

CHEWUCH RM 13-15.5

FISH HABITAT ENHANCEMENT PROJECT



WASHINGTON STATE

UPSTREAM END OF PROJECT:
 LATITUDE 48°38'48.5" N
 LONGITUDE 120°09'06.5" W

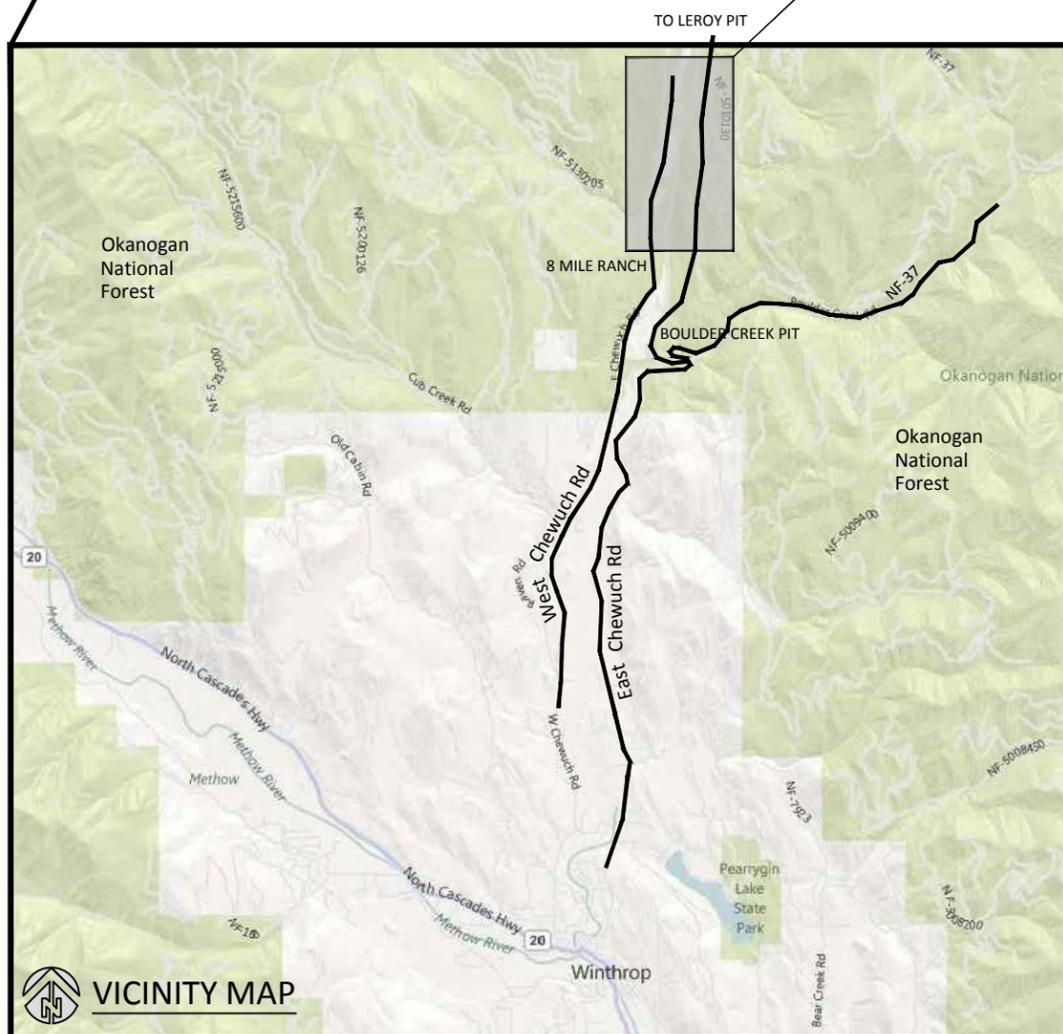
SECTION 1, TOWNSHIP 36N, RANGE 21E

DOWNSTREAM END OF PROJECT:
 LATITUDE 48°37'15.0" N
 LONGITUDE 120°09'45.0" W

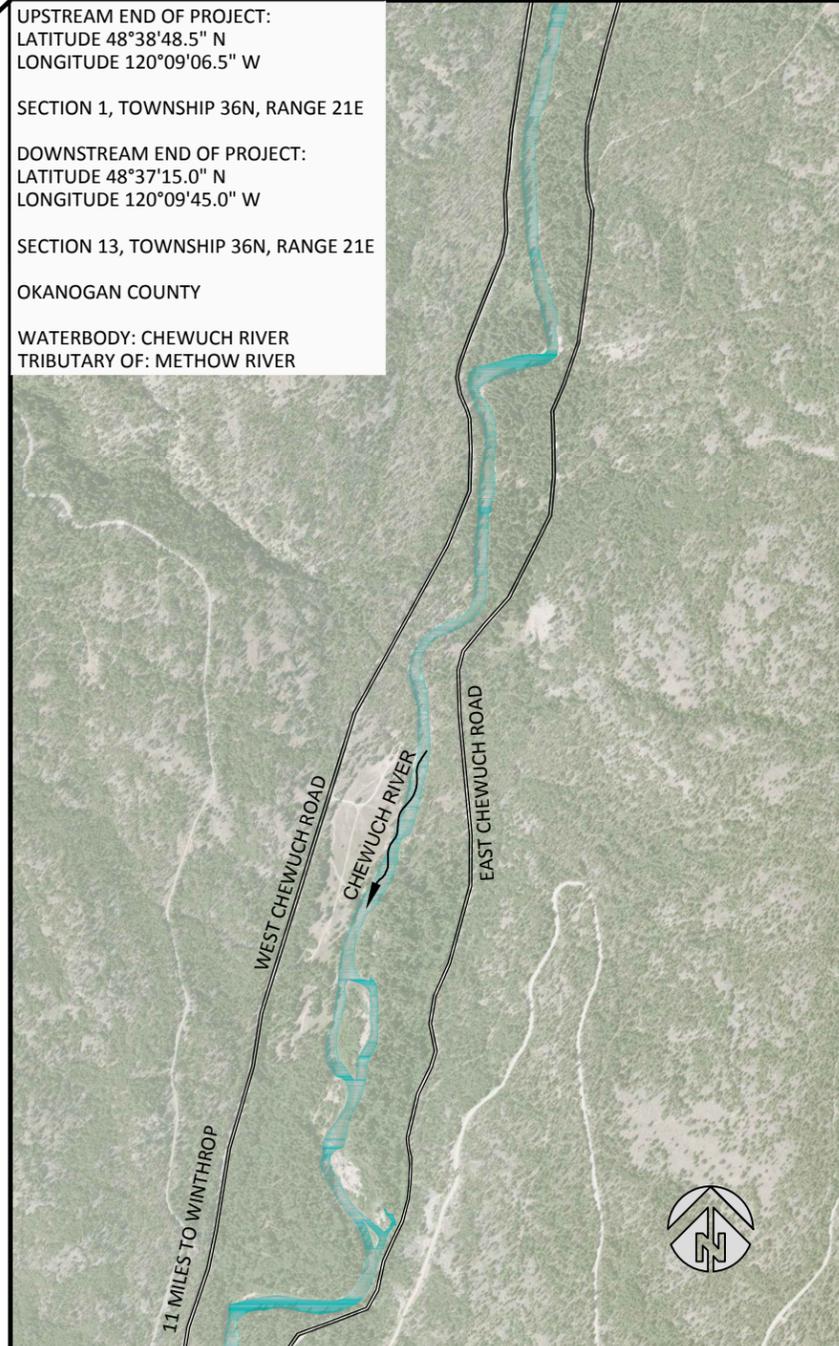
SECTION 13, TOWNSHIP 36N, RANGE 21E

OKANOGAN COUNTY

WATERBODY: CHEWUCH RIVER
 TRIBUTARY OF: METHOW RIVER



VICINITY MAP



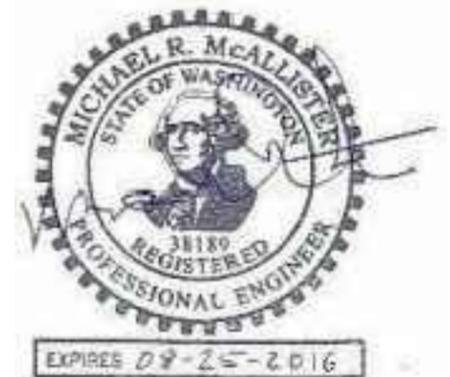
LOCATION MAP

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YAKAMA NATION FISHERIES
 2 JOHNSON LANE
 WINTHROP WA, 98862



NO.	BY	DATE	REVISION DESCRIPTION

RP,DF DRAWN	MB,MM DESIGNED	MB,MM CHECKED
MM APPROVED	04/01/15 DATE	PROJECT

Confederated Tribes and Bands of the Yakama Nation
 Chewuch RM 13-15.5
 Fish Habitat Enhancement Project



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

COVER, SHEET LIST AND
 VICINITY MAP

THE 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.

ALL WORK SHALL BE IN COMPLIANCE WITH REQUIREMENTS STATED IN PERMITS ISSUED FOR THIS PROJECT.

WDFW IN-WATER WORK PERIODS

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

EXISTING DATA

TOPOGRAPHIC DATA WAS COLLECTED BY INTER-FLUVE USING RTK AND TOTAL STATION IN OCTOBER, 2010.

HORIZONTAL DATUM: STATE PLANE NAD83 WASHINGTON NORTH
VERTICAL DATUM: NAVD88

HYDROLOGY INFORMATION PROVIDED BY USBR.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS (4.1.0).

GIS DATA INCLUDING: AERIAL PHOTOGRAPHY, LIDAR, FISH USE, SURFACE SOILS INFORMATION, LAND OWNERSHIP, AND TRANSPORTATION ROUTES PROVIDED BY VARIOUS AGENCIES.

SOILS

NO SOILS INVESTIGATIONS HAVE BEEN PERFORMED. SUBSURFACE SOILS ARE EXPECTED TO BE SAND, GRAVEL, COBBLES, BOULDERS. CONTRACTOR SHALL CONDUCT OWN INVESTIGATIONS IF ADDITIONAL DATA IS REQUIRED AT NO ADDITIONAL COST.

UTILITIES

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

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

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

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

CONSTRUCTION STAKING

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

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

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

CONSTRUCTION MATERIALS

ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY A PRE-PROJECT CONDITION SURVEY COMPARED AGAINST A PROJECT CONDITION SURVEY

CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL AT NO ADDITIONAL MEASURE OR COST. MEASUREMENT AND PAYMENT SHALL NOT BE BASED ON WEIGHT TICKETS OR TRUCK MEASURE WITHOUT PRIOR WRITTEN APPROVAL.

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

ANY EXCESS MATERIAL SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION OF THE STOCKPILE AND STAGING AREA. AT COMPLETION OF WORK, THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE FOR LEGAL DISPOSAL.

CONSTRUCTION ACCESS/TRAFFIC CONTROL

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

PUBLIC ACCESS TO/ALONG ROADWAYS SHALL BE MAINTAINED AND KEPT CLEAN AT ALL TIMES.

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 NEAT 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.

ALL DISTURBED AREAS INCLUDING ROADS, DRIVEWAYS AND ACCESS ROUTES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AND RE-VEGETATED PER PLANS.

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

ANY FENCES REMOVED FOR ACCESS OR CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.

STAGING AND STOCKPILE AREAS

STAGING AND STOCKPILE AREAS WILL BE FLAGGED BY THE OWNER. STAGING AREAS USED FOR CONSTRUCTION EQUIPMENT STORAGE, VEHICLE STORAGE, FUELING, SERVICING, AND HAZARDOUS MATERIAL STORAGE SHALL BE 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND. NATURAL MATERIALS MAY BE STOCKPILED NEAR INSTALLATION AREAS.

EQUIPMENT

BIODEGRADABLE HYDRAULIC FLUID SHALL BE USED IN EACH EXCAVATOR WORKING WITHIN LIVE WATER. MECHANIZED EQUIPMENT AND VEHICLES SHALL BE INSPECTED DAILY FOR LEAKS, AND CLEANED THOROUGHLY BEFORE OPERATION NEAR WATER.

TREE SALVAGE

ALL TREES AND SLASH REMOVED FOR CONSTRUCTION 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. CONTRACTOR IS RESPONSIBLE FOR REMOVING SMALLER CLEARING AND GRUBBING DEBRIS FROM THE SITE AND DISPOSING AT A LEGAL LOCATION AT THE END OF THE PROJECT UNLESS DIRECTED BY THE OWNER'S REPRESENTATIVE.

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

LIVE TREES

ALL TREES NOT MARKED FOR REMOVAL SHALL BE LEFT STANDING UNDISTURBED. AVOID THE DRIPLINE IF POSSIBLE. CONSTRUCTION ACTIVITY SHALL NOT DEBARK OR DAMAGE LIVE TREES.

FISH RESCUE

ALL FISH RESCUE EFFORTS SHALL BE SUPERVISED BY A YAKAMA NATION FISHERIES/AQUATIC BIOLOGIST EXPERIENCED WITH THE COLLECTION AND HANDLING OF SALMONID FISHES 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 INTO RIVER AT AREAS SELECTED BY A YNF BIOLOGIST.



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GENERAL NOTES

EROSION/SEDIMENTATION CONTROL (ESC) PLAN

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

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

- A. THE IMPLEMENTATION OF AN ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
- B. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
- C. ESC FACILITIES AS APPROXIMATELY SHOWN ON THIS PLAN ARE TO BE CONSTRUCTED PRIOR TO CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER SURFACE WATERS, THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER STANDARDS.
- D. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED AT NO ADDITIONAL COST FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
- E. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
- F. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A WEEK OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.
- 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.

INSPECTION AND MAINTENANCE

ALL ESC FACILITIES SHALL BE INSPECTED, MAINTAINED, AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL ESC FACILITIES SHALL BE INSPECTED DAILY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.

CONTRACTOR'S ESC RECORD

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

1. WHEN MAJOR GRADING ACTIVITIES OCCUR.
2. DATES OF RAINFALL EVENTS EITHER EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 INCHES/24 HOURS.
3. WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON SITE, OR ON A PORTION OF THE SITE.
4. WHEN STABILIZATION MEASURES ARE INITIATED FOR PORTIONS OF THE SITE.
5. 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.

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 THREE 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 AS SOON AS PRACTICAL NOT INDICATED IN THE CONTRACT DOCUMENTS FOR OTHER PERMANENT STABILIZATION MEASURES.

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 SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BEST MANAGEMENT PRACTICES (BPMs) 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

CONSTRUCTION DEWATERING

TEMPORARY COFFERDAMS SHALL BE USED TO ISOLATE IN-CHANNEL EXCAVATION AREAS FROM THE RIVER.

DEWATERING OF IN-CHANNEL WORK AREAS 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.

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. (SEE CONSTRUCTION DEWATERING).

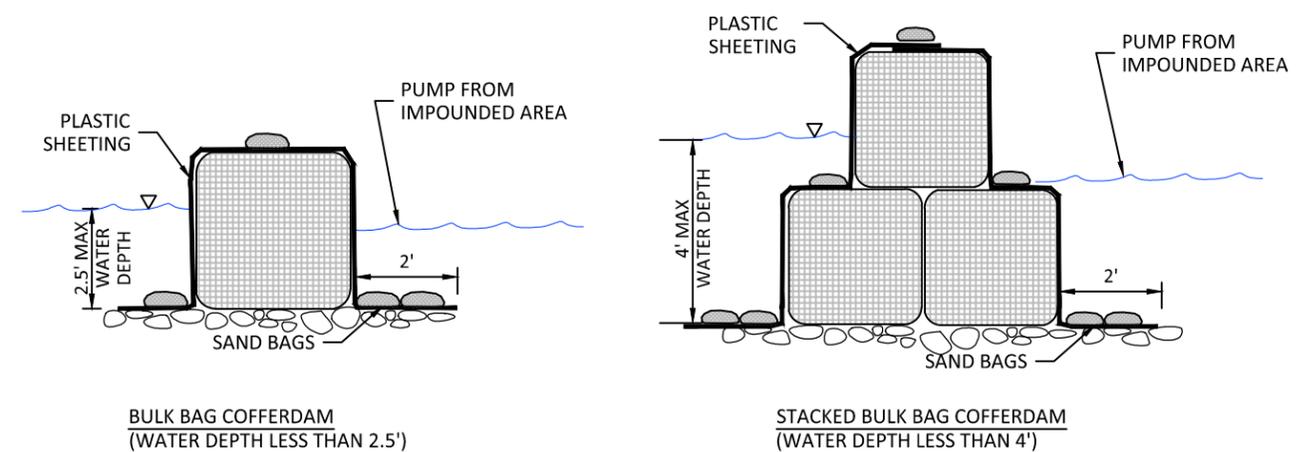
OWNER'S REPRESENTATIVE SHALL APPROVE DEWATERING DISCHARGE LOCATION PRIOR TO IMPLEMENTATION.

CONTRACTOR SHALL PERFORM CONSTRUCTION DEWATERING IN SUCH A MANNER AS TO AVOID THE RELEASE OF SEDIMENT-LADEN WATER TO 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 THE RIVER, A 'DIRT-BAG' OR SEDIMENT RETENTION STRUCTURE MAY BE REQUIRED AS NECESSARY TO COMPLY WITH LAWS AND PERMIT REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.

