BELLINGHAM 97 WASHINGTON CHELAN VEVERETT. **SPOKANE** LEAVENWORTH WENATCHEE SEATTLE . 97 **IDAHO** (-99) **OREGON** PORTLAND **LOCATION MAP** STATE OF WASHINGTON NOT TO SCALE $\binom{2}{2}$ **COLES** CORNER LEAVENWORTH **PESHASTIN VICINITY MAP** NOT TO SCALE EXPIRES: 11/23/21 MB, JP, DM

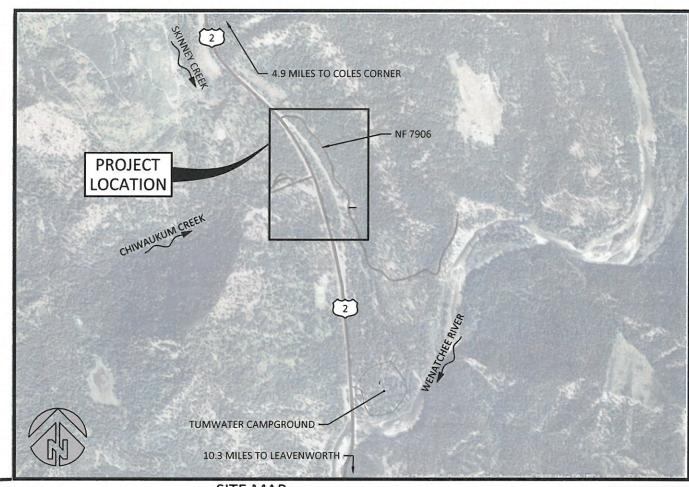
DM

170232

12/16/2019

SKINNEY CREEK - FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN

CHELAN COUNTY, WA



SITE MAP NOT TO SCALE

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COORDINATES:

LATITUDE: 47°41'23.58" N LONGITUDE 120°44'11.71 W

TOWNSHIP 25N, RANGE 17E, SECTION 4 & 5

WATERBODY: SKINNEY CREEK TRIBUTARY OF: CHIWAUKUM CREEK

YAKAMA NATION FISHERIES SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN



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

COVER, SHEET INDEX AND VICINITY MAP

SHEET

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

IN WATER 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 GPS AND TOTAL STATION EQUIPMENT ON APRIL 18-20, 2016, JUNE 2,2016, SEPTEMBER 28, 2017 AND NOVEMBER 8, 2017. DATA ARE REFERENCED TO NAD 83, STATE PLANE, WASHINGTON NORTH, NAVD88, US SURVEY FEET.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS 5.0.5.

LANDOWNERSHIP DATA OBTAINED FROM CHELAN COUNTY GIS.

SOILS

SOILS WITHIN THE PROJECT AREA CONSIST PRIMARILY OF NARD SANDY LOAM, 3 TO 30 PERCENT SLOPES; NATAPOC STONY SANDY LOAM, 3 TO 30 PERCENT SLOPES IS ALSO PRESENT, AS MAPPED BY NRCS.

SOILS AVAILABLE FROM 2008 BOREHOLE DATA COLLECTED BY WSDOT ALONG THE NEW HIGHWAY 2 ALIGNMENT.

SOILS EXPOSED AT FINISHED GRADE ELEVATION WILL BE EVALUATED BY ENGINEER. IF FINE SOILS ARE PRESENT, ENGINEER MAY RECOMMEND OWNER AUTHORIZE OPTIONAL ADDITIVE ITEM TO OVER-EXCAVATE AND PLACE SUBSTRATE. NO MATERIALS SHALL BE PROCURED, NOR WORK COMMENCED, UNTIL APPROVAL IN WRITING IS OBTAINED FROM OWNER.

CONTRACTOR SHALL CONDUCT OWN SOILS INVESTIGATIONS AS NEEDED.

UTILITIES

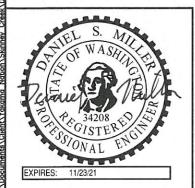
THE PROJECT FOLLOWS A PRIOR ALIGNMENT OF HIGHWAY 2. UTILITIES MAY EXIST.

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

THE CONTRACTOR SHALL CALL (800-424-5555 OR 811) 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

CONTRACTOR SHALL STAKE PROJECT LIMITS AND GRADE STAKES BASED ON PROJECT ELEVATION CONTROL POINTS. THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST.

CONTRACTOR SHALL COORDINATE WITH ENGINEER FOR INITIAL AND PERIODIC CHECKING OF CONTRACTOR'S STAKEOUT. 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.

CONSTRUCTION MATERIALS

OWNER PROVIDED LOGS, LOGS WITH ROOTWADS AND VERTICAL LOGS WILL BE LOCATED IN A DESIGNATED STOCKPILE/STAGING AREA. CONTRACTOR SHALL PROCURE, PROVIDE AND PLACE SLASH MATERIALS.

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOT WADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS AND MATERIAL SIZE, PER DIRECTION BY OWNER OR OWNER'S REPRESENTATIVE.

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 DESIGNATED LOCATION.

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, GRADED, AND RESURFACED TO PRE-PROJECT CONDITION PER WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION OR USFS STANDARDS PER JURISDICTION. WORK SHALL BE INCIDENTAL TO MOBILIZATION/DEMOBILIZATION.

ALL DISTURBED AREAS INCLUDING, BUT NOT LIMITED TO: ROADS, DRIVEWAYS, TEMPORARY ACCESS ROUTES, STAGING AREAS AND STRUCTURE LOCATIONS SHALL 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.

CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED SURFACES EXCEPT CHANNEL BETWEEN TOPS OF BANK AND EXISTING GRAVEL ROADS.

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 DEVELOPING EROSION AND SEDIMENT CONTROL PLAN, 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.
- S. 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.
- 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.
- 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.





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GENERAL NOTES

SHEET

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

EXCAVATED MATERIAL WILL BE PLACED IN SPOILS AREA INCLUDING EXISTING SKINNEY CREEK. STREAM DIVERSION SHALL BE AN 18INCH DIAMETER FLEXIBLE PIPE PLACED IN EXISTING SKINNEY CREEK AND BACKFILLED BY SPOILS PLACEMENT. PIPE SHALL HAVE SUFFICIENT STRENGTH TO WITHSTAND BACKFILL AND CONSTRUCTION EQUIPMENT. PIPE SHALL BE ABANDONED IN PLACE AND PLUGGED AT PROJECT COMPLETION.

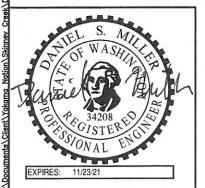
DEWATERING OF IN-CHANNEL WORK AREA(S) SHALL OCCUR CONCURRENT WITH FISH RESCUE. CONTRACTOR SHALL COORDINATE WITH THE YAKAMA NATION FISHERIES FOR FISH RESCUE. CONTRACTOR SHALL PROVIDE YAKAMA FISHERIES AMPLE TIME TO SCHEDULE FISH RESCUE. IF DIVERSION FAILS DUE TO CONTRACTOR NEGLIGENCE, FISH RESCUE SHALL 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 SHALL BE INCORPORATED INTO LOG STRUCTURES. SMALLER DEBRIS SHALL BE PLACED IN LOG STRUCTURES OR ON DISTURBED SURFACES AS APPROVED BY THE OWNER OR 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 HEAVY EQUIPMENT OUT OF DRIP LINE OF EXISTING TREES.

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 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

NO WETLANDS WERE IDENTIFIED ON SITE AS DOCUMENTED IN "SKINNEY CREEK WETLAND ASSESSMENT" (INTER-FLUVE, AUGUST 2017).

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.

ABBREVIATIONS

CY CUBIC YARDS

DBH DIAMETER AT BREAST HEIGHT

EA EAC

ESC EROSION AND SEDIMENT CONTROL

or FT FOOT

LS LUMP SUM

LUMP SUM

LWM LARGE WOODY MATERIAL

MAX MAXIMUM

MIN MINIMUM MSF THOUSAND

MSF THOUSAND SQUARE FEET OHW ORDINARY HIGH WATER

RD ROAD

STA STATION

SY SQUARE YARDS

TBM TEMPORARY BENCHMARK

TYP TYPICAL

US UNITED STATES

USACE UNITED STATES ARMY CORPS OF ENGINEERS

USFS UNITED STATES FOREST SERVICE

WDFW WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

WSDOT WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

QUANTITIES ESTIMATE

Item	Quantity	Units
Excavation and place in onsite spoils areas	30,550	CY
Log structure at Skinney Creek fill	2	EA
Bank buried LWM structures:		
15-17"DBH x 40' Long large wood with rootwad	54	EA
18-20"DBH x 40' Long large wood with rootwad	22	EA
15-17"DBH x 40' Long large wood without rootwad	33	EA
LWM gravel/cobble backfill	380	CY
Vibratory driven 12-15"DBH x 20' Long vertical log	77	EA
Floodplain wood - salvaged from Skinney Creek spoils area (a	pprox. Qty):	
small-medium conifer: whole tree with rootwad	185	EA
large conifer: whole tree with rootwad	10	EA
small-medium deciduous tree - topped	90	EA
large deciduous tree - topped	10	EA
Buried ballast log (15-17"x40'Long conifer w/ rootwad)	50	EA
Erosion control fabric	54	MSF
Seed and mulch	6.11	Acre
Optional item:	1=1=2	
Streambed substrate Station 2+40 to upstream project limit		
- excavation	600	CY
- substrate placement	600	CY

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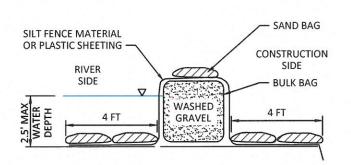
ESTIMATED MATERIAL VOLUMES ARE IN-PLACE QUANTITIES AND NOT FACTORED FOR EXPANSION OF EXCAVATED MATERIAL OR COMPACTION OF PLACED MATERIAL. MEASUREMENT AND PAYMENT SHALL NOT BE BASED ON WEIGHT TICKETS OR TRUCK MEASURE WITHOUT PRIOR WRITTEN APPROVAL.

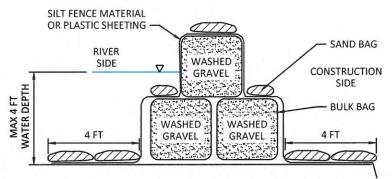




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ABBREVIATIONS AND
QUANTITIES ESTIMATE

SHEET





TEMPORARY COFFERDAM DEPTHS LESS THAN 2.5'

COFFERDAM SECTION IN WATER DEPTHS GREATER THAN 2.5'

BULK BAG NOTES:

- FOR LOW FLOW CONDITIONS, SAND BAGS MAY BE USED IN PLACE OF BULK BAGS TO FORM COFFERDAM.
- 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.
- 3. IF WATER DEPTH EXCEEDS 85% OF THE BULK BAG HEIGHT, AN ADDITIONAL TOP ROW OF BULK BAGS SHALL BE INSTALLED, SUPPORTED BY TWO BOTTOM ROWS OF BULK BAGS. 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.
- 4. 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.
- 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.
- 6. IF POSSIBLE, THE COFFERDAM SHALL BE EXTENDED ONTO A GRAVEL BAR AND OUT OF THE WATER. IF THE END MUST BE TERMINATED AT THE RIVERBANK, THE COFFERDAM SHALL BE TIGHTLY SEALED TO THE GROUND BY PLASTIC SHEETING AND STANDARD SANDBAGS. MULTIPLE LAYERS OF SHEETING AND SANDBAGS MAY BE REQUIRED TO FORM A WATERTIGHT SEAL.
- 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.
- 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.
- BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED. BAGS, SHEETING AND GRAVEL WILL BE HAULED OFFSITE.
- 10. 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.
- 11. 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.

