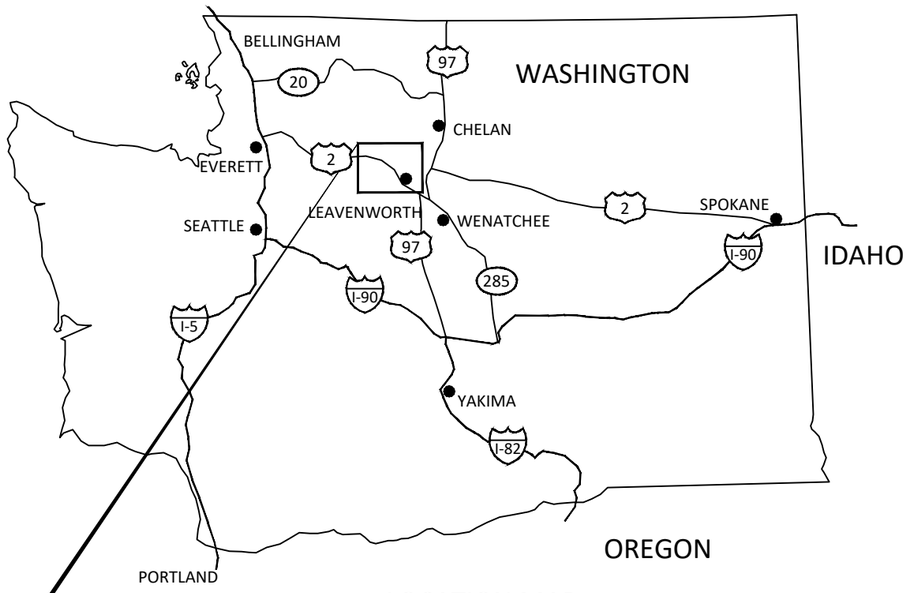
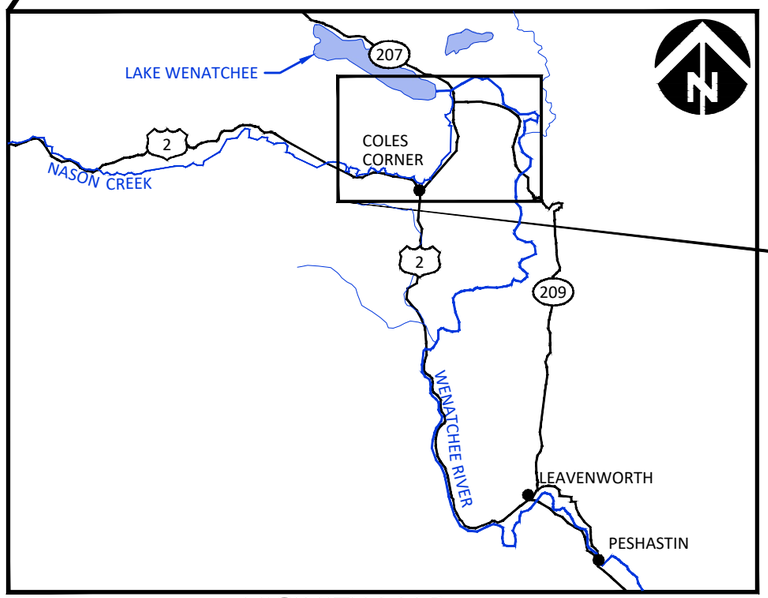
NASON CREEK RM 3.6-4.6 FLOODPLAIN ENHANCEMENT
PHASE 2 - UPSTREAM STREAM ENHANCEMENT PROJECT
30% DESIGN

CHELAN COUNTY, WA

MAY, 2025

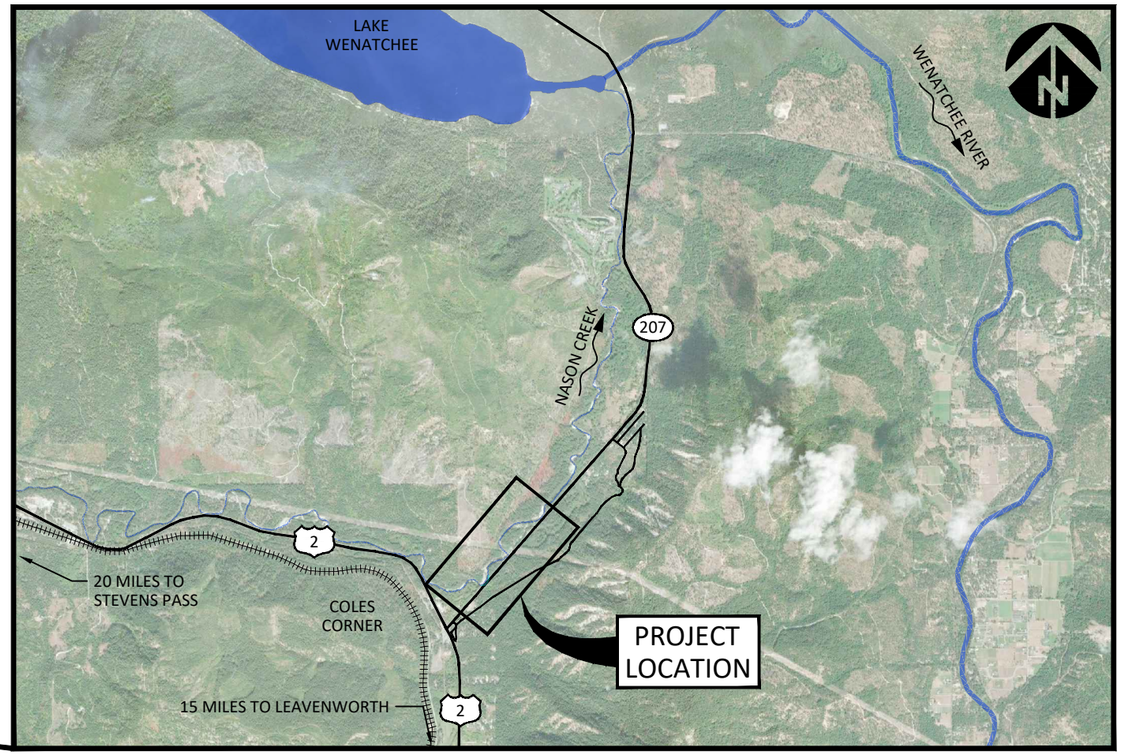


LOCATION MAP
STATE OF WASHINGTON
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

THIS PROJECT WAS DESIGNED IN ACCORDANCE WITH THE BPA HABITAT IMPROVEMENT PROGRAM, PROGRAMMATIC BIOLOGICAL OPINION (HIP IV).



SITE MAP
1" = 1 MILE

COORDINATES:

LATITUDE: 47°45'48"N
LONGITUDE: 120°43'50"W

SECTION 9, TOWNSHIP 26N, RANGE 17E

WATERBODY: NASON CREEK
TRIBUTARY OF: WENATCHEE RIVER

SHEET LIST:

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

CM	DM	DM
DRAWN	DESIGNED	CHECKED
DM	05/30/2025	200237
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT
PHASE 2 30% DESIGN

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

Yakama Nation Fisheries
POST OFFICE BOX 151
FORT ROAD
TOPPENISH, WA 98948
(509)865-5121

COVER, SHEET INDEX & VICINITY MAPS

SHEET 1 OF 22

G:\M-P\Nason Creek Floodplain RM 3.4-4.6 Phase 3 200237\Drawings\IFI_NasonFP_NoRD_C.dwg -- cmcconnell -- 5/29/25

THE OWNER WILL PROVIDE A PRE-BID SITE TOUR. THE CONTRACTOR SHALL 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.

IN WATER WORK WINDOW IS JULY 1-31

EXISTING DATA

TOPOGRAPHIC DATA WAS COLLECTED BY INTER-FLUVE USING RTK GPS EQUIPMENT ON NOVEMBER 14 & 15, 2018 AND NOVEMBER 2 & 3, 2020. DATA ARE REFERENCED TO NAD83, STATE PLANE, WASHINGTON NORTH, NAVD88, US SURVEY FEET.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS 5.0.7.

SOILS

SOILS WITHIN THE PROJECT AREA CONSIST OF BEVERLY FINE SANDY LOAM, BRIEF GRAVELLY SANDY LOAM, ALLUVIAL LAND, RIVERWASH, PEOH SILT LOAM, GODDARD COBBLY FINE SANDY LOAM, AS MAPPED BY NRCS.

HIGHWAY 207 EMBANKMENT MATERIALS

CONTRACTOR SHALL CONDUCT OWN SOILS INVESTIGATIONS AS NEEDED, 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 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.

EXISTING UTILITIES WILL BE DECOMMISSIONED AND REMOVED/ABANDONED (TBD) IN PHASE 1.

CONSTRUCTION STAKING

OWNER'S REPRESENTATIVE WILL PROVIDE STAKING OF PROJECT LIMITS, 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.

CONTRACTOR SHALL STAKE PROJECT LIMITS AND GRADES 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.

CONSTRUCTION MATERIALS

OWNER PROVIDED LOGS, LOGS WITH ROOTWADS AND LOG PILES 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 ROOTWADS 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.

PHASE 1 CONSTRUCTION WILL INCLUDE RELOCATING HIGHWAY 207 ROADWAY AND UTILITIES, DECOMMISSIONING AND REMOVAL OF UTILITIES.

EXISTING HIGHWAY 207 EMBANKMENT TO BE ABANDONED WILL BE REMOVED IN THIS PHASE 2 WORK.

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 DEVELOPING A TRAFFIC CONTROL PLAN ACCEPTABLE TO CHELAN COUNTY AND WSDOT AND 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.

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.

QUANTITIES ESTIMATE

Location	Structure	quantity	units	Log w/RW	Buried single log	Surface single log	Log pile	Slash	Tipped/Salvaged tree	Excavation (CY)	Backfill (CY)
Phase 2 - River Left											
	Bar roughness lws	12	ea	5			5			50	50
	Tipped trees (separate contract)	4	ea						1		
	FP roughness logs	4	ea			1					
	Apex lws	2	ea	4			7	4		300	300
Phase 2 RL subtotal = Sum[(# of structures)x(qty per structure)]				68	0	4	74	8	4	1200	1200
Phase 2 - River Right											
	Apex lws	4	ea	4			7	4		300	300
	Bank buried lws	1	ea	9				4	2	300	300
	Bank buried lws w/trees	4	ea	9			4	4	6	300	300
	Bank buried small lws	2	ea	2			2	2	1	40	40
	Bank margin wood	8	ea	7			12	3	3	50	50
	Bar roughness wood structures	5	ea	5			5			50	50
	CED3 Bank barb structure	4	ea	12		1	14	3	6	0	590
	Deflector lws	3	ea			2	9	2		0	0
	Floodplain lws	7	ea		3		4		1		
	Inlet structure	2	ea	14			6	6			
	Buried log	37	ea		1						
	Log piles	126	ea				1			0	0
	Roughness trees	8	ea						1	0	0
	Salvaged/Tipped trees	38	ea						1	0	0
	Slash	14	ea					1		0	0
	Surface logs	90	ea			1				0	0
	Mainstem remeander	1	ea							3280	2330
	Road removal/wetland channel	1	ea							27000	0
Phase 2 RR subtotal = Sum[(# of structures)x(qty per structure)]				222	58	100	418	108	129	33710	8120
		Phase 2 Total =		290	58	104	492	116	133	34910	9320

NOTES:

1. 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.

2. PLANTING PLAN AND REVEGETATION ARE DESIGNED BY OTHERS.

ABBREVIATIONS

APPROX	APPROXIMATE
BMP	BEST MANAGEMENT PRACTICE
CY	CUBIC YARDS
°	DEGREE
DBH	DIAMETER AT BREAST HEIGHT
DIA	DIAMETER
EA	EACH
ELEV	ELEVATION
ESC	EROSION AND SEDIMENT CONTROL
' or FT	FOOT
GIS	GEOGRAPHIC INFORMATION SYSTEM
HWY	HIGHWAY
" or IN	INCH
LWM	LARGE WOODY MATERIAL
LWS	LARGE WOOD STRUCTURE
LS	LUMP SUM
MAX	MAXIMUM
MIN	MINIMUM
MP	MILEPOST
MSF	THOUSAND SQUARE FEET
NAD 83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NRCS	NATURAL RESOURCES CONSERVATION SERVICE
OHW	ORDINARY HIGH WATER
OLW	ORDINARY LOW WATER
%	PERCENT
LBS	POUNDS
RD	ROAD
RM	RIVER MILE
RTK GPS SYSTEM	REAL TIME KINEMATIC GLOBAL POSITIONING
STA	STATION
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

Preliminary
Not for Construction

G:\M-P\Nason_Creek_Floodplain_RM_3.4-4.6_Phase_3_200237\Drawings\FI_NasonFP_NoRD_C.dwg — cmcconnell — 5/29/25

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YAKAMA NATION FISHERIES
NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT
PHASE 2 30% DESIGN

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GENERAL NOTES, ABBREVIATIONS AND QUANTITIES

HIP IV GENERAL CONSERVATION MEASURES APPLICABLE TO ALL ACTIONS

THE ACTIVITIES COVERED UNDER THE HIP ARE INTENDED TO PROTECT AND RESTORE FISH AND WILDLIFE HABITAT WITH LONG-TERM BENEFITS TO ESA-LISTED SPECIES. THE FOLLOWING GENERAL CONSERVATION MEASURES (DEVELOPED IN COORDINATION WITH USFWS AND NMFS) WILL BE APPLIED TO ALL ACTIONS OF THIS PROJECT.

PROJECT DESIGN AND SITE PREPARATION.

1. STATE AND FEDERAL PERMITS.

A. ALL APPLICABLE REGULATORY PERMITS AND OFFICIAL PROJECT AUTHORIZATIONS WILL BE OBTAINED BEFORE PROJECT IMPLEMENTATION.

B. THESE PERMITS AND AUTHORIZATIONS INCLUDE, BUT ARE NOT LIMITED TO, NATIONAL ENVIRONMENTAL POLICY ACT, NATIONAL HISTORIC PRESERVATION ACT, THE APPROPRIATE STATE AGENCY REMOVAL AND FILL PERMIT, USACE CLEAN WATER ACT (CWA) 404 PERMITS, CWA SECTION 401 WATER QUALITY CERTIFICATIONS, AND FEMA NO-RISE ANALYSES.

2. TIMING OF IN-WATER WORK.

A. APPROPRIATE STATE (OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW), WASHINGTON DEPARTMENT OF FISH AND WILDLIFE (WDFW), IDAHO DEPARTMENT OF FISH AND GAME (IDFG), AND MONTANA FISH WILDLIFE AND PARKS (MFWP)) GUIDELINES FOR TIMING OF IN-WATER WORK WINDOWS (IWW) WILL BE FOLLOWED.

B. CHANGES TO ESTABLISHED WORK WINDOWS WILL BE APPROVED BY REGIONAL STATE BIOLOGISTS AND BPA'S EC LEAD.

C. BULL TROUT. FOR AREAS WITH DESIGNATED IN-WATER WORK WINDOWS FOR BULL TROUT OR AREAS KNOWN TO HAVE BULL TROUT, PROJECT PROPONENTS WILL CONTACT THE APPROPRIATE USFWS FIELD OFFICE TO INSURE THAT ALL REASONABLE IMPLEMENTATION MEASURES ARE CONSIDERED AND AN APPROPRIATE IN-WATER WORK WINDOW IS BEING USED TO MINIMIZE PROJECT EFFECTS.

D. LAMPREY. WORKING IN STREAM OR RIVER CHANNELS THAT CONTAIN PACIFIC LAMPREY WILL BE AVOIDED FROM MARCH 1 TO JULY 1 FOR REACHES <5,000 FEET IN ELEVATION AND FROM MARCH 1 TO AUGUST 1 FOR REACHES >5,000 FEET. IF EITHER TIMEFRAME IS INCOMPATIBLE WITH OTHER OBJECTIVES, THE AREA WILL BE SURVEYED FOR NESTS AND LAMPREY PRESENCE, AND AVOIDED IF POSSIBLE. IF LAMPREYS ARE KNOWN TO EXIST, THE PROJECT SPONSOR WILL UTILIZE DEWATERING AND SALVAGE PROCEDURES (SEE FISH SALVAGE AND ELECTROFISHING SECTIONS) TO MINIMIZE ADVERSE EFFECTS.