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

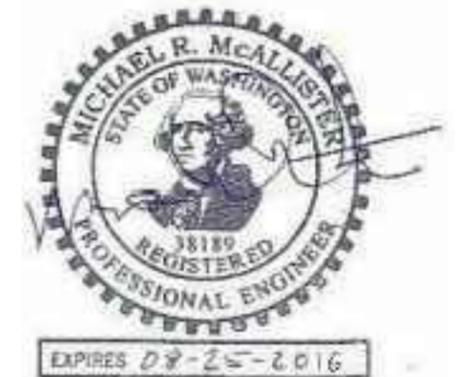
EQUIPMENT

BIODEGRADABLE HYDRAULIC FLUID SHALL BE USED IN EACH EXCAVATOR WORKING WITHIN LIVE WATER. MECHANIZED EQUIPMENT AND VEHICLES SHALL BE INSPECTED DAILY FOR LEAKS, AND CLEANED THOROUGHLY BEFORE OPERATION NEAR WATER.



BULK BAG NOTES:

1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WASHED SPAWNING GRAVEL, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT SEPARATES THE CONSTRUCTION SITE FROM THE RIVER.
2. IF WATER DEPTH EXCEEDS 85% OF THE BULK BAG HEIGHT, AN ADDITIONAL TOP ROW OF BULK BAGS SHALL BE INSTALLED, SUPPORTED BY TWO BOTTOM ROWS OF BULK BAGS.
3. BULK BAG COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY SANDBAGS FILLED WITH PEA GRAVEL. PLACED IN ROWS ON TOP OF COFFERDAM, AND AT TOE OF COFFERDAM. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON BOTH SIDES OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING MINIMUM 2- FEET FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY MINIMUM TWO ROWS OF STANDARD SANDBAGS.
4. IF POSSIBLE, THE ENDS OF THE COFFERDAM SHALL BE EXTENDED ONTO A DRY GRAVEL BAR. IF THE END MUST BE TERMINATED AT A WET 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.
5. BULK BAGS SHALL BE WATERPROOF CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.
6. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL BE LONG ENOUGH TO ENSURE THAT ENTIRE LENGTH OF COFFERDAM WILL BE COVERED WITHOUT A SEAM. MINIMUM 12-FT WIDE ROLL SHALL BE USED FOR SINGLE LAYER BULK BAG COFFERDAM. TWO LENGTHS OF 12-FT WIDE ROLL SHALL BE USED FOR 2-LAYER STACKED BULK BAG COFFERDAM.
7. CONTRACTOR SHALL PROVIDE PUMPING SUFFICIENT TO LOWER WATER SURFACE IN THE IMPOUNDED AREA IN ORDER TO CAUSE ANY LEAKS UNDER THE COFFERDAM TO PASS WATER TOWARD THE WORK AREA INSTEAD OF FROM THE WORK AREA TO THE RIVER. DISCHARGE TURBID WATER TO UPLAND FLOODPLAIN. PUMP SHALL BE POSITIONED SUFFICIENTLY DOWNSTREAMS TO INTERCEPT ALL TURBIDITY.
9. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED.
10. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.
11. IF NECESSARY, GAPS BETWEEN BULK BAGS SHALL BE FILLED WITH WASHED GRAVEL TO SEAL AND IMPROVE COFFER DAM. DISPOSAL OF ROCK SHALL BE DETERMINED BY OWNER.



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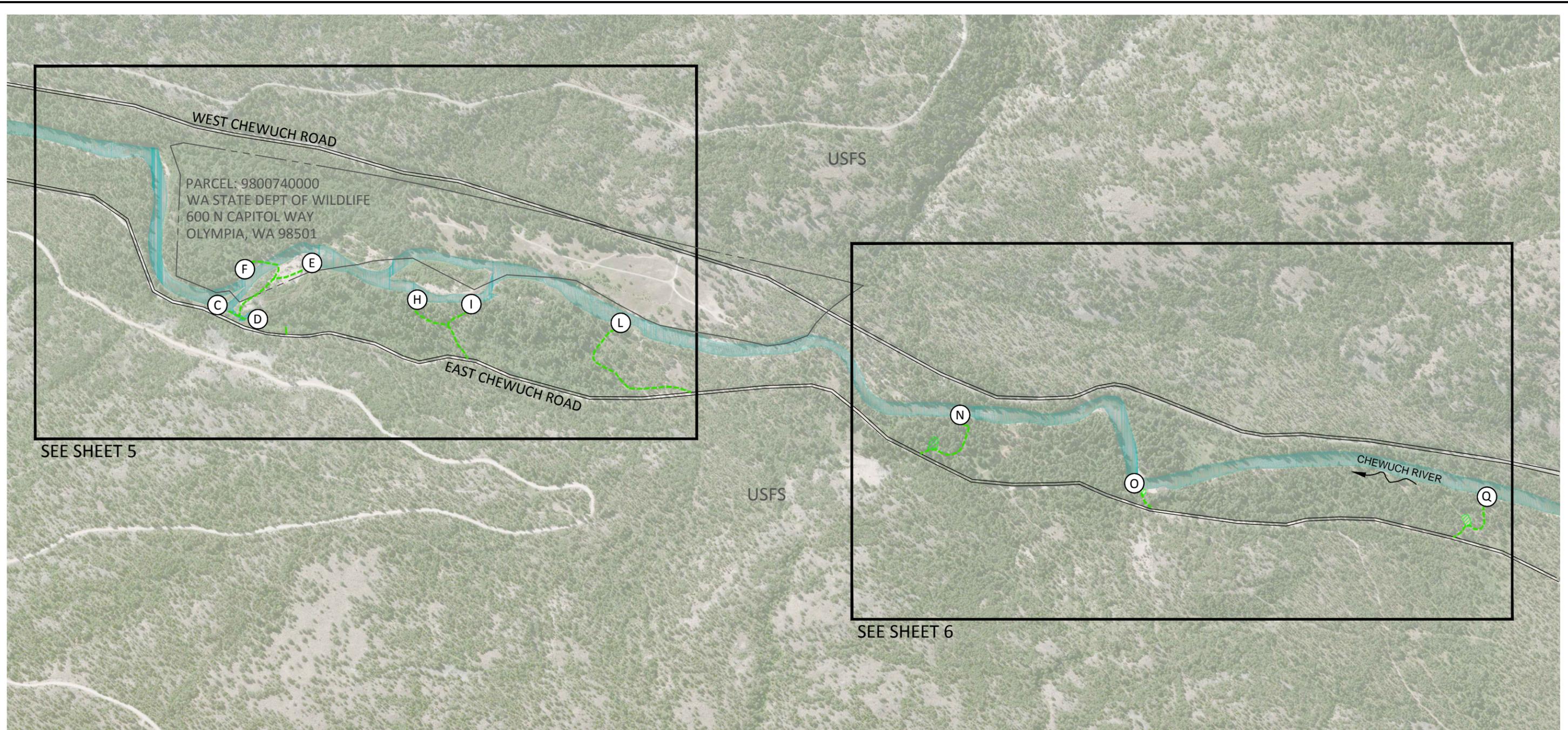
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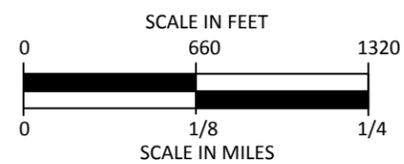
EROSION CONTROL TYPICAL
DETAILS AND NOTES

SHEET
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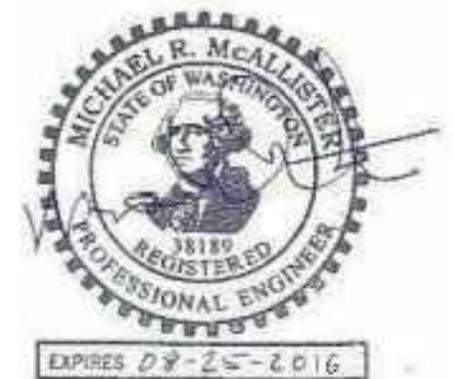


LEGEND

- PROPERTY LINES
- TEMPORARY ACCESS
- STAGING / STOCKPILE AREA
- PROJECT SITE



SITE PLAN



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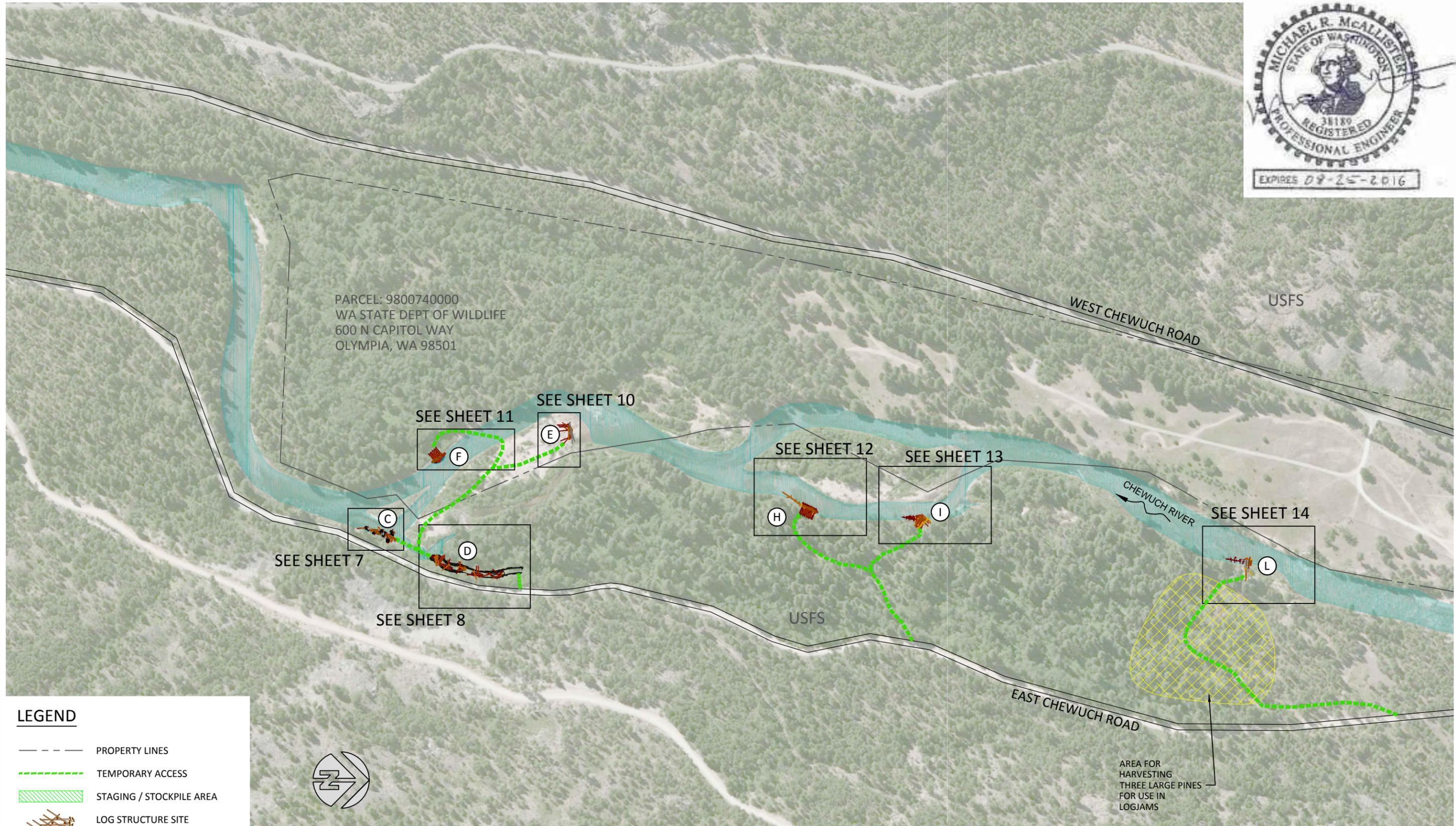
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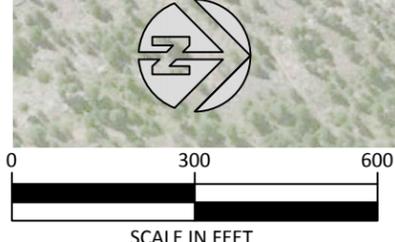
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OVERVIEW - SITE LOCATIONS



LEGEND

- PROPERTY LINES
- TEMPORARY ACCESS
- STAGING / STOCKPILE AREA
- LOG STRUCTURE SITE
- SITE NAME



SITE PLAN

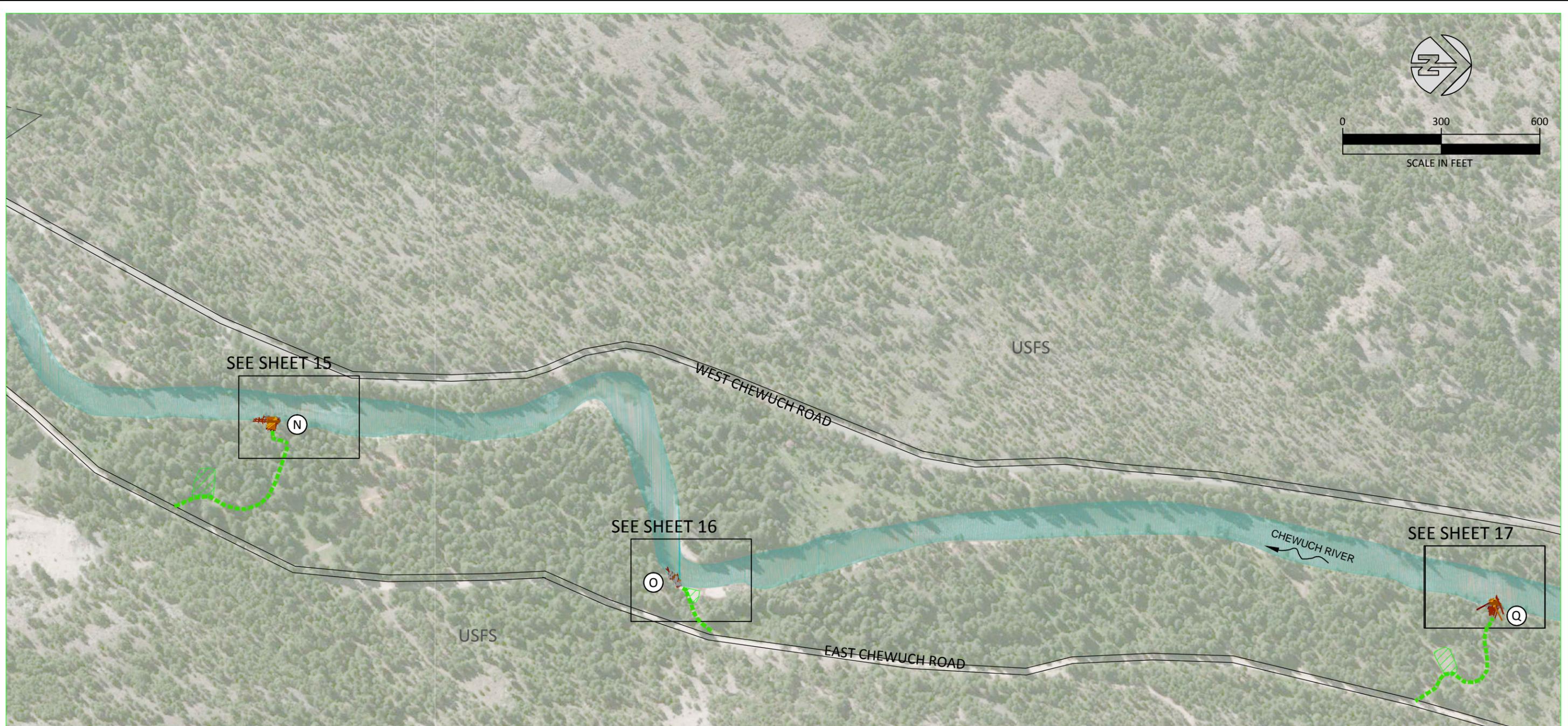
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PROJECT SITES A-L,
ACCESS, STAGING