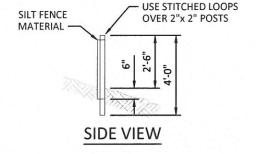


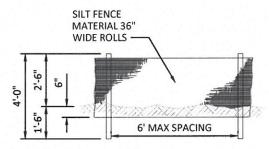
TYPICAL DETAIL - TEMPORARY COFFERDAM

NOT TO SCALE

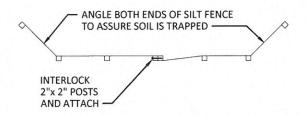
EXPIRES: 11/23/21

YAKAMA NATION FISHERIES SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN





FRONT VIEW



TOP VIEW

SILT FENCES:

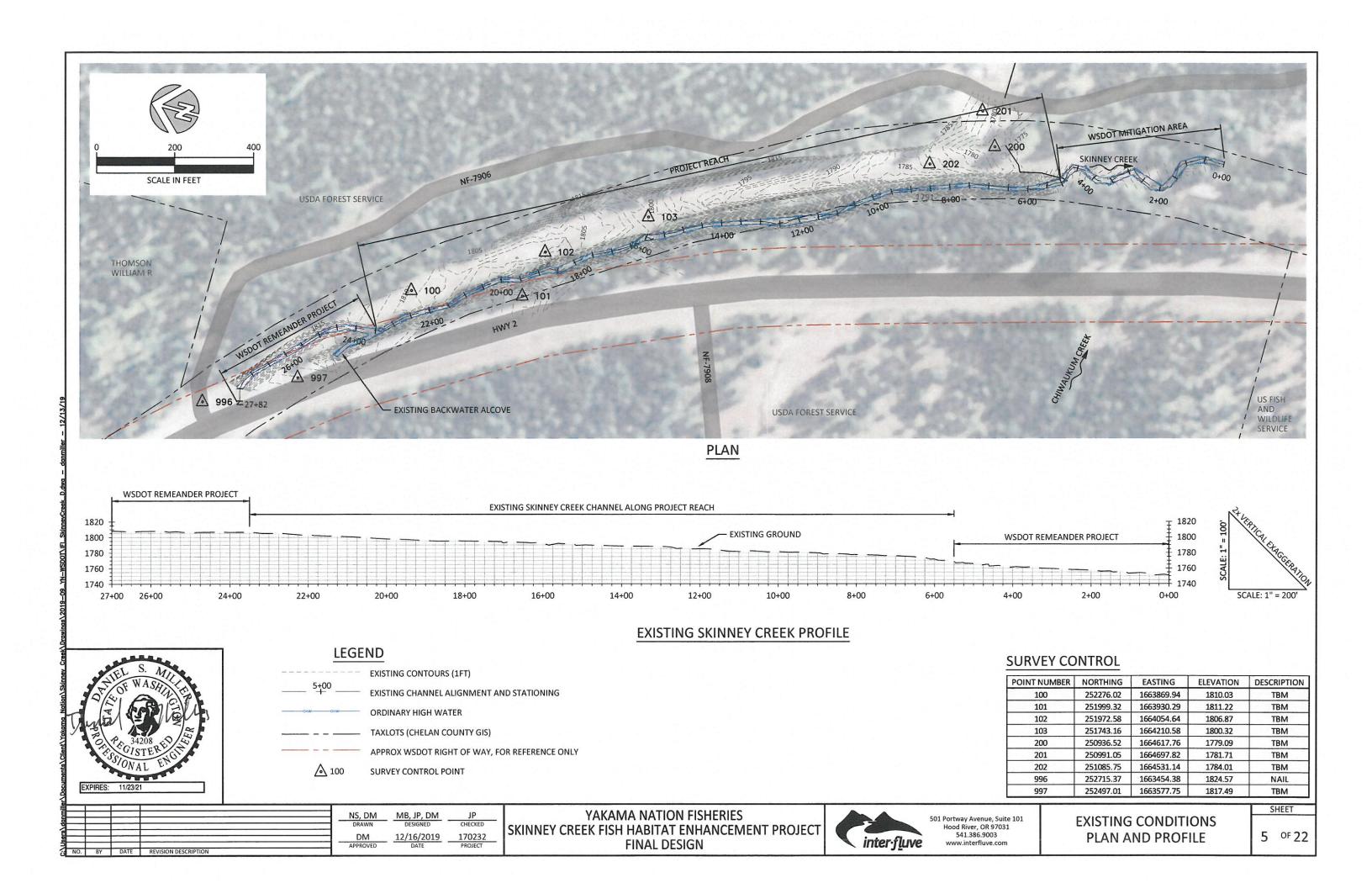
- THE SILT FENCE SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, SILT FENCE SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST. ALTERNATIVELY, OVERLAP 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.
- 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.
- 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.