E. THE IN-WATER WORK WINDOW WILL BE PROVIDED IN THE CONSTRUCTION PLANS.

3. CONTAMINANTS.

A. EXCAVATION OF MORE THAN 20 CUBIC YARDS WILL REQUIRE A SITE VISIT AND DOCUMENTED ASSESSMENT FOR POTENTIAL CONTAMINANT SOURCES. THE SITE ASSESSMENT WILL BE STORED WITH PROJECT FILES OR AS AN APPENDIX TO THE BASIS OF DESIGN REPORT.

B. THE SITE ASSESSMENT WILL SUMMARIZE:

1. THE SITE VISIT, CONDITION OF THE PROPERTY, AND IDENTIFICATION OF ANY AREAS USED FOR VARIOUS INDUSTRIAL PROCESSES;
2. AVAILABLE RECORDS, SUCH AS FORMER SITE USE, BUILDING PLANS, AND RECORDS OF ANY PRIOR CONTAMINATION EVENTS;
3. INTERVIEWS WITH KNOWLEDGEABLE PEOPLE, SUCH AS SITE OWNERS, OPERATORS, OCCUPANTS, NEIGHBORS, OR LOCAL GOVERNMENT OFFICIALS; AND
4. THE TYPE, QUANTITY, AND EXTENT OF ANY POTENTIAL CONTAMINATION SOURCES.

4. SITE LAYOUT AND FLAGGING.

A. CONSTRUCTION AREAS TO BE CLEARLY FLAGGED PRIOR TO CONSTRUCTION.

B. AREAS TO BE FLAGGED WILL INCLUDE:

1. SENSITIVE RESOURCE AREAS, SUCH AS AREAS BELOW ORDINARY HIGH WATER, SPAWNING AREAS, SPRINGS, AND WETLANDS;
2. EQUIPMENT ENTRY AND EXIT POINTS;
3. ROAD AND STREAM CROSSING ALIGNMENTS;
4. STAGING, STORAGE, AND STOCKPILE AREAS; AND
5. NO-SPRAY AREAS AND BUFFERS.

5. 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 FLOODPLAINS WILL BE MINIMIZED.

B. VEHICLE USE AND HUMAN ACTIVITIES, INCLUDING WALKING, IN AREAS OCCUPIED BY TERRESTRIAL ESA-LISTED SPECIES WILL BE MINIMIZED.

C. TEMPORARY ACCESS ROADS AND PATHS WILL NOT BE BUILT ON SLOPES WHERE GRADE, SOIL, OR OTHER FEATURES SUGGEST A 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.

D. 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).

E. AT PROJECT COMPLETION, ALL TEMPORARY ACCESS ROADS AND PATHS WILL BE OBLITERATED, AND THE SOIL WILL BE STABILIZED AND REVEGETATED. ROAD AND PATH OBLITERATION REFERS TO THE MOST COMPREHENSIVE DEGREE OF DECOMMISSIONING AND INVOLVES DECOMPACTING THE SURFACE AND DITCH, PULLING THE FILL MATERIAL ONTO THE RUNNING SURFACE, AND RESHAPING TO MATCH THE ORIGINAL CONTOUR.

F. HELICOPTER FLIGHT PATTERNS WILL BE ESTABLISHED IN ADVANCE AND LOCATED TO AVOID TERRESTRIAL ESA-LISTED SPECIES AND THEIR OCCUPIED HABITAT DURING SENSITIVE LIFE STAGES.

6. TEMPORARY STREAM CROSSINGS.

A. EXISTING STREAM CROSSINGS OR BEDROCK 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. TREATED WOOD SHALL NOT BE USED ON TEMPORARY BRIDGE CROSSINGS OR IN LOCATIONS IN CONTACT WITH OR DIRECTLY OVER WATER.

C. FOR PROJECTS THAT REQUIRE EQUIPMENT AND VEHICLES TO CROSS IN THE WET:

1. THE LOCATION AND NUMBER OF ALL WET CROSSINGS SHALL BE APPROVED BY THE BPA EC LEAD AND DOCUMENTED IN THE CONSTRUCTION PLANS;
2. VEHICLES AND MACHINERY SHALL CROSS STREAMS AT RIGHT ANGLES TO THE MAIN CHANNEL WHENEVER POSSIBLE;
3. NO STREAM CROSSINGS WILL OCCUR 300 FEET UPSTREAM OR 100 FEET DOWNSTREAM OF AN EXISTING REDD OR SPAWNING FISH; AND
4. AFTER PROJECT COMPLETION, TEMPORARY STREAM CROSSINGS WILL BE OBLITERATED AND BANKS RESTORED.

7. 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. STAGING AREAS CLOSER THAN 150 FEET WILL BE APPROVED BY THE EC LEAD.

B. NATURAL MATERIALS USED FOR IMPLEMENTATION OF AQUATIC RESTORATION, SUCH AS LARGE WOOD, GRAVEL, AND BOULDERS, MAY BE STAGED WITHIN 150 FEET IF CLEARLY INDICATED IN THE PLANS THAT AREA IS FOR NATURAL MATERIALS ONLY.

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 DISPOSED OF OUTSIDE THE 100-YEAR FLOODPLAIN.

8. EQUIPMENT.

A. MECHANIZED EQUIPMENT AND VEHICLES WILL BE SELECTED, OPERATED, AND MAINTAINED IN A MANNER THAT MINIMIZES ADVERSE EFFECTS 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).

B. EQUIPMENT WILL BE STORED, FUELED, AND MAINTAINED IN AN CLEARLY IDENTIFIED STAGING AREA THAT MEETS STAGING AREA CONSERVATION MEASURES.

C. EQUIPMENT WILL BE REFUELED IN A VEHICLE STAGING AREA 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).

D. BIODEGRADABLE LUBRICANTS AND FLUIDS WILL BE USED ON EQUIPMENT OPERATING IN AND ADJACENT TO THE STREAM CHANNEL AND LIVE WATER.

E. EQUIPMENT WILL BE INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND.

F. EQUIPMENT WILL BE THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER, AND AS OFTEN AS NECESSARY DURING OPERATION, TO REMAIN GREASE FREE.

9. EROSION CONTROL.

A. TEMPORARY EROSION CONTROL MEASURES INCLUDE:

1. TEMPORARY EROSION CONTROLS WILL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTION SITE AND APPROPRIATELY INSTALLED DOWNSLOPE OF PROJECT ACTIVITY WITHIN THE RIPARIAN BUFFER AREA UNTIL SITE REHABILITATION IS COMPLETE;
2. 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;
3. TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE SEDGE MATS, FIBER WATTLES, SILT FENCES, JUTE MATTING, WOOD FIBER MULCH AND SOIL BINDER, OR GEOTEXTILES AND GEOSYNTHETIC FABRIC;
4. 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;
5. SEDIMENT WILL BE REMOVED FROM EROSION CONTROLS ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE CONTROL; AND
6. 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:

1. A SUPPLY OF SEDIMENT CONTROL MATERIALS; AND
2. AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER IS PRESENT.

10. DUST ABATEMENT.

A. THE PROJECT SPONSOR WILL DETERMINE THE APPROPRIATE DUST CONTROL MEASURES BY CONSIDERING SOIL TYPE, EQUIPMENT USAGE, PREVAILING WIND DIRECTION, AND THE EFFECTS CAUSED BY OTHER EROSION AND SEDIMENT CONTROL MEASURES.

B. WORK WILL BE SEQUENCED AND SCHEDULED TO REDUCE EXPOSED BARE SOIL SUBJECT TO WIND EROSION.

C. 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 MIXED 50:50 WITH WATER.

D. 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).

E. SPILL CONTAINMENT EQUIPMENT WILL BE AVAILABLE DURING APPLICATION OF DUST ABATEMENT CHEMICALS.

F. PETROLEUM-BASED PRODUCTS WILL NOT BE USED FOR DUST ABATEMENT.

Preliminary
Not for Construction

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DRAWN	DESIGNED	CHECKED
BPA		200237
APPROVED	DATE	PROJECT

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NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT
PHASE 2 30% DESIGN

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HIP IV GENERAL CONSERVATION MEASURES (1 OF 3)

SHEET 3 OF 22

G:\M--P\Nason_Creek_Floodplain_RM_3.4--4.6_Phase_3_200237\Drawings\IFI_NasonFP_NoRD_G.dwg -- cmcconnell -- 5/29/25

PROJECT DESIGN AND SITE PREPARATION (CONTINUED).

11. SPILL PREVENTION, CONTROL, AND COUNTER MEASURES.

A. A DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING 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.

F. PUMPS USED ADJACENT TO WATER SHALL USE SPILL CONTAINMENT SYSTEMS.

12. INVASIVE SPECIES CONTROL.

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.

C. WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES UNLESS DECONTAMINATION PROCEDURES HAVE BEEN APPROVED BY THE EC LEAD.

WORK AREA ISOLATION AND FISH SALVAGE.

1. WORK AREA ISOLATION.

A. 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.

B. WORK AREA ISOLATION AND FISH SALVAGE ACTIVITIES WILL COMPLY WITH THE IN-WATER WORK WINDOW.

C. DESIGN PLANS WILL INCLUDE ALL ISOLATION ELEMENTS AND AREAS (COFFER DAMS, PUMPS, DISCHARGE AREAS, FISH SCREENS, FISH RELEASE AREAS, ETC.).

D. 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.

2. FISH SALVAGE.

A. MONITORING AND RECORDING WILL TAKE PLACE FOR DURATION OF SALVAGE. THE SALVAGE REPORT WILL BE COMMUNICATED TO AGENCIES VIA THE PROJECT COMPLETION FORM (PCF).

B. SALVAGE ACTIVITIES SHOULD TAKE PLACE DURING CONDITIONS TO MINIMIZE STRESS TO FISH SPECIES, TYPICALLY PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES WHICH OCCUR IN THE MORNING VERSUS LATE IN THE DAY.

C. SALVAGE OPERATIONS WILL FOLLOW THE ORDERING, METHODS, AND CONSERVATION MEASURES SPECIFIED BELOW:

1. SLOWLY REDUCE WATER FROM THE WORK AREA TO ALLOW SOME FISH TO LEAVE VOLITIONALLY.
2. BLOCK NETS WILL BE INSTALLED AT UPSTREAM AND DOWNSTREAM LOCATIONS AND MAINTAINED IN A SECURED POSITION TO EXCLUDE FISH FROM ENTERING THE PROJECT AREA.
3. 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 AS LONG AS PASSAGE REQUIREMENTS ARE MET.
4. NETS WILL BE MONITORED HOURLY DURING IN-STREAM DISTURBANCE.
5. IF BLOCK NETS REMAIN IN PLACE MORE THAN ONE DAY, THE NETS WILL BE MONITORED AT LEAST DAILY TO ENSURE THEY ARE SECURED AND FREE OF ORGANIC ACCUMULATION. IF BULL TROUT ARE PRESENT, NETS ARE TO BE CHECKED EVERY 4 HOURS FOR FISH IMPINGEMENT.
6. CAPTURE FISH THROUGH SEINING AND RELOCATE TO STREAMS.
7. WHILE DEWATERING, ANY REMAINING FISH WILL BE COLLECTED BY HAND OR DIP NETS.
8. SEINES WITH A MESH SIZE TO ENSURE CAPTURE OF THE RESIDING ESA-LISTED FISH WILL BE USED.
9. MINNOW TRAPS WILL BE LEFT IN PLACE OVERNIGHT AND USED IN CONJUNCTION WITH SEINING.
10. ELECTROFISH TO CAPTURE AND RELOCATED FISH NOT CAUGHT DURING SEINING PER ELECTROFISH CONSERVATION MEASURES.
11. CONTINUE TO SLOWLY DEWATER STREAM REACH.
12. COLLECT ANY REMAINING FISH IN COLD-WATER BUCKETS AND RELOCATED TO THE STREAM.
13. LIMIT THE TIME FISH ARE IN A TRANSPORT BUCKET.
14. MINIMIZE PREDATION BY TRANSPORTING COMPARABLE SIZES IN BUCKETS.
15. BUCKET WATER TO BE CHANGED EVERY 15 MINUTES OR AERATED.
16. BUCKETS WILL BE KEPT IN SHADED AREAS OR COVERED.
17. DEAD FISH WILL NOT BE STORED IN TRANSPORT BUCKETS, BUT WILL BE LEFT ON THE STREAM BANK TO AVOID MORTALITY COUNTING ERRORS.

D. SALVAGE GUIDELINES FOR BULL TROUT, LAMPREY, MUSSELS, AND NATIVE FISH.

1. CONDUCT SITE SURVEY TO ESTIMATE SALVAGE NUMBERS.
2. PRE-SELECT SITE(S) FOR RELEASE AND/OR MUSSEL BED RELOCATION.
3. SALVAGE OF BULL TROUT WILL NOT TAKE PLACE WHEN WATER TEMPERATURES EXCEED 15 DEGREES CELSIUS.
4. IF DRAWDOWN LESS THAN 48 HOURS, SALVAGE OF LAMPREY AND MUSSELS MAY NOT BE NECESSARY IF TEMPERATURES SUPPORT SURVIVAL IN SEDIMENTS.
5. SALVAGE MUSSELS BY HAND, LOCATING BY SNORKELING OR WADING.
6. SALVAGE LAMPREY BY ELECTROFISHING (SEE ELECTROFISHING FOR LARVAL LAMPREY SETTINGS AND LARVAL LAMPREY DRY SHOCKING SETTINGS).
7. SALVAGE BONY FISH AFTER LAMPREY WITH NETS OR ELECTROFISHING (SEE ELECTROFISHING FOR APPROPRIATE SETTINGS).
8. REGULARLY INSPECT DEWATERED SITE SINCE LAMPREY LIKELY TO EMERGE AFTER DEWATERING AND MUSSELS MAY BECOME VISIBLE.
9. MUSSELS MAY BE TRANSFERRED IN COOLERS.
10. MUSSELS WILL BE PLACED INDIVIDUALLY TO ENSURE ABILITY TO BURROW INTO NEW HABITAT.

3. ELECTROFISHING.

A. INITIAL SITE SURVEY AND INITIAL SETTINGS.

1. IDENTIFY SPAWNING ADULTS AND ACTIVE REDDS TO AVOID.
2. RECORD WATER TEMPERATURE. ELECTROFISHING WILL NOT OCCUR WHEN WATER TEMPERATURES ARE ABOVE 18 DEGREES CELSIUS.
3. IF POSSIBLE, A BLOCK NET WILL BE PLACED DOWNSTREAM AND CHECKED REGULARLY TO CAPTURE STUNNED FISH THAT DRIFT DOWNSTREAM.
4. INITIAL SETTINGS WILL BE 100 VOLTS, PULSE WIDTH OF 500 MICRO SECONDS, AND PULSE RATE OF 30 HERTZ.
5. RECORDS FOR CONDUCTIVITY, WATER TEMPERATURE, AIR TEMPERATURE, ELECTROFISHING SETTINGS, ELECTROFISHER MODEL, ELECTROFISHER CALIBRATION, FISH CONDITIONS, FISH MORTALITIES, AND TOTAL CAPTURE RATES WILL BE INCLUDED IN THE SALVAGE LOG BOOK.