LEGEND

-  PROPERTY LINES
-  TEMPORARY ACCESS
-  STAGING / STOCKPILE AREA
-  LOG STRUCTURE SITE
-  SITE NAME

SITE PLAN



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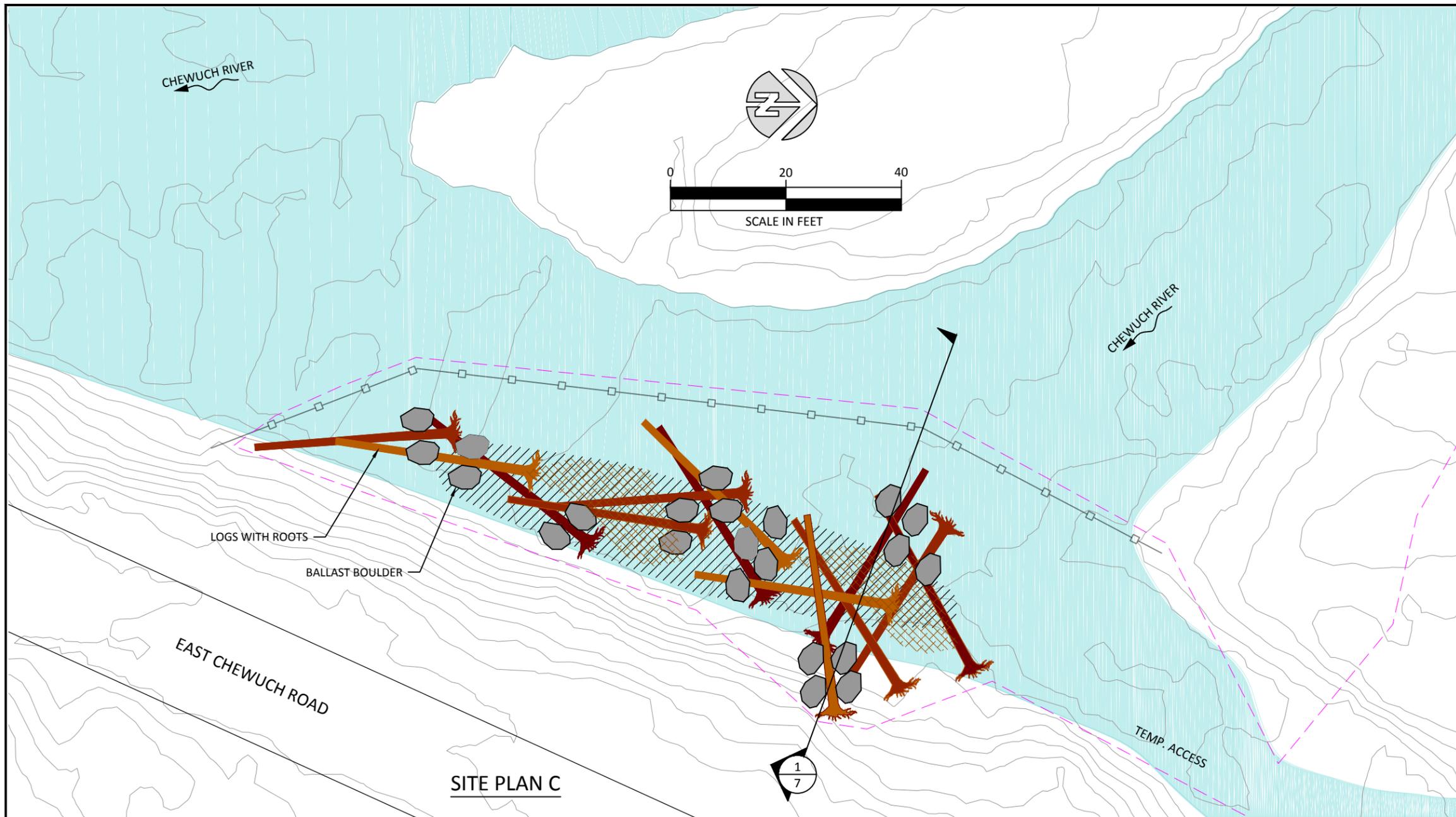
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PROJECT SITES N-Q,
 ACCESS, STAGING

SHEET
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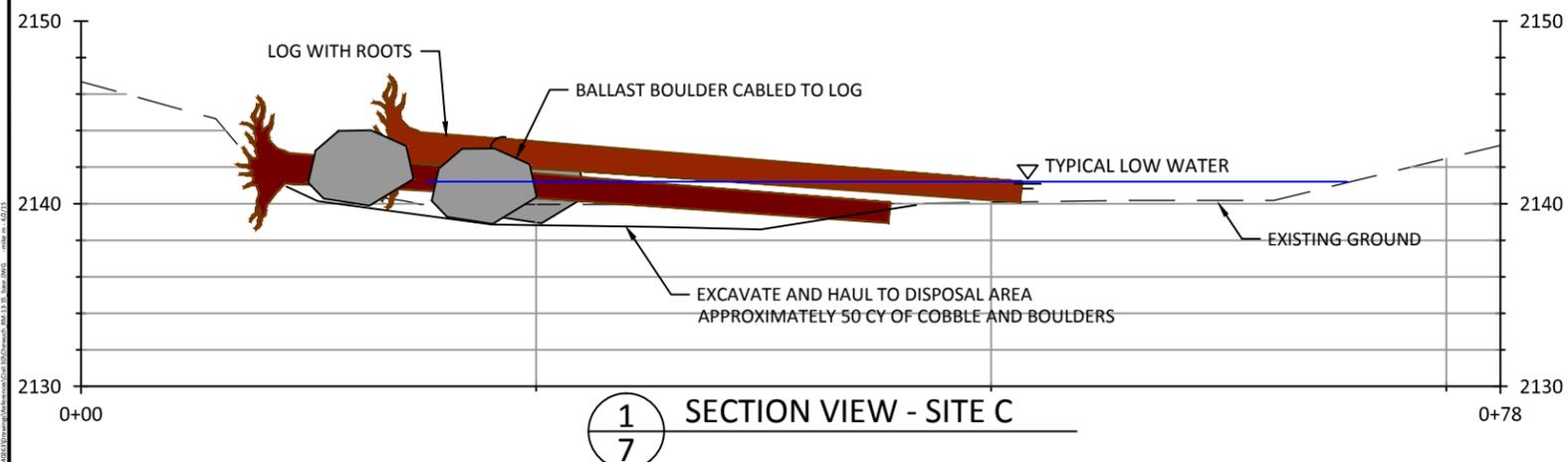


CONSTRUCTION QUANTITIES	
ITEM	QUANTITY
LOG WITH ROOTS	13
4' DIAMETER BOULDER	22
EXCAVATE AND HAUL TO LEROY PIT	50 CY
SILT FENCE	180 FT
SLASH	20 CY

- QUANTITIES NOTES:**
1. LOAD AND HAUL BOULDERS TO SITE FROM LEROY PIT.
 2. ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED TO THE PROJECT FINAL CONDITION.
 3. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL WITH NO ADDITIONAL MEASUREMENT OR COST TO THE OWNER.
 4. TEMPORARY STOCKPILE OF EXCAVATED MATERIAL SHALL BE WITHIN DESIGNATED LIMITS OF DISTURBANCE.
 5. ON ACCESS ROUTES AND DISTURBANCE AREA FOR PROJECT SITE, SALVAGE TREES, SHRUBS, AND WOODY DEBRIS TO BE USED AS SLASH.

LEGEND

- LIMITS OF DISTURBANCE
- SILT FENCE
- APPROXIMATE LOW WATER
- IMPORTED SLASH
- EXCAVATION AREA
- LOG LAYER 1
- LOG LAYER 2
- LOG LAYER 3
- BOULDER



- LOG NOTES:**
1. LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
 2. INSTALL SLASH LOOSELY BETWEEN/BENEATH LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.



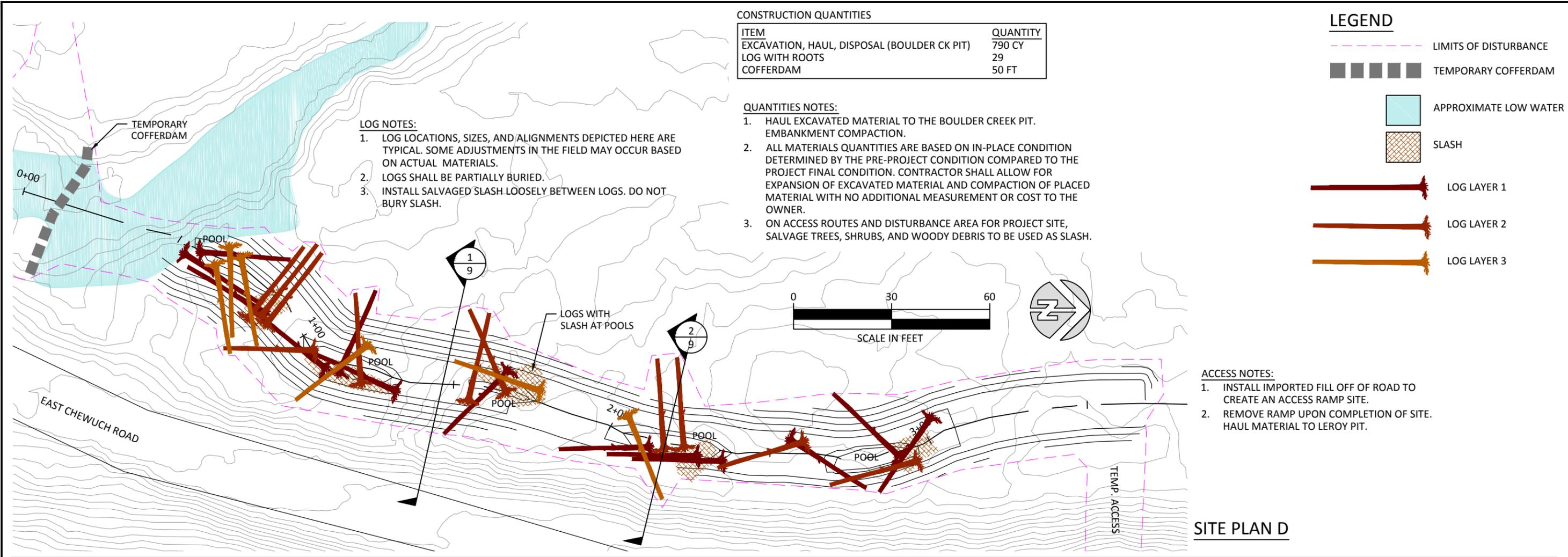
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MM APPROVED	04/01/15 DATE	PROJECT

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SITE C



CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATION, HAUL, DISPOSAL (BOULDER CK PIT)	790 CY
LOG WITH ROOTS	29
COFFERDAM	50 FT

- QUANTITIES NOTES:**
- HAUL EXCAVATED MATERIAL TO THE BOULDER CREEK PIT. EMBANKMENT COMPACTION.
 - ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED TO THE PROJECT FINAL CONDITION. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL WITH NO ADDITIONAL MEASUREMENT OR COST TO THE OWNER.
 - ON ACCESS ROUTES AND DISTURBANCE AREA FOR PROJECT SITE, SALVAGE TREES, SHRUBS, AND WOODY DEBRIS TO BE USED AS SLASH.

- LOG NOTES:**
- LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
 - LOGS SHALL BE PARTIALLY BURIED.
 - INSTALL SALVAGED SLASH LOOSELY BETWEEN LOGS. DO NOT BURY SLASH.

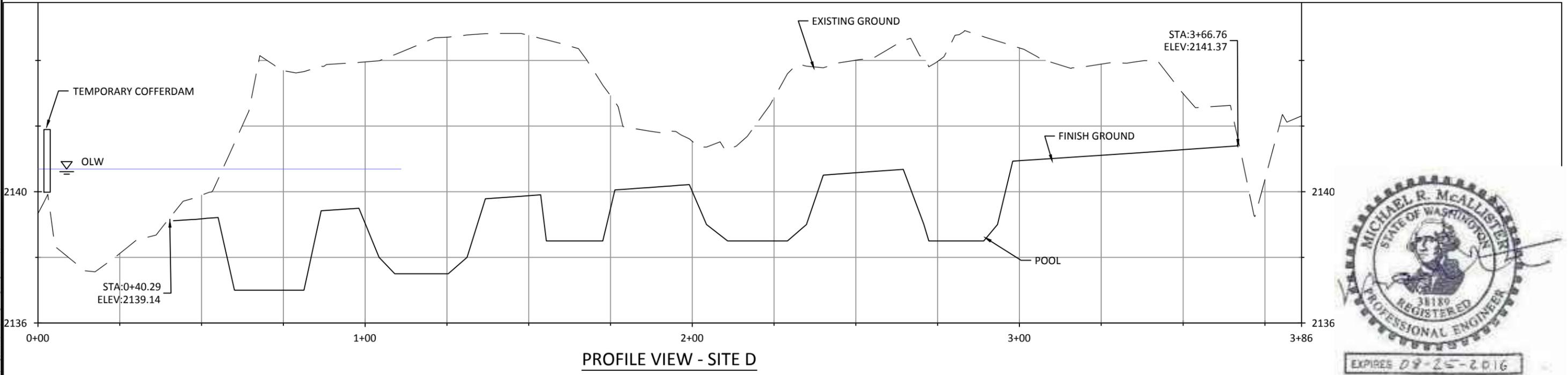
LEGEND

- LIMITS OF DISTURBANCE
- ■ ■ ■ ■ TEMPORARY COFFERDAM
- APPROXIMATE LOW WATER
- SLASH
- LOG LAYER 1
- LOG LAYER 2
- LOG LAYER 3



- ACCESS NOTES:**
- INSTALL IMPORTED FILL OFF OF ROAD TO CREATE AN ACCESS RAMP SITE.
 - REMOVE RAMP UPON COMPLETION OF SITE. HAUL MATERIAL TO LEROY PIT.

SITE PLAN D



PROFILE VIEW - SITE D

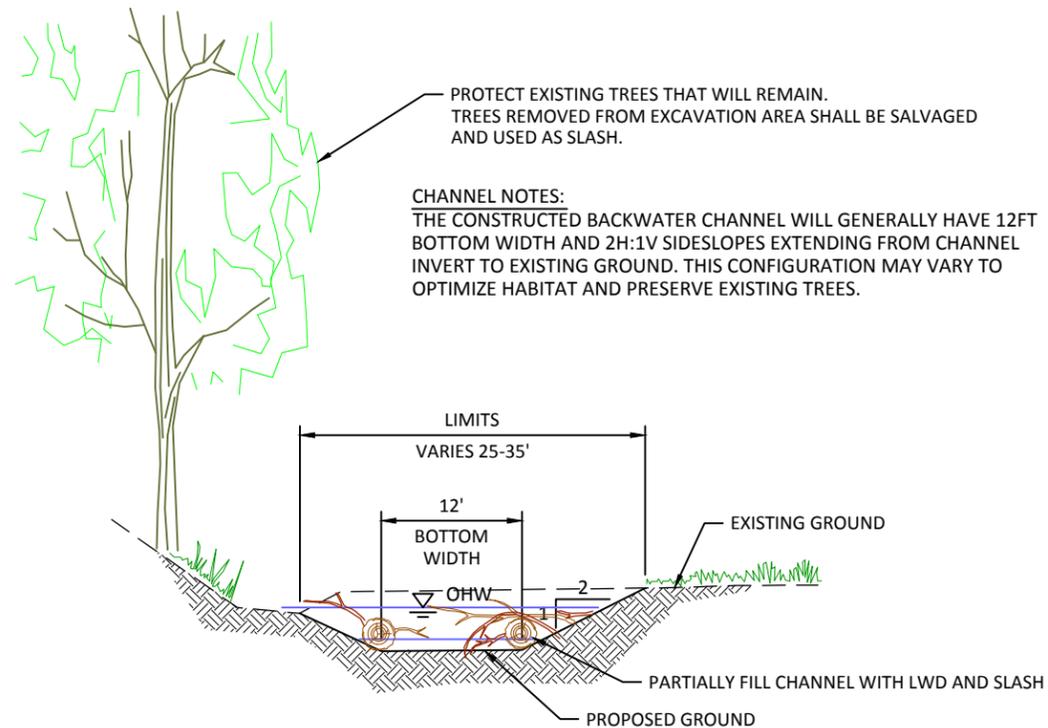
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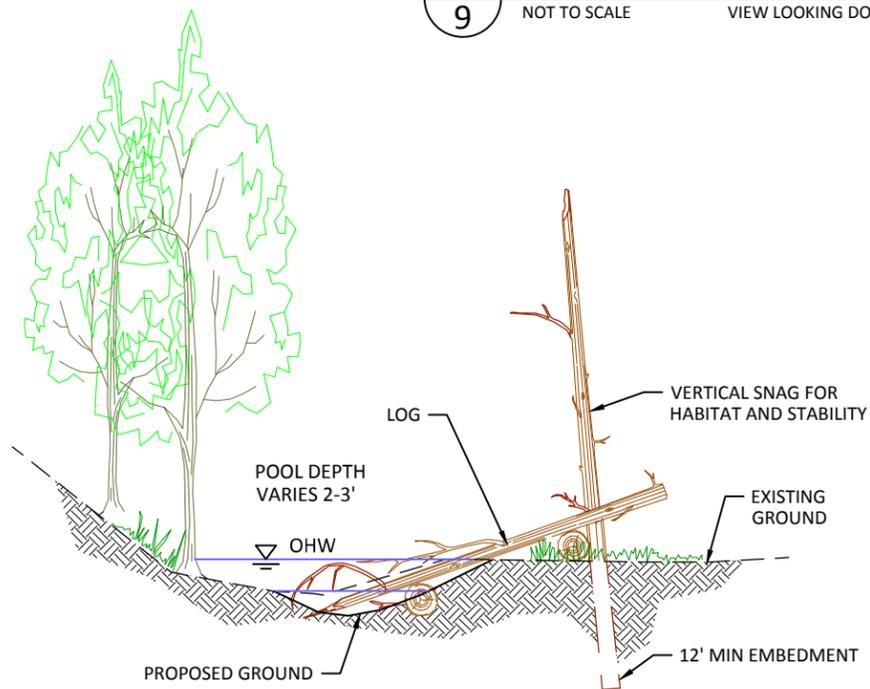
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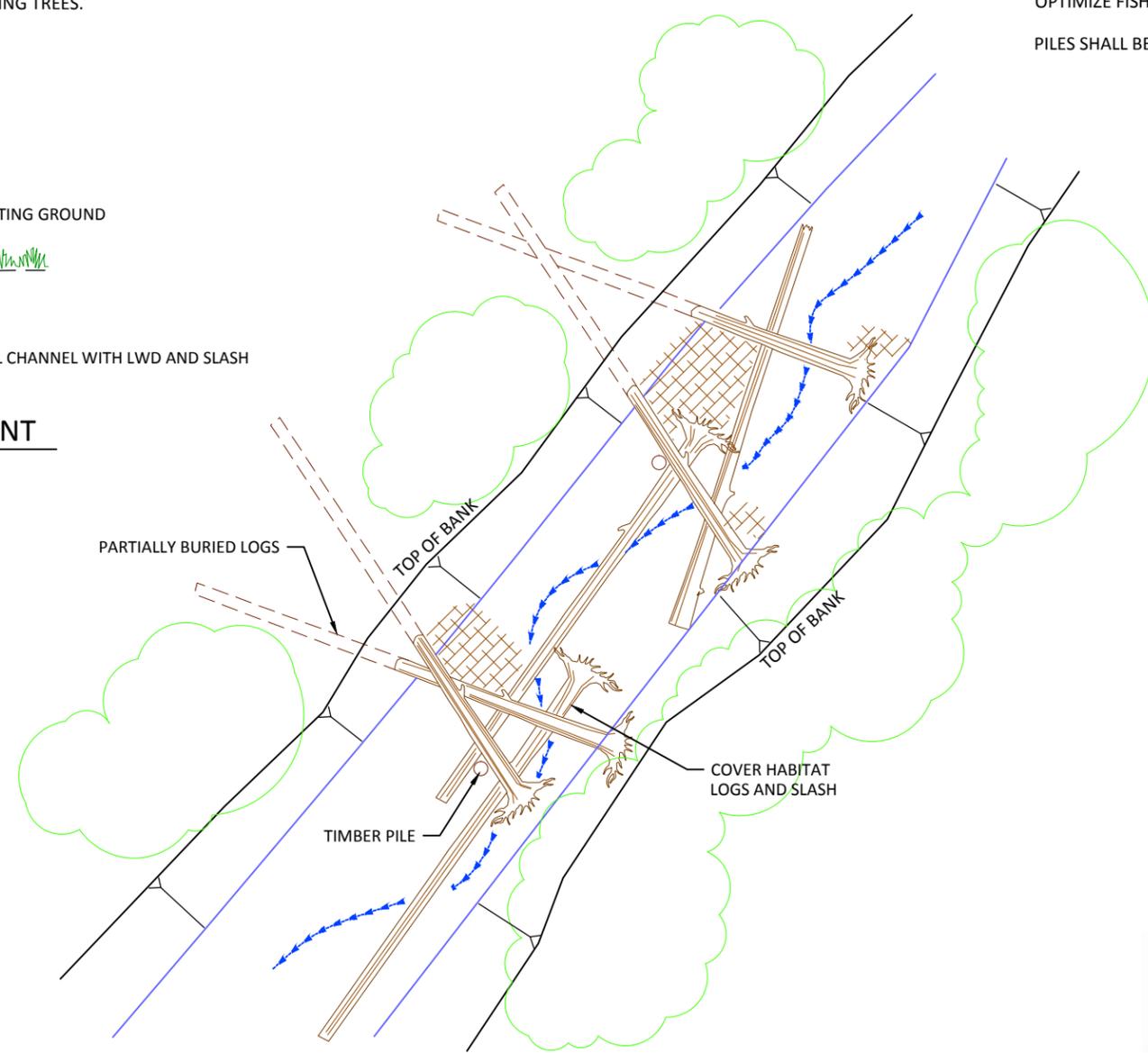
SITE D GRADING PLAN