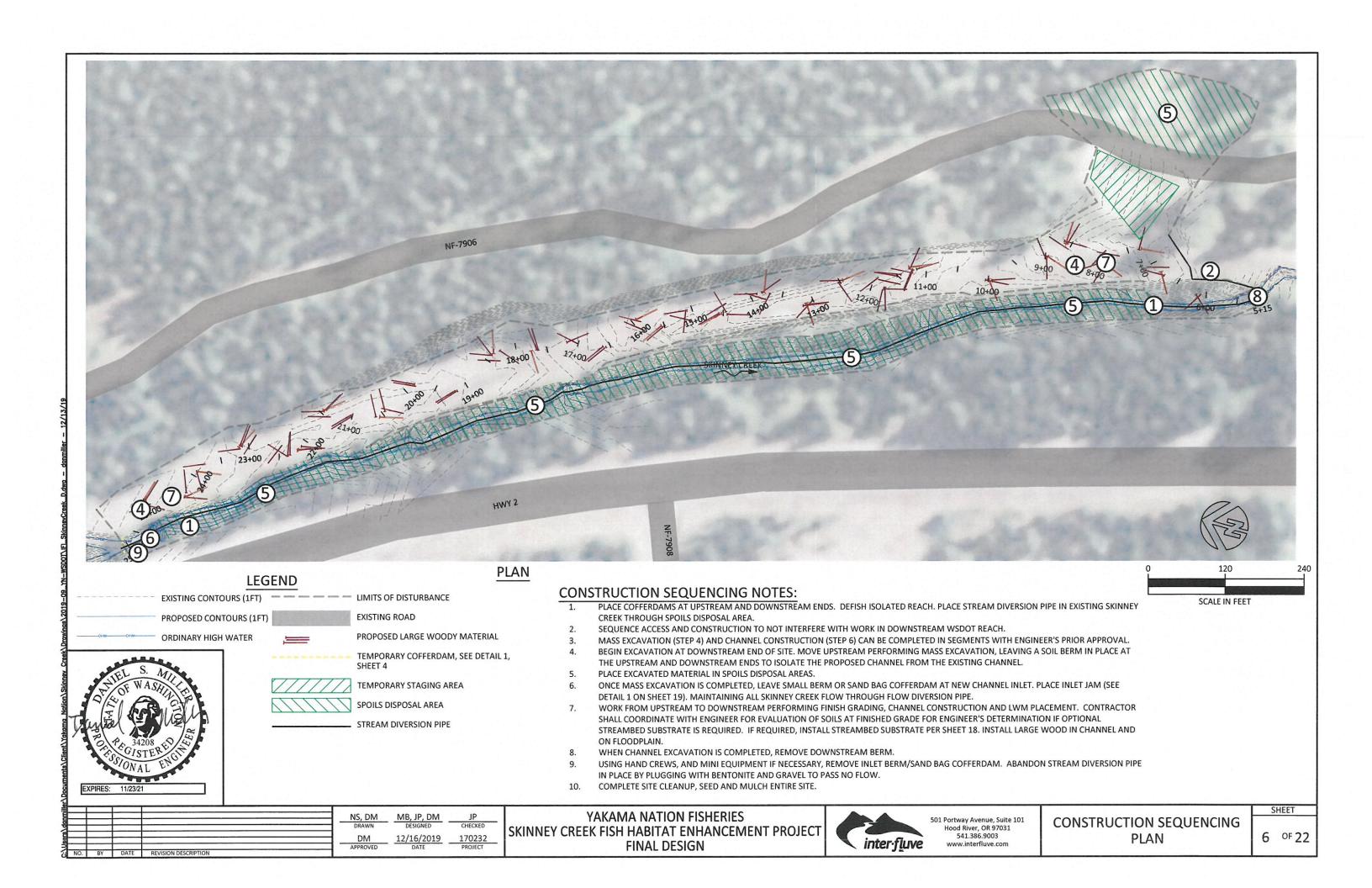


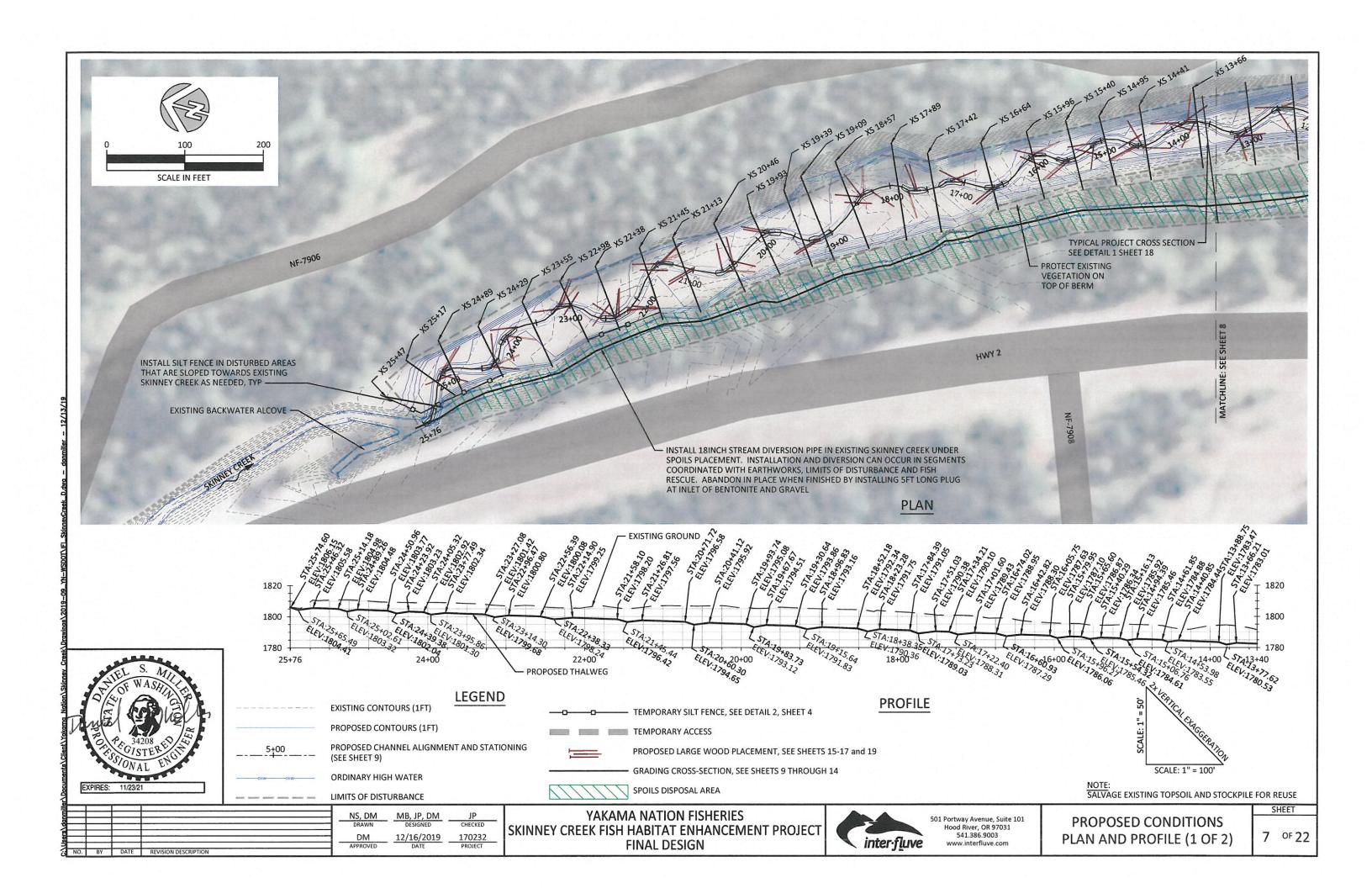
inter:fluve

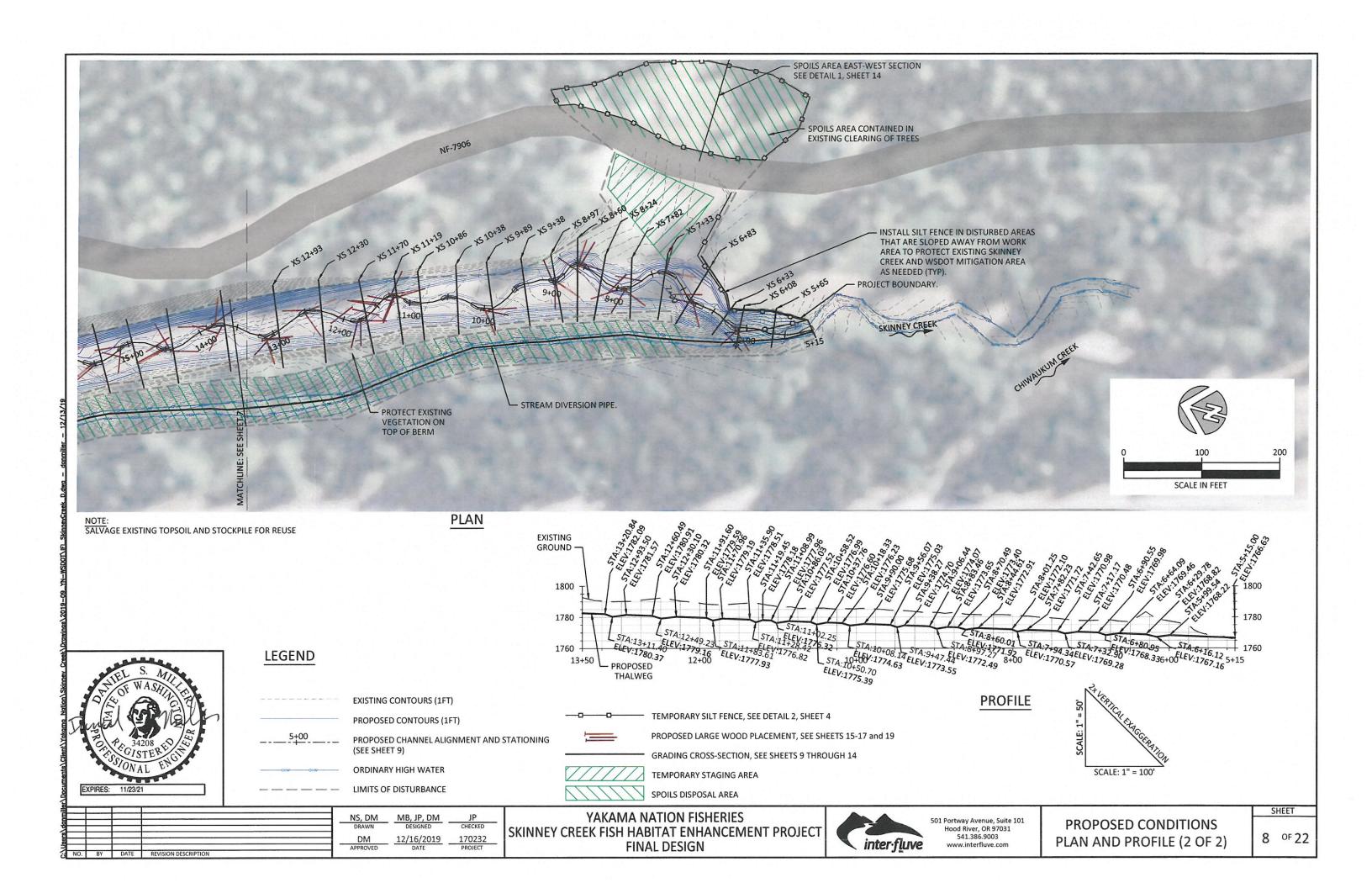
501 Portway Avenue, Suite 101 Hood River, OR 97031 541.386.9003 TYPICAL DETAILS - EROSION CONTROL

SHEET









Grading Cross			
Section	End Point	Northing	Easting
5+65	Left	250,800.52	1,664,588.26
	Right	250,793.93	1,664,538.48
6+08	Left	250,840.98	1,664,581.19
	Right	250,837.57	1,664,524.70
6+33	Left	250,852.67	1,664,582.44
	Right	250,870.88	1,664,534.26
6+83	Left	250,895.99	1,664,618.24
	Right	250,919.55	1,664,535.70
7+33	Left	250,952.86	1,664,619.97
	Right	250,942.83	1,664,534.90
7+82	Left	250,995.59	1,664,602.40
	Right	250,977.52	1,664,526.66
8+24	Left	251,028.85	1,664,597.81
	Right	251,021.62	1,664,512.36
8+60	Left	251,069.27	1,664,608.85
	Right	251,041.44	1,664,505.48
8+97	Left	251,096.69	1,664,579.48
	Right	251,059.09	1,664,499.96
9+38	Left	251,132.05	1,664,564.39
	Right	251,098.12	1,664,484.41
9+89	Left	251,172.97	1,664,548.61
	Right	251,139.13	1,664,467.68
10+38	Left	251,209.84	1,664,534.91
	Right	251,182.79	1,664,450.44
10+88	Left	251,254.95	1,664,514.20
	Right	251,223.51	1,664,431.39
11+19	Left	251,282.25	1,664,499.96
	Right	251,248.42	1,664,419.03
11+70	Left	251,324.59	1,664,483.39
	Right	251,280.96	1,664,397.22
12+30	Left	251,374.11	1,664,470.86
	Right	251,336.90	1,664,370.49
12+93	Left	251,428.33	1,664,448.13
	Right	251,387.75	1,664,350.04
13+66	Left	251,491.33	1,664,424.08
	Right	251,451.04	1,664,327.94
14+41	Left	251,551.59	1,664,383.80
4, 2-	Right	251,511.38	1,664,295.77
14+95	Left	251,597.63	1,664,357.13
	Right	251,552.69	1,664,278.07

GRADING CROSS SECTION END POINT COORDINATE TABLE

Grading Cross			
Section	End Point	Northing	Easting
15+40	Left	251,637.23	1,664,339.97
	Right	251,592.30	1,664,260.91
15+96	Left	251,682.07	1,664,313.15
	Right	251,637.02	1,664,236.82
16+64	Left	251,734.07	1,664,284.32
	Right	251,689.84	1,664,207.60
17+42	Left	251,796.16	1,664,253.20
	Right	251,752.30	1,664,160.65
17+89	Left	251,844.50	1,664,253.72
	Right	251,792.38	1,664,138.78
18+57	Left	251,907.53	1,664,212.15
	Right	251,836.06	1,664,115.63
19+09	Left	251,944.35	1,664,182.32
	Right	251,875.22	1,664,089.68
19+39	Left	251,960.61	1,664,159.54
	Right	251,899.70	1,664,074.61
19+93	Left	251,993.69	1,664,120.80
	Right	251,936.41	1,664,053.52
20+46	Left	252,035.86	1,664,094.35
	Right	251,973.95	1,664,020.75
21+13	Left	252,081.75	1,664,063.36
	Right	252,021.98	1,663,980.62
21+45	Left	252,119.13	1,664,039.59
	Right	252,065.97	1,663,958.86
22+38	Left	252,167.07	1,664,001.74
	Right	252,115.10	1,663,930.65
22+98	Left	252,205.30	1,663,971.28
	Right	252,149.66	1,663,906.01
23+55	Left	252,244.77	1,663,933.58
	Right	252,185.52	1,663,863.44
24+29	Left	252,290.52	1,663,888.26
	Right	252,242.86	1,663,834.45
24+89	Left	252,335.01	1,663,857.34
	Right	252,289.02	1,663,803.77
25+17	Left	252,367.86	1,663,822.04
	Right	252,296.08	1,663,795.13
25+47	Left	252,379.90	1,663,770.03
	Right	252,307.14	1,663,776.26

EXPIRES: 11/23/21

STATION REFERENCES PROPOSED CHANNEL ALIGNMENT LEFT TO RIGHT ORIENTATION IS LOOKING DOWNSTREAM **GRADING SECTION LOCATIONS SHOWN ON SHEETS 7 & 8** GRADING SECTIONS ARE SHOWN ON SHEETS 10 THROUGH 14

			NS, DM	MB, JP, DM	JP
			DRAWN	DESIGNED	CHECKED
			DM	12/16/2019	170232
 BV	DATE	DEVICION DESCRIPTION	APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN

11+35 | 251,286.60 | 1,664,469.86 | Riffle bottom

			Character 1	
PI Station	Northing	Easting	Channel feature	PI Station
5+15	250,749.63	1,664,573.36		11+46
5+26	250,759.97	1,664,567.97		11+59
5+33	250,766.06	1,664,564.87		11+70
5+45	250,776.95	1,664,559.58		11+83
5+68	250,799.58	1,664,554.99		11+91
5+85	250,816.51	1,664,556.65		12+02
5+99	250,830.14	1,664,554.33	Riffle Top	12+17
6+16	250,846.34	1,664,550.78	Pool	12+30
6+29	250,859.14	1,664,555.56	Riffle bottom	12+49
6+40	250,868.26	1,664,560.64		12+60
6+52	250,880.13	1,664,564.40	70-12	12+93
6+64	250,891.46	1,664,565.89	Riffle Top	13+11
6+80	250,908.19	1,664,567.98	Pool	13+20
6+90	250,915.69	1,664,573.95	Riffle bottom	13+32
7+04	250,924.74	1,664,584.24		13+49
7+17	250,934.47	1,664,592.75	Riffle Top	13+66
7+32	250,949.82	1,664,596.17	Pool	13+78
7+42	250,958.98	1,664,592.83	Riffle bottom	13+88
7+54	250,968.96	1,664,586.59		14+06
7+67	250,976.84	1,664,575.86		14+26
7+82	250,986.97	1,664,565.50	Riffle Top	14+40
7+94	250,997.79	1,664,560.05	Pool	14+53
8+01	251,004.71	1,664,560.03	Riffle bottom	14+61
8+14	251,018.24	1,664,562.38		14+78
8+27	251,029.46	1,664,568.62		14+94
8+44	251,045.28	1,664,574.23	Riffle Top	15+06
8+60	251,060.33	1,664,577.50	Pool	15+16
8+70	251,068.89	1,664,571.46	Riffle bottom	15+27
8+83	251,073.67	1,664,559.41	Riffle Top	15+40
8+97	251,082.05	1,664,548.43	Pool	15+54
9+06	251,091.13	1,664,547.16	Riffle bottom	15+65
9+17	251,101.33	1,664,544.34		15+79
9+28	251,110.70	1,664,538.22		15+96
9+38	251,119.75	1,664,533.82	Riffle Top	16+05
9+47	251,126.89	1,664,528.07	Pool	16+18
9+56	251,130.84	1,664,520.40	Riffle bottom	16+29
9+64	251,134.28	1,664,512.91	Time Bottom	16+42
9+77	251,141.50	1,664,502.34		16+60
9+90	251,150.17	1,664,492.81	Riffle Top	16+74
10+08	251,167.97	1,664,489.29	Pool	17+01
10+18	251,177.76	1,664,492.12	Riffle bottom	17+22
10+27	251,186.52	1,664,493.82	Mille Bottom	17+34
10+37	251,197.01	1,664,494.33	Riffle Top	17+51
10+50	251,209.84	1,664,492.63	Pool	17+73
10+58	251,215.75	1,664,487.51	Riffle bottom	17+84
10+70	251,225.46	1,664,481.34	Tarrie Bottom	17+97
10+86	251,240.38	1,664,475.55	Riffle Top	18+11
11+02	251,256.22	1,664,472.07	Pool	18+23
11+02	251,262.13	1,664,475.33	Riffle bottom	18+38
11+19	251,272.46	1,664,476.96	Riffle Top	18+52
11+19	251,272.46	1,664,475.07	Pool	10.72
11+20	231,201.22	1,004,473.07	FUUI	

PROPOSED ALIGNMENT N,E COORDINATE TABLE

ol Station	Northing	Easting	Channel feature
18+72	251,874.58	1,664,146.83	
18+96	251,886.37	1,664,125.18	Riffle Top
19+15	251,899.52	1,664,111.74	Pool
19+30	251,913.03	1,664,105.22	Riffle botton
19+41	251,924.15	1,664,104.64	
19+54	251,937.00	1,664,106.75	
19+67	251,949.87	1,664,106.19	Riffle Top
19+83	251,965.35	1,664,101.93	Pool
19+93	251,972.70	1,664,095.14	Riffle botton
20+13	251,982.83	1,664,078.07	
20+41	251,994.64	1,664,053.20	Riffle Top
20+60	252,006.56	1,664,038.17	Pool
20+71	252,016.85	1,664,033.24	Riffle botton
20+99	252,044.08	1,664,030.24	
21+26	252,071.78	1,664,030.18	Riffle Top
21+45	252,090.19	1,664,027.30	Pool
21+58	252,096.10	1,664,016.10	Riffle botton
21+74	252,100.79	1,664,000.04	
21+96	252,103.37	1,663,978.11	
22+14	252,109.46	1,663,961.19	Riffle Top
22+38	252,125.21	1,663,943.84	Pool
22+56	252,142.65	1,663,939.13	Riffle botton
22+68	252,155.09	1,663,939.87	Time botton
22+82	252,167.78	1,663,944.62	
22+96	252,181.81	1,663,945.61	Riffle Top
23+14	252,198.53	1,663,939.43	Pool
23+27	252,204.22	1,663,927.98	Riffle botton
23+38	252,210.63	1,663,918.77	Mille Botton
23+48	252,218.52	1,663,913.14	
23+64	252,233.33	1,663,905.69	
23+77	252,243.88	1,663,898.25	Riffle Top
23+95	252,253.97	1,663,882.90	Pool
24+05	252,256.21	1,663,873.70	Riffle botton
24+23	252,254.72	1,663,855.17	top
24+39	252,261.59	1,663,841.31	Pool
24+50	252,272.42	1,663,837.23	toe
24+63	252,284.54	1,663,833.17	100
24+78	252,299.17	1,663,830.55	
24+89	252,309.43	1,663,827.66	Riffle Top
25+02	252,319.49	1,663,818.88	Pool
25+14	252,313.43	1,663,807.43	Riffle botton
25+24	252,321.13	1,663,797.41	Tarrie Doctori
25+35	252,320.43	1,663,786.71	
25+46	252,318.14	1,663,775.57	Riffle Top
25+65	252,317.48	1,663,756.39	Pool
23703	252,324.46	1,663,748.95	Riffle botton
25+75			