B. ELECTROFISHING TECHNIQUE.

1. SAMPLING WILL BEGIN USING STRAIGHT DC. POWER WILL REMAIN ON UNTIL THE FISH IS NETTED WHEN USING STRAIGHT DC. GRADUALLY INCREASE VOLTAGE WHILE REMAINING BELOW MAXIMUM LEVELS.
2. MAXIMUM VOLTAGE WILL BE 1100 VOLTS WHEN CONDUCTIVITY IS <100 MILLISECONDS, 800 VOLTS WHEN CONDUCTIVITY IS BETWEEN 100 AND 300 MILLISECONDS, AND 400 VOLTS WHEN CONDUCTIVITY IS >300 MILLISECONDS.
3. IF FISH CAPTURE IS NOT SUCCESSFUL USING STRAIGHT DC, THE ELECTROFISHER WILL BE SET TO INITIAL VOLTAGE FOR PDC. VOLTAGE, PULSE WIDTH, AND PULSE FREQUENCY WILL BE GRADUALLY INCREASED WITHIN MAXIMUM VALUES UNTIL CAPTURE IS SUCCESSFUL.
4. MAXIMUM PULSE WIDTH IS 5 MILLISECONDS. MAXIMUM PULSE RATE IS 70 HERTZ
5. ELECTROFISHING WILL NOT OCCUR IN ONE AREA FOR AN EXTENDED PERIOD.
6. THE ANODE WILL NOT INTENTIONALLY COME INTO CONTACT WITH FISH. THE ZONE FOR POTENTIAL INJURY OF 0.5 M FROM THE ANODE WILL BE AVOIDED.
7. SETTINGS WILL BE LOWERED IN SHALLOWER WATER SINCE VOLTAGE GRADIENTS LIKELY TO INCREASE.
8. ELECTROFISHING WILL NOT OCCUR IN TURBID WATER WHERE VISIBILITY IS POOR (I.E. UNABLE TO SEE THE BED OF THE STREAM).
9. OPERATIONS WILL IMMEDIATELY STOP IF MORTALITY OR OBVIOUS FISH INJURY IS OBSERVED. ELECTROFISHING SETTINGS WILL BE REEVALUATED.

C. SAMPLE PROCESSING.

1. FISH SHALL BE SORTED BY SIZE TO AVOID PREDATION DURING CONTAINMENT.
2. SAMPLERS WILL REGULARLY CHECK CONDITIONS OF FISH HOLDING CONTAINERS, AIR PUMPS, WATER TRANSFERS, ETC.
3. FISH WILL BE OBSERVED FOR GENERAL CONDITIONS AND INJURIES
4. EACH FISH WILL BE COMPLETELY REVIVED BEFORE RELEASE. ESA-LISTED SPECIES WILL BE PRIORITIZED FOR SUCCESSFUL RELEASE.

D. BULL TROUT ELECTROFISHING.

1. ELECTROFISHING FOR BULL TROUT WILL ONLY OCCUR FROM MAY 1 TO JULY 31. NO ELECTROFISHING WILL OCCUR IN ANY BULL TROUT OCCUPIED HABITAT AFTER AUGUST 15. IN FMO HABITATS ELECTROFISHING MAY OCCUR ANY TIME.
2. ELECTROFISHING OF BULL TROUT WILL NOT OCCUR WHEN WATER TEMPERATURES EXCEED 15 DEGREES CELSIUS.

E. LARVAL LAMPREY ELECTROFISHING.

1. PERMISSION FROM EC LEAD WILL BE OBTAINED IF LARVAL LAMPREY ELECTROFISHER IS NOT ONE OF FOLLOWING PRE-APPROVED MODELS: ABP-2 "WISCONSIN", SMITH-ROOT LR-24, OR SMITH-ROOT APEX BACKPACK.
2. LARVAL LAMPREY SAMPLING WILL INCORPORATE 2-STAGE METHOD: "TICKLE" AND "STUN".
3. FIRST STAGE: USE 125 VOLT DC WITH A 25 PERCENT DUTY CYCLE APPLIED AT A SLOW RATE OF 3 PULSES PER SECOND. IF TEMPERATURES ARE BELOW 10 DEGREES CELSIUS, VOLTAGE MAY BE INCREASED GRADUALLY (NOT TO EXCEED 200 VOLTS). BURSTED PULSES (THREE SLOW AND ONE SKIPPED) RECOMMENDED TO INCREASE EMERGENCE.
4. SECOND STAGE (OPTIONAL FOR EXPERIENCED NETTERS): IMMEDIATELY AFTER LAMPREY EMERGE, USE A FAST PULSE SETTING OF 30 PULSES PER SECOND.
5. USE DIP NETS FOR VISIBLE LAMPREY. SIENES AND FINE MESH NET SWEEPS MAY BE USED IN POOR VISIBILITY.

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DRAWN	DESIGNED	CHECKED
BPA		200237
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT
PHASE 2 30% DESIGN

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HIP IV GENERAL CONSERVATION MEASURES (2 OF 3)

SHEET 4 OF 22

WORK AREA ISOLATION AND FISH SALVAGE (CONTINUED).

6. SAMPLING WILL OCCUR SLOWLY (>60 SECONDS PER METER) STARTING AT UPSTREAM AND WORKING DOWNSTREAM.

7. MULTIPLE SWEEPS TO OCCUR WITH 15 MINUTES BETWEEN SWEEPS.

8. POST-DRAWDOWN "DRY-SHOCKING" WILL BE APPLIED IF LARVAL LAMPREY CONTINUE TO EMERGE. ANODES TO BE PLACED ONE METER APART TO SAMPLE ONE SQUARE METER AT A TIME FOR AT LEAST 60 SECONDS. FOR TEMPERATURES LESS THAN 10 DEGREES CELSIUS, MAXIMUM VOLTAGE MAY BE GRADUALLY INCREASED TO 400 VOLTS (DRY-SHOCKING ONLY).

4. DEWATERING.

A. DEWATERING WILL OCCUR AT A RATE SLOW ENOUGH TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA.

B. WHERE A GRAVITY FEED DIVERSION IS NOT POSSIBLE, A PUMP MAY BE USED. PUMPS WILL BE INSTALLED TO AVOID REPETIVE DEWATERING AND REWATERING.

C. WHEN FISH ARE PRESENT, PUMPS WILL BE SCREENED IN ACCORDANCE WITH NMFS FISH SCREEN CRITERIA. NMFS ENGINEERING REVIEW AND APPROVAL WILL BE OBTAINED FOR PUMPS EXCEEDING 3 CUBIC FEET PER SECOND.

D. DISSIPATION OF FLOW ENERGY AT THE BYPASS OUTFLOW WILL BE PROVIDED TO PREVENT DAMAGE TO THE STREAM CHANNEL AND RIPARIAN VEGETATION.

E. SEEPAGE WATER WILL BE PUMPED TO A TEMPORARY STORAGE AND TREATMENT SITE OF INTO UPLAND AREAS TO ALLOW WATER TO PERCOLATE THROUGH SOIL AND VEGETATION PRIOR TO REENTERING THE STREAM CHANNEL.

CONSTRUCTION AND POST CONSTRUCTION CONSERVATION MEASURES.

1. FISH PASSAGE.

A. FISH PASSAGE WILL BE PROVIDED FOR ADULT AND JUVENILE FISH LIKELY TO BE PRESENT DURING CONSTRUCTION UNLESS PASSAGE DID NOT EXIST BEFORE CONSTRUCTION, THE STREAM IS NATURALLY IMPASSABLE, OR PASSAGE WILL NEGATIVELY IMPACT ESA-LISTED SPECIES OR THEIR HABITAT.

B. FISH PASSAGE ALTERNATIVES WILL BE APPROVED BY THE BPA EC LEAD UNDER ADVISEMENT BY THE NMFS HABITAT BIOLOGIST.

2. CONSTRUCTION AND DISCHARGE WATER.

A. SURFACE WATER MAY BE DIVERTED TO MEET CONSTRUCTION NEEDS ONLY IF DEVELOPED SOURCES ARE UNAVAILABLE OR INADEQUATE.

B. DIVERSIONS WILL NOT EXCEED 10% OF THE AVAILABLE FLOW.

C. CONSTRUCTION DISCHARGE WATER WILL BE COLLECTED AND TREATED TO REMOVE DEBRIS, NUTRIENTS, SEDIMENT, PETROLEUM HYDROCARBONS, METALS, AND OTHER POLLUTANTS.

3. TIME AND EXTENT OF DISTURBANCE.

A. EARTHWORK REQUIRING IN-STREAM MECHANIZED EQUIPMENT (INCLUDING DRILLING, EXCAVATION, DREDGING, FILLING, AND COMPACTING) WILL BE COMPLETED AS QUICKLY AS POSSIBLE.

B. MECHANIZED EQUIPMENT WILL WORK FROM TOP OF BANK UNLESS WORK FROM ANOTHER LOCATION WILL RESULT IN LESS HABITAT DISTURBANCE (TURBIDITY, VEGETATION DISTURBANCE, ETC.).

4. CESSATION OF WORK.

A. PROJECT OPERATIONS WILL CEASE WHEN HIGH FLOW CONDITIONS MAY RESULT IN INUNDATION OF THE PROJECT AREA (FLOOD EFFORTS TO DECREASE DAMAGES TO NATURAL RESOURCES PERMITTED).

B. WATER QUALITY LEVELS EXCEEDED. SEE CWA SECTION 401 WATER QUALITY CERTIFICATION AND TURBIDITY MEASURES.

5. SITE RESTORATION.

A. DISTURBED AREAS, STREAM BANKS, SOILS, AND VEGETATION WILL BE CLEANED UP AND RESTORED TO IMPROVED OR PRE-PROJECT CONDITIONS.

B. PROJECT-RELATED WASTE WILL BE REMOVED.

C. TEMPORARY ACCESS ROADS AND STAGING WILL BE DECOMPACTED AND RESTORED. SOILS WILL BE LOOSENED IF NEEDED FOR REVEGETATION OR WATER INFILTRATION.

D. THE PROJECT SPONSOR WILL RETAIN THE RIGHT OF REASONABLE ACCESS TO THE SITE TO MONITOR AND MAINTAIN THE SITE OVER THE LIFE OF THE PROJECT.

6. REVEGETATION.

A. PLANTING AND SEEDING WILL OCCUR PRIOR TO OR AT THE BEGINNING OF THE FIRST GROWING SEASON AFTER CONSTRUCTION.

B. A MIX OF NATIVE SPECIES (INVASIVE SPECIES NOT ALLOWED) APPROPRIATE TO THE SITE WILL BE USED TO REESTABLISH VEGETATION, PROVIDE SHADE, AND REDUCE EROSION. REESTABLISHED VEGETATION SHOULD BE AT LEAST 70% OF PRE-PROJECT CONDITIONS WITHIN THREE YEARS.

C. VEGETATION SUCH AS WILLOWS, SEDGES, OR RUSH MATS WILL BE SALVAGED FROM DISTURBED OR ABANDONED AREAS TO BE REPLANTED.

D. SHORT-TERM STABILIZATION MEASURE MAY INCLUDE THE USE OF NON-NATIVE STERILE SEED MIX (WHEN NATIVE NOT AVAILABLE), WEED-FREE CERTIFIED STRAW, OR OTHER SIMILAR TECHNIQUES.

E. SURFACE FERTILIZER WILL NOT BE APPLIED WITHIN 50 FEET OF ANY STREAM, WATE BODY, OR WETLAND.

F. FENCING WILL BE INSTALLED AS NECESSARY TO PREVENT ACCESS TO REVEGETATED SITES BY LIVESTOCK OR UNAUTHORIZED PERSONS.

G. INVASIVE PLANTS WILL BE REMOVED OR CONTROLLED UNTIL NATIVE PLANT SPECIES ARE WELL ESTABLISHED (TYPICALLY THREE YEARS POST-CONSTRUCTION).

7. SITE ACCESS AND IMPLEMENTATION MONITORING.

A. THE PROJECT SPONSOR WILL PROVIDE CONSTRUCTION MONITORING DURING IMPLEMENTATION TO ENSURE ALL CONSERVATION MEASURES ARE ADEQUATELY FOLLOWED, EFFECTS TO LISTED SPECIES ARE NOT GREATER THAN PREDICTED, AND INCIDENTAL TAKE LIMITATIONS ARE NOT EXCEEDED.

B. THE PROJECT SPONSOR OR DESIGNATED REPRESENTATIVE WILL SUBMIT THE PROJECT COMPLETION FORM (PCF) WITHIN 30 DAYS OF PROJECT COMPLETION.

8. CWA SECTION 401 WATER QUALITY CERTIFICATION.

A. THE PROJECT SPONSOR OR DESIGNATED REPRESENTATIVE WILL COMPLETE AND RECORD WATER QUALITY OBSERVATIONS (SEE TURBIDITY MONITORING) TO ENSURE IN-WATER WORK IS NOT DEGRADING WATER QUALITY.

B. DURING CONSTRUCTION, WATER QUALITY PROVISIONS PROVIDED BY THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, WASHINGTON DEPARTMENT OF ECOLOGY, IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY WILL BE FOLLOWED.

STAGED REWATERING PLAN.

A. WHEN REINTRODUCING WATER TO DEWATERED AREAS AND NEWLY CONSTRUCTED CHANNELS, A STAGED REWATERING PLAN WILL BE APPLIED.

B. THE FOLLOWING WILL BE APPLIED TO ALL REWATERING EFFORTS. COMPLEX REWATERING EFFORTS MAY REQUIRE ADDITIONAL NOTES OR A DEDICATED SHEET IN THE CONSTRUCTION DETAILS.

1. TURBIDITY MONITORING PROTOCOL WILL BE APPLIED TO REWATERING EFFORTS.

2. PRE-WASH THE AREA BEFORE REWATERING. TURBID WASH WATER WILL BE DETAINED AND PUMPED TO THE FLOODPLAIN OR SEDIMENT CAPTURE AREAS RATHER THAN DISCHARGING TO FISH-BEARING STREAMS.

3. INSTALL SEINE NETS AT UPSTREAM END TO PREVENT FISH FROM MOVING DOWNSTREAM UNTIL 2/3 OF TOTAL FLOW IS RESTORED TO THE CHANNEL.

4. STARTING IN EARLY MORNING INTRODUCE 1/3 OF NEW CHANNEL FLOW OVER PERIOD OF 1-2 HOURS.

5. INTRODUCE SECOND THIRD OF FLOW OVER NEXT 1 TO 2 HOURS AND BEGIN FISH SALVAGE OF BYPASS CHANNEL IF FISH ARE PRESENT.

6. REMOVE UPSTREAM SEINE NETS ONCE 2/3 FLOW IN REWATERED CHANNEL AND DOWNSTREAM TURBIDITY IS WITHIN ACCEPTABLE RANGE (LESS THAN 40 NTU OR LESS THAN 10% BACKGROUND).

7. INTRODUCE FINAL THIRD OF FLOW ONCE FISH SALVAGE EFFORTS ARE COMPLETE AND DOWNSTREAM TURBIDITY VERIFIED TO BE WITHIN ACCEPTABLE RANGE.

8. INSTALL PLUG TO BLOCK FLOW INTO OLD CHANNEL OR BYPASS. REMOVE ANY REMAINING SEINE NETS.

9. IN LAMPREY SYSTEMS, LAMPREY SALVAGE AND DRY SHOCKING MAY BE NECESSARY.

TURBIDITY MONITORING.

A. RECORD THE READING, LOCATION, AND TIME FOR THE BACKGROUND READING APPROXIMATELY 100 FEET UPSTREAM OF THE PROJECT AREA USING A RECENTLY CALIBRATED TURBIDIMETER OR VIA VISUAL OBSERVATION (SEE THE HIP HANDBOOK TURBIDITY MONITORING SECTION FOR A VISUAL OBSERVATION KEY).

B. RECORD THE TURBIDITY READING, LOCATION, AND TIME AT THE MEASUREMENT COMPLIANCE LOCATION POINT.

1. 50 FEET DOWNSTREAM FOR STREAMS LESS THAN 30 FEET WIDE.

2. 100 FEET DOWNSTREAM FOR STREAMS BETWEEN 30 AND 100 FEET WIDE.

3. 200 FEET DOWNSTREAM FOR STREAMS GREATER THAN 100 FEET WIDE.

4. 300 FEET FROM THE DISCHARGE POINT OR NONPOINT SOURCE FOR LOCATIONS SUBJECT TO TIDAL OR COASTAL SCOUR.

C. TURBIDITY SHALL BE MEASURED (BACKGROUND LOCATION AND COMPLIANCE POINTS) EVERY 4 HOURS WHILE WORK IS BEING IMPLEMENTED.

D. IF THERE IS A VISIBLE DIFFERENCE BETWEEN A COMPLIANCE POINT AND THE BACKGROUND, THE EXCEEDANCE WILL BE NOTED IN THE PROJECT COMPLETION FORM (PCF). ADJUSTMENTS OR CORRECTIVE MEASURES WILL BE TAKEN IN ORDER TO REDUCE TURBIDITY.

