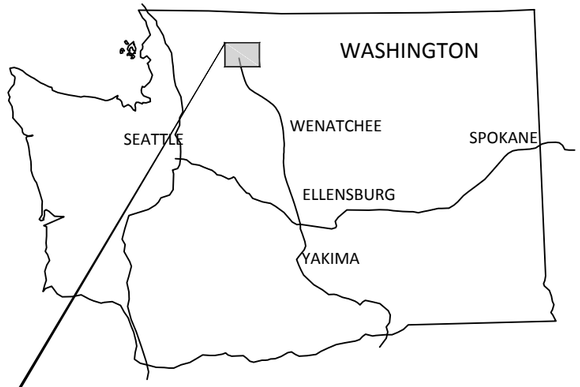
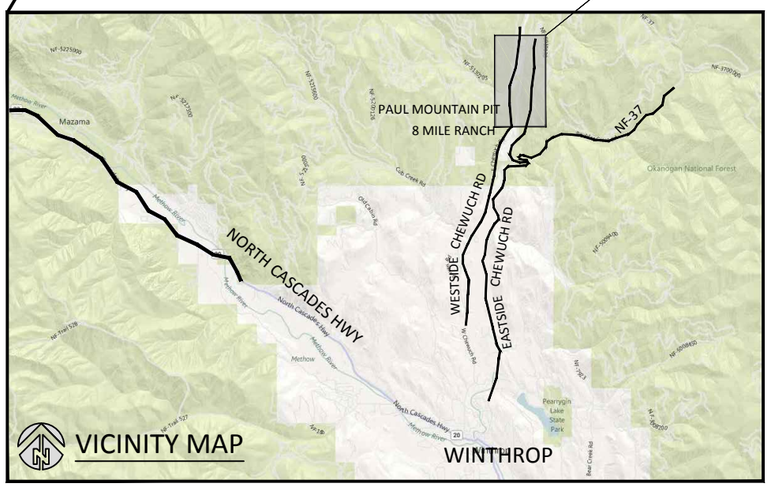
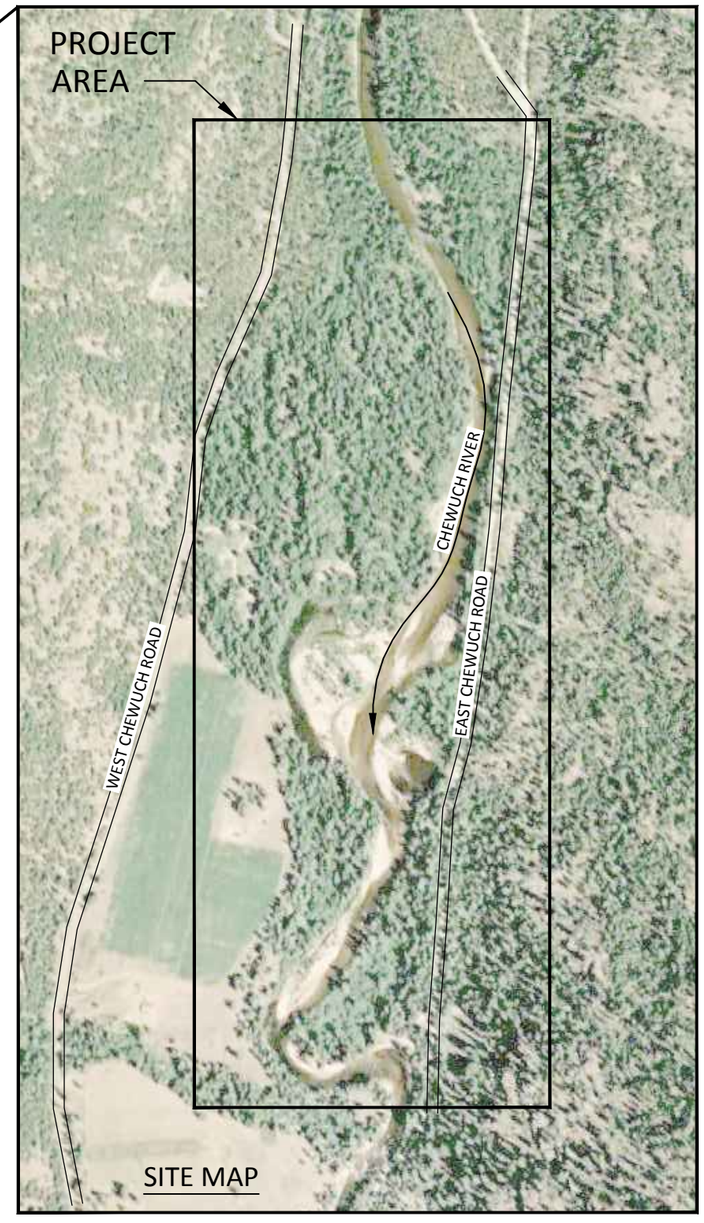
CHEWUCH RIVER RIGHT

FISH HABITAT ENHANCEMENT PROJECT





VICINITY MAP



SITE MAP

SITE LOCATION:

LATITUDE: 48°36'36.55" NORTH
LONGITUDE: 120°09'50.26" WEST
OKANOGAN COUNTY, WASHINGTON

WATERBODY: CHEWUCH RIVER
TRIBUTARY OF: METHOW RIVER

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CONFEDERATED TRIBES AND BANDS
YAKAMA NATION
TREATY OF 1855

YAKAMA NATION FISHERIES
2 JOHNSON LANE
WINTHROP WA, 98862

MICHAEL R. McALLISTER
STATE OF WASHINGTON
38189
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 08-25-2016

NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/1/15	
APPROVED	DATE	PROJECT

CONFEDERATED TRIBES AND BANDS OF THE YAKAMA NATION
CHEWUCH RIVER RIGHT
- FISH HABITAT ENHANCEMENT PROJECT

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Hood River, OR 97031
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COVER, VICINITY MAP, AND SHEET LIST

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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

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

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.

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.