1 SECTION - BACKWATER ENHANCEMENT
NOT TO SCALE VIEW LOOKING DOWNSTREAM



2 SECTION - BACKWATER ENHANCEMENT, POOL WITH LWD
NOT TO SCALE VIEW LOOKING DOWNSTREAM



3 PLAN VIEW - TYPICAL BACKWATER ALCOVE
NOT TO SCALE

LWD NOTES:

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

BRACING TO EXISTING TREES OR INSTALLED VERTICAL LOGS WILL OCCUR AT LOCATIONS IDENTIFIED IN THE FIELD TO PROVIDE HORIZONTAL STABILITY. SLASH AND TREE TOPS WILL BE INSTALLED AT "RACKING" LOCATIONS TO EMULATE NATURAL DEBRIS ACCUMULATIONS AND TO OPTIMIZE FISH HABITAT.

PILES SHALL BE INSTALLED BY VIBRATORY DRIVER.



NO.	BY	DATE	REVISION DESCRIPTION

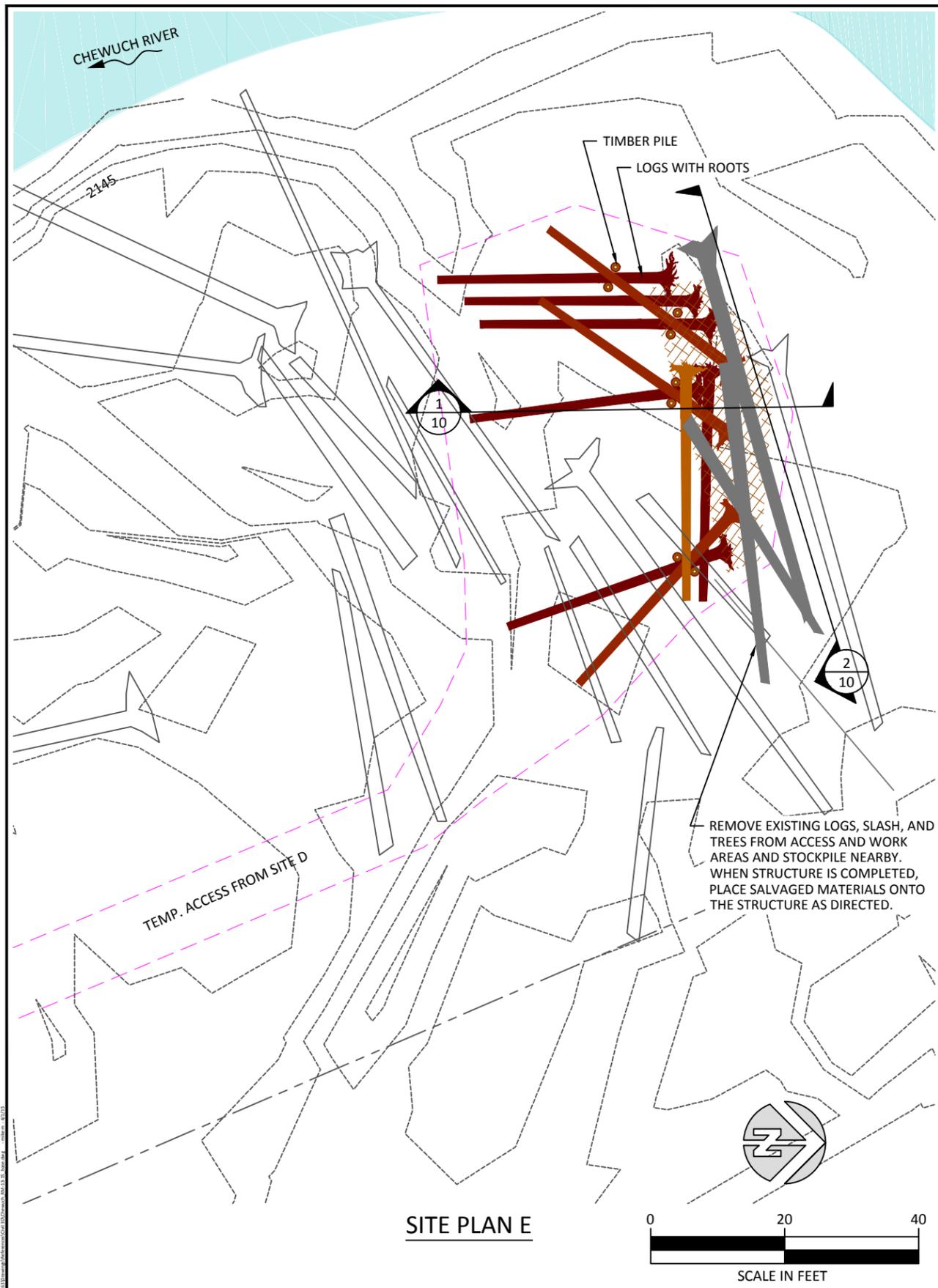
RP,DF DRAWN	MB,MM DESIGNED	MB,MM CHECKED
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SITE D TYPICAL DETAILS



LEGEND

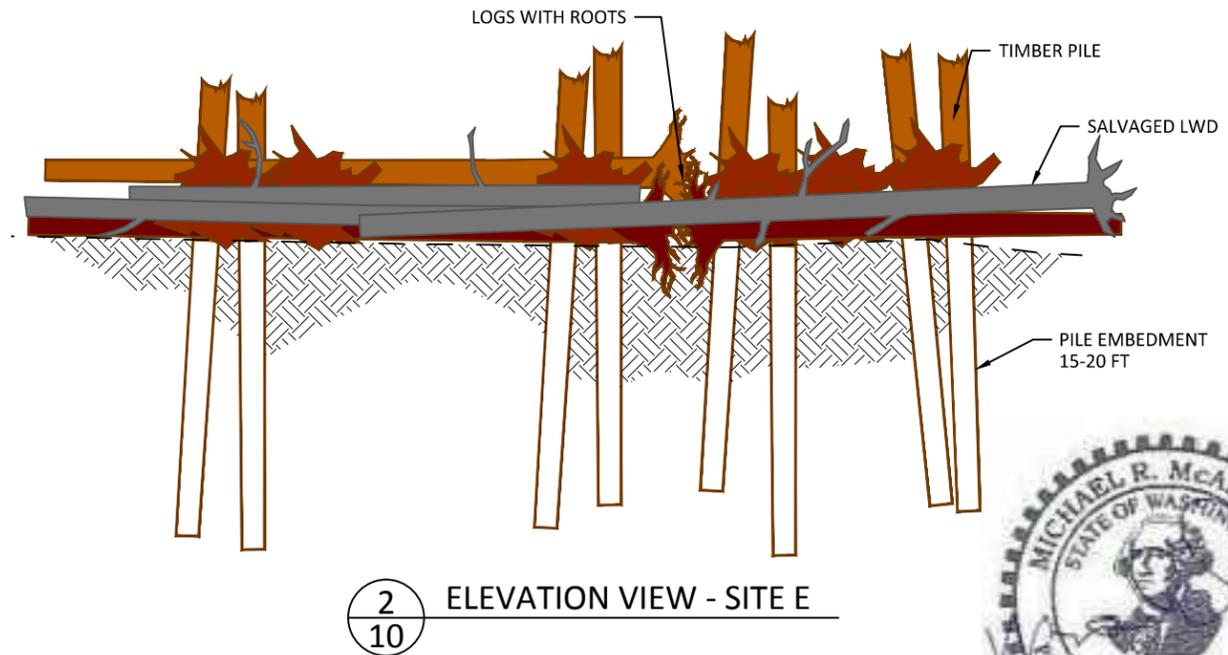
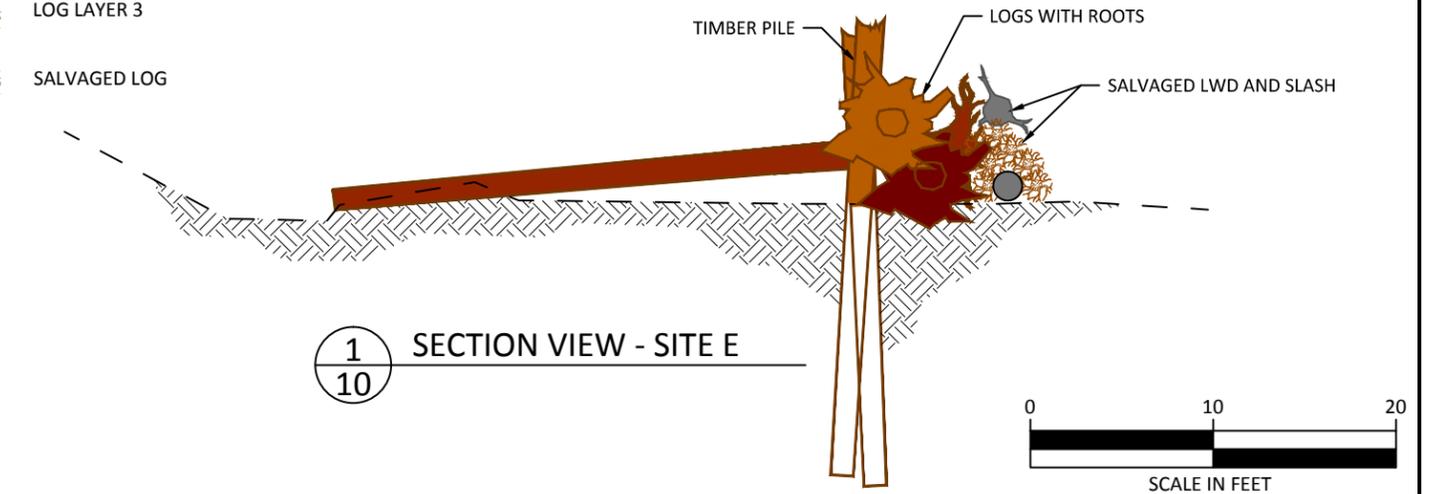
- LIMITS OF DISTURBANCE
- APPROXIMATE LOW WATER
- SLASH
- LOG LAYER 1
- LOG LAYER 2
- LOG LAYER 3
- SALVAGED LOG

CONSTRUCTION QUANTITIES

ITEM	QUANTITY
LOG WITH ROOTS	10
TIMBER PILE	8

NOTES:

1. WOOD PLACEMENTS SHOWN ON PLANS ARE APPROXIMATE AND SUBJECT TO CHANGE IN THE FIELD.
2. SALVAGE EXISTING WOOD ON THE GRAVEL BAR AND INCORPORATE INTO THE CONSTRUCTED STRUCTURE.
3. SHRUBS AND SLASH GENERATED FROM SITE ACCESS SHALL BE INCORPORATED INTO THE STRUCTURE.
4. VARY THE APPEARANCE OF TIMBER PILES BY INSTALLING THEM AT ANGLES AND WITH DIFFERENT TOP HEIGHTS. BREAK THE TOPS IF POSSIBLE.
5. PILES SHALL BE INSTALLED BY VIBRATORY DRIVER.



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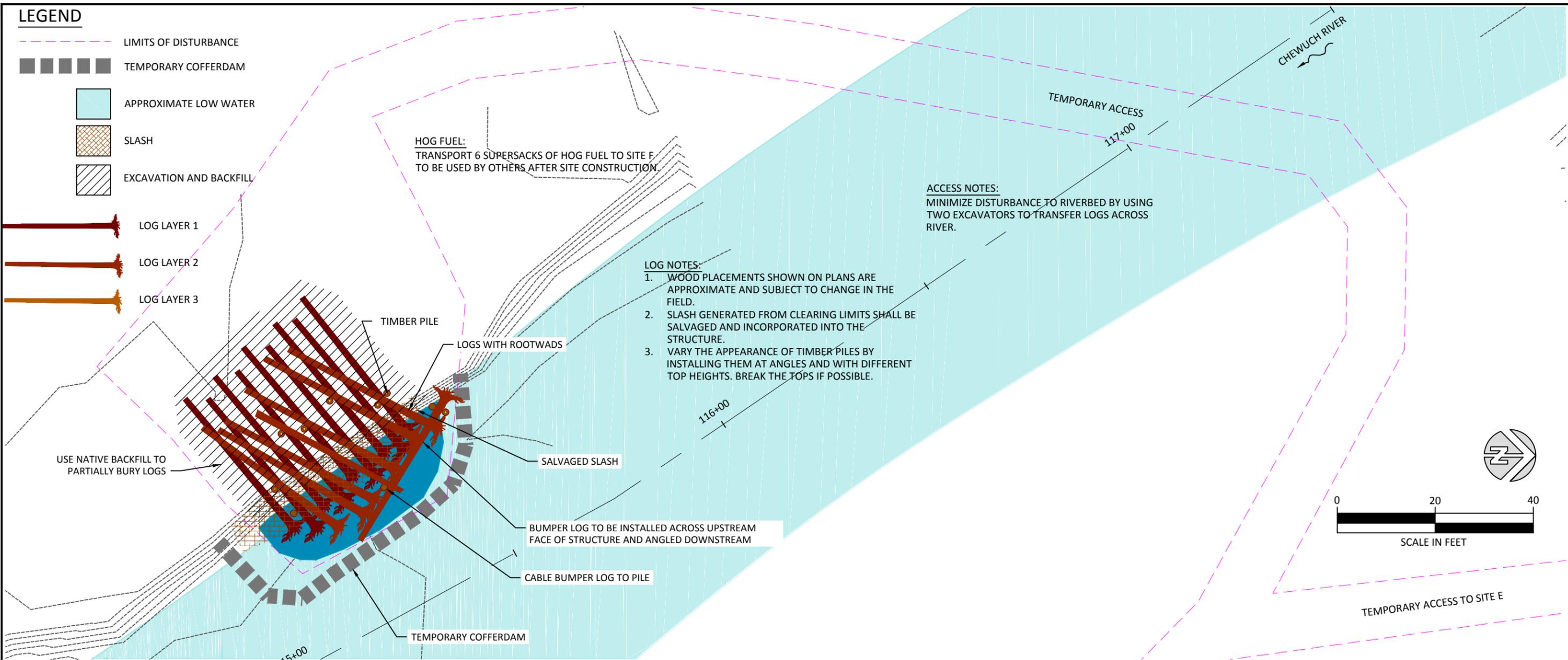


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SITE E	SHEET 10 OF 22
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LEGEND

-  LIMITS OF DISTURBANCE
-  TEMPORARY COFFERDAM
-  APPROXIMATE LOW WATER
-  SLASH
-  EXCAVATION AND BACKFILL
-  LOG LAYER 1
-  LOG LAYER 2
-  LOG LAYER 3

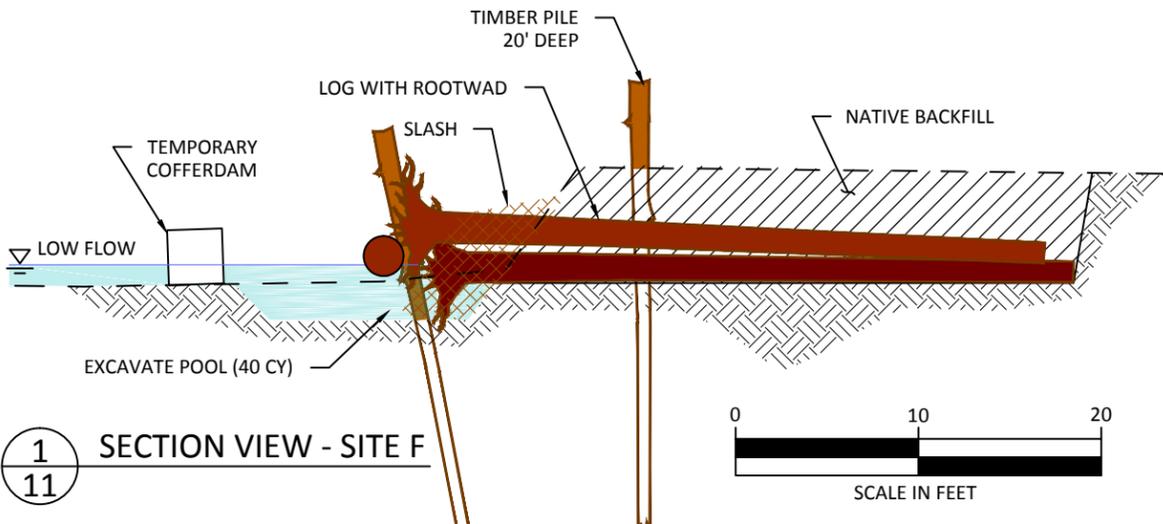
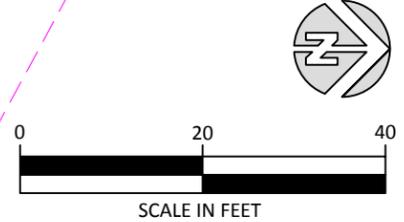


LOG NOTES:

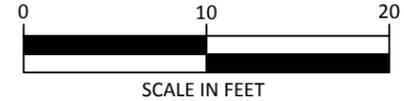
1. WOOD PLACEMENTS SHOWN ON PLANS ARE APPROXIMATE AND SUBJECT TO CHANGE IN THE FIELD.
2. SLASH GENERATED FROM CLEARING LIMITS SHALL BE SALVAGED AND INCORPORATED INTO THE STRUCTURE.
3. VARY THE APPEARANCE OF TIMBER PILES BY INSTALLING THEM AT ANGLES AND WITH DIFFERENT TOP HEIGHTS. BREAK THE TOPS IF POSSIBLE.