E. IF EXCEEDANCES OCCUR FOR MORE THAN TWO CONSECUTIVE MONITORING INTERVALS (AFTER 8 HOURS), THE ACTIVITY WILL STOP UNTIL THE TURBIDITY LEVEL RETURNS TO BACKGROUND. THE BPA EC LEAD WILL BE NOTIFIED OF ALL EXCEEDANCES AND CORRECTIVE ACTIONS AT PROJECT COMPLETION.

F. IF TURBIDITY CONTROLS (COFFER DAMS, WADDLES, FENCING, ETC.) ARE DETERMINED INEFFECTIVE, CREWS WILL BE MOBILIZED TO MODIFY AS NECESSARY. OCCURRENCES WILL BE DOCUMENTED IN THE PROJECT COMPLETION FORM (PCF).

G. FINAL TURBIDITY READINGS, EXCEEDANCES, AND CONTROL FAILURES WILL BE SUBMITTED TO THE BPA EC LEAD USING THE PROJECT COMPLETION FORM (PCF).

Preliminary
Not for Construction

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NO.	BY	DATE	REVISION DESCRIPTION

BPA	BPA	BPA
DRAWN	DESIGNED	CHECKED
BPA		200237
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT
PHASE 2 30% DESIGN

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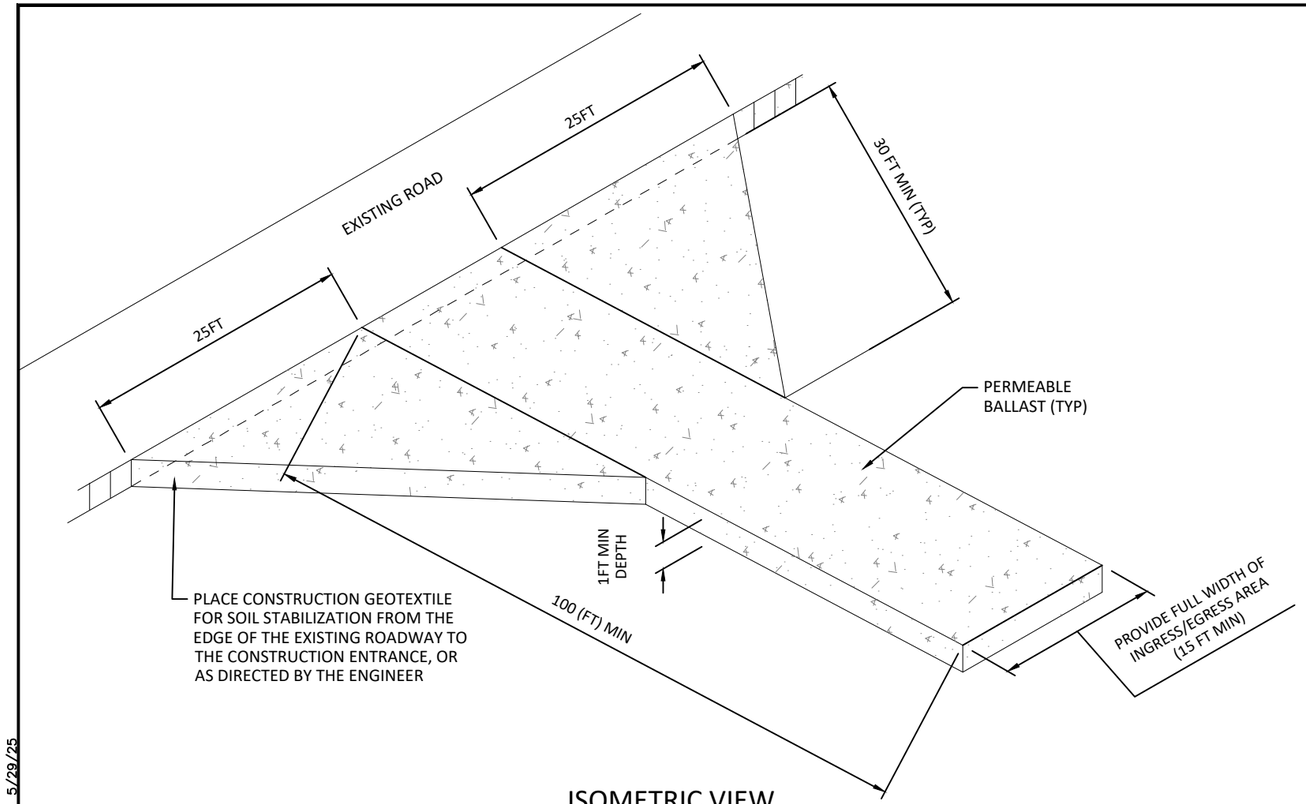
HIP IV GENERAL CONSERVATION MEASURES (3 OF 3)

SHEET 5 OF 22



ISOMETRIC VIEW

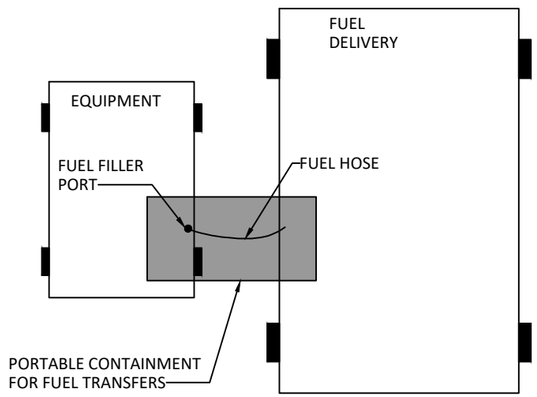
1/6 STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

FUELING NOTES:

CONTRACTOR SHALL PROVIDE ADDITIONAL PROTECTION MEASURES AGAINST FUEL SPILLS SINCE REFUELING AREA IS WITHIN 150 FT OF A WETLAND AND THE RIVER. ADDITION PROTECTION MEASURES SHALL CONSIST OF:

1. CONTAINMENT EQUIPMENT SIZED TO CONTAIN THE MOST LIKELY VOLUME OF FUEL SPILLED DURING A FUEL TRANSFER.
2. PORTABLE CONTAINMENT EQUIPMENT SHALL BE POSITIONED TO CATCH ANY FUEL SPILLS DUE TO OVERFILLING THE EQUIPMENT AND ANY OTHER SPILLS THAT MAY OCCUR AT OR NEAR THE FUEL FILLER PORT TO THAT EQUIPMENT DURING EACH REFUELING ACTIVITY.
3. PERSONNEL MUST ATTEND TO THE FUELING PROCESS TO ENSURE THAT ANY SPILLS WILL BE OF LIMITED VOLUME.



2/6 FUELING AREA PROTECTION

NOT TO SCALE

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

CM	DM	DM
DRAWN	DESIGNED	CHECKED
DM	05/30/2025	200237
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES

NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT

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TYPICAL DETAILS - EROSION CONTROL AND ENVIRONMENTAL PROTECCTION

SHEET 6 OF 22

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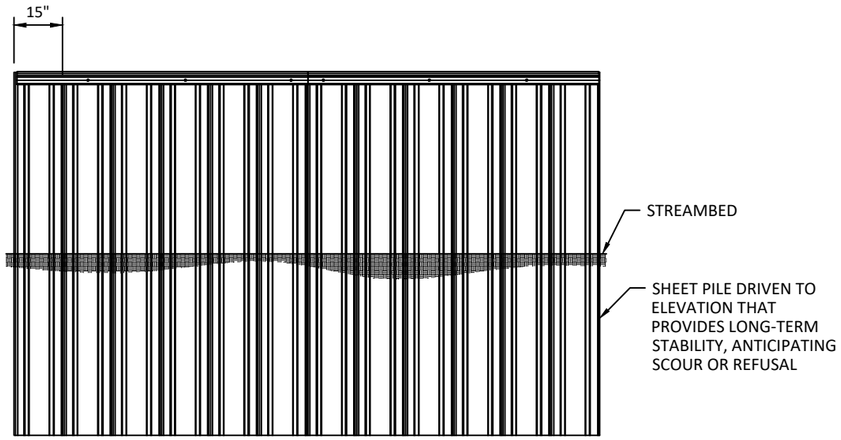
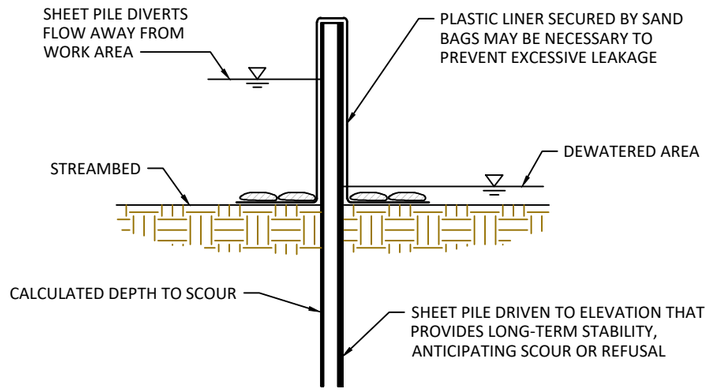


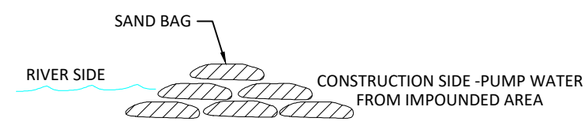
NOTE:
INDIVIDUAL SHEET WEIGHT 45 LBS PER LINEAR FOOT

ELEVATION



SECTION

1/7 TYPICAL DETAIL - SHEET PILE COFFERDAM
NOT TO SCALE



2/7 TYPICAL DETAIL - SANDBAG COFFERDAM
NOT TO SCALE

COFFERDAM NOTES:

1. TEMPORARY SHEET PILE AND PEA GRAVEL FILLED SAND BAGS ARE PRE-APPROVED METHODS OF ISOLATING CONSTRUCTION WATER FROM THE WATERWAY.
2. SHEETPILE COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS PLACED IN ROWS AT THE TOE OF COFFERDAM. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON THE WORK AREA SIDE OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING MINIMUM 4-FEET FROM TOE OF COFFERDAM. MULTIPLE LAYERS OF SHEETING AND SANDBAGS MAY BE REQUIRED TO FORM A WATERTIGHT SEAL.
3. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL BE LONG ENOUGH TO ENSURE THAT ENTIRE LENGTH OF COFFERDAM WILL BE COVERED WITHOUT A SEAM.
4. CONTRACTOR SHALL PROVIDE PUMPING SUFFICIENT FOR A NET INFLOW TO THE WORK AREA, AND DISCHARGE TURBID WATER TO UPLAND FLOODPLAIN.
5. COFFERDAM AND ALL MATERIALS INCLUDING PLASTIC SHEETING, SAND BAGS AND PEA GRAVEL FILL. SHALL BE COMPLETELY REMOVED FROM THE SITE AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED.

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

CM	DM	DM
DRAWN	DESIGNED	CHECKED
DM	05/30/2025	200237
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT
PHASE 2 30% DESIGN

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TYPICAL DETAILS - STREAM DIVERSION COFFERDAM

SHEET
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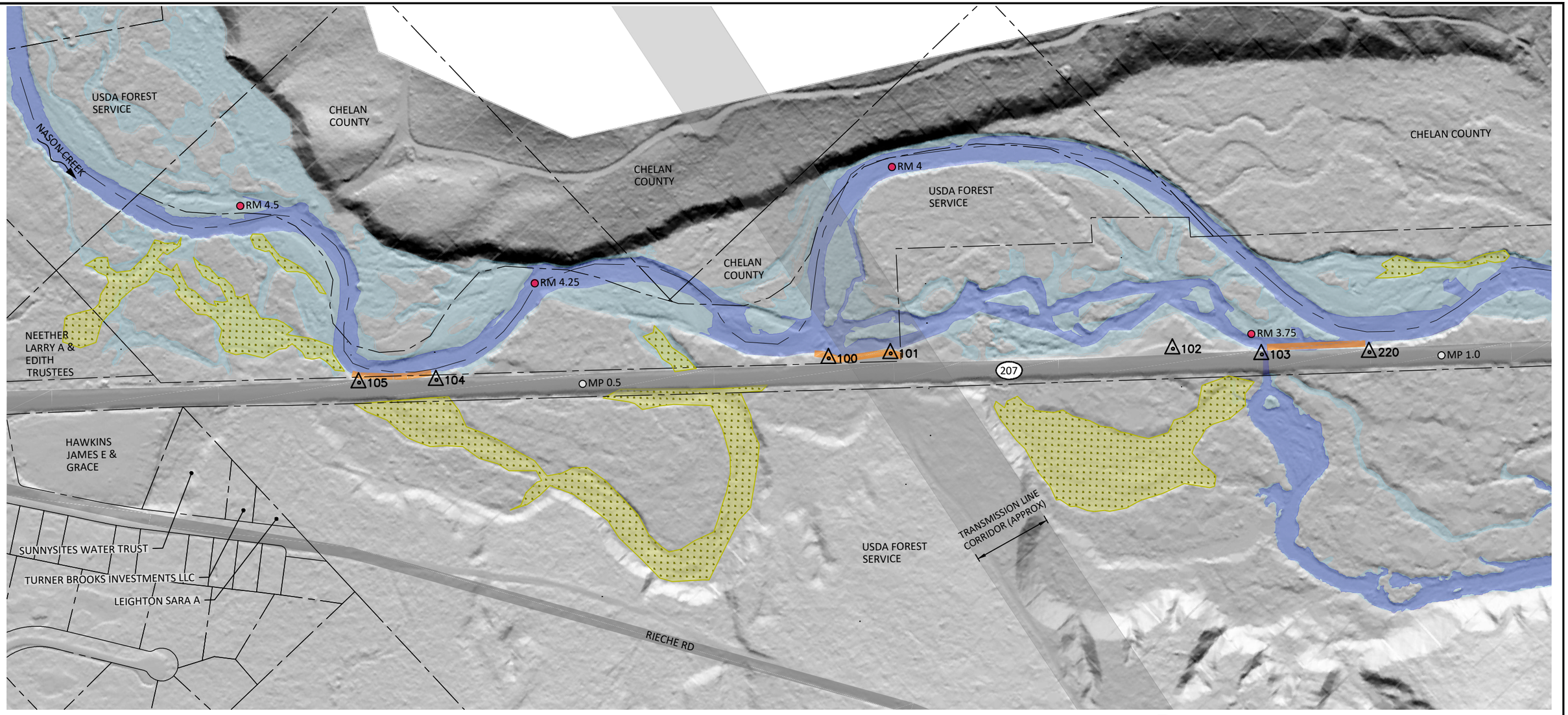

LEGEND

- APPROXIMATE 1.5-YEAR EVENT FLOW INUNDATION LIMITS FOR EXISTING CONDITIONS
- APPROXIMATE EXISTING ACTIVE CHANNEL
- EXISTING WETLANDS
- WSDOT CHRONIC ENVIRONMENT DEFICIENCY SITE (CED)
- TAXLOTS
- RM XX — NASON CREEK RIVER MILE
- MP XX — HIGHWAY 207 MILEPOST
- 100 — SURVEY CONTROL POINT

SURVEY CONTROL

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	278552.01	1665695.91	1954.74	REBAR
101	278700.56	1665813.38	1952.82	STAKE
104	277630.52	1664927.19	1964.70	REBAR
105	277452.23	1664772.04	1966.58	REBAR

0 300 600

SCALE IN FEET

NOTES:

1. HAMER ENVIRONMENTAL WETLAND DELINEATION OCCURRED ON AUGUST 4-5, 2020 AND FALL 2021.

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EXISTING CONDITIONS & PROPERTY OWNERSHIP

