREAM REACH AFFECTED, PROPOSED TIME FOR THE PASSAGE BARRIER, AND ALTERNATIVES CONSIDERED, WILL BE INCLUDED IN THE VARIANCE REQUEST.

2) **CONSTRUCTION AND DISCHARGE WATER**:
   - A) SURFACE WATER MAY BE DIVERTED TO MEET CONSTRUCTION NEEDS, BUT ONLY IF DEVELOPED SOURCES ARE UNAVAILABLE OR INADEQUATE.
   - B) DIVERSIONS WILL NOT EXCEED 10% OF THE AVAILABLE FLOW.
   - C) ALL CONSTRUCTION DISCHARGE WATER WILL BE COLLECTED AND TREATED USING THE BEST AVAILABLE TECHNOLOGY APPLICABLE TO SITE CONDITIONS.
   - D) TREATMENTS TO REMOVE DEBRIS, NUTRIENTS, SEDIMENT, PETROLEUM HYDROCARBONS, METALS AND OTHER POLLUTANTS LIKELY TO BE PRESENT WILL BE PROVIDED.

3) **MINIMIZE TIME AND EXTENT OF DISTURBANCE**: EARTHWORK (INCLUDING DRILLING, EXCAVATION, DREDGING, FILLING AND COMPACTING) IN WHICH MECHANIZED EQUIPMENT IS IN STREAM CHANNELS, RIPARIAN AREAS, AND WETLANDS WILL BE COMPLETED AS QUICKLY AS POSSIBLE. MECHANIZED EQUIPMENT WILL BE USED IN STREAMS ONLY WHEN PROJECT SPECIALISTS BELIEVE THAT SUCH ACTIONS ARE THE ONLY REASONABLE ALTERNATIVE FOR IMPLEMENTATION, OR WOULD RESULT IN LESS SEDIMENT IN THE STREAM CHANNEL OR DAMAGE (SHORT- OR LONG-TERM) TO THE OVERALL AQUATIC AND RIPARIAN ECOSYSTEM RELATIVE TO OTHER ALTERNATIVES. TO THE EXTENT FEASIBLE, MECHANIZED EQUIPMENT WILL WORK FROM THE TOP OF THE BANK,UNLESS WORK FROM ANOTHER LOCATION WOULD RESULT IN LESS HABITAT DISTURBANCE.

4) **CESSATION OF WORK**: PROJECT OPERATIONS WILL CEASE UNDER THE FOLLOWING CONDITIONS:
   - A) HIGH FLOW CONDITIONS THAT MAY RESULT IN INUNDATION OF THE PROJECT AREA, EXCEPT FOR EFFORTS TO AVOID OR MINIMIZE RESOURCE DAMAGE;
   - B) WHEN ALLOWABLE WATER QUALITY IMPACTS, AS DEFINED BY THE STATE CWA SECTION 401 WATER QUALITY CERTIFICATION, HAVE BEEN EXCEEDED; OR
   - C) WHEN "INCIDENTAL TAKE" LIMITATIONS HAVE BEEN REACHED OR EXCEEDED.

5) **SITE RESTORATION**: WHEN CONSTRUCTION IS COMPLETE:
   - A) ALL STREAM BANKS, SOILS, AND VEGETATION WILL BE CLEANED UP AND RESTORED AS NECESSARY USING STOCKPILED LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL.
   - B) ALL PROJECT RELATED WASTE WILL BE REMOVED.
   - C) ALL TEMPORARY ACCESS ROADS, CROSSINGS, AND STAGING AREAS WILL BE OBLITERATED. WHEN NECESSARY FOR RE-VEGETATION AND INFILTRATION OF WATER, COMPACTED AREAS OF SOIL WILL BE LOOSENED.
   - D) ALL DISTURBED AREAS WILL BE REHABILITATED IN A MANNER THAT RESULTS IN SIMILAR OR IMPROVED CONDITIONS RELATIVE TO PRE-PROJECT CONDITIONS. THIS WILL BE ACHIEVED THROUGH REDISTRIBUTION OF STOCKPILED MATERIALS, SEEDING, AND/OR PLANTING WITH LOCAL NATIVE SEED MIXES OR PLANTS.