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.

WETLAND SOILS SHALL BE SALVAGED AND HAULED TO AN APPROVED ON-SITE STOCKPILE AREA. THE SALVAGED WETLAND SOILS SHALL BE STORED IN TWO SEPARATE PILES: ONE FOR THE TOP 6 INCHES OF SOD AND TOPSOIL; AND ONE FOR SALVAGED SOILS BELOW THE TOP 6 INCHES.

THE SIDE CHANNEL IS EXPECTED TO BE EXCAVATED INTO GRAVEL AND COBBLE. HOWEVER, IF MUCK IS ENCOUNTERED AT THE FINISH GRADE, THE OWNER MAY REQUIRE 6 INCH OVER-EXCAVATION OF MUCK AND PLACEMENT OF SALVAGED STREAM GRAVEL. THE CONTRACTOR SHALL STOCKPILE 100 CY OF GRAVEL AND COBBLE SALVAGED FROM BULK EXCAVATIONS. THIS SALVAGED MATERIAL SHALL REMAIN AT THE STOCKPILE AREA TO BE USED AS SALVAGED STREAM GRAVEL TO REPLACE MUCK IF AND WHERE IT IS ENCOUNTERED. AT CHANNEL COMPLETION, EXCESS SALVAGED STREAM GRAVEL SHALL BE REMOVED FROM THE STOCKPILE AREA AND HAULED TO A LEGAL DISPOSAL SITE.

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 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.

TREE SALVAGE

ALL TREES AND SLASH REMOVED FOR CONSTRUCTION SHALL BE TEMPORARILY STOCKPILED WITHIN LIMITS OF DISTURBANCE. STOCKPILED TREE/SLASH SHALL BE REINCORPORATED INTO FINISHED PROJECT.

ANY REMOVED VEGETATION GREATER THAN 6 INCHES DIAMETER AND 8 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 YAKAMA NATION FISHERIES 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 STOCKPILINGS 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 SEDIMENTATION 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).

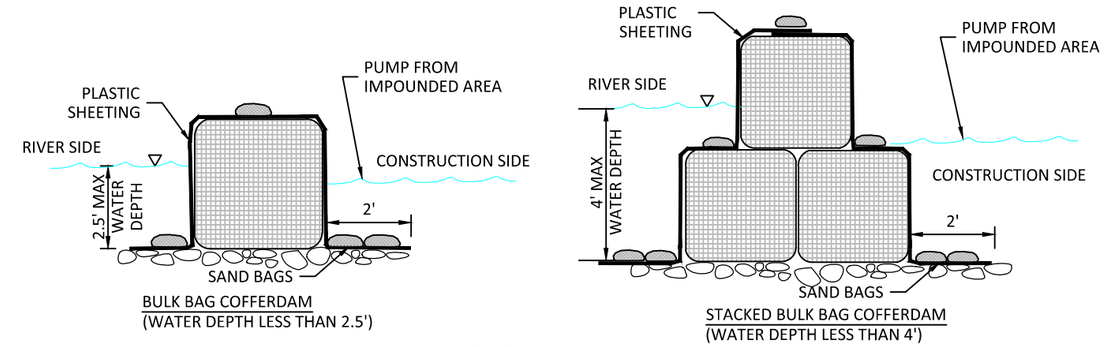
OWNER'S REPRESENTATIVE SHALL APPROVE DEWATERING DISCHARGE LOCATION PRIOR TO IMPLEMENTATION.

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 VISQUINE OR GEOTEXTILE LINER OR PLYWOOD OR METAL PLATING AS NECESSARY TO DISSIPATE PUMP DISCHARGE JET TO PREVENT EROSION.

EQUIPMENT

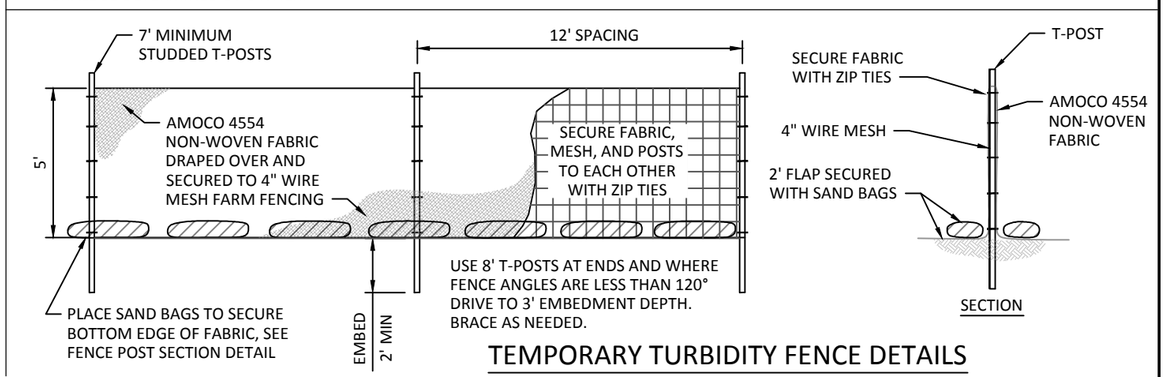
BIODEGRADABLE HYDRAULIC FLUID SHALL BE USED IN EACH EXCAVATOR WORKING WITHIN LIVE WATER. MECHANIZED EQUIPMENT AND VEHICLES SHALL BE INSPECTED DAILY FOR LEAKS, AND CLEANED THOROUGHLY BEFORE OPERATION NEAR WATER.



BULK BAG DETAILS

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.
8. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED.
9. 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.
10. IF NECESSARY, GAPS BETWEEN BULK BAGS SHALL BE FILLED WITH WASHED GRAVEL TO SEAL AND IMPROVE COFFER DAM. DISPOSAL OF ROCK WASH SHALL BE DETERMINED BY OWNER.