SHEET 8 OF 22

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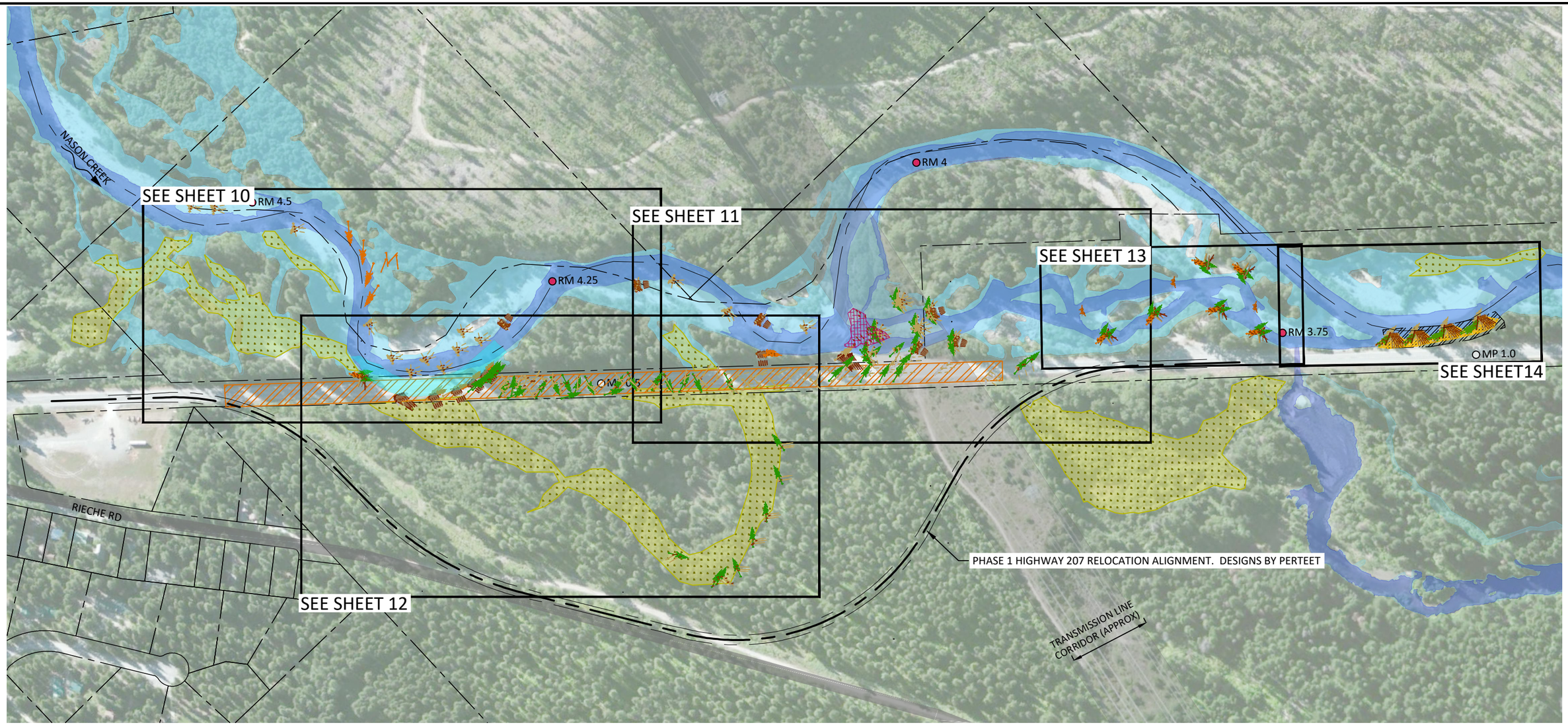

LEGEND

- APPROXIMATE 1.5-YEAR EVENT FLOW INUNDATION LIMITS FOR EXISTING CONDITIONS
- APPROXIMATE EXISTING ACTIVE CHANNEL
- EXISTING WETLANDS
- TAXLOTS
- RM XX — NASON CREEK RIVER MILE
- MP XX — HIGHWAY 207 MILEPOST
- EXISTING ROAD PRISM REMOVAL
- STABILIZE EXISTING LOG JAM WITH LOG PILES

NOTES:

1. HAMER ENVIRONMENTAL WETLAND DELINEATION OCCURRED ON AUGUST 4-5, 2020 AND FALL 2021.

0 300 600

SCALE IN FEET

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PHASE 2 30% DESIGN

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PROPOSED CONDITIONS AND SHEET INDEX

SHEET 9 OF 22

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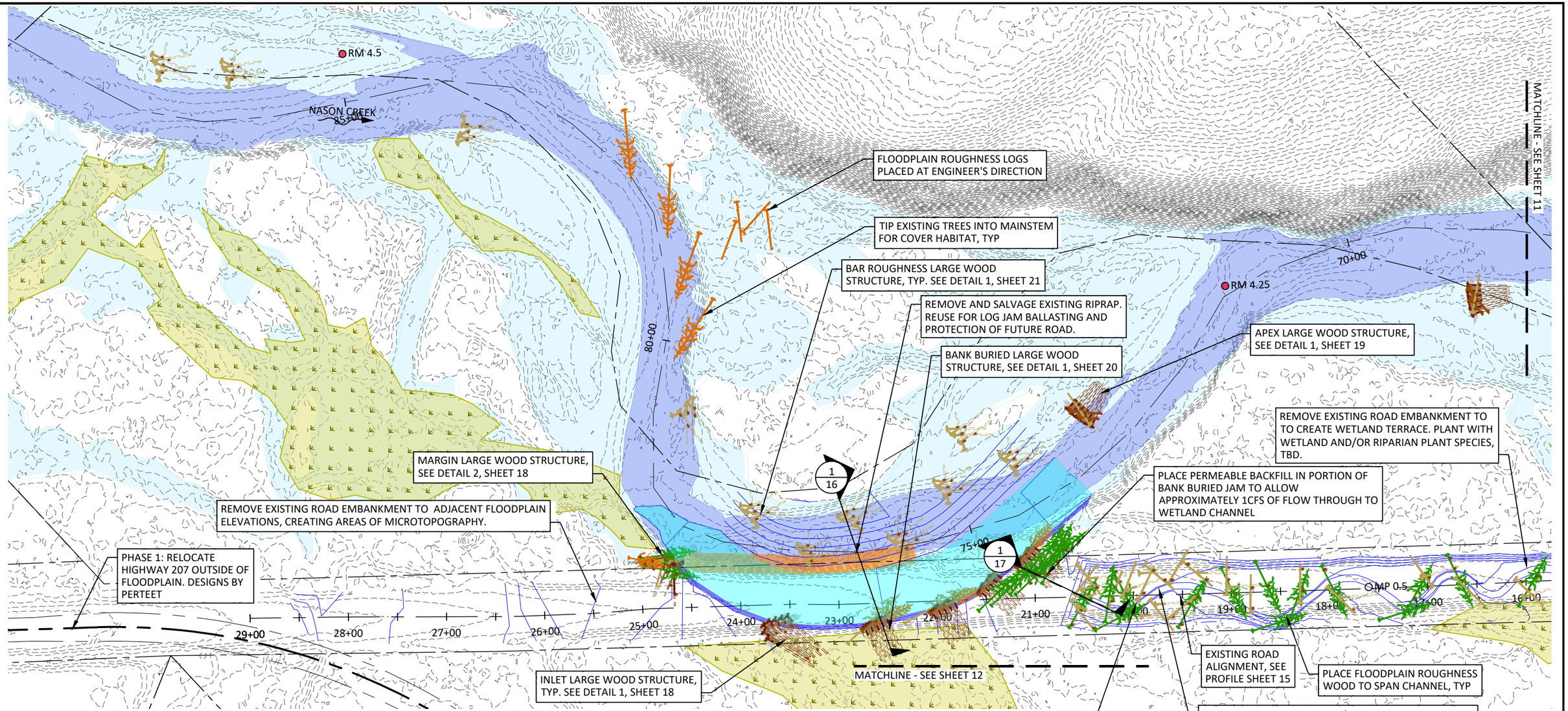

LEGEND

- EXISTING CONTOURS (1 FT)
- PROPOSED CONTOURS (1 FT)
- APPROXIMATE 1.5-YEAR EVENT FLOW INUNDATION LIMITS FOR EXISTING CONDITIONS
- APPROXIMATE EXISTING ACTIVE CHANNEL
- EXISTING WETLANDS
- TAXLOTS
- RM XX — NASON CREEK RIVER MILE
- MP XX — HIGHWAY 207 MILEPOST
- PROPOSED NEW CHANNEL

NOTES:

1. HAMER ENVIRONMENTAL WETLAND DELINEATION OCCURRED ON AUGUST 4-5, 2020 AND FALL 2021.

0 100 200

SCALE IN FEET

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PROPOSED CONDITIONS
(1 OF 5)

SHEET
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MATCHLINE - SEE SHEET 10

BAR ROUGHNESS LARGE WOOD STRUCTURE, TYP. SEE DETAIL 1, SHEET 21

TRANSMISSION LINE CORRIDOR (APPROX)

APEPX LARGE WOOD STRUCTURE, TYP. SEE DETAIL 1, SHEET 19.

BANK BURIED LARGE WOOD STRUCTURE, TYP. SEE DETAIL 1, SHEET 20. LOCATED IN GAP IN EXISTING TREES. PRESERVE STANDING TREES ALONG RIVER BANK

EXISTING LOG JAM - INSTALL LOG PILES AS EXCAVATOR REACH ALLOWS TO STABILIZE

INLET LARGE WOOD STRUCTURE, IN CURRENT WSDOT PULLOUT. SEE DETAIL 1, SHEET 18. MATCH TO EXISTING LOG JAM. PRESERVE STANDING TREES ALONG RIVER BANK.

REMOVE AND SALVAGE EXISTING RIPRAP. REUSE FOR LOG JAM BALLASTING AND PROTECTION OF FUTURE ROAD.

APEX LWS WITH RACKING WOOD

MATCHLINE - SEE SHEET 13

BAR ROUGHNESS LWS WITH RACKING WOOD

UPLAND BENCH TO PROVIDE BUFFER BETWEEN NASON CREEK AND NEW ROAD WITH LWM INSTALLED ALONG OUTBOARD EDGE. FILL COMPRISED OF SMALL BOULDERS, GRAVEL/ COBBLE WITH SAND ALLUVIUM AND TOPSOIL TO PROVIDE EROSION RESISTANCE AND ENCOURAGE PLANT GROWTH. MATCH TO PHASE 1 ROAD EMBANKMENT. PLANT WITH RIPARIAN AND UPLAND SPECIES, TBD. MIX DESIGN TO BE DETERMINED IN FUTURE PHASE.

NASON CREEK

REMOVE ABANDONED BEAVER DAM. FIELD FIT AT OWNER'S DIRECTION

PLACE FLOODPLAIN ROUGHNESS WOOD TO SPAN CHANNEL, TYP

2
17

16+00 15+00 14+00 13+00 12+00 11+00 10+00 9+00 8+00 7+00 6+00 5+00 4+00 3+00 2+00

MATCHLINE - SEE SHEET 12

FLOODPLAIN ROUGHNESS WOOD, TYP

EXISTING ROAD ALIGNMENT, SEE PROFILE SHEET 15

BANK BURIED SMALL WOOD STRUCTURE, TYP. SEE DETAIL 2, SHEET 20.

REMOVE EXISTING ROAD EMBANKMENT TO ELEVATION TO CREATE WETLAND TERRACE. PLANT WITH WETLAND AND/OR RIPARIAN PLANT SPECIES, TBD.

TRANSITION SMOOTHLY TO EXISTING HIGH FLOW CHANNEL AT OWNER'S DIRECTION

FUTURE ROAD RELOCATION DESIGN WILL EVALUATE IF TOE OF SLOPE REVETMENT WITH LWM IS NECESSARY.

PHASE 1: RELOCATE HIGHWAY 207 OUTSIDE OF FLOODPLAIN. DESIGNS BY PERTEET.

LEGEND

- EXISTING CONTOURS (1 FT)
- PROPOSED CONTOURS (1 FT)
- APPROXIMATE 1.5-YEAR EVENT FLOW INUNDATION LIMITS FOR EXISTING CONDITIONS
- APPROXIMATE EXISTING ACTIVE CHANNEL
- EXISTING WETLANDS
- TAXLOTS
- RM XX — NASON CREEK RIVER MILE
- MP XX — HIGHWAY 207 MILEPOST

NOTES:

1. HAMER ENVIRONMENTAL WETLAND DELINEATION OCCURRED ON AUGUST 4-5, 2020 AND FALL 2021.

0 100 200

SCALE IN FEET

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YAKAMA NATION FISHERIES
NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT
PHASE 2 30% DESIGN

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PROPOSED CONDITIONS
(2 OF 5)

SHEET
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BAR ROUGHNESS LARGE WOOD STRUCTURE, TYP. SEE DETAIL 1, SHEET 21

APEX LARGE WOOD STRUCTURE, TYP. SEE DETAIL 1, SHEET 19

REMOVE EXISTING ROAD EMBANKMENT TO ELEVATION TO CREATE WETLAND TERRACE. PLANT WITH RIPARIAN PLANT SPECIES, TBD

BANK BURIED LARGE WOOD STRUCTURE, TYP. SEE DETAIL 1, SHEET 19

GROUNDWATER FED ALCOVE/ WETLAND CHANNEL WITH SEASONAL HIGH FLOW THROUGH CREATED FLOODPLAIN

NASON CREEK

MP 0.5

MATCHLINE - SEE SHEET 10

MATCHLINE - SEE SHEET 11

PLACE FLOODPLAIN ROUGHNESS WOOD TO SPAN CHANNEL, TYP

REMOVE AND SALVAGE EXISTING RIPRAP. REUSE FOR LOG JAM BALLASTING AND PROTECTION OF FUTURE ROAD.

EXCAVATE CHANNEL THROUGH ROAD EMBANKMENT CONNECTING CHANNEL UPSTREAM AND DOWNSTREAM OF EXISTING ROAD

REMOVE EXISTING ROAD EMBANKMENT TO ADJACENT FLOODPLAIN ELEVATIONS, CREATING AREAS OF MICROTOPOGRAPHY

PHASE 1: RELOCATE HIGHWAY 207 OUTSIDE OF FLOODPLAIN. DESIGNS BY PARTEET.

RIECHE RD

FUTURE ROAD RELOCATION DESIGN WILL EVALUATE IF TOE OF SLOPE REVETMENT (RIPRAP AND LARGE WOOD) IS NECESSARY.