ACCESS NOTES:
MINIMIZE DISTURBANCE TO RIVERBED BY USING TWO EXCAVATORS TO TRANSFER LOGS ACROSS RIVER.

HOG FUEL:
TRANSPORT 6 SUPERSACKS OF HOG FUEL TO SITE F TO BE USED BY OTHERS AFTER SITE CONSTRUCTION.



1 SECTION VIEW - SITE F
11



CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATION	440CY
BACKFILL	440 CY
LOG WITH ROOTS	17
TIMBER PILE	10
COFFERDAM	85 FT

QUANTITIES NOTES:

1. ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED TO THE PROJECT FINAL CONDITION.
2. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL WITH NO ADDITIONAL MEASUREMENT OR COST TO THE OWNER.
3. TEMPORARY STOCKPILE OF EXCAVATED MATERIAL SHALL BE WITHIN DESIGNATED LIMITS OF DISTURBANCE.
4. ON ACCESS ROUTES AND DISTURBANCE AREA FOR PROJECT SITE, SALVAGE TREES, SHRUBS, AND WOODY DEBRIS TO BE USED AS SLASH.
5. HAUL EXCESS FILL TO DESIGNATED DISPOSAL SITE AND EMBANKMENT COMPACT.

SITE PLAN F

NO.	BY	DATE	REVISION DESCRIPTION

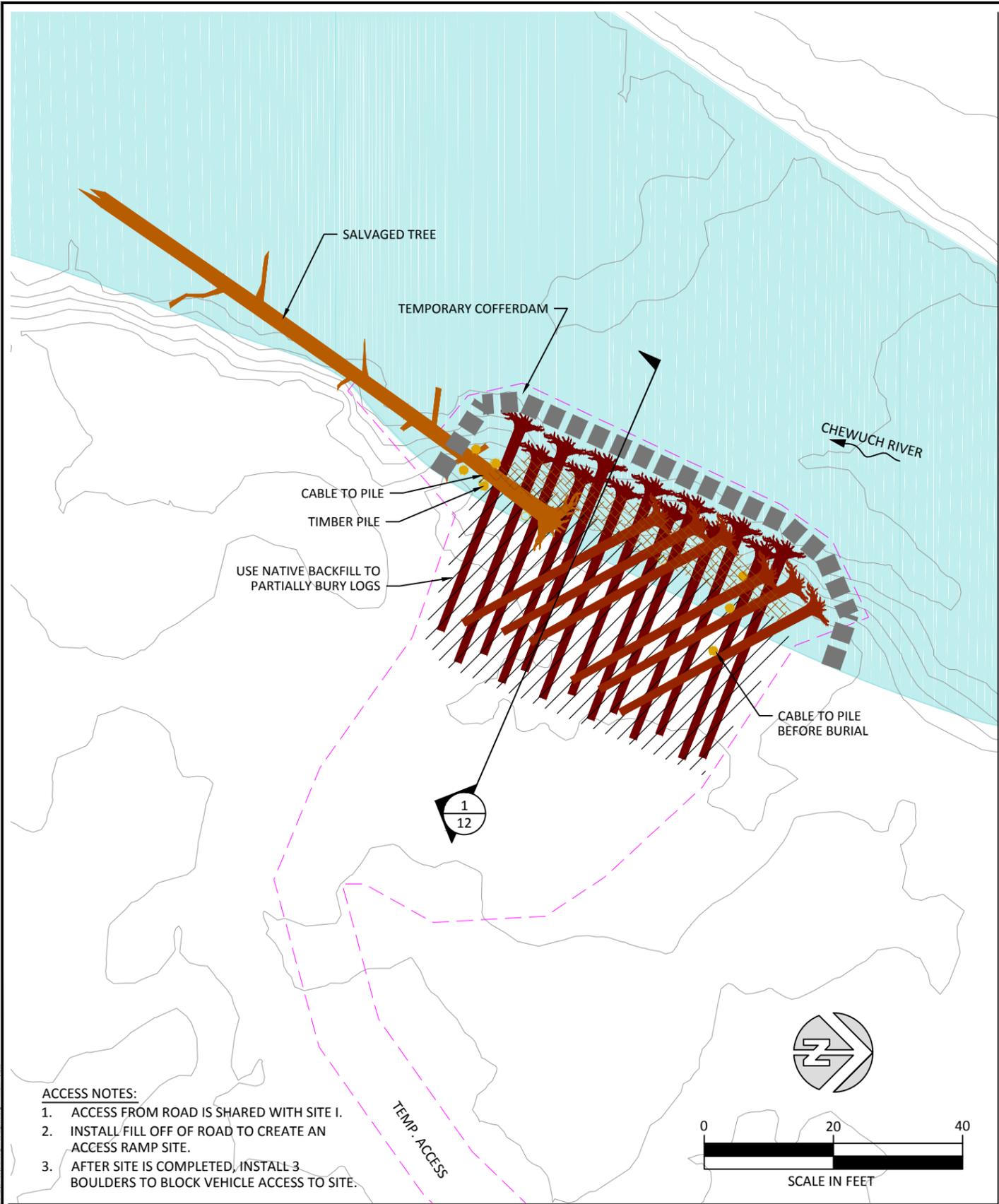
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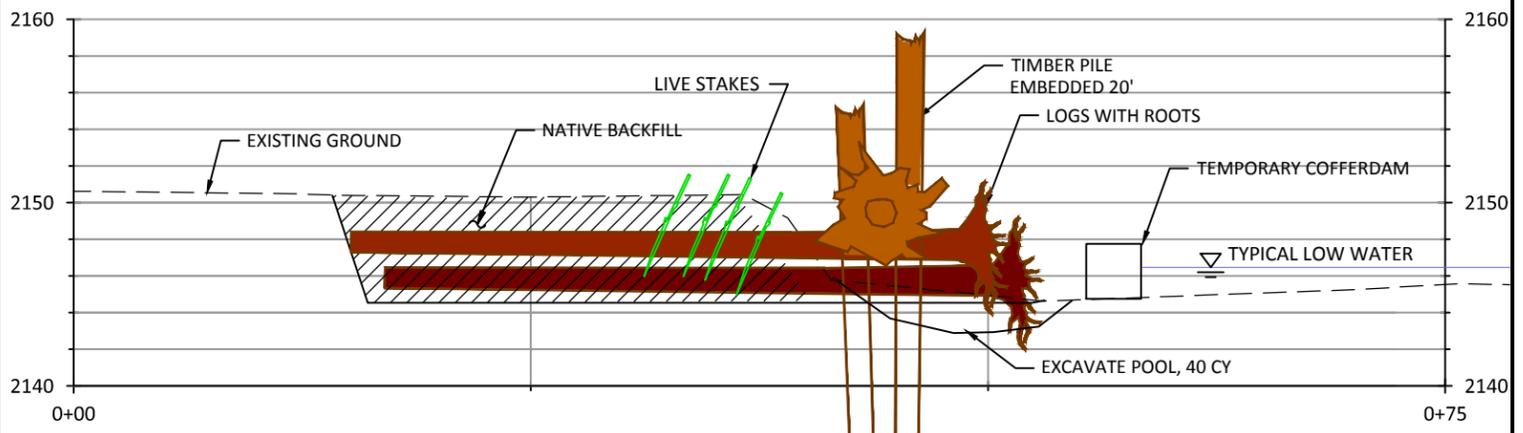
SITE F



ITEM	QUANTITY
EXCAVATION	320 CY
BACKFILL	240 CY
HAUL EXCESS TO BOULDER CK PIT	80 CY
LOG WITH ROOTS	19
TIMBER PILE	7
SALVAGED TREE WTH ROOTS	1
COFFERDAM	90 FT

- QUANTITIES NOTES:**
1. ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED TO THE PROJECT FINAL CONDITION.
 2. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL WITH NO ADDITIONAL MEASUREMENT OR COST TO THE OWNER.
 3. TEMPORARY STOCKPILE OF EXCAVATED MATERIAL SHALL BE WITHIN DESIGNATED LIMITS OF DISTURBANCE.
 4. ON ACCESS ROUTES AND DISTURBANCE AREA FOR PROJECT SITE, SALVAGE TREES, SHRUBS, AND WOODY DEBRIS TO BE USED AS SLASH.
 5. REMOVE COFFERDAM BEFORE INSTALLING SALVAGED TREE.

- LOG NOTES:**
1. LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
 2. INSTALL SLASH LOOSELY BETWEEN LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.



1
12 SECTION VIEW - SITE H

- LEGEND**
- LIMITS OF DISTURBANCE
 - TEMPORARY COFFERDAM
 - APPROXIMATE LOW WATER
 - SLASH
 - EXCAVATION AND BACKFILL
 - LOG LAYER 1
 - LOG LAYER 2
 - LOG LAYER 3

- ACCESS NOTES:**
1. ACCESS FROM ROAD IS SHARED WITH SITE I.
 2. INSTALL FILL OFF OF ROAD TO CREATE AN ACCESS RAMP SITE.
 3. AFTER SITE IS COMPLETED, INSTALL 3 BOULDERS TO BLOCK VEHICLE ACCESS TO SITE.

SITE PLAN H



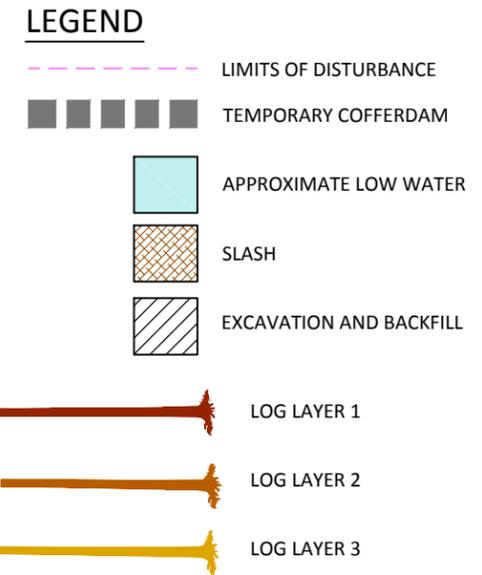
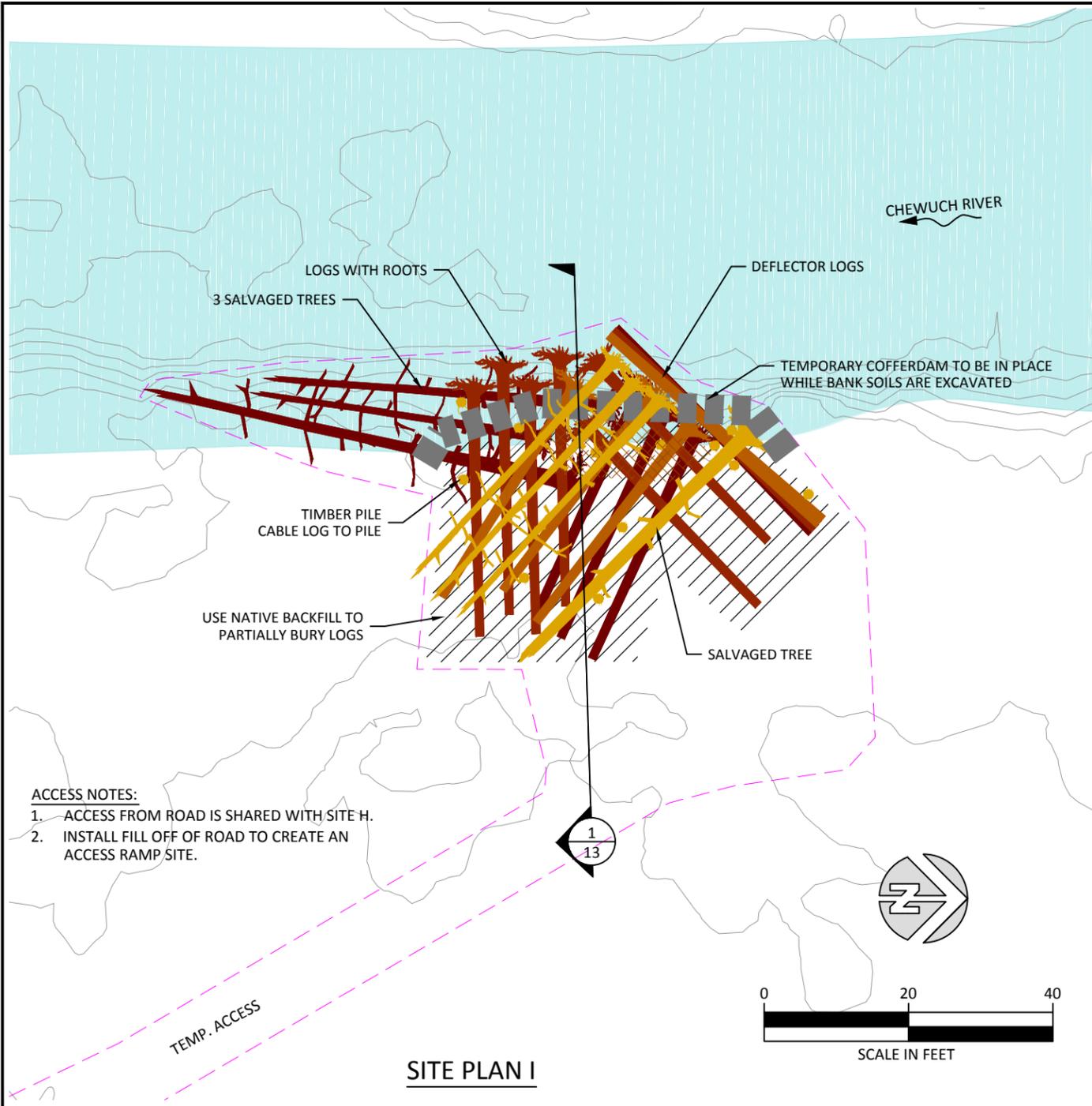
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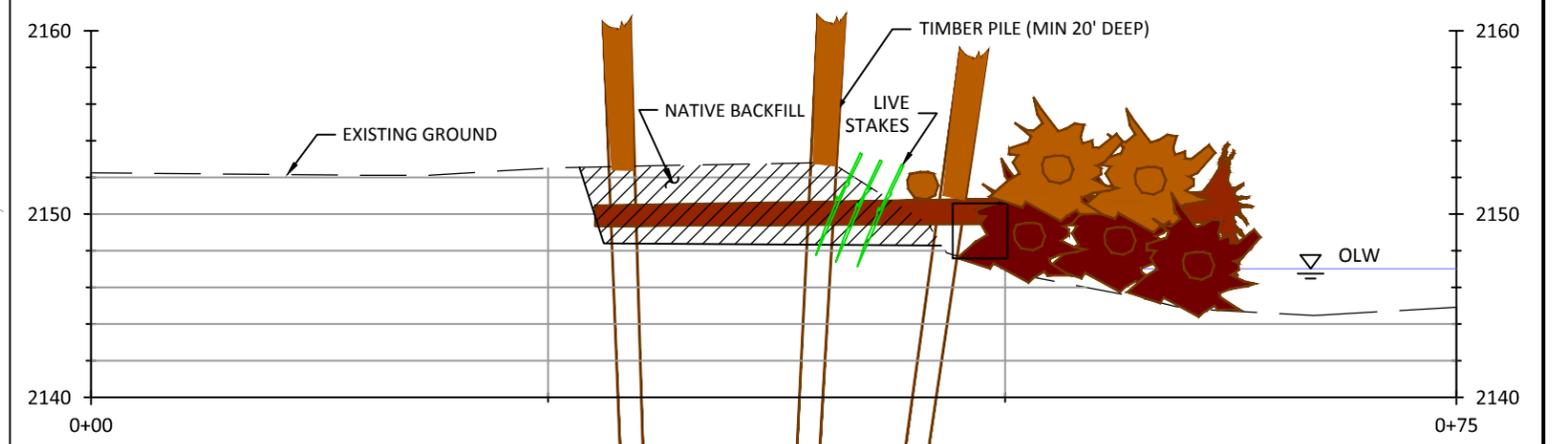
SITE H



CONSTRUCTION QUANTITIES	
ITEM	QUANTITY
EXCAVATION & BACKFILL	125 CY
LOG WITH ROOTS	15
LOGS	3
TIMBER PILE	12
SALVAGED TREE WITH ROOTS	10
COFFERDAM	60 FT

- QUANTITIES NOTES:**
- ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED TO THE PROJECT FINAL CONDITION.
 - CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL WITH NO ADDITIONAL MEASUREMENT OR COST TO THE OWNER.
 - TEMPORARY STOCKPILE OF EXCAVATED MATERIAL SHALL BE WITHIN DESIGNATED LIMITS OF DISTURBANCE.
 - ON ACCESS ROUTES AND DISTURBANCE AREA FOR PROJECT SITE, SALVAGE TREES, SHRUBS, AND WOODY DEBRIS TO BE USED AS SLASH.
 - TEMPORARY COFFERDAM SHALL BE INSTALLED BEFORE EXCAVATION AND BACKFILL OF LOGS. REMOVE COFFERDAM BEFORE INSTALLING SALVAGED TREES.