TEMPORARY TURBIDITY FENCE DETAILS

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EROSION CONTROL AND SEDIMENTATION DETAILS

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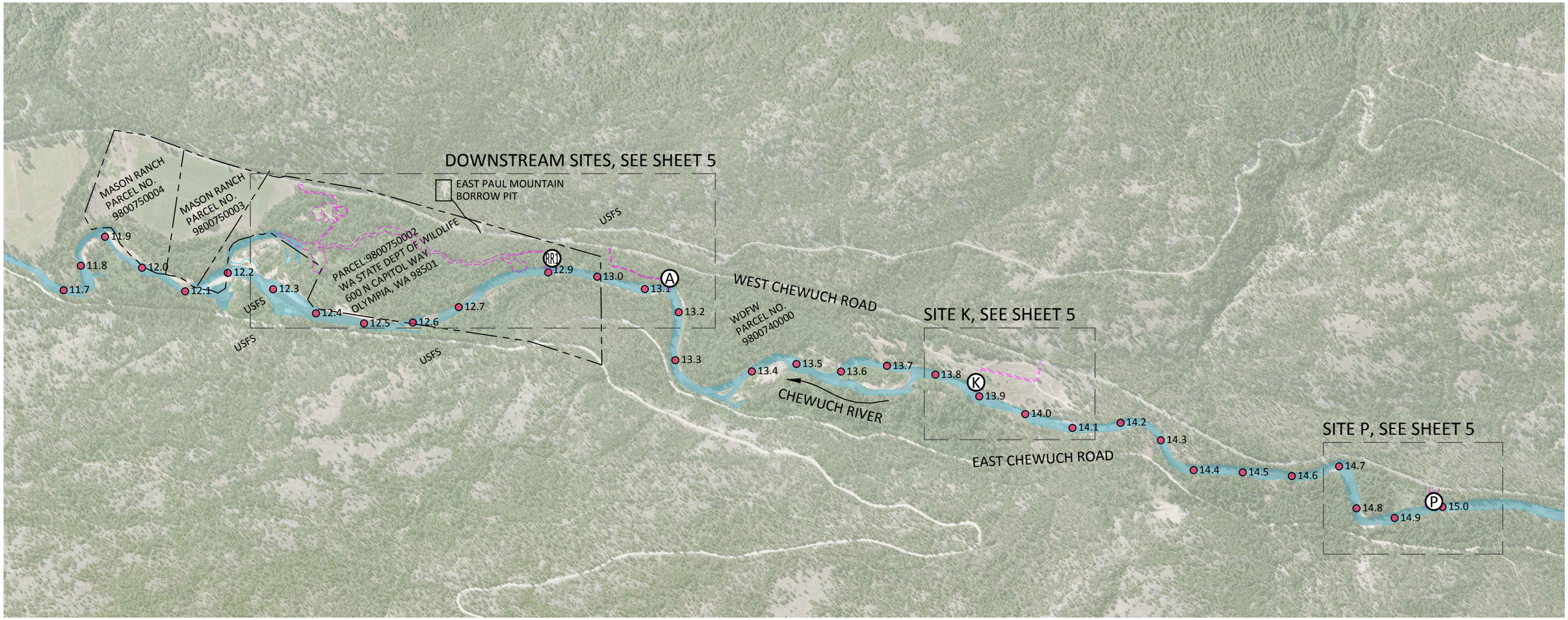

AERIAL VIEW

LEGEND

- 12.5 RIVER MILE MARKER
- PROPERTY LINES
- LIMITS OF DISTURBANCE
- TEMPORARY ACCESS
- STAGING/STOCKPILE

0 1000 2000

SCALE IN FEET

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EXISTING CONDITIONS OVERVIEW

SHEET 4 OF 22

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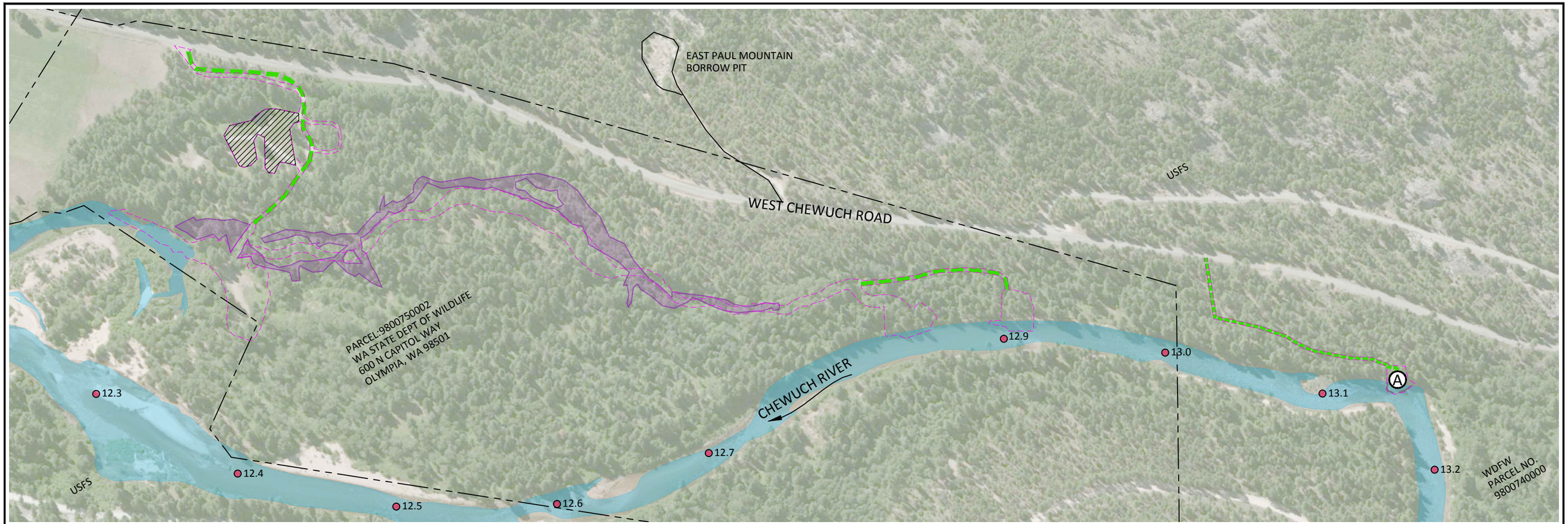
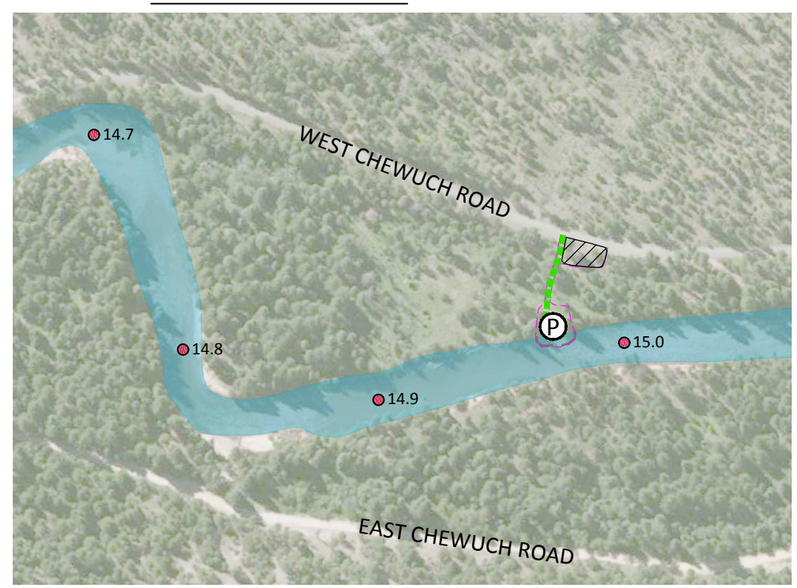