6) **RE-VEGETATION**: LONG-TERM SOIL STABILIZATION OF DISTURBED SITES WILL BE ACCOMPLISHED WITH REESTABLISHMENT OF NATIVE VEGETATION USING THE FOLLOWING CRITERIA:
   - A) PLANTING AND SEEDING WILL OCCUR PRIOR TO OR AT THE BEGINNING OF THE FIRST GROWING SEASON AFTER CONSTRUCTION.
   - B) AN APPROPRIATE MIX OF SPECIES THAT WILL ACHIEVE ESTABLISHMENT, SHADE, AND EROSION CONTROL OBJECTIVES, PREFERABLY FORB, GRASS, SHRUB, OR TREE SPECIES NATIVE TO THE PROJECT AREA OR REGION AND APPROPRIATE TO THE SITE WILL BE USED.
   - C) VEGETATION, SUCH AS WILLOW, SEDGE AND RUSH MATS, WILL BE SALVAGED FROM DISTURBED OR ABANDONED FLOOD PLAINS, STREAM CHANNELS, OR WETLANDS.
   - D) INVASIVE SPECIES WILL NOT BE USED.
   - E) SHORT-TERM STABILIZATION MEASURES MAY INCLUDE THE USE OF NON-NATIVE STERILE SEED MIX (WHEN NATIVE SEEDS ARE NOT AVAILABLE), WEED-FREE CERTIFIED STRAW, JUTE MATTING, AND OTHER SIMILAR TECHNIQUES.
   - F) SURFACE FERTILIZER WILL NOT BE APPLIED WITHIN 50 FEET OF ANY STREAM CHANNEL, WATER BODY, OR WETLAND.
   - G) FENCING WILL BE INSTALLED AS NECESSARY TO PREVENT ACCESS TO RE-VEGETATED SITES BY LIVESTOCK OR UNAUTHORIZED PERSONS.
   - H) RE-ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS WILL ACHIEVE AT LEAST 70% OF PRE-PROJECT CONDITIONS WITHIN 3 YEARS.
   - I) INVASIVE PLANTS WILL BE REMOVED OR CONTROLLED UNTIL NATIVE PLANT SPECIES ARE WELL ESTABLISHED (TYPICALLY 3 YEARS POST-CONSTRUCTION).

7) **IMPLEMENTATION MONITORING**: PROJECT SPONSOR STAFF OR THEIR DESIGNATED REPRESENTATIVE WILL PROVIDE IMPLEMENTATION MONITORING TO ENSURE COMPLIANCE WITH THE APPLICABLE BIOLOGICAL OPINION, INCLUDING:
   - A) GENERAL CONSERVATION MEASURES ARE ADEQUATELY FOLLOWED; AND
   - B) EFFECTS TO LISTED SPECIES ARE NOT GREATER THAN PREDICTED AND INCIDENTAL TAKE LIMITATIONS ARE NOT EXCEEDED.

8) **CWA SECTION 401 WATER QUALITY CERTIFICATION**: THE PROJECT SPONSOR OR DESIGNATED REPRESENTATIVE WILL COMPLETE AND RECORD WATER QUALITY OBSERVATIONS TO ENSURE THAT IN-WATER WORK IS NOT DEGRADING WATER QUALITY. DURING CONSTRUCTION, CWA SECTION 401 WATER QUALITY CERTIFICATION PROVISIONS PROVIDED BY THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, WASHINGTON DEPARTMENT OF ECOLOGY, OR IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY WILL BE FOLLOWED. TURBIDITY MONITORING SHALL BE CONDUCTED IN ACCORDANCE WITH THE HIP III TURBIDITY MONITORING PROTOCOL OUTLINED BELOW AND RECORDED ON THE PROJECT COMPLETION FORM.

TURBIDITY MONITORING PROTOCOL

THE PROJECT SPONSOR SHALL COMPLETE AND RECORD THE FOLLOWING WATER QUALITY OBSERVATIONS TO ENSURE THAT ANY INCREASE IN SUSPENDED SEDIMENT DOES NOT EXCEED THE LIMIT FOR HIP III COMPLIANCE. RECORDS SHALL BE REPORTED ON THE HIP III PROJECT COMPLETION FORM (PNF).