Channel

inter·fluve

501 Portway Avenue, Suite 101 Hood River, OR 97031

Channel

feature

Riffle Top

Pool

Riffle bottom

Riffle Top

Pool

Riffle bottom

Riffle Top

Riffle Top

Pool

Riffle bottom

Riffle Top

Pool

Riffle bottom

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Pool

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Pool

toe

top

Pool

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Riffle Top

Pool

Northing

Easting

251,291.70 1,664,461.05

251,297.27 1,664,448.83

251,303.74 1,664,439.38

251,313.64 1,664,431.53

251,321.46 | 1,664,429.85

251,332.77 1,664,430.24

251,347.10 1,664,432.67

251,359.74 1,664,432.61

251,378.30 1,664,427.92

251,385.88 | 1,664,419.60 |

251,406.37 1,664,393.71

251,419.78 1,664,381.86

251,440.39 1,664,381.44

251,457.86 1,664,384.70

251,474.23 1,664,383.41

251,486.10 1,664,379.66

251,506.49 1,664,361.47

251,518.97 1,664,345.11

251,529.96 1,664,336.05

251,542.49 1,664,332.13

251,550.25 1,664,333.45

251,566.47 1,664,334.26

251,582.28 1,664,330.26

251,592.48 1,664,323.27

251,603.86 1,664,305.78 251,612.80 1,664,296.84

251,624.81 1,664,289.59 251,636.09 1,664,289.41

251,650.38 1,664,290.72

251,665.86 1,664,285.57

251,671.40 1,664,277.88

251,677.37 1,664,266.64 251,681.13 | 1,664,255.91

251,687.64 1,664,244.69

251,701.76 1,664,233.34

251,714.38 1,664,229.87

251,741.96 1,664,229.52

251,762.21 1,664,224.78

251,770.15 1,664,216.03

251,784.68 1,664,207.55

251,805.79 1,664,200.71

251,816.63 1,664,203.39

251,829.17 1,664,201.72

251,841.84 1,664,195.59

251,851.86 | 1,664,188.69 |

251,863.09 1,664,178.65

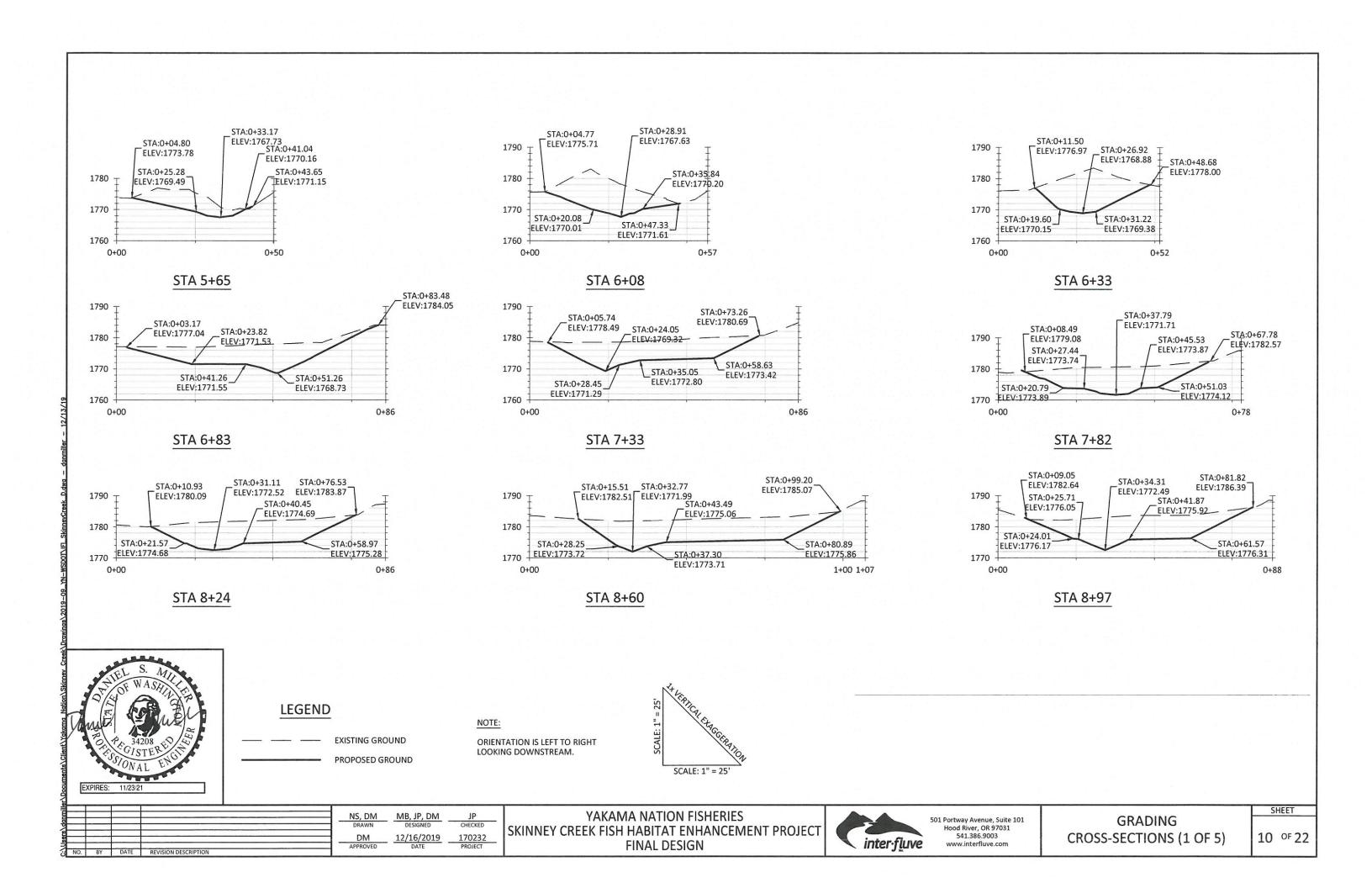
251,867.74 1,664,165.62 Riffle bottom

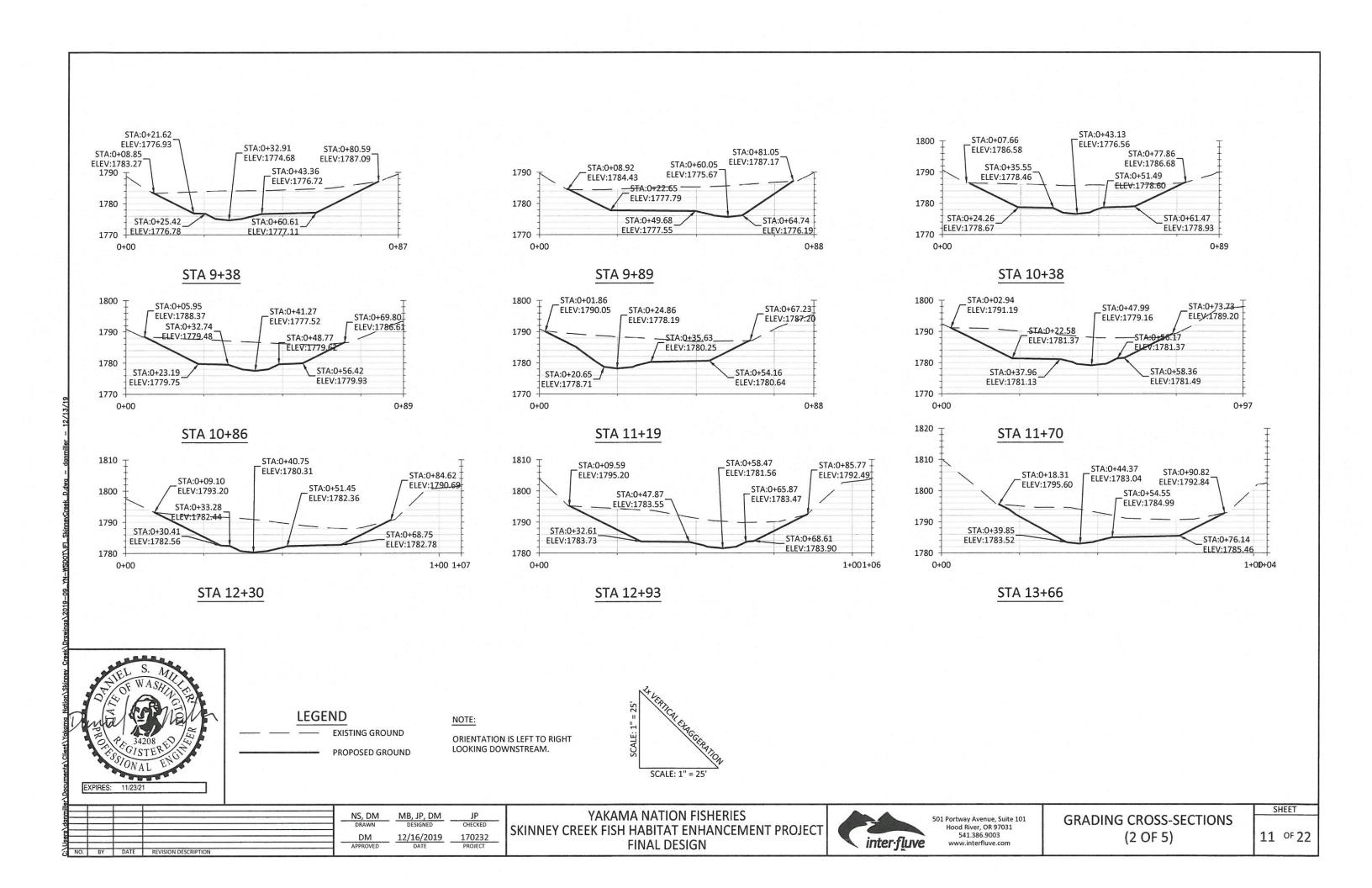
251,597.12 1,664,315.13 Riffle bottom

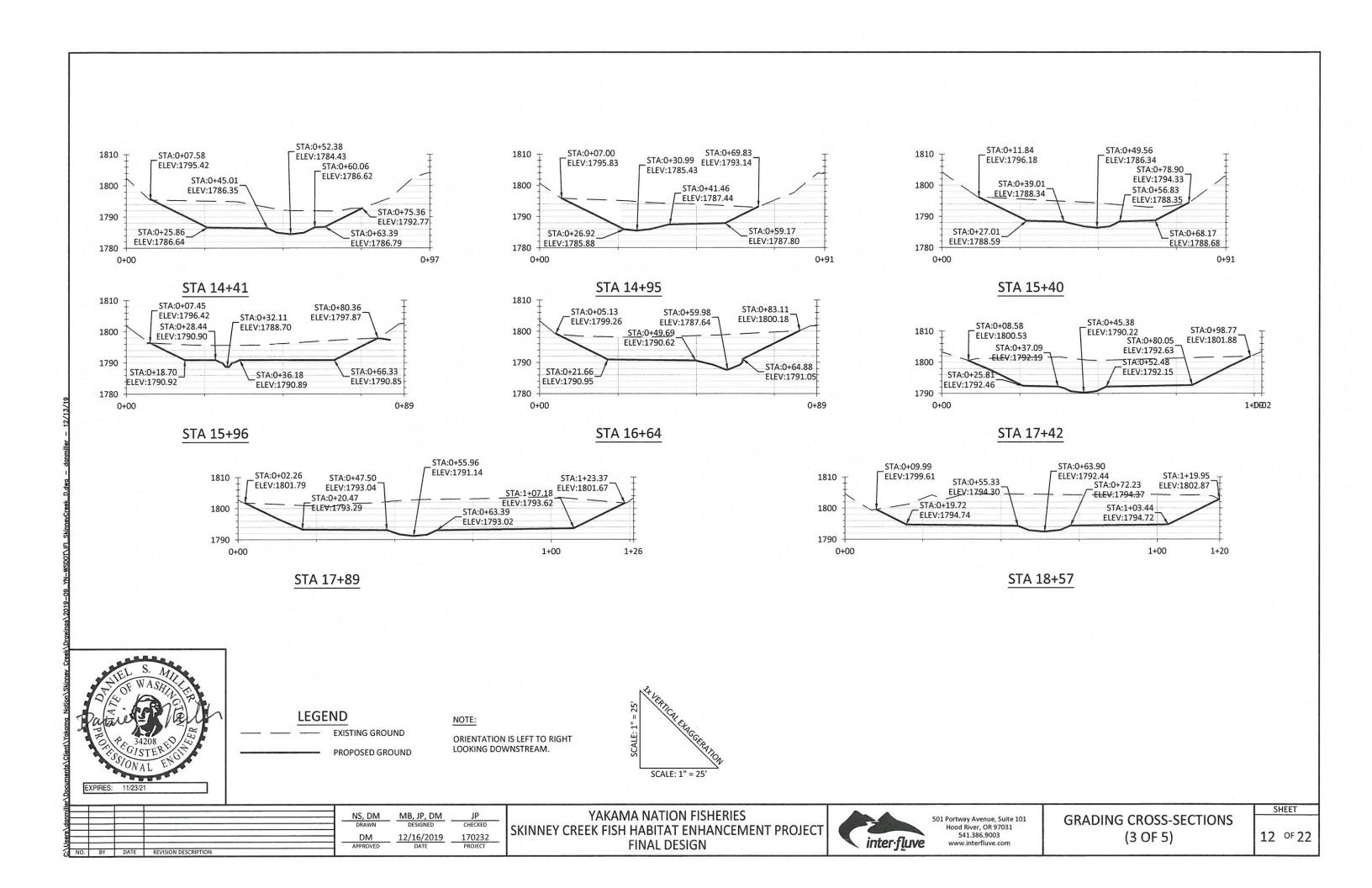
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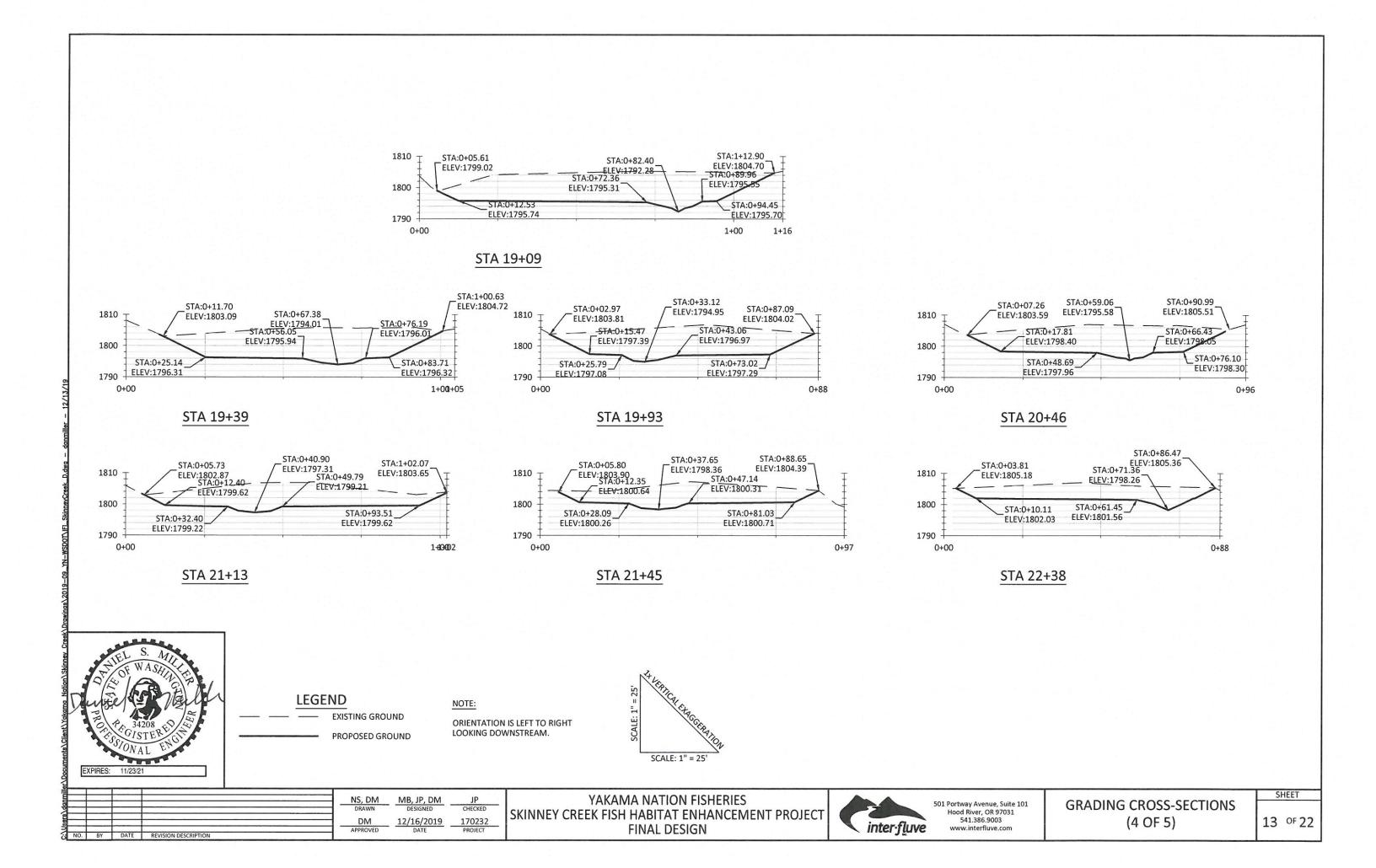
251,429.21 1,664,381.66 Riffle bottom