FLOODPLAIN ROUGHNESS AND POTENTIAL HABITAT LWM, TYP. SEE DETAIL 2 SHEET 20

LEGEND

- EXISTING CONTOURS (1 FT)
- PROPOSED CONTOURS (1 FT)
- APPROXIMATE 1.5-YEAR EVENT FLOW INUNDATION LIMITS FOR EXISTING CONDITIONS
- APPROXIMATE EXISTING ACTIVE CHANNEL
- EXISTING WETLANDS
- TAXLOTS
- RM XX — NASON CREEK RIVER MILE
- MP XX — HIGHWAY 207 MILEPOST
- PROPOSED NEW CHANNEL

NOTES:

1. HAMER ENVIRONMENTAL WETLAND DELINEATION OCCURRED ON AUGUST 4-5, 2020 AND FALL 2021.

0 100 200

SCALE IN FEET

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YAKAMA NATION FISHERIES

NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT

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PROPOSED CONDITIONS (3 OF 5)

SHEET 12 OF 22

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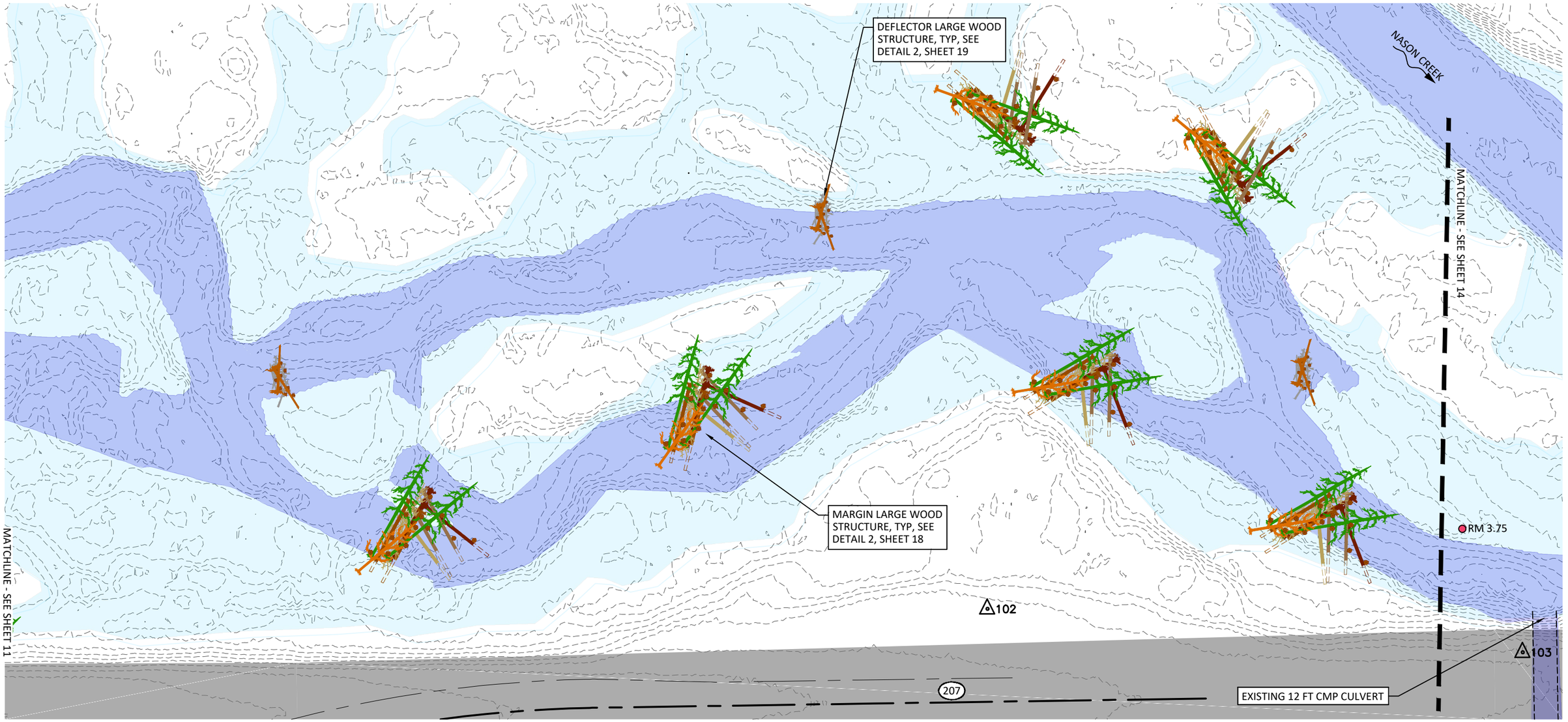

LEGEND

- EXISTING CONTOURS (1 FT)
- APPROXIMATE 1.5-YEAR EVENT FLOW INUNDATION LIMITS FOR EXISTING CONDITIONS
- APPROXIMATE EXISTING ACTIVE CHANNEL
- RM XX — NASON CREEK RIVER MILE
- 100 — SURVEY CONTROL POINT

0 50 100

SCALE IN FEET

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

CM DRAWN	DM DESIGNED	DM CHECKED
DM APPROVED	05/30/2025 DATE	200237 PROJECT

YAKAMA NATION FISHERIES
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PROPOSED CONDITIONS
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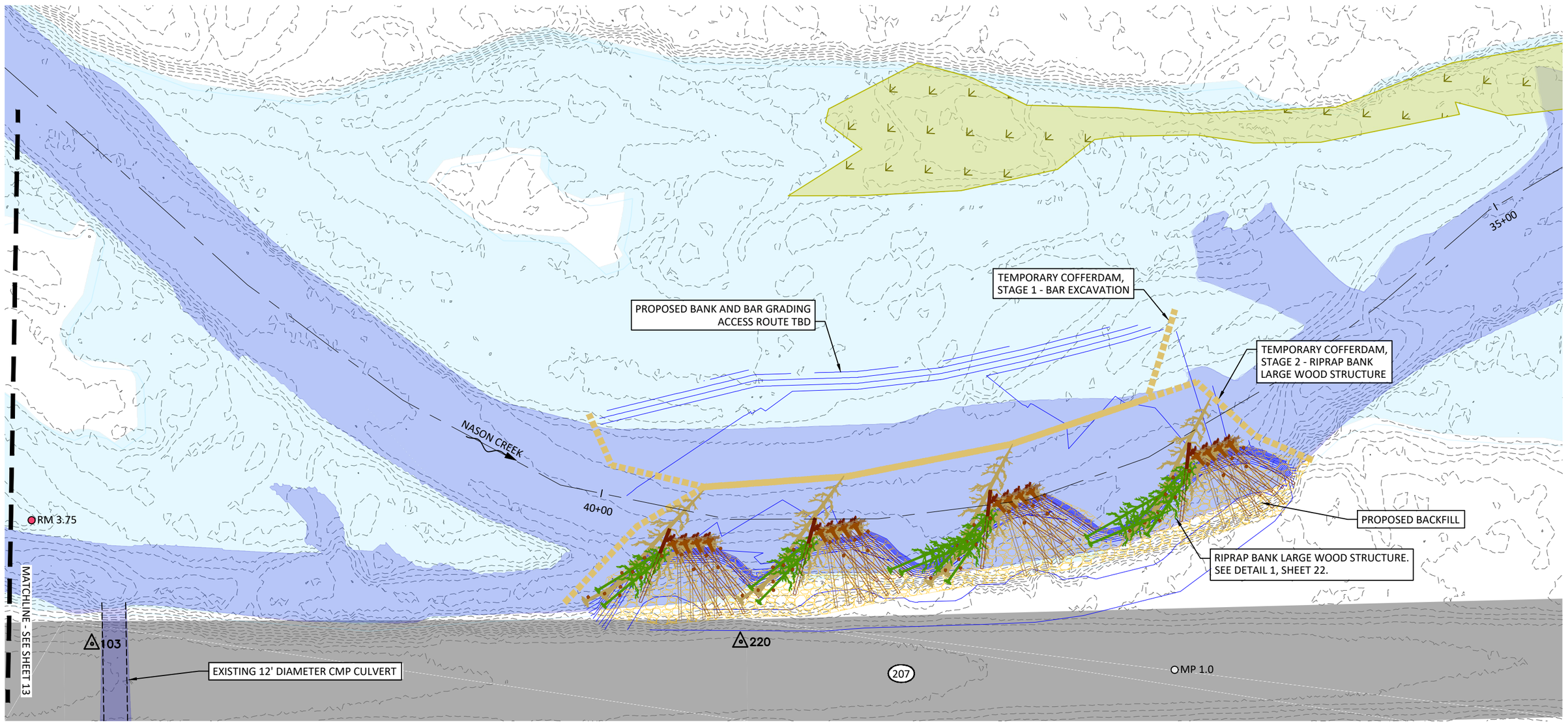

LEGEND

- EXISTING CONTOURS (1 FT)
- PROPOSED CONTOURS (1 FT)
- TEMPORARY ACCESS
- APPROXIMATE 1.5-YEAR EVENT FLOW INUNDATION LIMITS FOR EXISTING CONDITIONS
- APPROXIMATE EXISTING ACTIVE CHANNEL
- EXISTING WETLANDS
- RM XX — NASON CREEK RIVER MILE
- MP XX — HIGHWAY 207 MILEPOST
- 100 — SURVEY CONTROL POINT

NOTES:

1. WETLANDS DELINEATED AUGUST 4-5, 2020 BY HAMER ENVIRONMENTAL.

0 50 100

SCALE IN FEET

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PROPOSED CONDITIONS
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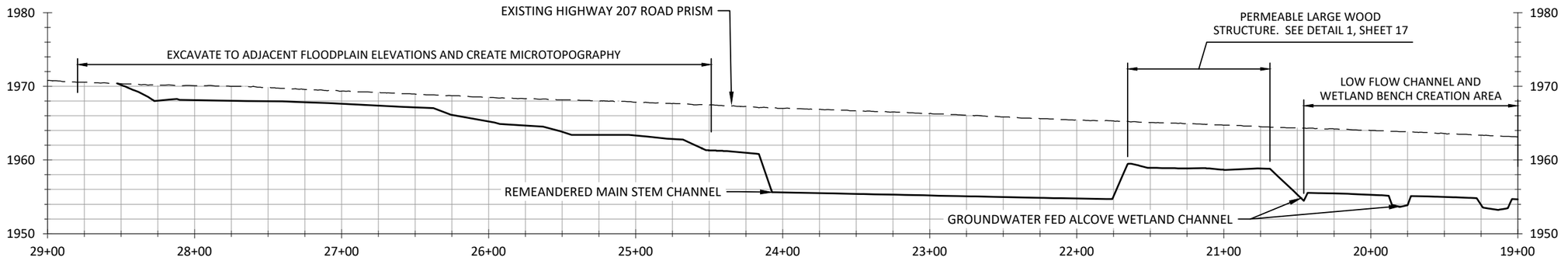
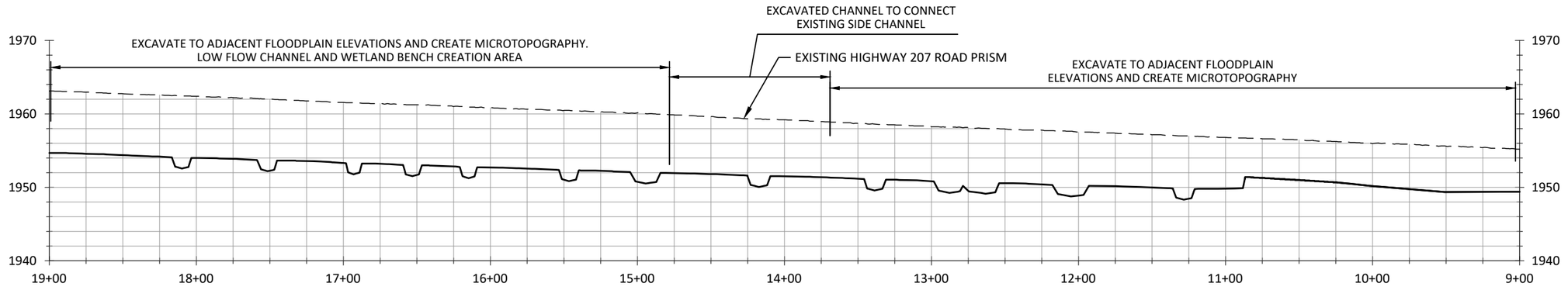
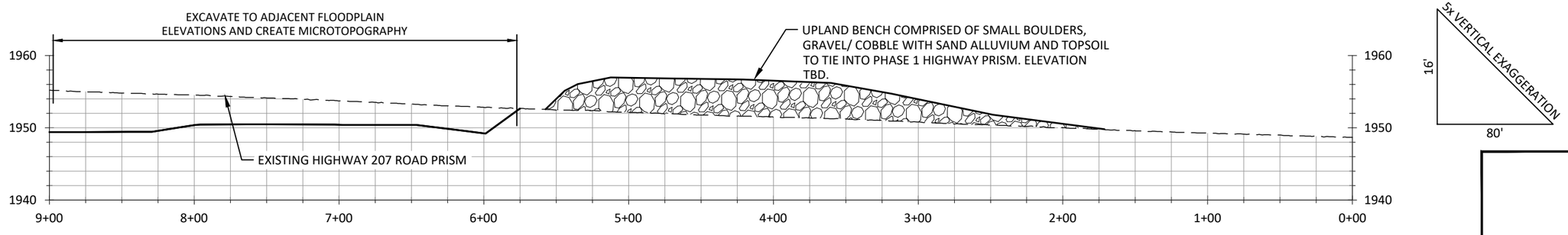


PROFILE - EXISTING ROAD PRISM, STA 29+00 - 19+00



PROFILE - EXISTING ROAD PRISM, STA 19+00 - 9+00



PROFILE - EXISTING ROAD PRISM, STA 9+00 - 0+00

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PROFILE - EXISITNG ROAD PRISM

SHEET
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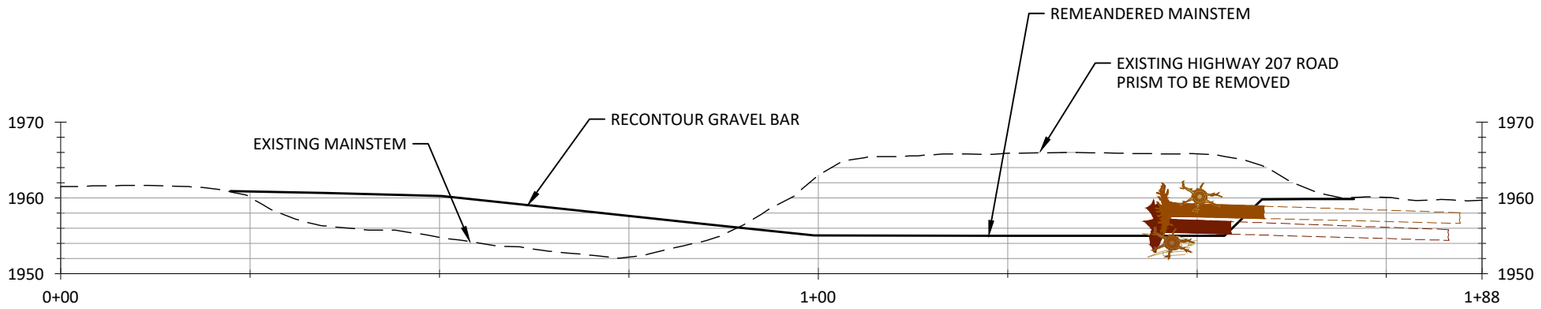

1/16 TYPICAL SECTION - MAINSTEM/ROAD REMOVAL

1"=20'

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PROFILE - SIDE CHANNEL

SHEET
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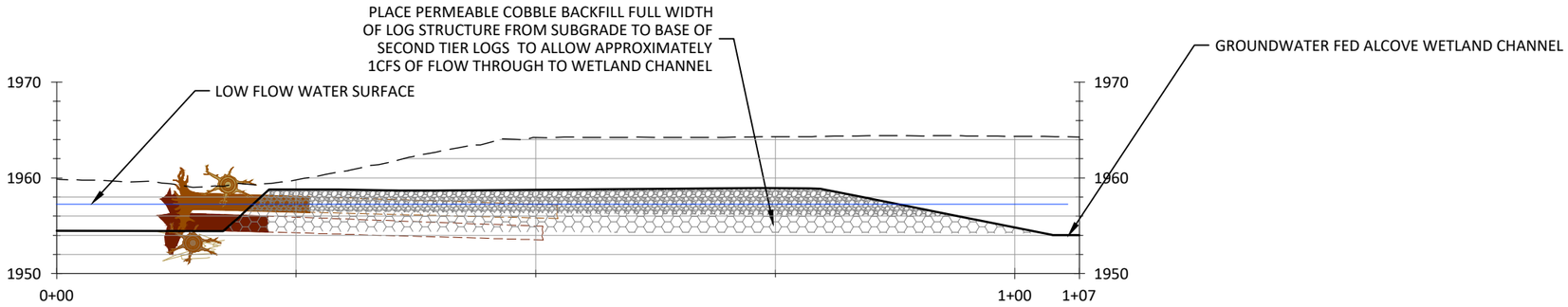
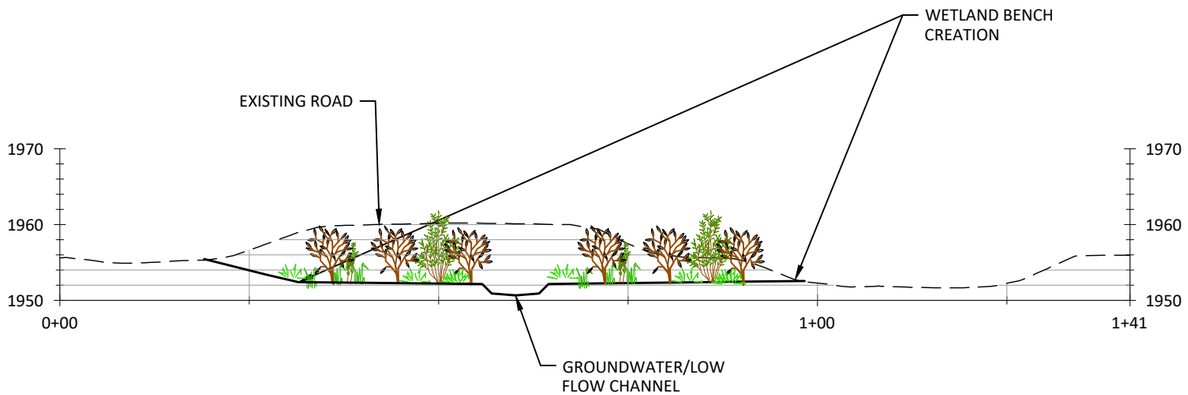