- ACCESS NOTES:**
- ACCESS FROM ROAD IS SHARED WITH SITE H.
 - INSTALL FILL OFF OF ROAD TO CREATE AN ACCESS RAMP SITE.



1/13 SECTION VIEW - SITE I

- LOG NOTES:**
- LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
 - INSTALL SLASH LOOSELY BETWEEN LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.
 - INSTALL PILES MINIMUM 20 FEET DEEP BELOW GROUND SURFACE. PILES SHALL BE INSTALLED BY VIBRATORY DRIVER.



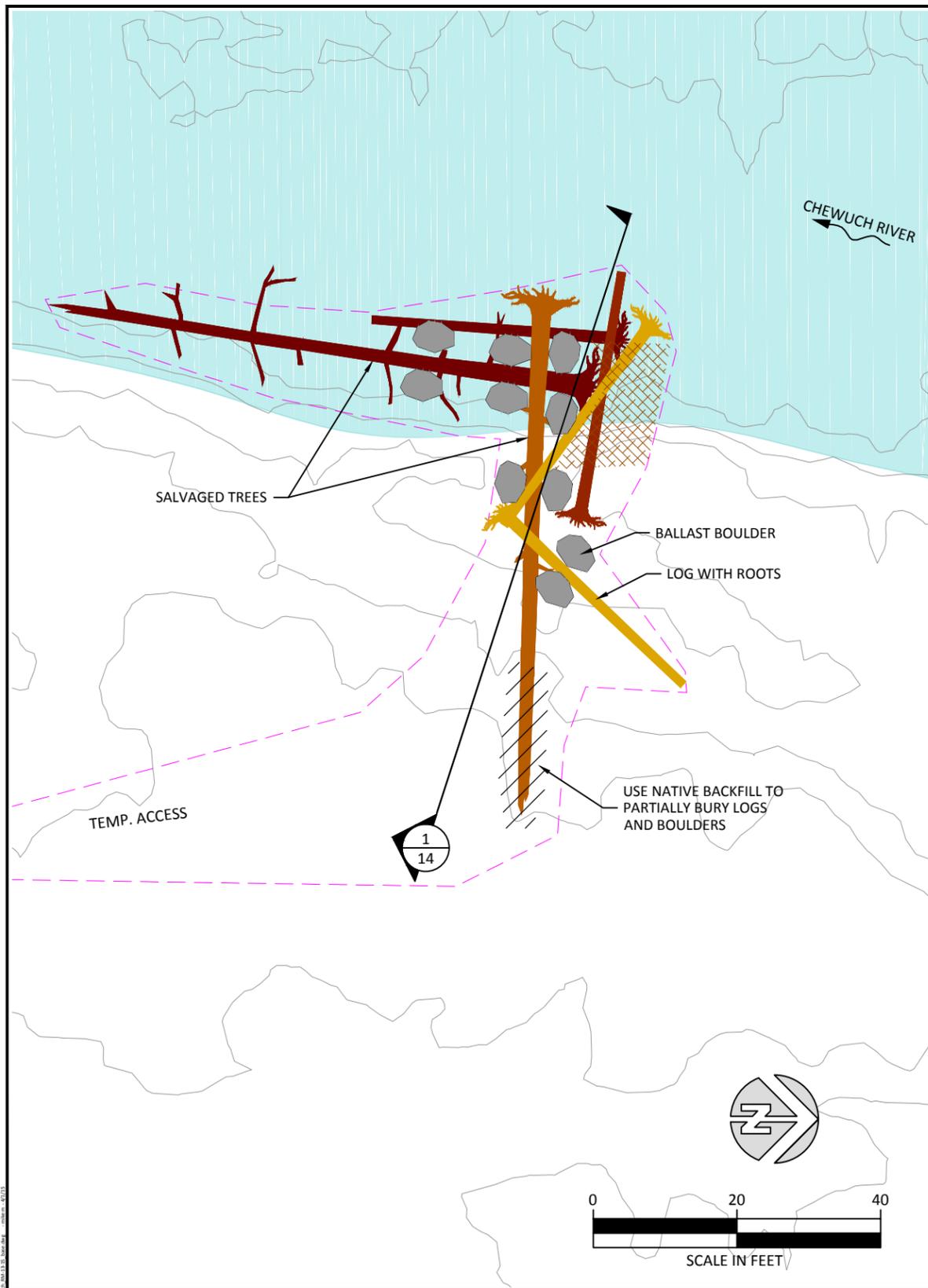
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MM APPROVED	04/01/15 DATE	PROJECT

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SITE I



SITE PLAN L

LEGEND

- LIMITS OF DISTURBANCE
- APPROXIMATE LOW WATER
- SLASH
- EXCAVATION AND BACKFILL
- LOG LAYER 1
- LOG LAYER 2
- LOG LAYER 3

SALVAGED TREE NOTES:

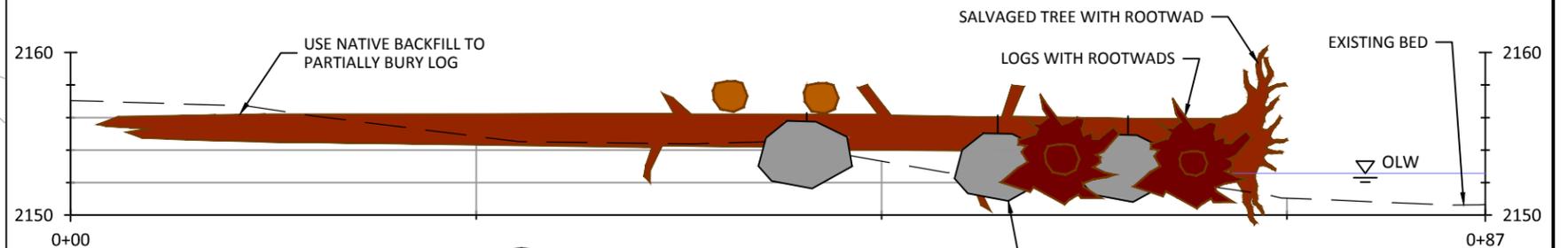
1. THREE TREES SHALL BE SALVAGED FROM THIS SITE. USE TWO SALVAGED TREES AT SITE L.
2. HAUL ONE SALVAGED TREE TO SITE Q.

LOG NOTES:

1. LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
2. SALVAGE ALL REMOVED TREES AND SHRUBS ALONG ACCESS ROUTE TO BE USED AS SLASH IN LOG STRUCTURE.
3. INSTALL SLASH LOOSELY BETWEEN LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.

CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATION & BACKFILL	5 CY
LOG WITH ROOTS	4
4' DIAMETER BOULDER	10
SALVAGED TREE WITH ROOTS	2



SECTION VIEW - SITE L



NO.	BY	DATE	REVISION DESCRIPTION

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MM APPROVED	04/01/15 DATE	PROJECT

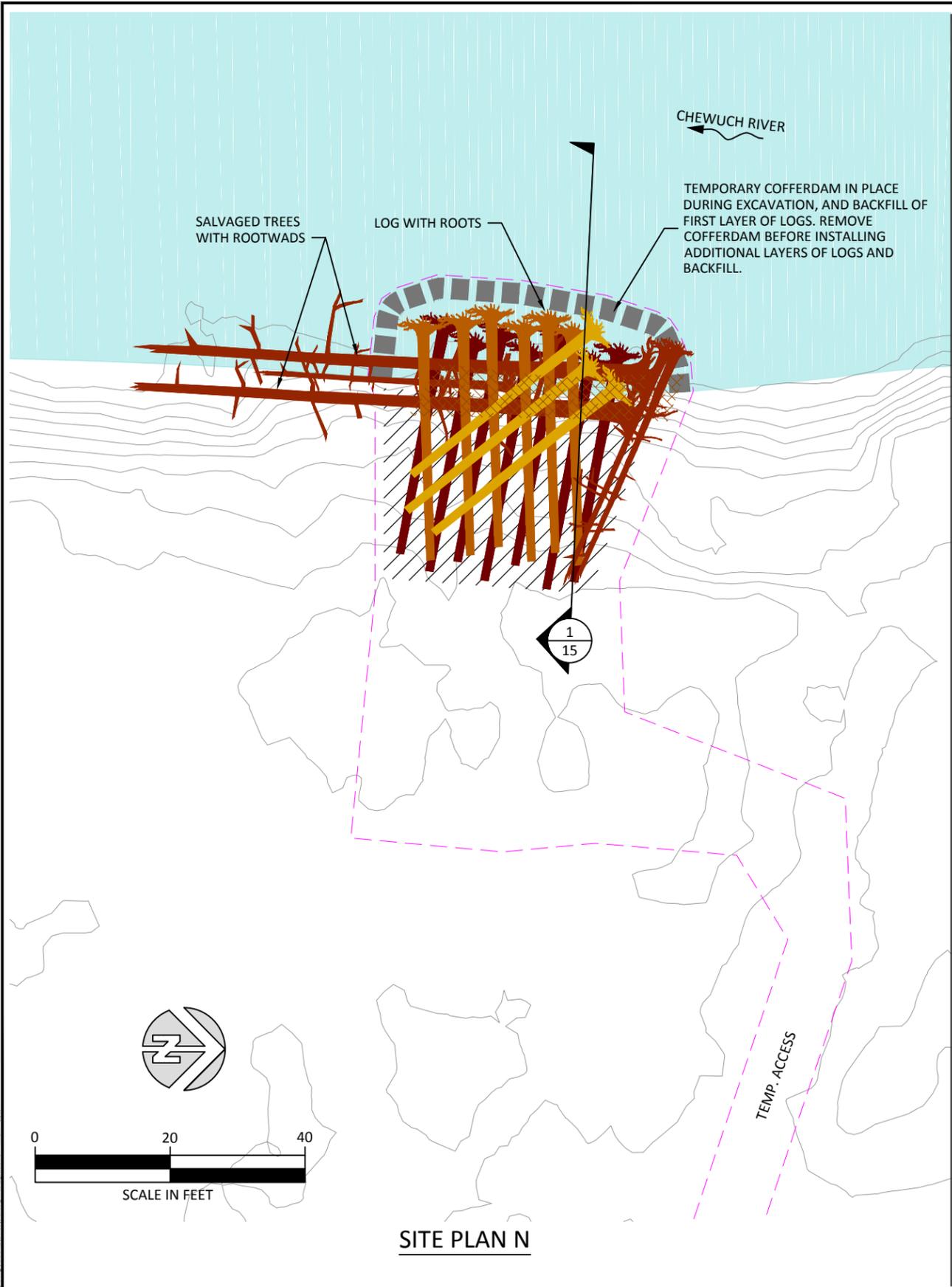
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SITE L

SHEET
14 OF 22



LEGEND

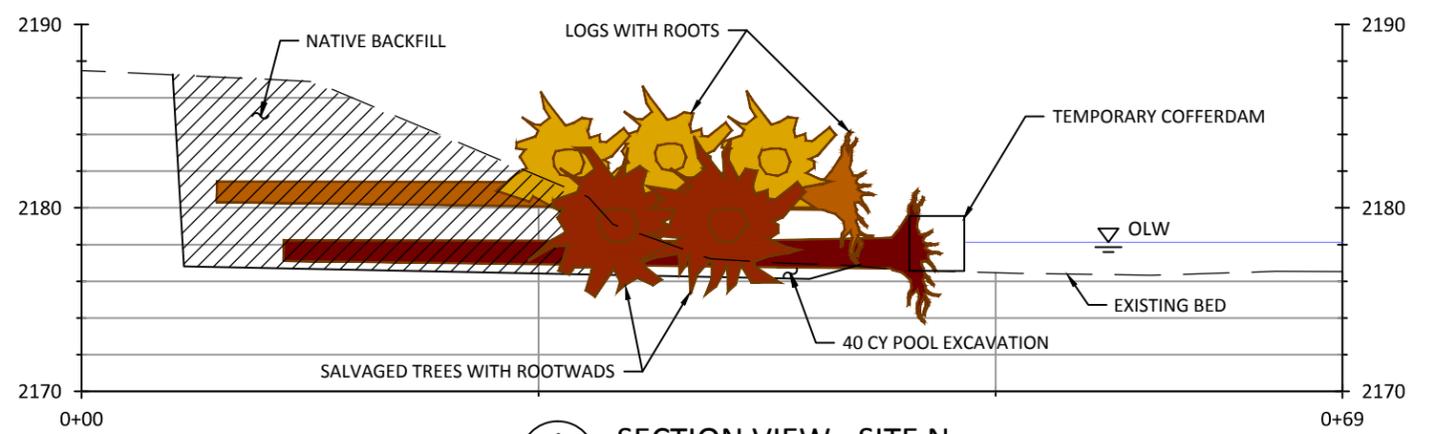
- LIMITS OF DISTURBANCE
- ■ ■ ■ ■ TEMPORARY COFFERDAM
- APPROXIMATE LOW WATER
- ▨ SLASH
- ▧ EXCAVATION AND BACKFILL
- LOG LAYER 1
- LOG LAYER 2
- LOG LAYER 3
- LOG LAYER 4

CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATION	290 CY
BACKFILL	230 CY
HAUL EXCESS FILL TO BOULDER CK PIT	60 CY
LOG WITH ROOTS	16
SALVAGED TREE WITH ROOTS	4-5
COFFERDAM	70 FT

QUANTITIES NOTES:

1. ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED TO THE PROJECT FINAL CONDITION.
2. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL WITH NO ADDITIONAL MEASUREMENT OR COST TO THE OWNER.
3. TEMPORARY STOCKPILE OF EXCAVATED MATERIAL SHALL BE WITHIN DESIGNATED LIMITS OF DISTURBANCE.
4. ON ACCESS ROUTES AND DISTURBANCE AREA FOR PROJECT SITE, SALVAGE TREES, SHRUBS, AND WOODY DEBRIS TO BE USED AS SLASH.
5. TEMPORARY COFFERDAM SHALL BE INSTALLED BEFORE EXCAVATION AND BACKFILL OF FIRST LAYER OF LOGS. REMOVE COFFERDAM BEFORE INSTALLING SALVAGED TREES, AND ADDITIONAL LAYERS OF LOGS AND BACKFILL.



NOISE LIMITS:
CAMPGROUND IS NEARBY. WORK SHALL OCCUR BETWEEN 8AM AND 5PM MON-THU.

- LOG NOTES:**
1. LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
 2. INSTALL SLASH LOOSELY BETWEEN LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.