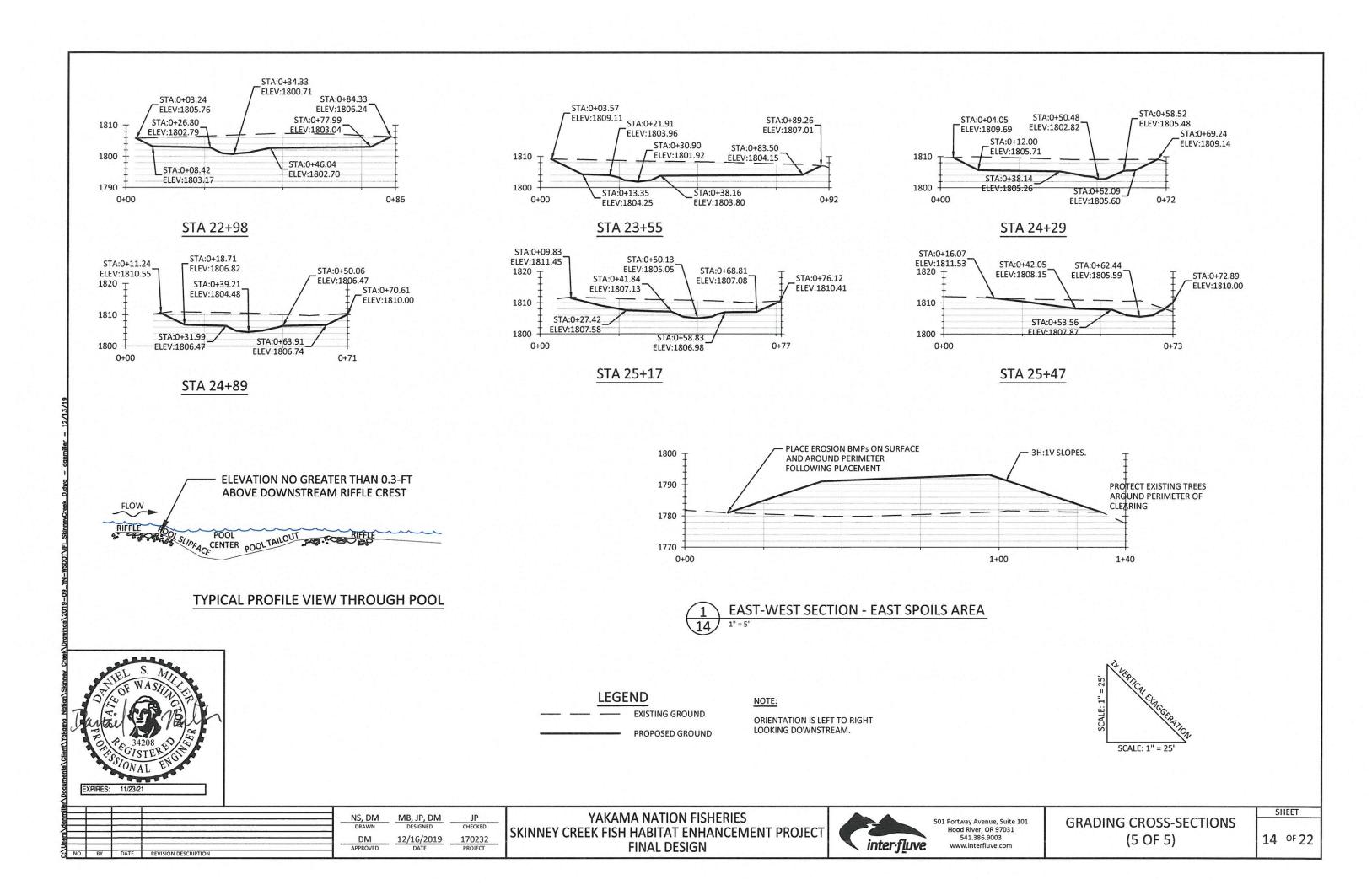
ALIGNMENT AND GRADING SECTION COORDINATE TABLES SHEET

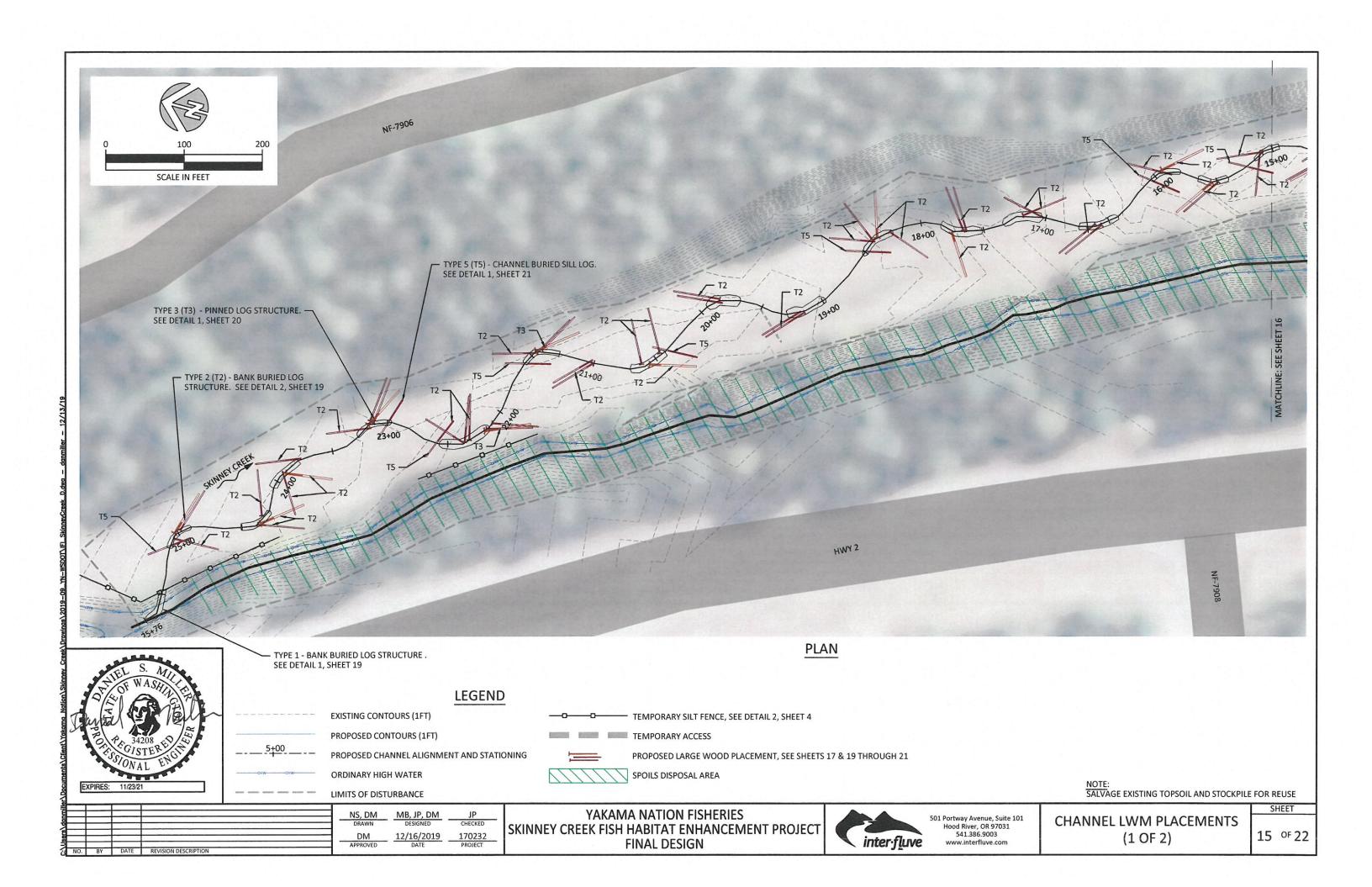


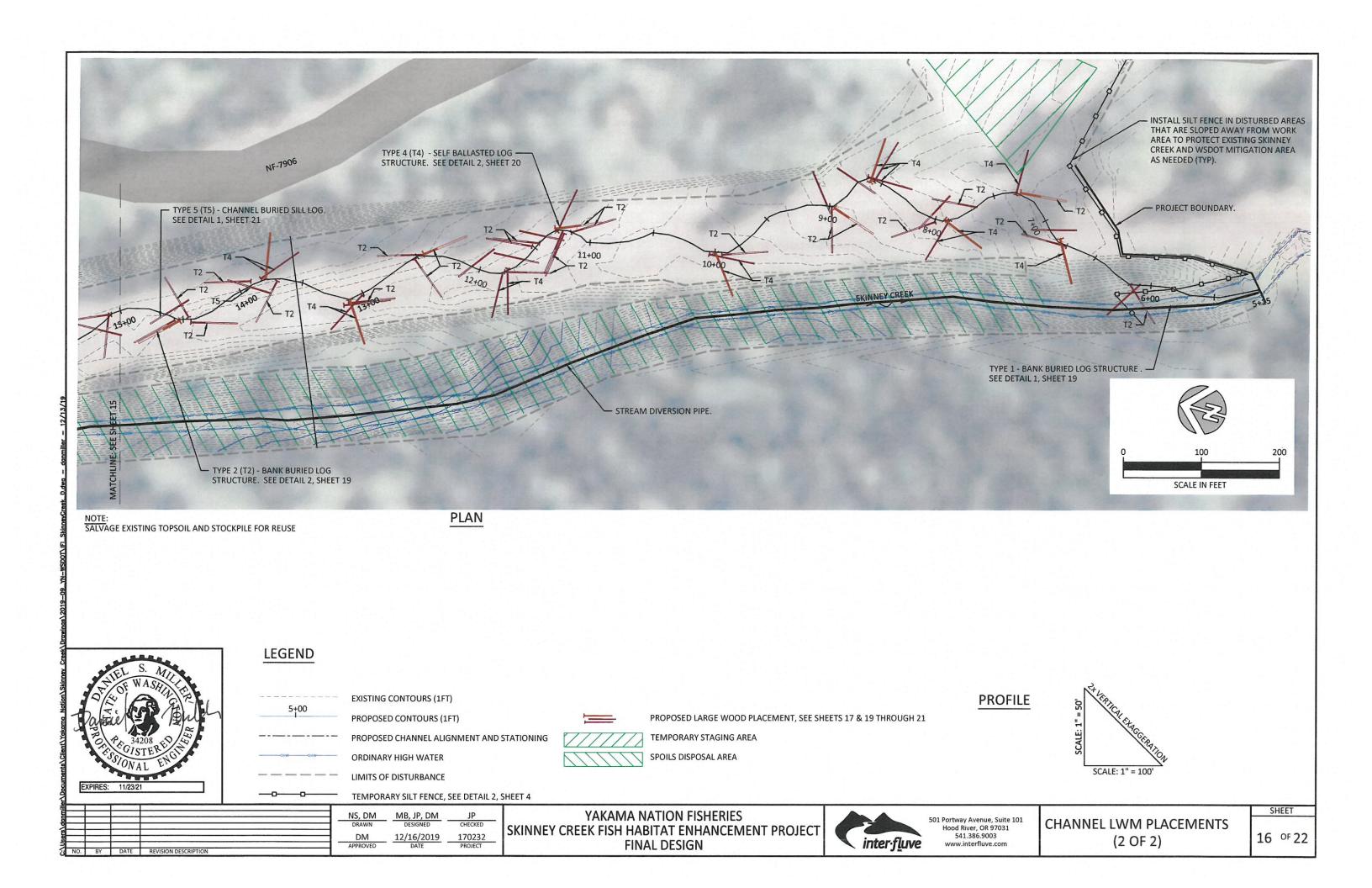


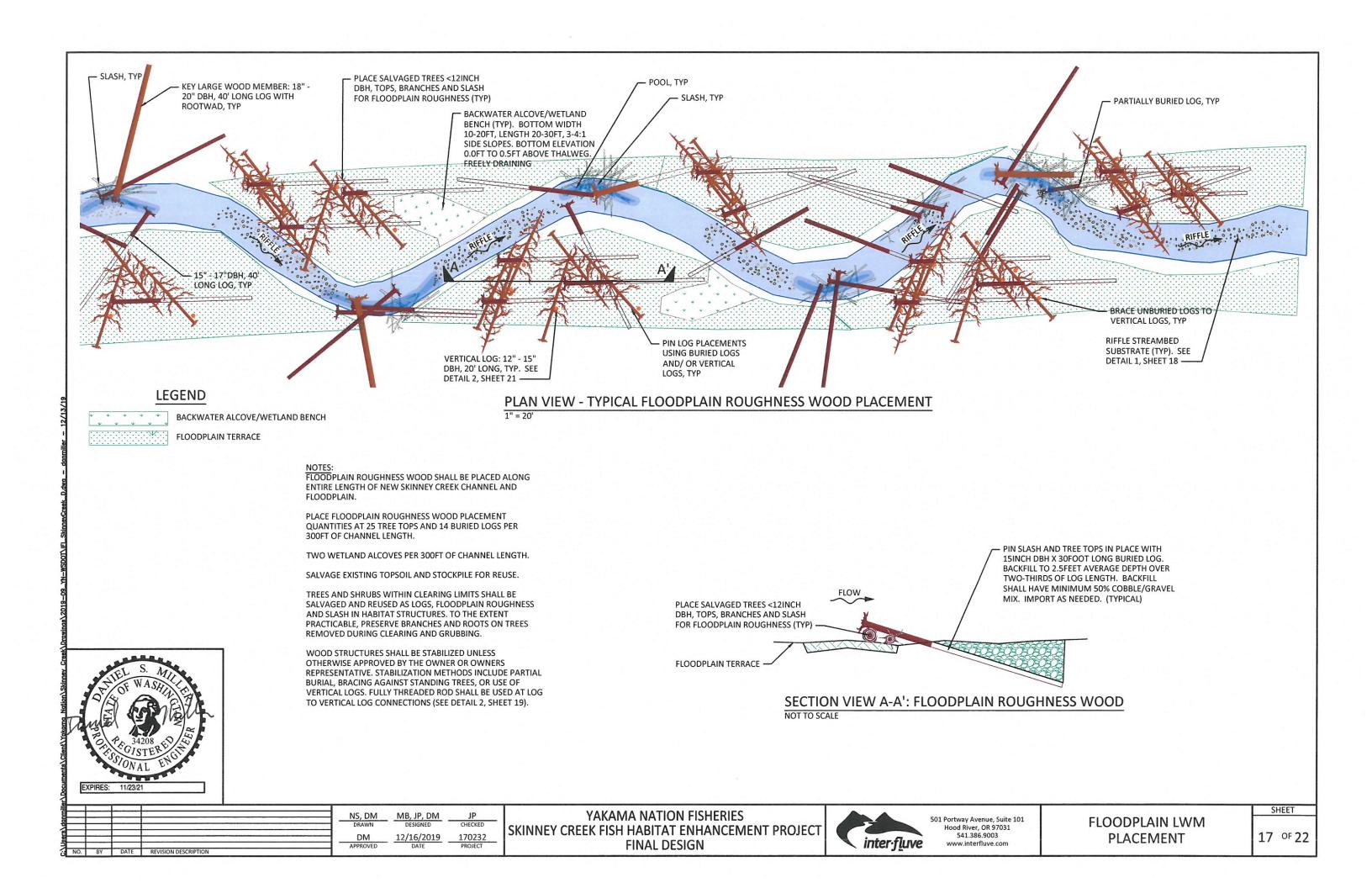


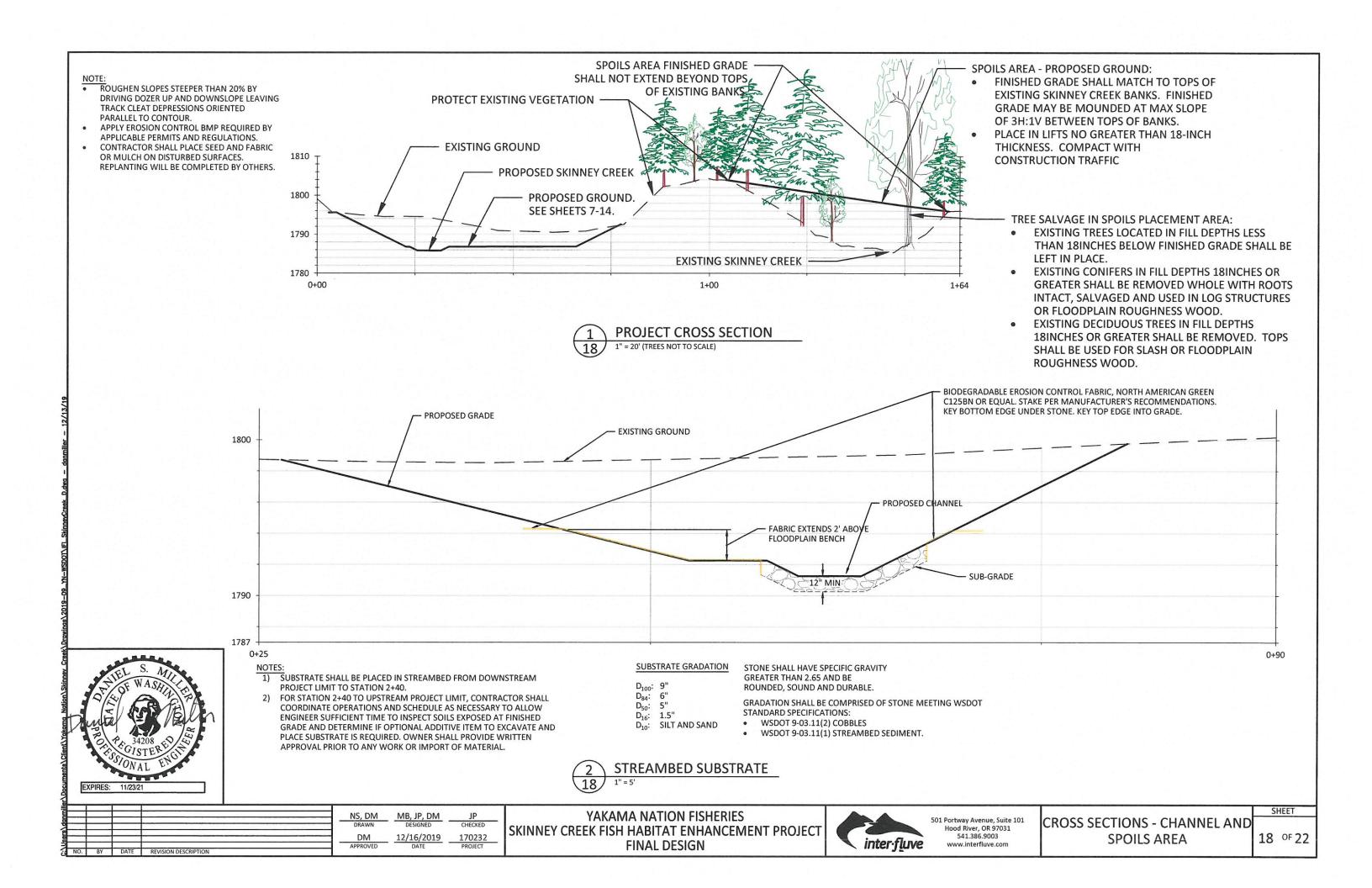


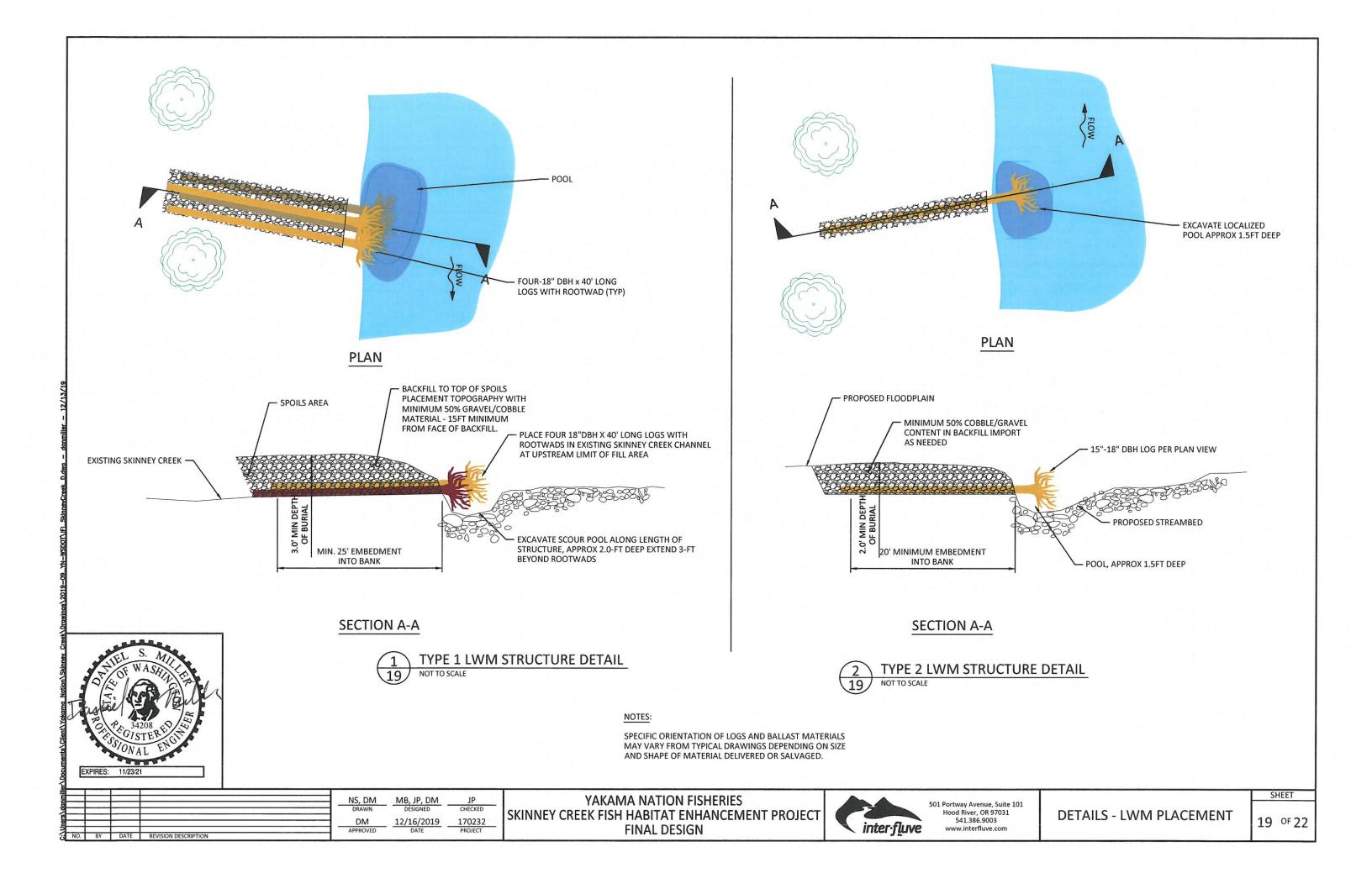


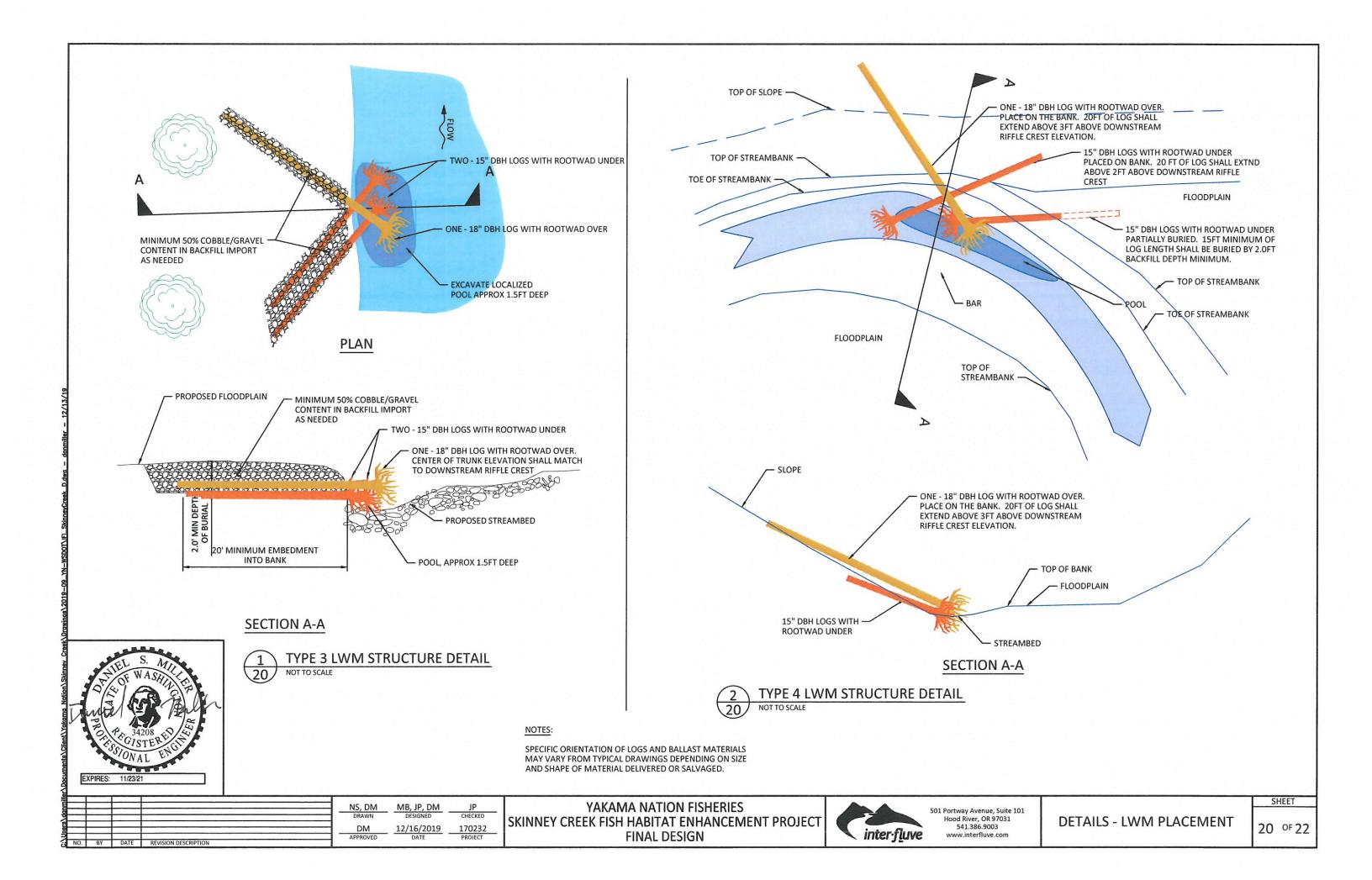


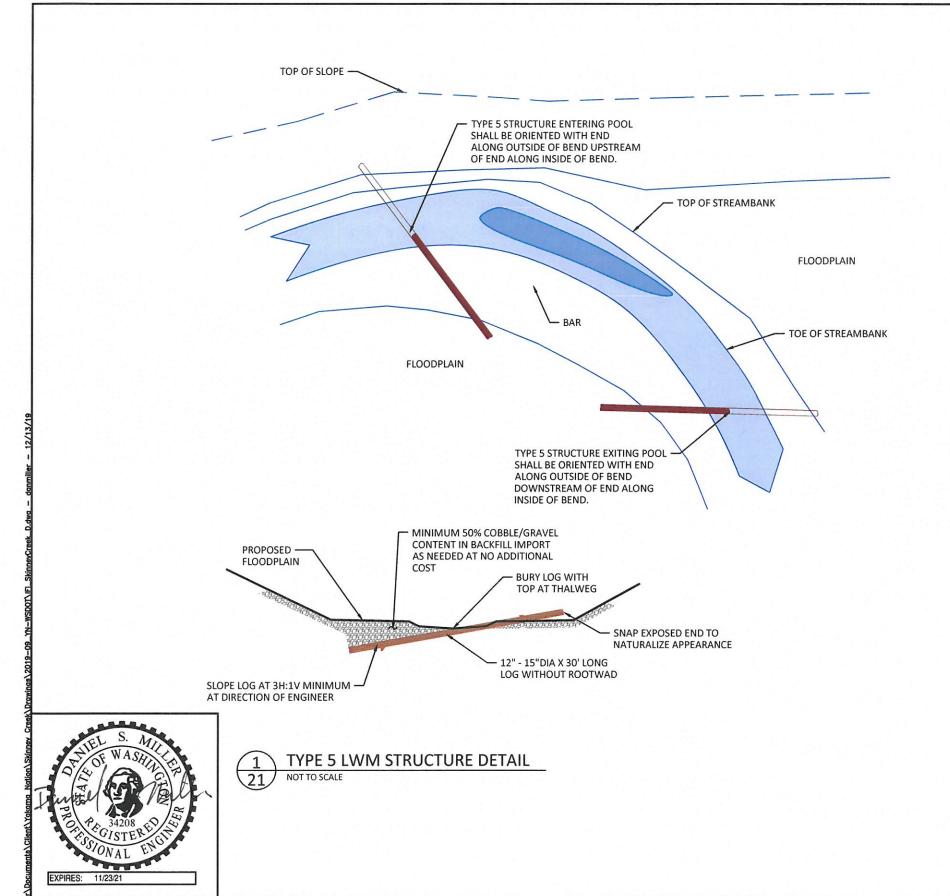


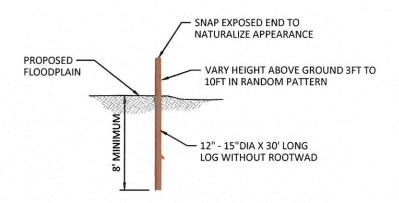












2 VERTICAL LOG EMBEDMENT DETAIL
21 NOT TO SCALE

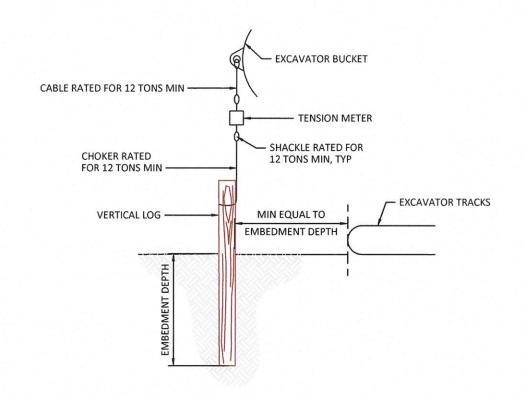
YAKAMA NATION FISHERIES SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN



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

DETAILS LWM PLACEMENT

SHEET 21 OF 22



VERTICAL LOGS

ALL VERTICAL LOGS 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: 1) HMC MOVAX SONIC SIDE GRIP VIBRATORY PILE DRIVER - MODEL SP80, 2) GRIZZLY MG90, OR 3) EQUIVALENT AS APPROVED BY ENGINEER.

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

RIGGING

RIGGING FOR VERTICAL LOG 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 LOGS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER. ENGINEER SHALL SELECT LOGS TO BE TESTED.

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

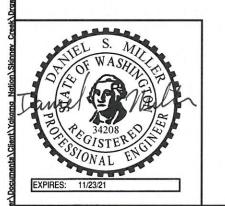
PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS TO BE DETERMINED IN THE FIELD. AS A GUIDELINE, TEST EMBEDMENT DEPTHS MAY INCLUDE 6', 8', 10', AND 12'.

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

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

10% OF VERTICAL LOGS SHALL BE PROOF TESTED. IF RESULTS VARY MORE THAN 50% THE ENGINEER MAY REQUIRE THAT UP TO 25% OF THE VERTICAL LOGS SHALL BE PROOF TESTED AT NO ADDITIONAL COST.









501 Portway Avenue, Suite 101 Hood River, OR 97031 541.386.9003 DETAILS - VERTICAL LOG PULLOUT TEST SHEET