DOWNSTREAM SITES

SITE K



SITE P

LEGEND

- 12.5 — RIVER MILE MARKER
- PROPERTY LINES
- LIMITS OF DISTURBANCE
- TEMPORARY ACCESS
- STAGING/STOCKPILE
- WETLAND DELINEATION

0 300 600
SCALE IN FEET

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EXISTING CONDITIONS, OWNERSHIP, ACCESS AND STAGING

SHEET 5 OF 22

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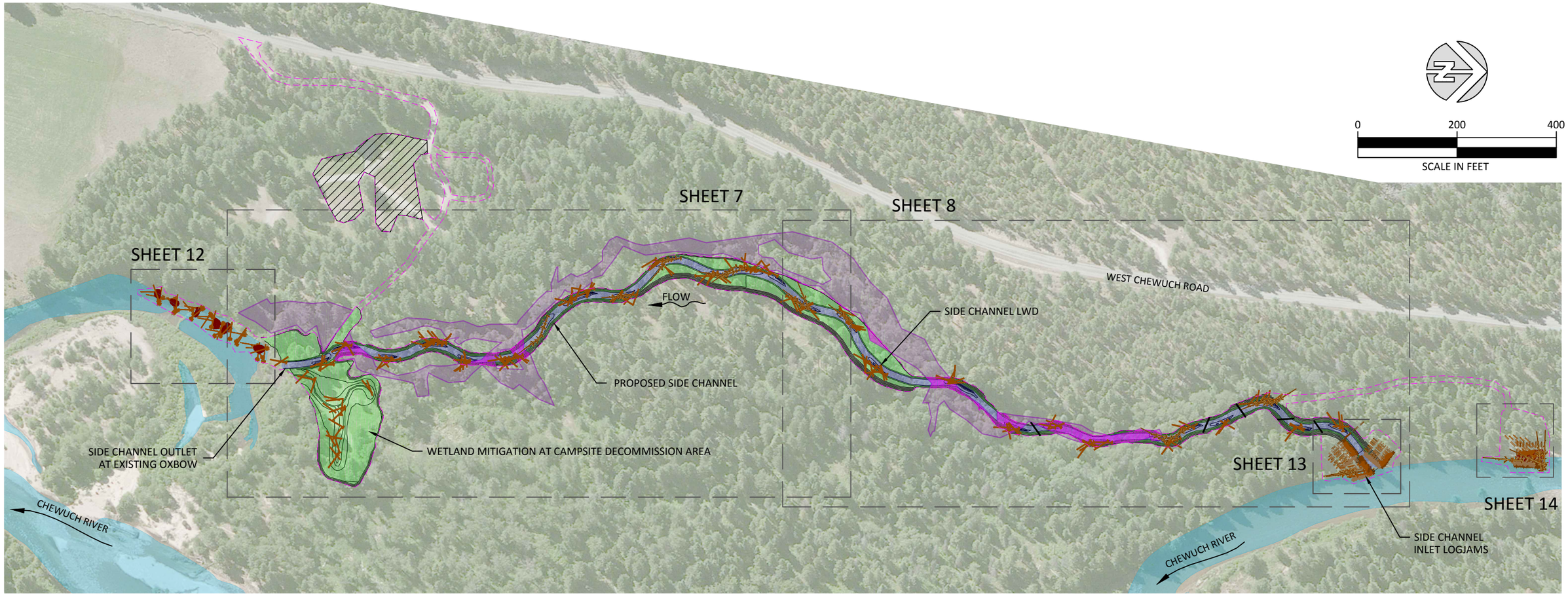

PLAN

LEGEND

- PROPERTY LINE
- PROPOSED SIDE CHANNEL
- WETLAND DELINEATION
- WETLAND SOIL SALVAGE (TOPSOIL TYPE B)
- WETLAND CREATION
- STAGING AREA
- LOG PLACEMENTS

SIDE CHANNEL CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATION, HAUL, DISPOSAL	15,500 CY
LOGS WITH ROOTS	180
LOGS	56
WETLAND MITIGATION (TOPSOIL TYPE B PLACEMENT)	1.55 AC

QUANTITIES NOTES:

1. ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED AGAINST THE PROJECT FINAL CONDITION.
2. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL AT NO ADDITIONAL MEASURE OR COST TO THE OWNER.
3. MEASUREMENTS BY WEIGHT OR TRUCK MEASUREMENT SHALL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL.
4. SALVAGED TREES SHALL BE INCORPORATED INTO HABITAT STRUCTURES.
5. WETLAND SOIL SALVAGE SHALL GENERALLY OCCUR AT AREAS DELINEATED AS WETLAND WITHIN THE PROJECT LIMITS OF DISTURBANCE. WETLAND SOIL SALVAGE SHALL AREAS WILL BE AS DIRECTED BY THE OWNER. INSTALL SALVAGED WETLAND SOIL AT WETLAND MITIGATION AREAS. SEE TOPSOIL TYPE B IN THE SPECIFICATIONS.