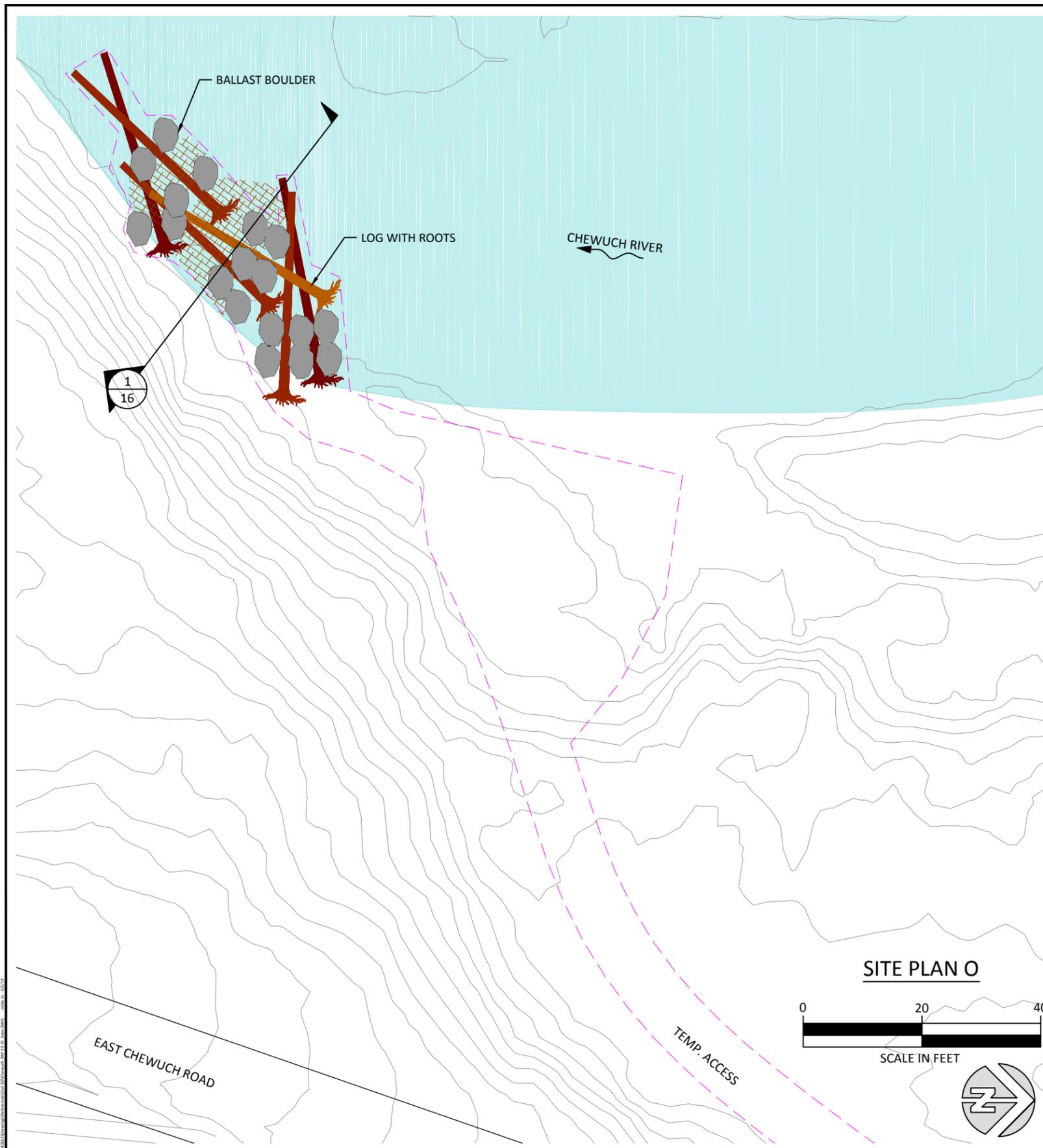
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SITE N



LEGEND

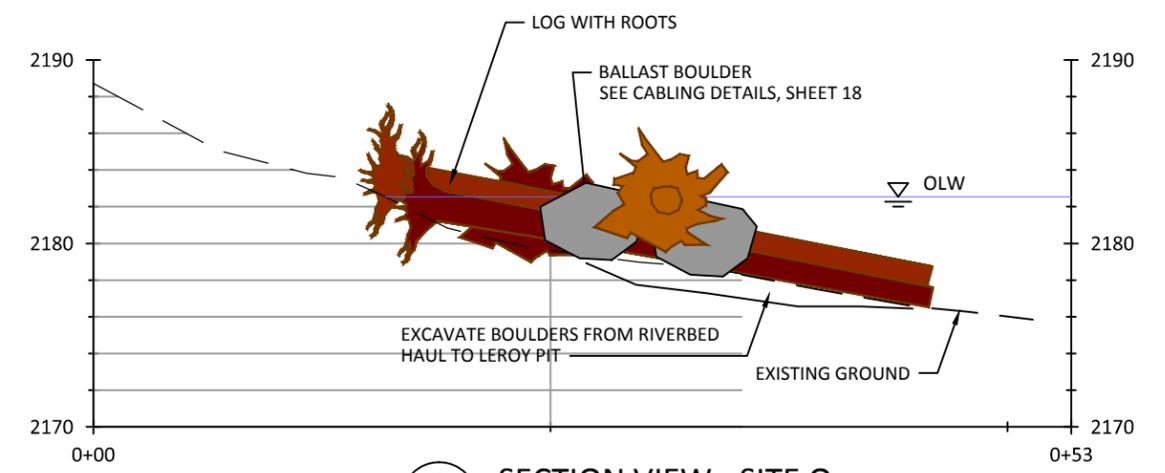
- LIMITS OF DISTURBANCE
- APPROXIMATE LOW WATER
- IMPORTED SLASH
- LOG LAYER 1
- LOG LAYER 2
- BOULDER

CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATE AND HAUL BOULDERS TO LEROY PIT	12 CY
LOG WITH ROOTS	6
BOULDER	18
SLASH	20 CY

- ### QUANTITIES NOTES:
- ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED TO THE PROJECT FINAL CONDITION.
 - TEMPORARY STOCKPILE OF EXCAVATED MATERIAL SHALL BE WITHIN DESIGNATED LIMITS OF DISTURBANCE.
 - ON ACCESS ROUTES AND DISTURBANCE AREA FOR PROJECT SITE, SALVAGE TREES, SHRUBS, AND WOODY DEBRIS TO BE USED AS SLASH.

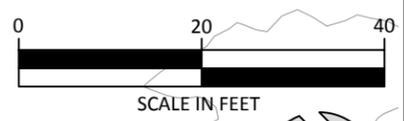
- ### NOTES:
- LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
 - BEFORE WOOD AND BALLAST BOULDER PLACEMENT, EXISTING SMALL BOULDERS SHALL BE REMOVED TO DEEPEN EXISTING POOL HABITAT. HAUL EXCAVATED MATERIAL FOR DISPOSAL AT THE LEROY PIT.
 - INSTALL SLASH LOOSELY BETWEEN LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.
 - AVOID EXISTING TREES.



1
16 SECTION VIEW - SITE O

NOISE LIMITS:
CAMPGROUND IS NEARBY. WORK SHALL OCCUR BETWEEN 8AM AND 5PM MON-THU.

SITE PLAN O



NO.	BY	DATE	REVISION DESCRIPTION

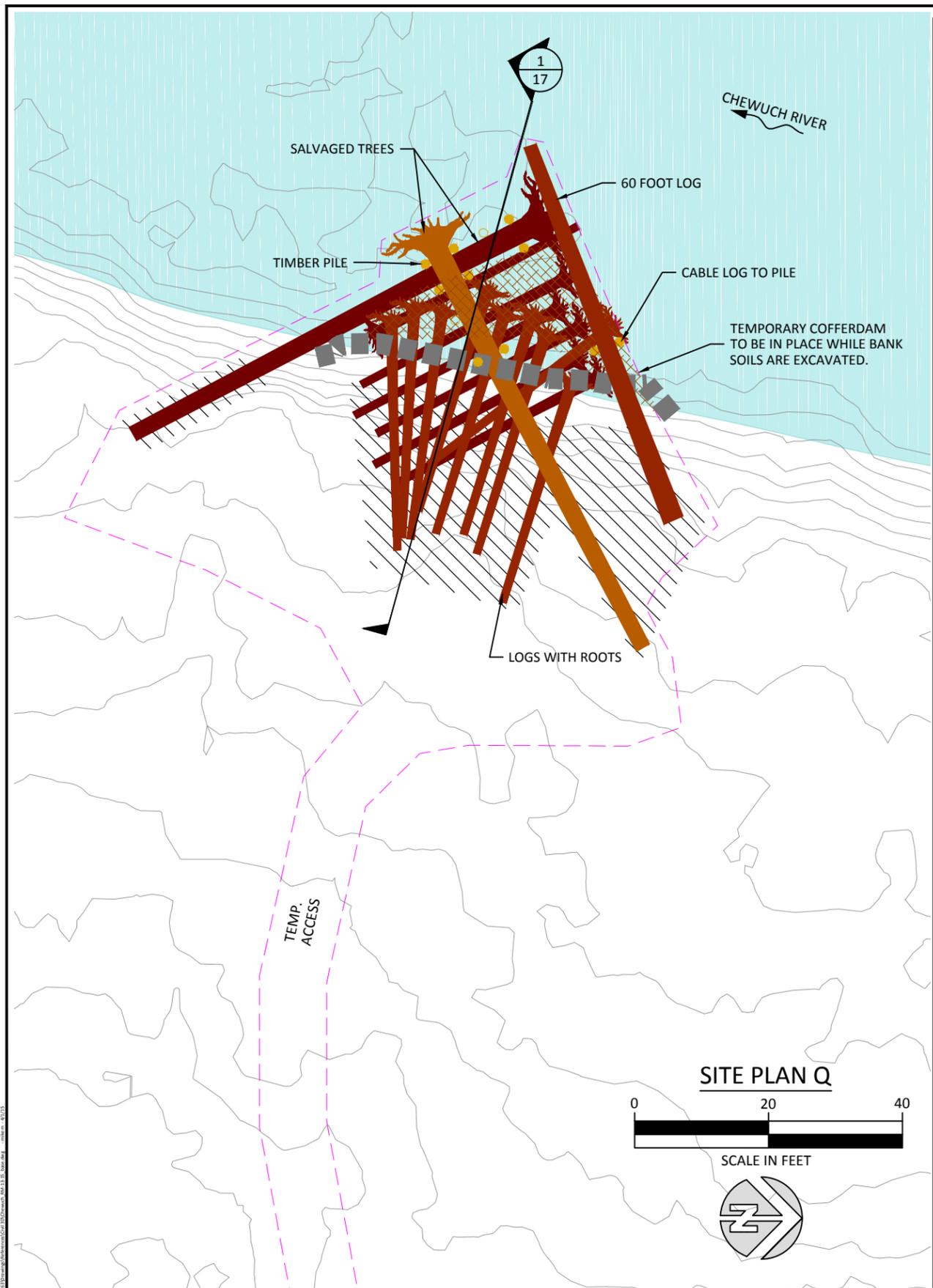
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SITE O



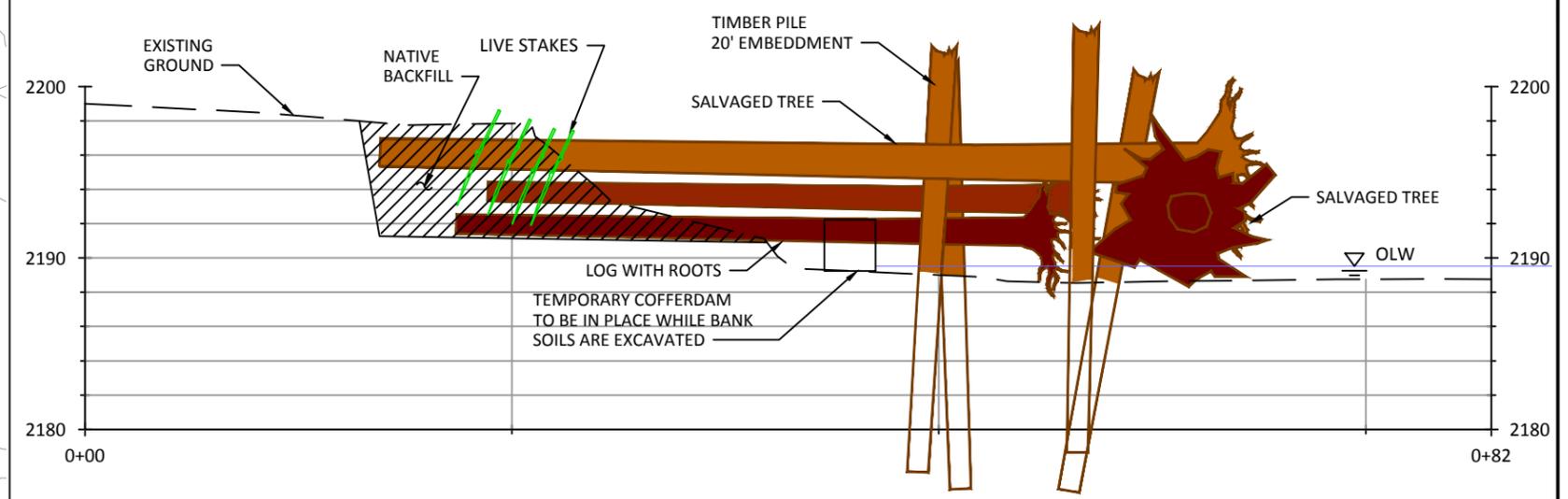
LEGEND

- LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM
- APPROXIMATE LOW WATER
- SLASH
- EXCAVATION AND BACKFILL
- LOG LAYER 1
- LOG LAYER 2
- LOG LAYER 3

- SALVAGED TREE NOTES:**
- ONE SALVAGED SHALL BE FROM SITE Q LIMITS OF DISTURBANCE.
 - ONE SALVAGED TREE FROM SITE L.

CONSTRUCTION QUANTITIES	
ITEM	QUANTITY
EXCAVATION & BACKFILL	125 CY
LOG WITH ROOTS	15
TIMBER PILE	10
OVERSIZE LOG (60')	1
SALVAGED TREE WITH ROOTS	2
COFFERDAM	60 FT

- QUANTITIES NOTES:**
- OWNER SUPPLIED LOGS WILL BE DECKED NEAR WEST CHEWUCH ROAD ROAD AT THE TEMPORARY ACCESS ROUTE.
 - ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED TO THE PROJECT FINAL CONDITION.
 - CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL WITH NO ADDITIONAL MEASUREMENT OR COST TO THE OWNER.
 - TEMPORARY STOCKPILE OF EXCAVATED MATERIAL SHALL BE WITHIN DESIGNATED LIMITS OF DISTURBANCE.
 - ON ACCESS ROUTES AND DISTURBANCE AREA FOR PROJECT SITE, SALVAGE TREES, SHRUBS, AND WOODY DEBRIS TO BE USED AS SLASH.
 - TIMBER PILES SHALL BE INSTALLED BY VIBRATORY DRIVER.



1
17 SECTION VIEW - SITE Q

- LOG NOTES:**
- LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
 - INSTALL SLASH LOOSELY BETWEEN LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.

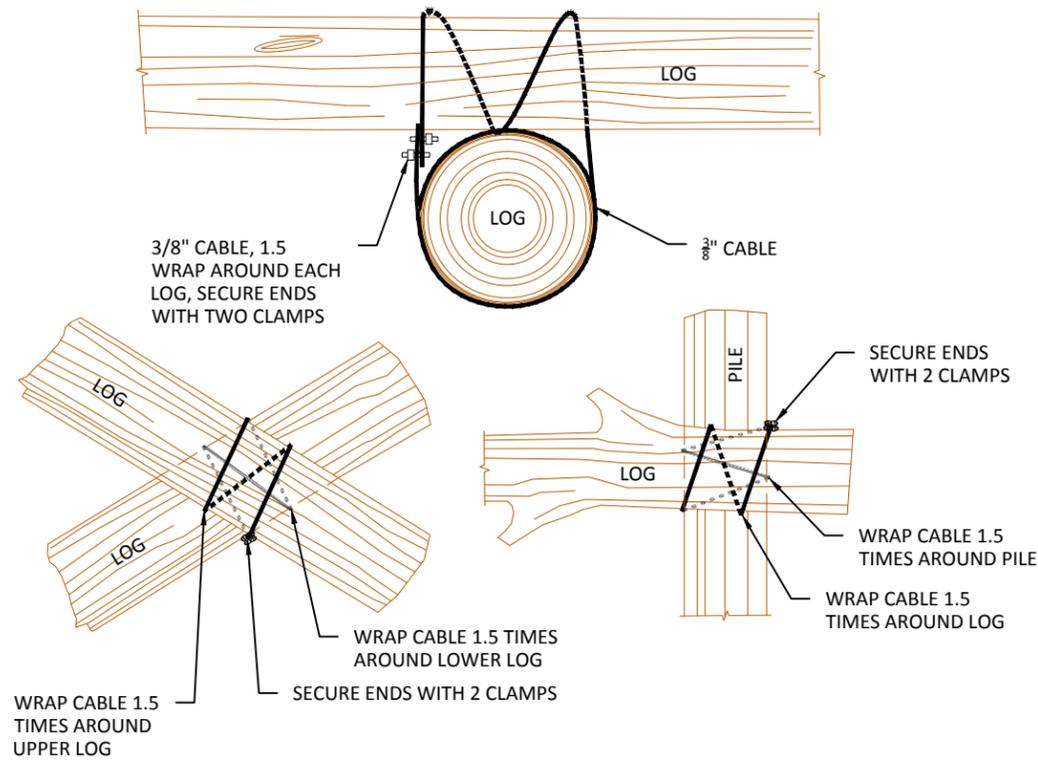


NO.	BY	DATE	REVISION DESCRIPTION

RP,DF DRAWN	MB,MM DESIGNED	MB,MM CHECKED
MM APPROVED	04/01/15 DATE	PROJECT

Confederated Tribes and Bands of the Yakama Nation
Chewuch RM 13-15.5
Fish Habitat Enhancement Project

501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
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LOG CABLING

DESCRIPTION

THIS WORK CONSISTS OF ANCHORING LARGE WOOD WITH CABLE AND PILES AS REQUIRED TO PROVIDE ADEQUATE BALLAST FOR STRUCTURAL STABILITY.

MATERIALS

CABLE SHALL BE 3/8 INCH GALVANIZED, STEEL CORE WIRE ROPE.

CLAMPS SHALL BE CROSBY CLIPS, G-450, OR APPROVED EQUAL. MINIMUM OF 2 CLAMPS PER CONNECTION.

CONSTRUCTION

FINAL POSITIONING OF THE ANCHORED STRUCTURES SHALL BE IN THE APPROXIMATE LOCATION AS SHOWN ON THE PLANS.

LOGS SHALL BE TOUCHING. CABLE SHALL BE WRAPPED ONE AND ONE HALF WRAP AROUND EACH LOG. PULL TIGHT AND INSTALL CLAMPS. CLAMPS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED CLAMP SIZE AND SPACING FOR THE SIZE AND LOAD RATING OF THE CABLE BEING USED.