1) TAKE A BACKGROUND TURBIDITY SAMPLE USING AN APPROPRIATELY AND FREQUENTLY CALIBRATED TURBIDIMETER IN ACCORD WITH MANUFACTURER'S INSTRUCTIONS, OR A VISUAL TURBIDITY OBSERVATION, EVERY 2 HOURS WHILE WORK IS BEING IMPLEMENTED, OR MORE OFTEN IF TURBIDITY DISTURBANCES VARY GREATLY, TO ENSURE THAT THE IN-WATER WORK AREA IS NOT CONTRIBUTING VISIBLE SEDIMENT TO THE WATER COLUMN. THE BACKGROUND SAMPLES OR OBSERVATIONS SHOULD BE TAKEN AT A RELATIVELY UNDISTURBED AREA APPROXIMATELY 100 FEET UPSTREAM FROM THE PROJECT AREA. RECORD THE OBSERVATION, LOCATION, AND TIME BEFORE MONITORING AT THE DOWNSTREAM POINT.

2) TAKE A SECOND SAMPLE OR OBSERVATION, IMMEDIATELY AFTER EACH UPSTREAM SAMPLE OR OBSERVATION, APPROXIMATELY 50 FEET DOWNSTREAM FROM THE PROJECT AREA IN STREAMS THAT ARE 30 FEET WIDE OR LESS; 100 FEET DOWNSTREAM FROM THE PROJECT AREA FOR STREAMS BETWEEN 30 AND 100 FEET WIDE; 200 FEET DOWNSTREAM FROM THE PROJECT AREA FOR STREAMS GREATER THAN 100 FEET WIDE; AND 300 FEET FROM THE DISCHARGE POINT OR NON-POINT SOURCE FOR AREAS SUBJECT TO TIDAL OR COASTAL SCOUR. RECORD THE DOWNSTREAM OBSERVATION, LOCATION, AND TIME.

3) COMPARE THE UPSTREAM AND DOWNSTREAM OBSERVATIONS/SAMPLES. IF OBSERVED OR MEASURED TURBIDITY DOWNSTREAM IS MORE THAN UPSTREAM OBSERVATION OR MEASUREMENT (> 10%), THE ACTIVITY MUST BE MODIFIED TO REDUCE TURBIDITY. IF VISUAL ESTIMATES ARE USED, AN OBVIOUS DIFFERENCE BETWEEN UPSTREAM AND DOWNSTREAM OBSERVATIONS SHALL BEAR THE ASSUMPTION OF A (> 10%) DIFFERENCE. CONTINUE TO MONITOR EVERY 2 HOURS AS LONG AS IN-STREAM ACTIVITY CONTINUES.

4) IF THE EXCEEDANCE CONTINUES AFTER THE SECOND MONITORING INTERVAL (AFTER 4 HOURS), THE ACTIVITY MUST STOP UNTIL THE TURBIDITY LEVEL RETURNS TO BACKGROUND, AND THE EC LEAD MUST BE NOTIFIED WITHIN 48 HOURS. THE EC LEAD SHALL DOCUMENT THE REASONS FOR THE EXCEEDANCE, CORRECTIVE MEASURES TAKEN, NOTIFY THE LOCAL NMFS BRANCH CHIEF AND/OR USFWS FIELD SUPERVISOR AND SEEK RECOMMENDATIONS.

5) IF AT ANY TIME, MONITORING, INSPECTIONS, OR OBSERVATIONS/SAMPLES SHOW THAT THE TURBIDITY CONTROLS ARE INEFFECTIVE, IMMEDIATELY MOBILIZE WORK CREWS TO REPAIR, REPLACE, OR REINFORCE CONTROL AS NECESSARY.

Designed _____ FEB 2015
Drawn C. CHRISTIANSEN X
Checked X
Approved _____
Title _____

HIP III GENERAL CONSERVATION MEASURES

X
X

Bonneville Power Administration: Environment, Fish and Wildlife

File Name
HIP III GCA

Drawing No.
2

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