MICHAEL R. McALLISTER
STATE OF WASHINGTON
38189
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 09-25-2016

NO.	BY	DATE	REVISION DESCRIPTION

DF (DRAWN)	MB,MM,CM (DESIGNED)	MB (CHECKED)
MM (APPROVED)	4/1/15 (DATE)	(PROJECT)

CONFEDERATED TRIBES AND BANDS OF THE YAKAMA NATION
CHEWUCH RIVER RIGHT
- FISH HABITAT ENHANCEMENT PROJECT

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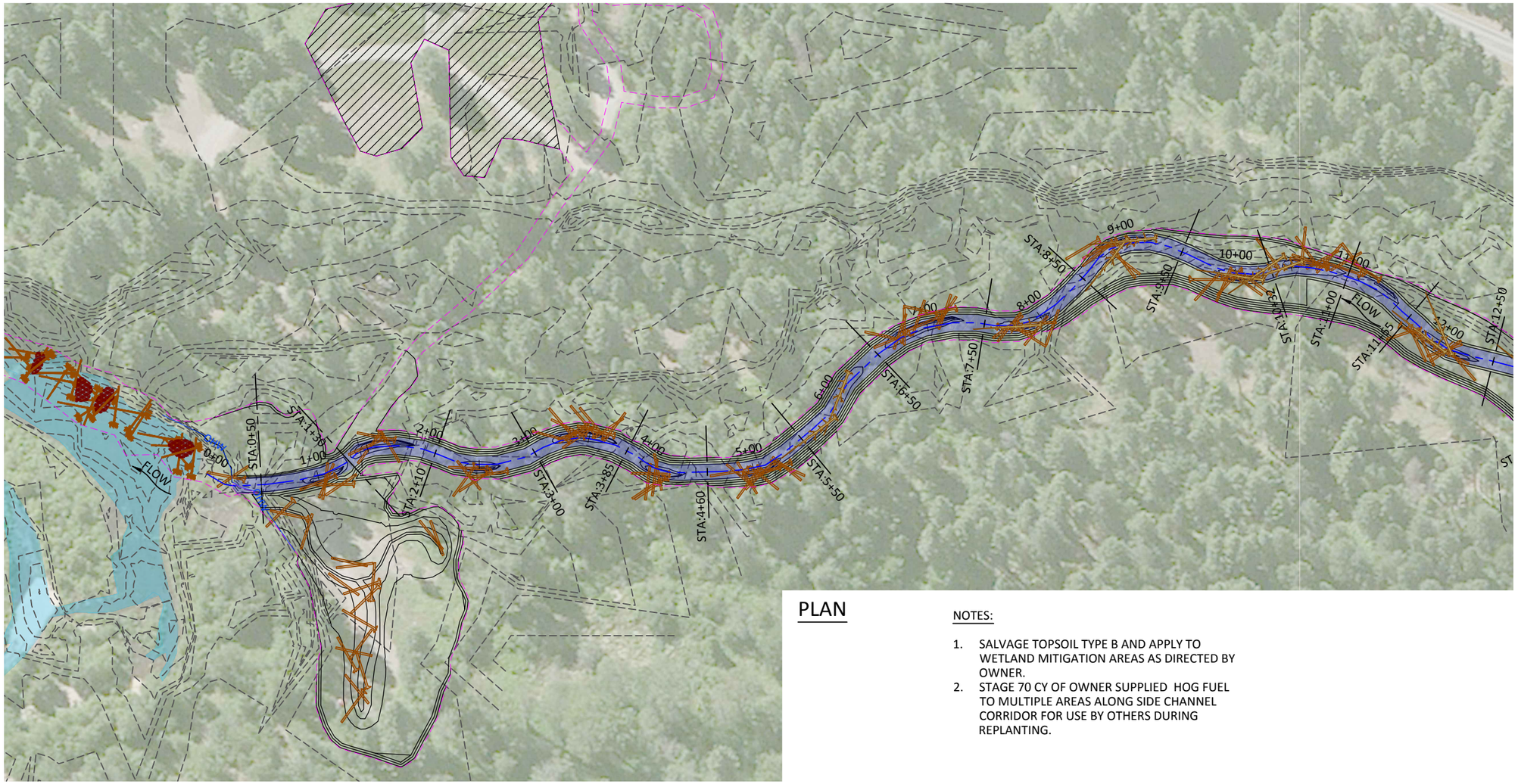
PROJECT OVERVIEW AND SHEET INDEX

G:\CAD\Chewuch River Right 2014_14025A\Drawings\IFI_Chewuch_RiverRight_D.dwg Mike M. 4/2/2015



PLAN

NOTES:

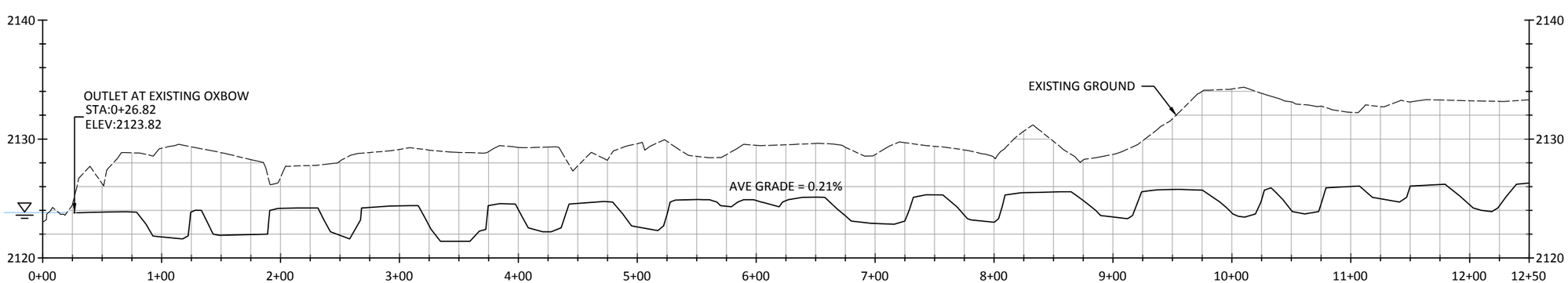
1. SALVAGE TOPSOIL TYPE B AND APPLY TO WETLAND MITIGATION AREAS AS DIRECTED BY OWNER.
2. STAGE 70 CY OF OWNER SUPPLIED HOG FUEL TO MULTIPLE AREAS ALONG SIDE CHANNEL CORRIDOR FOR USE BY OTHERS DURING REPLANTING.

0 100 200

SCALE IN FEET

LEGEND

- LIMITS OF DISTURBANCE
- EXISTING CONTROURS (1-FT INTERVAL)
- PROPOSED CONTOURS (1-FT INTERVAL)
- EXISTING RIVER
- PROPOSED SIDE CHANNEL
- PROPERTY LINE
- STAGING AREA
- STA:11+00 — GRADING CROSS SECTION LINE AND STATION ALONG CENTERLINE ALIGNMENT (SEE SHEET 10 AND 11)
- LOG INSTALLATIONS
- SALVAGED TREE PLACEMENT



PROFILE - SIDE CHANNEL, DOWNSTREAM END

NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/1/15	
APPROVED	DATE	PROJECT

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PROPOSED SIDE CHANNEL
STA 0+00 TO STA 12+50

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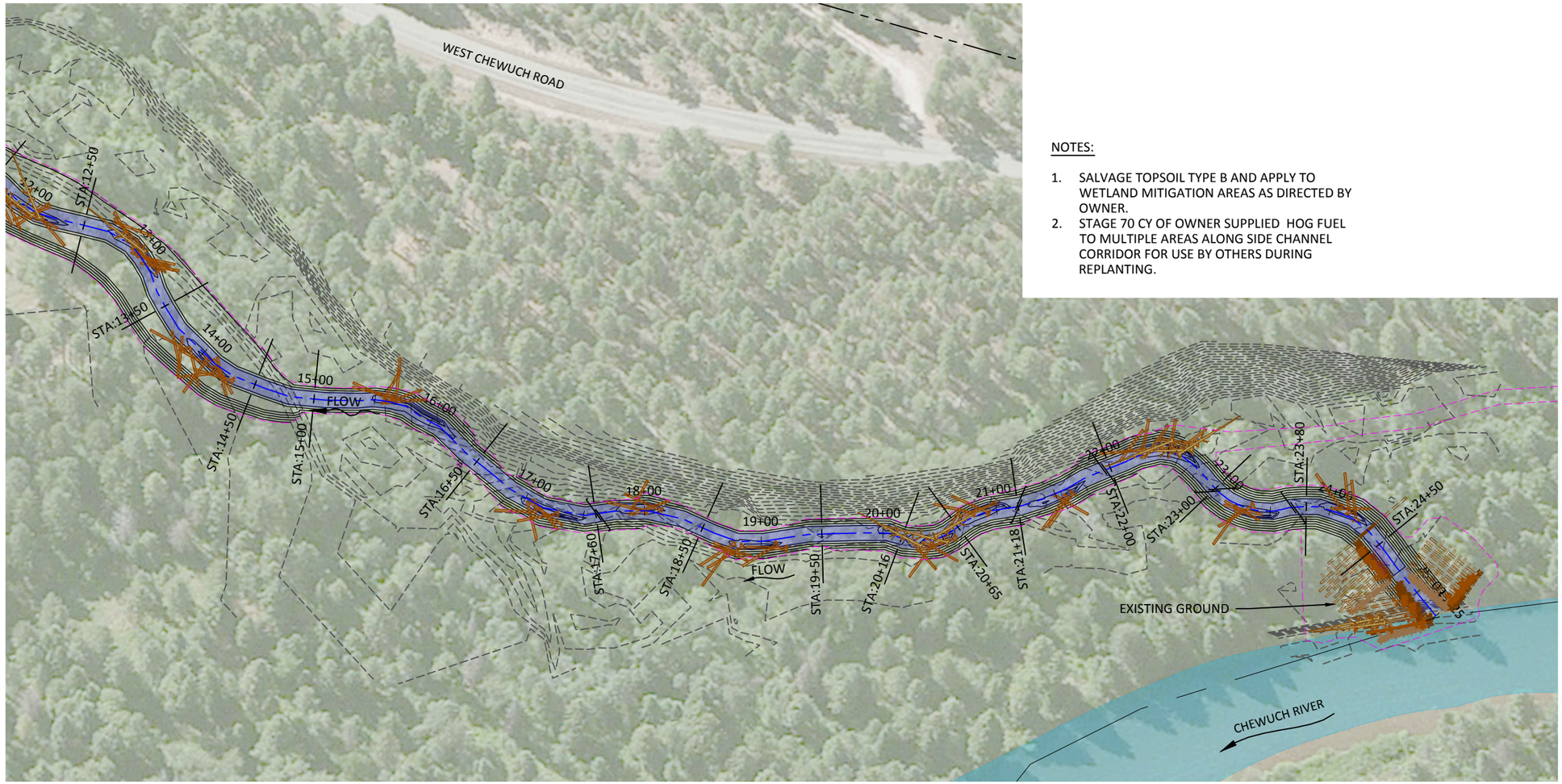

NOTES:

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2. STAGE 70 CY OF OWNER SUPPLIED HOG FUEL TO MULTIPLE AREAS ALONG SIDE CHANNEL CORRIDOR FOR USE BY OTHERS DURING REPLANTING.