1/17 TYPICAL SECTION - GROUND WATER FED/WETLAND CHANNEL

1"=15'



2/17 TYPICAL SECTION - ROAD REMOVAL/WETLAND TERRACE

1"=20'

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CROSS SECTIONS

SHEET
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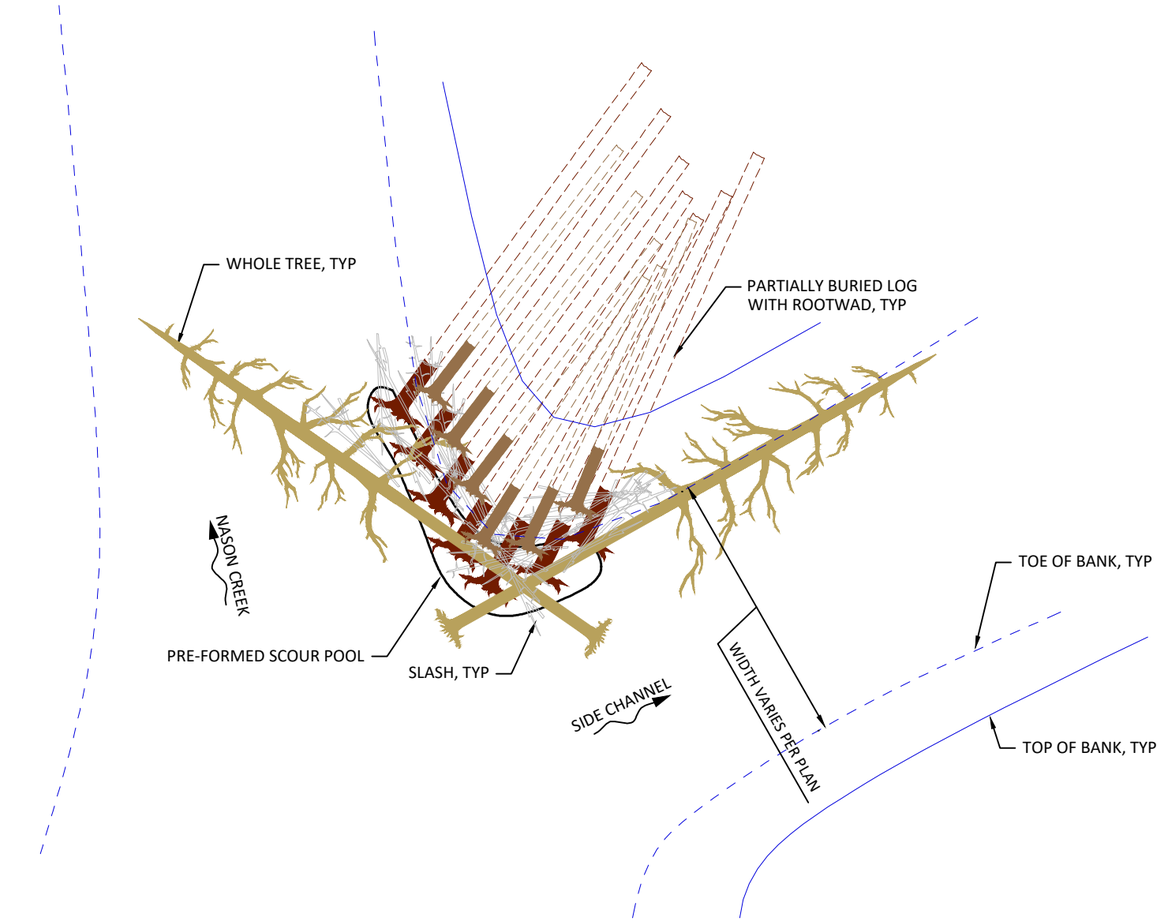
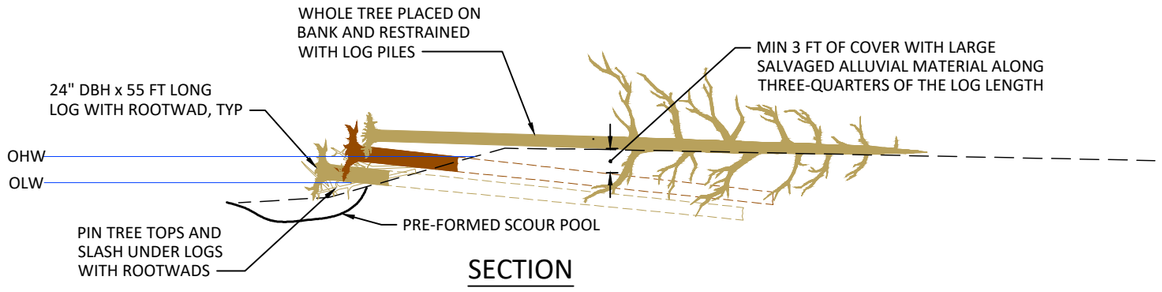


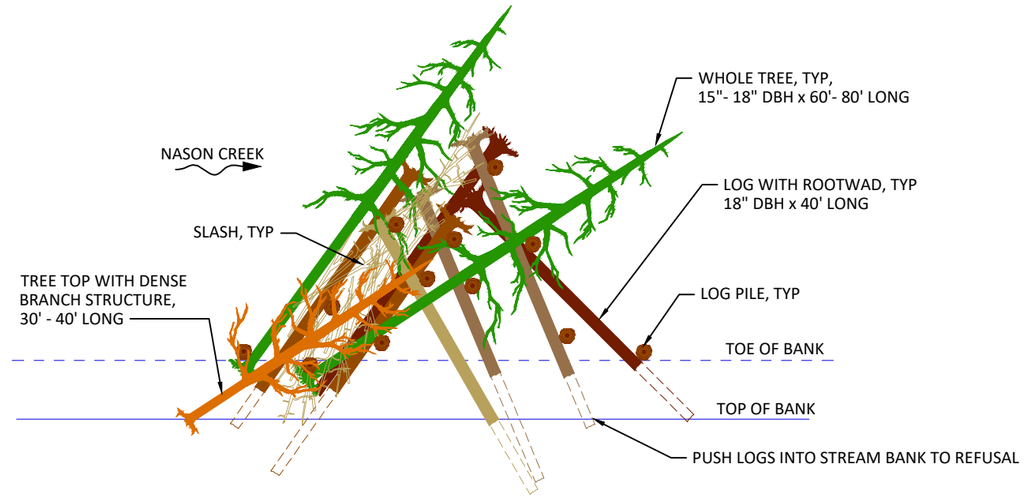
PLAN



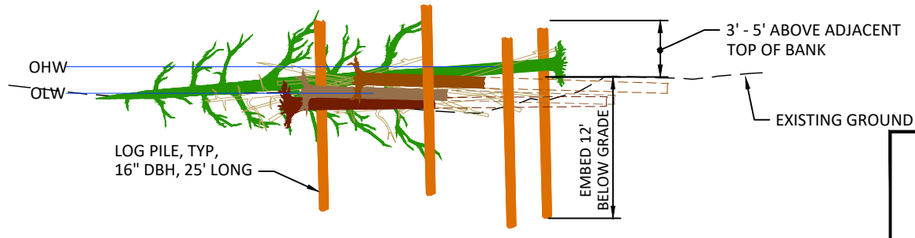
SECTION

1/18 TYPICAL DETAIL - INLET LARGE WOOD STRUCTURE

NOT TO SCALE



PLAN



SECTION

2/18 TYPICAL DETAIL - MARGIN LARGE WOOD STRUCTURE

NOT TO SCALE

Preliminary
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PHASE 2 30% DESIGN

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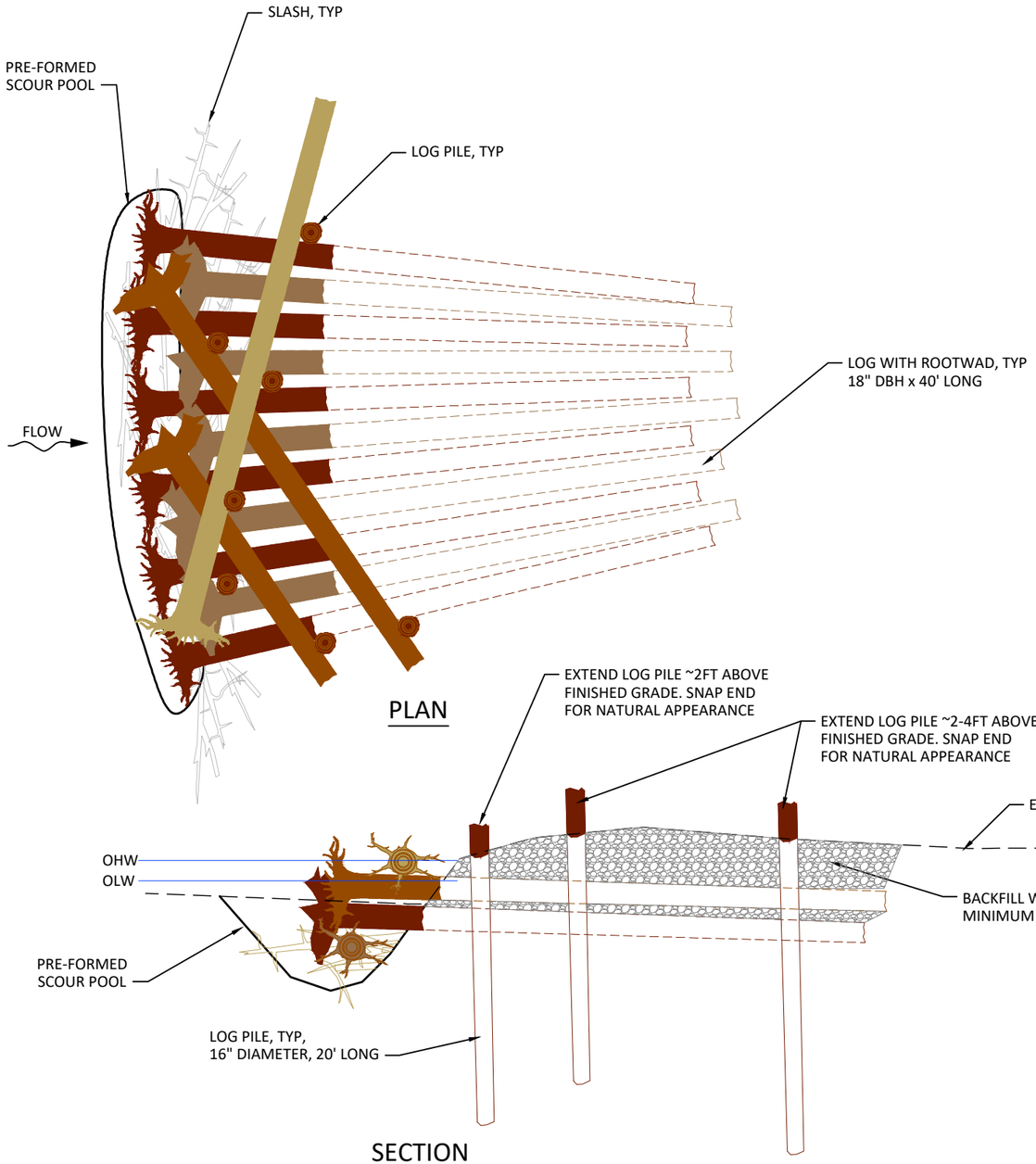
LARGE WOOD TYPICAL DETAILS
(1 OF 5)

SHEET
18 OF 22

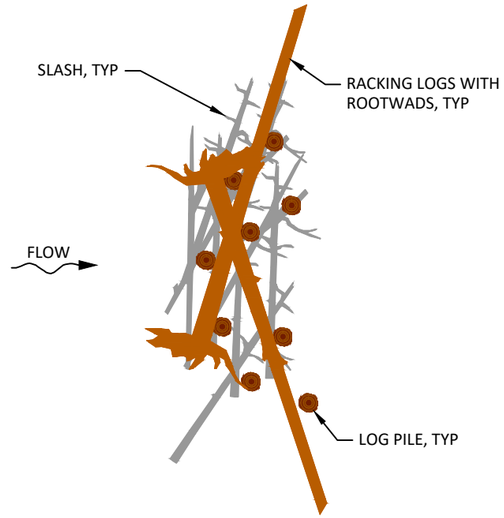


PLAN

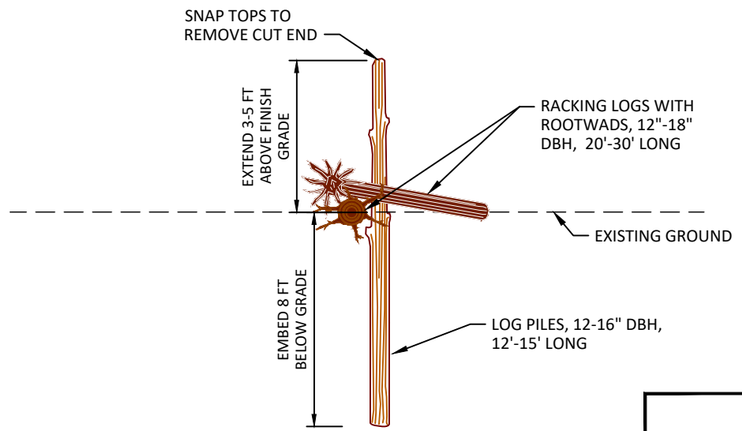
SECTION

1/19 TYPICAL DETAIL - APEX LARGE WOOD STRUCTURE

NOT TO SCALE



PLAN



SECTION

2/19 TYPICAL DETAIL - DEFLECTOR STRUCTURE

NOT TO SCALE

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

CM	DM	DM
DRAWN	DESIGNED	CHECKED
DM	05/30/2025	200237
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YAKAMA NATION FISHERIES