VIBRATORY PILE DRIVING

DESCRIPTION

THIS WORK CONSISTS OF INSTALLING LOGS VERTICALLY AS WOODEN PILES WHERE SHOWN ON THE PLANS. INSTALLATION SHALL BE WITH VIBRATORY PILE DRIVER.

MATERIALS

LOG PILES SHALL BE 12-18" DIAMETER AT BUTT END AND MINIMUM 10" DIAMETER AT SCALED END. EACH LOG PILE SHALL BE MINIMUM 30' LONG.

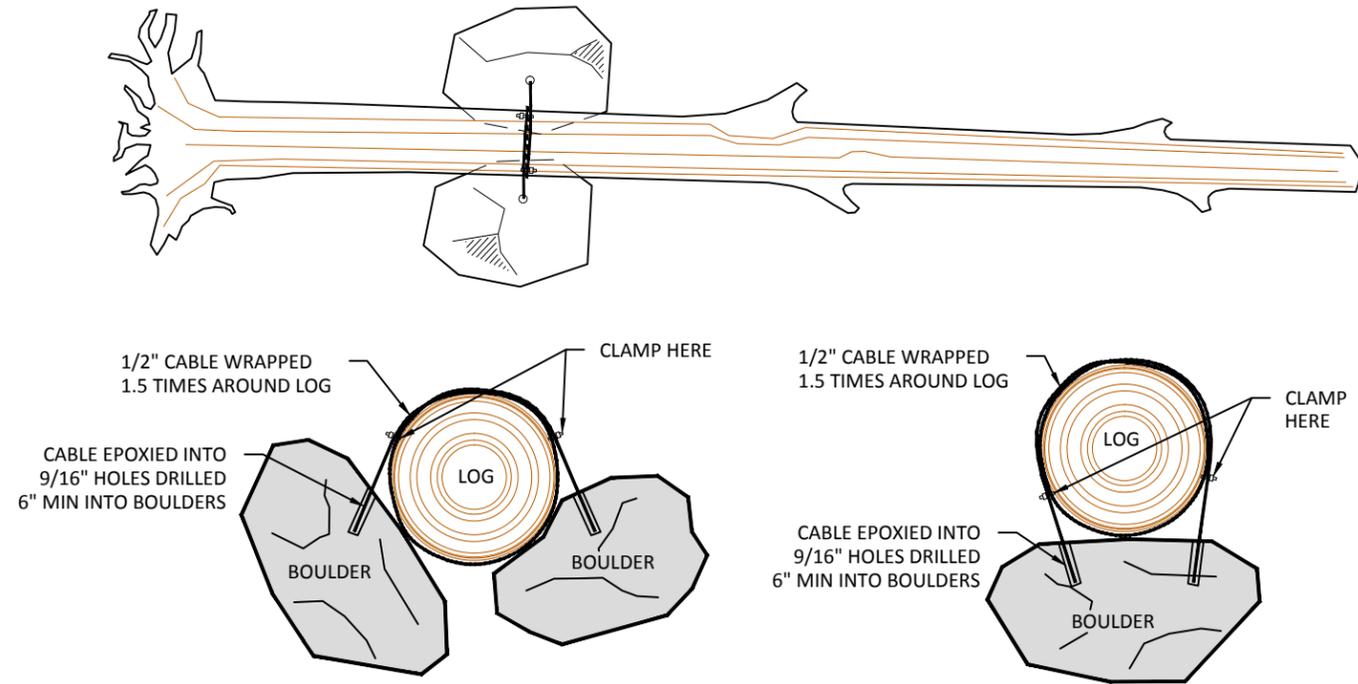
CONSTRUCTION

FINAL POSITIONING OF LOG PILES SHALL BE IN THE APPROXIMATE LOCATIONS SHOWN ON THE PLANS.

EACH PILE SHALL BE INSTALLED BY VIBRATORY PILE DRIVER TO A DEPTH OF 20' BELOW GROUND SURFACE. IF PILES CANNOT MEET THE DEPTH REQUIREMENT, BOULDERS SHALL BE USED IN LIEU OF PILES.

TESTING

AT EACH PROJECT SITE WHERE PILES ARE TO BE INSTALLED, ONE PILE SHALL BE TESTED FOR PULLOUT RESISTANCE. THE OWNER WILL PROVIDE THE PULL TEST EQUIPMENT.



BOULDER BALLAST

DESCRIPTION

THIS WORK CONSISTS OF ANCHORING LARGE WOOD WITH CABLE AND BOULDERS AS REQUIRED TO PROVIDE ADEQUATE BALLAST FOR STRUCTURAL STABILITY.

MATERIALS

BOULDERS SHALL BE NON-FRACTURED STONE WITH A MINIMUM SPECIFIC GRAVITY OF 2.65.

CABLE SHALL BE 1/2 INCH GALVANIZED, STEEL CORE, WIRE ROPE.

CLAMPS SHALL BE CROSBY CLIPS, G-450, OR APPROVED EQUAL. MINIMUM OF 2 CLAMPS PER CONNECTION.

EPOXY FOR ANCHORING SHALL BE HILTI HIT RE 500 ADHESIVE OR APPROVED EQUAL IF SUBMERGED DURING INSTALLATION, OR HILTI HIT-HY150 OR APPROVED EQUAL IF DRY INSTALLATION.

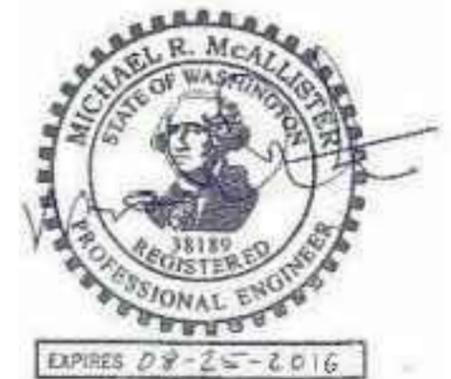
CONSTRUCTION

DRILL HOLES IN SOLID ROCK AND AVOID ANY CRACKS OR FRACTURES. HOLES SHALL BE 9/16 INCH IN DIAMETER. HOLES SHALL BE DRILLED 6 INCHES, MINIMUM, INTO ROCK.

HOLES SHALL BE CLEANED OF LOOSE ROCK FRAGMENTS AND DUST WITH A BRUSH AND AIR BLASTS. INSTALL EPOXY PER MANUFACTURER'S RECOMMENDATIONS.

CABLE SHALL BE WRAPPED A MINIMUM OF ONE FULL WRAP AROUND LOG BEFORE ENDS ARE INSERTED INTO THE DRILLED HOLES FILLED WITH EPOXY. DIP CABLE INTO ACETONE AND WIPE CABLE WITH CLEAN RAG TO REMOVE OIL AND RESIDUE. ALLOW ACETONE TO AIR-DRY PRIOR TO INSERTION INTO EPOXY FILLED HOLE. FILL HOLES WITH ENOUGH EPOXY TO ENSURE COMPLETE COVERAGE WITH EPOXY. INSERT CABLE INTO HOLE SO THAT END OF CABLE HITS THE BOTTOM OF THE HOLE. AS AN INDICATOR THAT ENOUGH EPOXY WAS INJECTED, A SMALL AMOUNT OF EXCESS EPOXY SHALL BE PUSHED OUT OF THE TOP OF THE HOLE AS CABLE IS SEATED IN HOLE. REFER TO MANUFACTURER'S RECOMMENDATION FOR CURE TIME.

LOGS AND BOULDERS SHALL BE TOUCHING. PULL CABLE TIGHT AND INSTALL CLAMPS. CLAMPS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED CLAMP SIZE AND SPACING FOR THE SIZE AND LOAD RATING OF THE CABLE BEING USED.



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TYPICAL LOG AND BOULDER
CABLING DETAILS

SHEET

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Special Provisions

INTRODUCTION

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

DIVISION 1 - GENERAL REQUIREMENTS

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

ITEM 001- TESC, SPCC PLAN AND IMPLEMENTATION

Description

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

- The Contractor shall submit a TESC for the project to the Owner for approval. The TESC must satisfy the requirements of the Washington Department of Ecology NPDES Stormwater General Permit for Construction Activity and all other applicable permits. The TESC included in the Drawings and described herein is intended to provide a baseline for sediment and erosion control and does not ensure that the standards established by any applicable permits will be met. The Contractor may use these measures or alternative measures of his own design to ensure satisfactory performance and that the erosion control requirements of all applicable permits are met. The contractor shall be named as the permit holder. The contractor shall be responsible for implementing, inspecting and filing reports, maintaining, replacing, and removing TESC and SPCC measures. The plan shall include the name, address and 24-hour contact number of the person responsible for erosion prevention and sediment control measures.
- Work will be in a sensitive environmental area. Biodegradable Hydraulic Fluid shall be installed into each piece of heavy machinery working within 50 feet of river. The Contractor shall submit proof of installation of biodegradable hydraulic fluid.
- A spill Containment Kit shall be on site and crews shall be trained in its use.

Measurement

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

Payment

Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified. Payment will be made in accordance with Section 1-04.1 for the following bid items: "TESC, SPCC Plan and Implementation" per lump sum.

ITEM 002 - MOBILIZATION

This item shall consist of preparation work and operations performed by the Contractor in accordance with the provisions of Section 1-09.7 of the Washington Department of Transportation Standard Specifications (Standard Specifications).

Measurement and Payment

Payment for Mobilization shall be by the lump sum contract price for, 'Mobilization', partial payments will be made as in accordance with Section 1-09.9 of the Standard Specifications. Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

DIVISION 2 - EARTHWORK

ITEM 003 - CHANNEL EXCAVATION INCL. HAUL

This item consists of excavating, loading, hauling, placing, and embankment compacting, or otherwise disposing of the material in accordance with Section 2-03 of the Standard Specifications, and as amended by these Special Provisions.

- This item includes clearing at work areas as needed to facilitate hauling between excavation and fill areas.
- Portions of work will be in water.
- This item includes hauling of excavated material to embankment (fill) areas designated in the Plans. The unit contract price per cubic yard shall include "Haul".
- This item includes earth embankment construction at designated fill areas. Embankment compaction shall be per Section 2-03.3(14)C Method A. Payment for Embankment Compaction will not be made as a separate item. All costs for embankment compaction shall be included in this item.
- No work shall occur outside of the limits of disturbance shown in the Plans unless authorized by the Owner.
- The Contractor shall provide minimum 5 days advance notice to the Owner before work at Site D. The Contractor shall understand that coordination with the Owner and only after the Owner has completed Hurtle rescue can work begin.

Sources of fill include these areas:

- Site D - Excavation of channel, load, haul, and embankment compact at Boulder Creek Pit.
- Sites H, I, and N - Load and haul excess fill and embankment compact at Boulder Creek Pit.
- Sites C and O - Excavate, load, and haul riverbed material (boulders, cobbles) to Leroy Pit.

Boulder Creek Pit

- Locations within the Boulder Creek Pit limits will be staked for placement of waste material.
- Upon completion of Haul, the Contractor shall shape the material to blend with surrounding topography.

Measurement

"Channel Excavation Incl. Haul" will be measured by cubic yard. All excavated material will be measured in the position it occupied before the excavation was performed. An original ground measurement was taken using digital terrain modeling survey techniques. The original ground will be compared with the planned finished section shown in the Plans. Slope/ground intercept points defining the limits of the measurement will be as staked by the Owner. No additional compensation will be made for excavated material that is stockpiled, re-excavated, and moved again.

Payment

Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified. Payment will be made in accordance with Section 1-04.1 for the following bid items: "Channel Excavation Incl. Haul" per cubic yard.

DIVISION 8 - MISCELLANEOUS CONSTRUCTION

The following sections are added.

ITEM 004 - SITE ACCESS MEASURES

Description

This item includes construction, maintenance, and decommissioning of access roads, and staging and stockpile areas; temporary traffic control; utilities locates; and site cleanup.

Materials

The Contractor shall provide all required materials for site access measures.

Construction Requirements

1. Site Access

Temporary site access shall be along alignments shown in the plans. Minor deviations to the alignments may occur as directed by the Owner to preserve sensitive areas or trees, or to avoid damage to fence posts or other features identified in the field. Deviations from the alignments shown in the plans shall be approved by Owner prior to use. If fence is removed to facilitate access or construction, the Contractor shall replace or repair fence at no additional cost to the Owner. Site access routes shall be maintained and restored to original or better condition.

2. Clearing and Grubbing

Site access will require the removal of trees and shrubs. Only trees designated for removal by the Owner shall be removed. Removed trees and shrubs shall be salvaged for reuse in Log Structures.

3. Traffic Control

Temporary traffic control requirements shall include construction signage any other measures required by State or local regulations at the entrance of each project site and fill disposal site.

"Site Access Measures," will be measured by lump sum.

4. Ramps

Sites D and H/I require access ramps from the road to floodplain. The Contractor may elect to load and haul Owner provided ramp material from the Leroy Pit.

The Contractor shall remove the ramp to site D and haul the material to LeRoy Pit. Embankment compact fill at LeRoy Pit.

6. Boulder Barricades

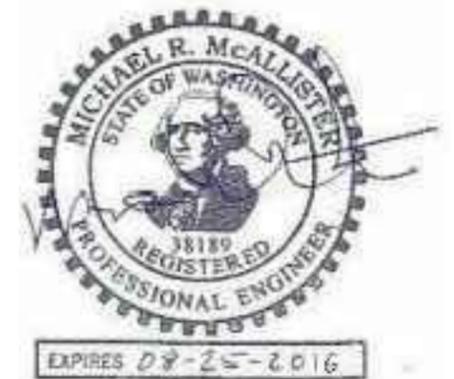
The Contractor shall block access to Sites H/I. Boulders shall be inset into the ground to provide a natural appearance and resist movement. The Contractor may elect to load and haul Owner provided Boulders from the Leroy Pit.

Measurement

The unit contract prices for "Site Access Measures" shall be full compensation for all costs incurred for equipment, materials and labor for Site Access Measures as described in this section.

Payment

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



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				RP,DF DRAWN MB,MM DESIGNED MB,MM CHECKED MM 04/01/15 APPROVED DATE PROJECT	Confederated Tribes and Bands of the Yakama Nation Chewuch RM 13-15.5 Fish Habitat Enhancement Project	501 Portway Ave, Suite 101 Hood River, OR 97031 541.386.9003 www.interfluve.com	SHEET SPECIFICATIONS 19 OF 22
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ITEM 005 - COFFERDAMS

Description

This item consists of providing and installing, maintaining, and removing measures to bypass the surface waters of the stream around in-channel work areas, and to prevent turbidity from entering the river.

Cofferdam shown in the Plans is one acceptable method. The Contractor may use this method or propose a different method that provides equal or better isolation of the work area from the flow. If a different method is proposed, Contractor shall submit drawings showing details of proposed methods for providing temporary isolation of surface water during construction activities. Review and approval of the Cofferdam Plan shall not relieve the Contractor from full responsibility for the adequacy of cofferdam work if the proposed plan is not successful at properly isolating the work area.

Cofferdams shall be suitably offset from work area so as to not interfere with log placement or limit pool excavation.

Materials

The Contractor shall provide all required materials for the project except as directed by the Owner.

1. Bulk Bag Cofferdam

If Bulk Bag Cofferdam is the method to be used to isolate work areas from the river or areas that drain directly to the river, see details for Bulk Bag Cofferdams on the Plans.

If Contractor elects to use alternate method(s) for temporary cofferdams, Contractor shall provide to the Owner shop drawings and/or vendor cut sheets for substitutions and submit cofferdam/diversion plan for review prior to implementation.

Construction Requirements

1. Cofferdams

Construction methods for Bulk Bag Cofferdams are described in the project plans.

2. Coordination with Fish Rescue

The Contractor shall provide minimum 5 days advance notice to the Owner before each cofferdam installation date. The Contractor shall understand that cofferdam installation requires coordination with the Owner and only after the Owner has completed fish rescue can the cofferdams be completed.

Measurement

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

“Cofferdams” will be measured by lump sum.

Payment

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

ITEM 006 - PUMPING

This item includes dewatering work within cofferdam impoundments. In cofferdammed (impoundment) areas, the intent of pumping will not necessarily be to remove all water from the impoundment, but to create a lower-head condition in the impoundment so that if there are any leaks, clean water will flow toward the construction area instead of turbidity flowing away from it.

Description

The work consists of furnishing, monitoring, operating, maintaining, and removing pumps, coordinating with the Owner for fish salvage relocation activities, and installation of control of water BMPs.

Materials

1. One 6" trash pump with 300 feet of discharge hose. System shall have pumping capacity greater than 600 gpm, assuming 12 feet of vertical lift and 300 feet of discharge hose.

2. Each water intake shall have a fish screen installed, operated and maintained according to NMFS' fish screen criteria (NMFS 1997; NMFS 2008).

3. Environmental Protection Measures such as straw bales, perforated pipe for discharge flow distributors, geotextiles, filter bags, or other means of controlling water and turbidity. No turbidity shall be allowed to enter the river or wetlands.

Construction Requirements

1. Pumps

Groundwater will be encountered during excavations. To help prevent turbidity from leaking through the cofferdams, the contractor shall provide and operate 6" trash pump to lower the water surface within the isolated area and discharge to an infiltration area.

2. Environmental Protection Measures

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

Measurement

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

“Pumping” will be measured by lump sum.

Payment

Payment will be made in accordance with Section 1-09.9 for the following bid items: “Pumping” per lump sum. The unit contract prices for “Pumping” shall be full compensation for all costs incurred for equipment, materials and labor for furnishing, installing, securing, maintaining and removal of pumping equipment as outlined in the plans. Environmental protection measures required to control turbidities shall be considered incidental to pumping.

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SPECIFICATIONS