NASON CR. R.M. 3.6-4.6 FLOODPLAIN ENHANCEMENT

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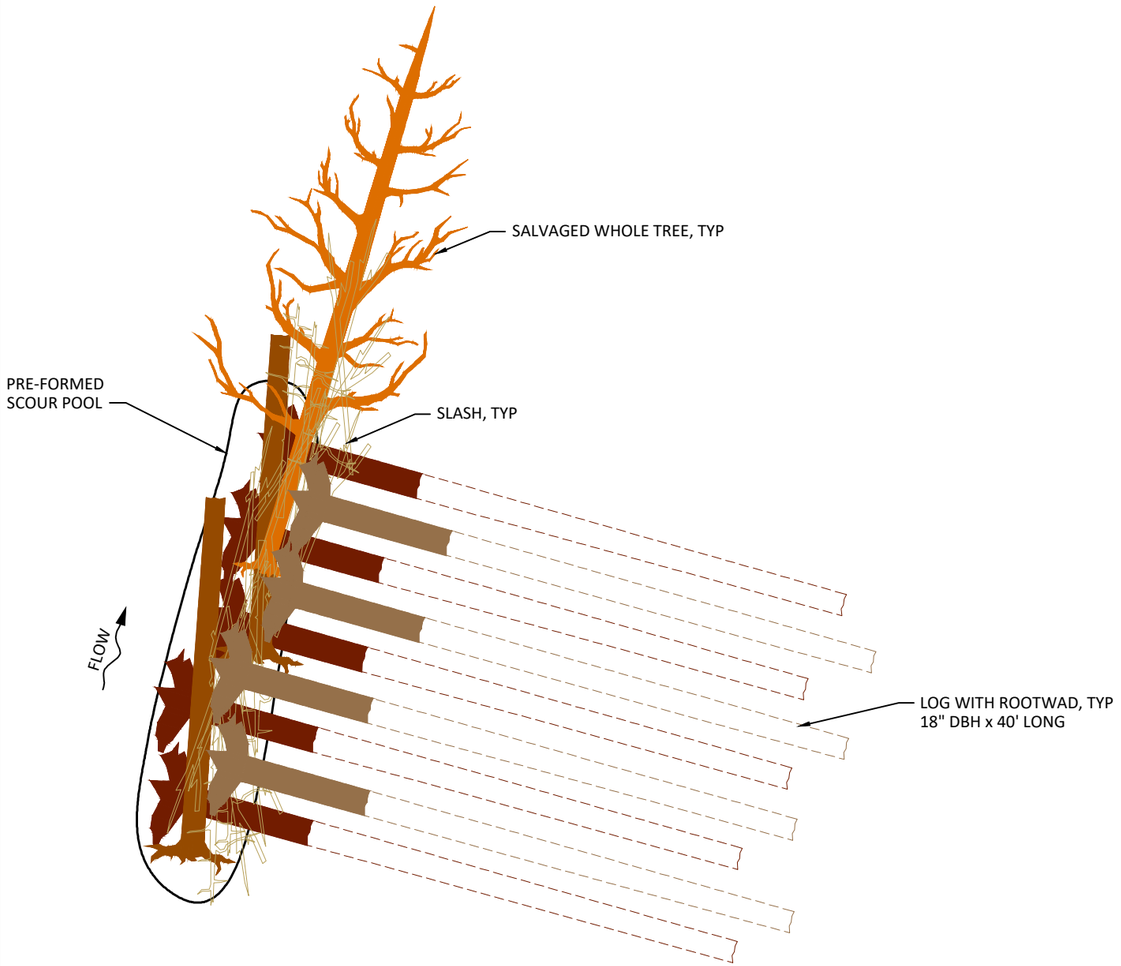
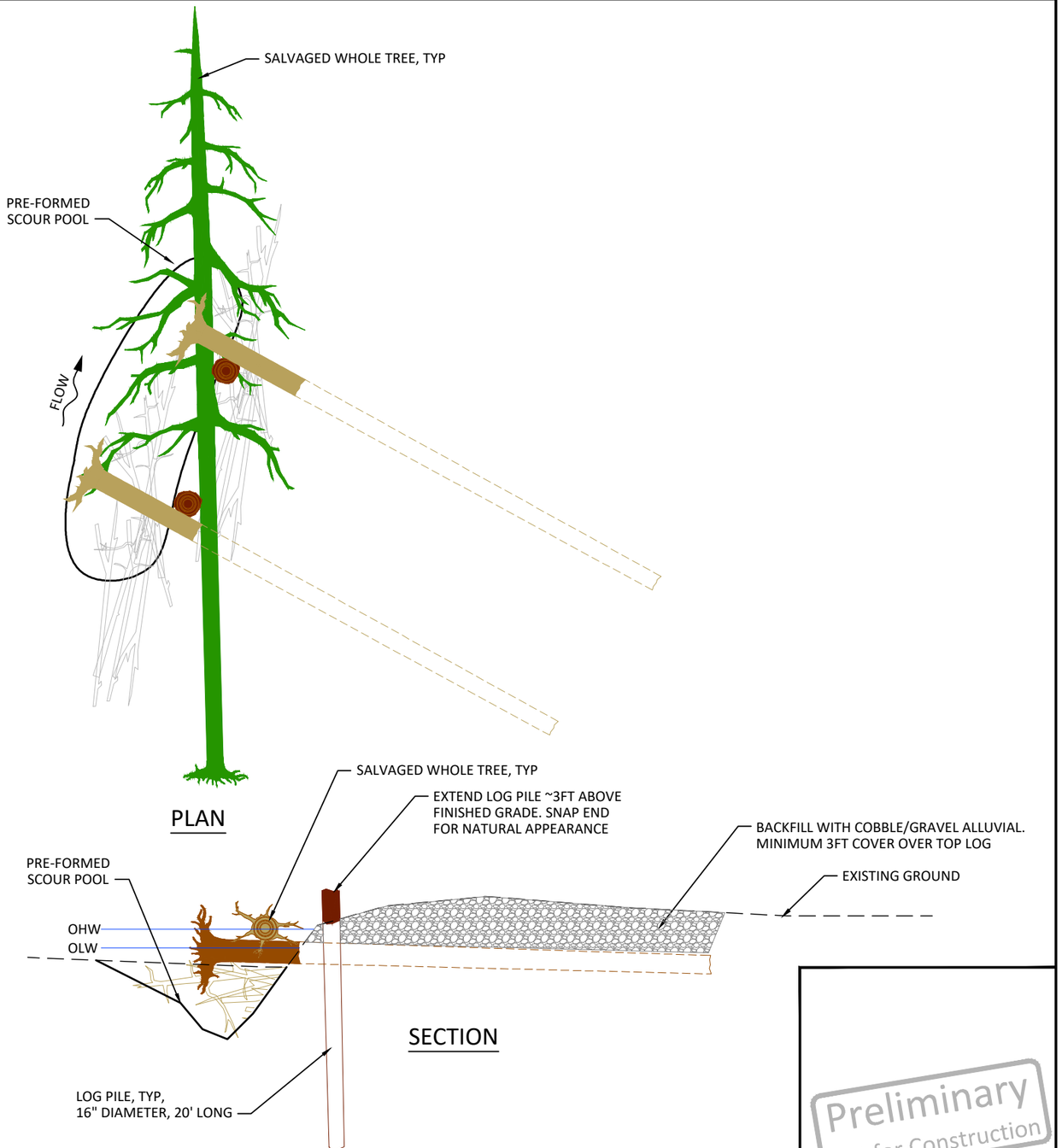
LARGE WOOD TYPICAL DETAILS (2 OF 5)

SHEET 19 OF 22



1/20 TYPICAL DETAIL - BANK BURIED LARGE WOOD STRUCTURE

NOT TO SCALE



2/20 TYPICAL DETAIL - SMALL BANK BURIED LARGE WOOD STRUCTURE

NOT TO SCALE

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

CM	DM	DM
DRAWN	DESIGNED	CHECKED
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LARGE WOOD TYPICAL DETAILS
(3 OF 5)

SHEET
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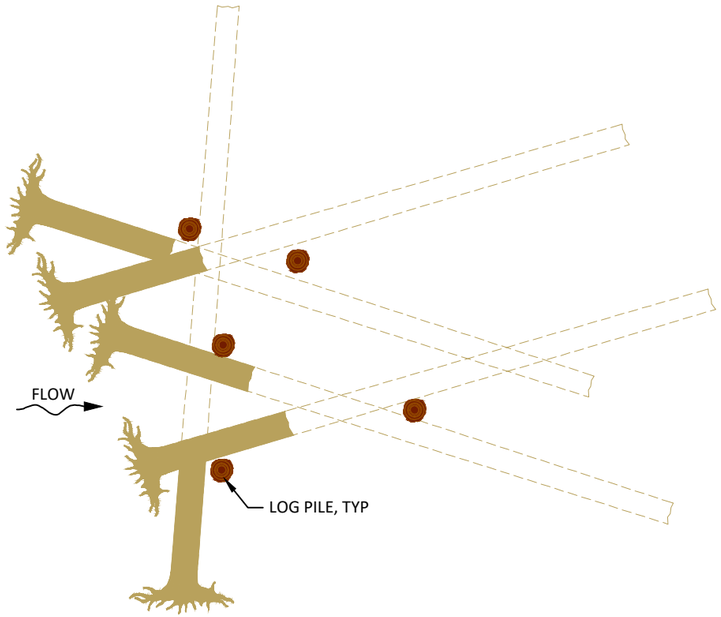
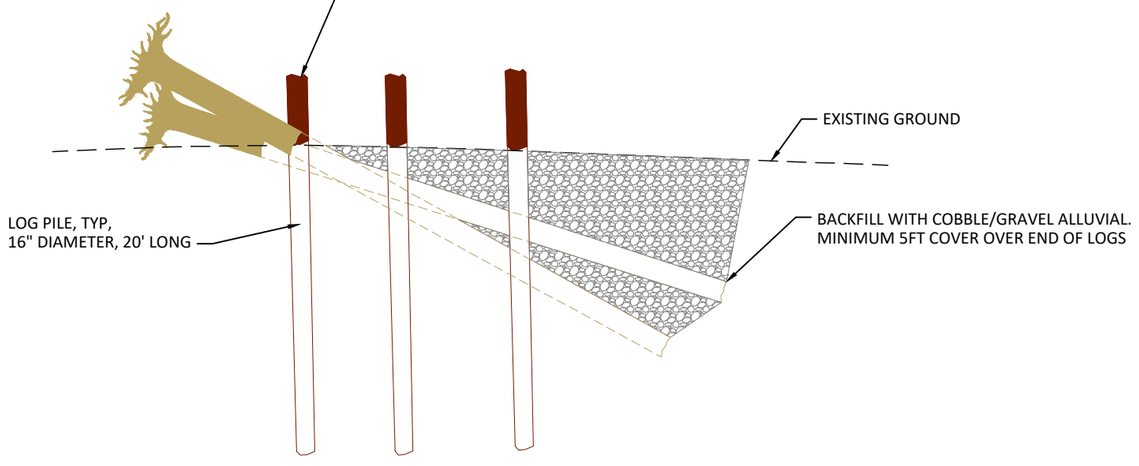


PLAN



SECTION

2/21 TYPICAL DETAIL - BAR ROUGHNESS LW STRUCTURE

NOT TO SCALE

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

CM	DM	DM
DRAWN	DESIGNED	CHECKED
DM	05/30/2025	200237
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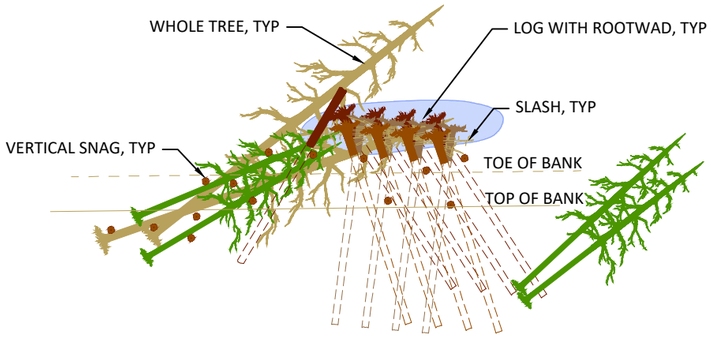
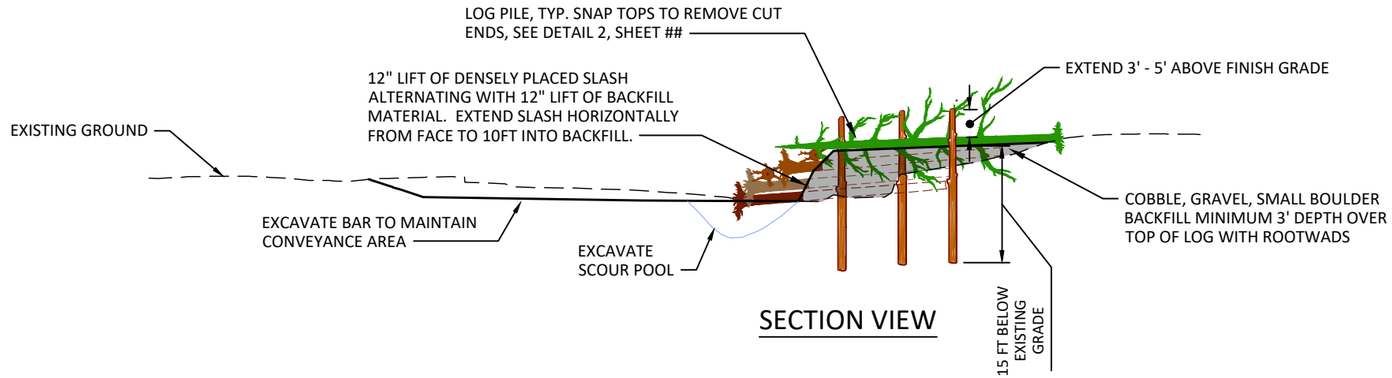
LARGE WOOD TYPICAL DETAILS
(4 OF 5)

SHEET
21 OF 22

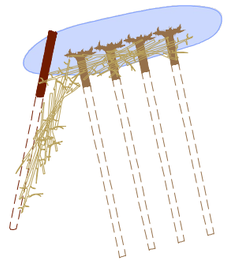
G:\M--P\Nason_Creek_Floodplain_RM_3.4--4.6_Phase_3_200237\Drawings\IFI_NasonFP_NoRD_G.dwg -- cmcconnell -- 5/29/25



PLAN VIEW

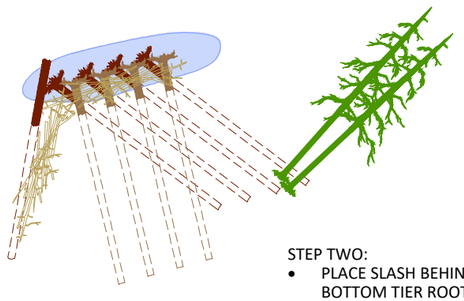


SECTION VIEW



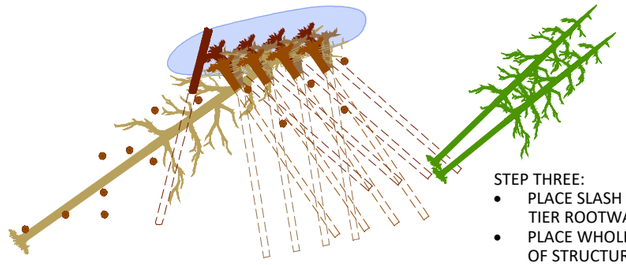
STEP ONE:
- EXCAVATE SCOUR POOL
- PLACE SLASH ALONG PERIMETER OF STRUCTURE
- PLACE BOTTOM TIER OF LOGS WITH ROOTWADS AND BUMPER LOG ON STREAMBED, PINNING SLASH UNDER AND BEHIND ROOTWADS
- BACKFILL TO TOPS OF LOGS

STEP 1



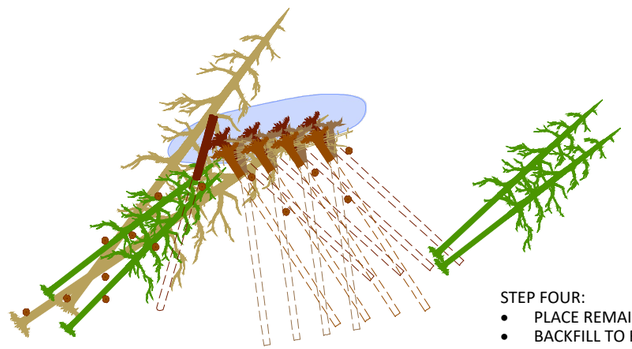
STEP TWO:
- PLACE SLASH BEHIND ROOTWADS OF BOTTOM TIER ROOTWADS
- PLACE DOWNSTREAM WHOLE TREES SPANNING BETWEEN STRUCTURES
- PLACE SECOND TIER OF LOGS WITH ROOTWADS, PINNING SLASH UNDER AND BEHIND ROOTWADS
- BACKFILL TO TOPS OF LOGS

STEP 2



STEP THREE:
- PLACE SLASH BEHIND ROOTWADS OF MIDDLE TIER ROOTWADS
- PLACE WHOLE TREES ALONG UPSTREAM FACE OF STRUCTURE
- PLACE THIRD TIER OF LOGS WITH ROOTWADS, PINNING SLASH UNDER AND BEHIND ROOTWADS
- INSTALL LOG PILES
- BACKFILL TO TOPS OF LOGS

STEP 3



STEP FOUR:
- PLACE REMAINING WHOLE TREES
- BACKFILL TO FINISHED GRADE

STEP 4

SEQUENCING

1/22 TYPICAL DETAIL - RIPRAP BANK LARGE WOOD STRUCTURE

NOT TO SCALE

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LARGE WOOD TYPICAL DETAILS
(5 OF 5)

SHEET
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