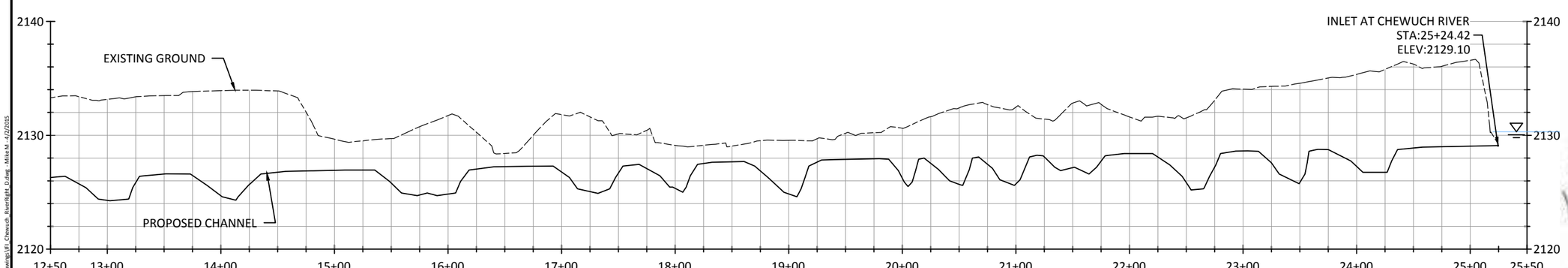
0 100 200

SCALE IN FEET

LEGEND

- LIMITS OF DISTURBANCE
- EXISTING CONTROURS (1-FT INTERVAL)
- PROPOSED CONTOURS (1-FT INTERVAL)
- EXISTING MAIN CHANNEL
- PROPOSED SIDE CHANNEL
- PROPERTY LINE
- STAGING AREA
- STA:11+00 — GRADING CROSS SECTION LINE AND STATION ALONG CENTERLINE ALIGNMENT (SEE SHEET 10 AND 11)
- LOG INSTALLATIONS
- SALVAGED TREE PLACEMENT

PLAN



PROFILE - SIDE CHANNEL, UPSTREAM END

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EXPIRES 08-25-2016

NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/1/15	
APPROVED	DATE	PROJECT

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PROPOSED SIDE CHANNEL
STA 12+50 TO STA 25+50

SHEET 8 OF 22

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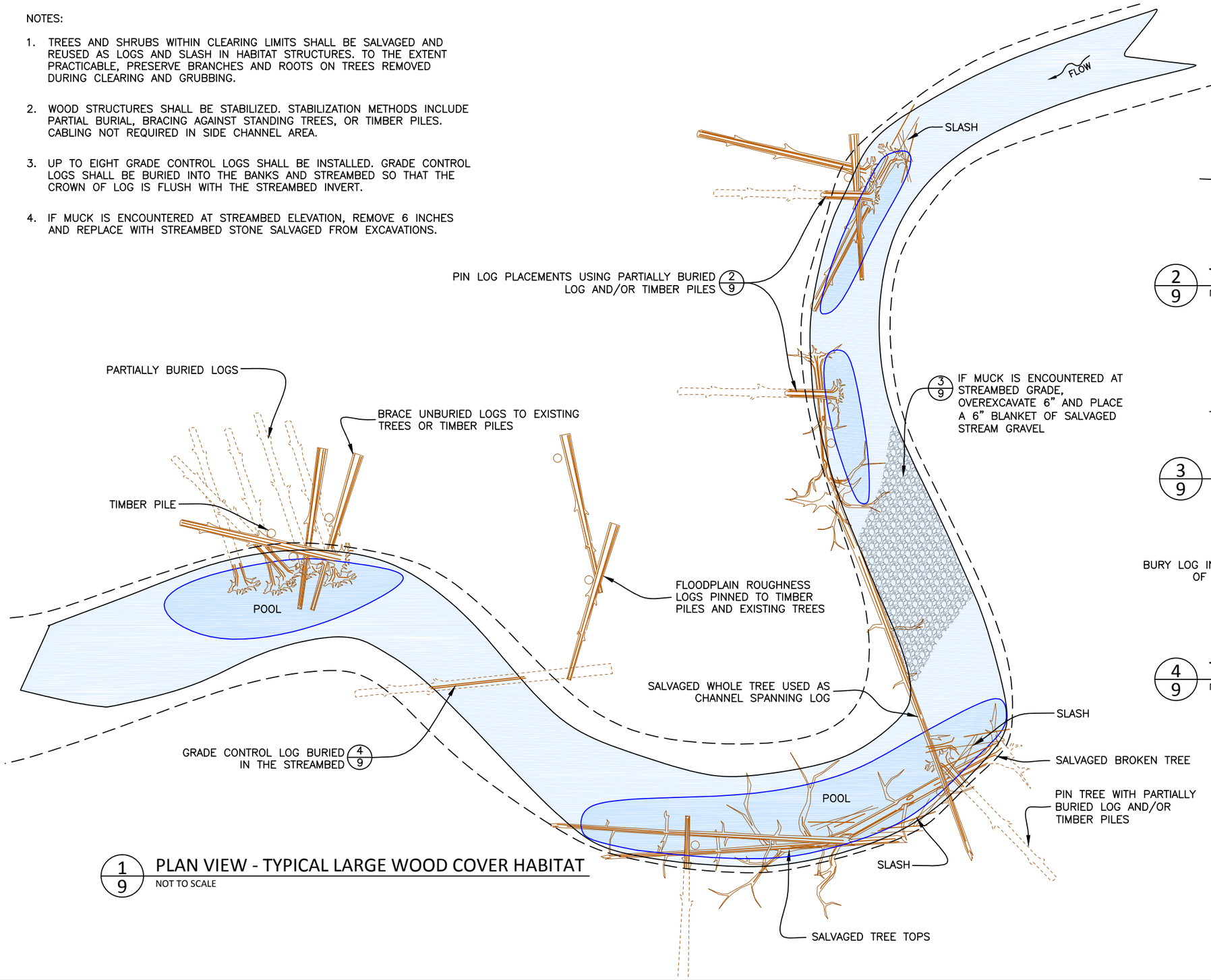
NOTES:

1. TREES AND SHRUBS WITHIN CLEARING LIMITS SHALL BE SALVAGED AND REUSED AS LOGS AND SLASH IN HABITAT STRUCTURES. TO THE EXTENT PRACTICABLE, PRESERVE BRANCHES AND ROOTS ON TREES REMOVED DURING CLEARING AND GRUBBING.

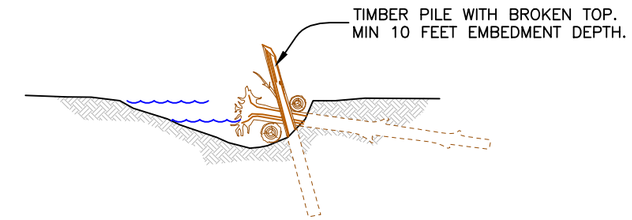
2. WOOD STRUCTURES SHALL BE STABILIZED. STABILIZATION METHODS INCLUDE PARTIAL BURIAL, BRACING AGAINST STANDING TREES, OR TIMBER PILES. CABLING NOT REQUIRED IN SIDE CHANNEL AREA.

3. UP TO EIGHT GRADE CONTROL LOGS SHALL BE INSTALLED. GRADE CONTROL LOGS SHALL BE BURIED INTO THE BANKS AND STREAMBED SO THAT THE CROWN OF LOG IS FLUSH WITH THE STREAMBED INVERT.

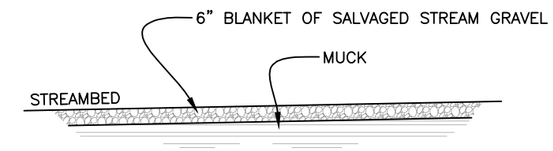
4. IF MUCK IS ENCOUNTERED AT STREAMBED ELEVATION, REMOVE 6 INCHES AND REPLACE WITH STREAMBED STONE SALVAGED FROM EXCAVATIONS.



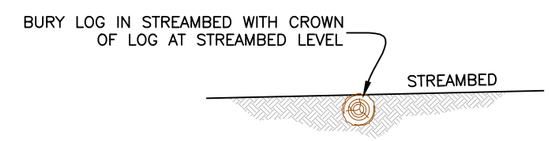
1/9 PLAN VIEW - TYPICAL LARGE WOOD COVER HABITAT
NOT TO SCALE



2/9 TYPICAL SECTION - SIDE CHANNEL LARGE WOOD
NOT TO SCALE



3/9 PROFILE VIEW - GRAVEL BLANKET
NOT TO SCALE



4/9 TYPICAL PROFILE - GRADE CONTROL LOG
NOT TO SCALE

NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	9/23/14	
APPROVED	DATE	PROJECT

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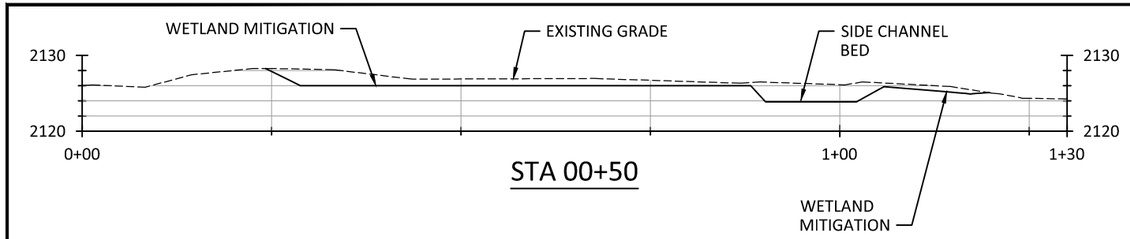
SIDE CHANNEL
TYPICAL DETAILS



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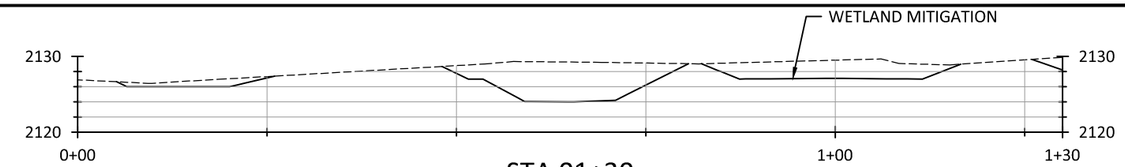

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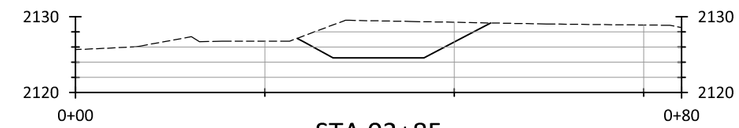
STA 02+10

STA 03+00



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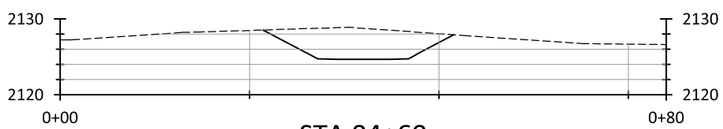

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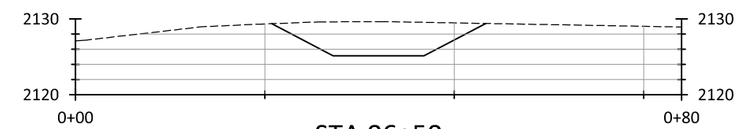
STA 05+50



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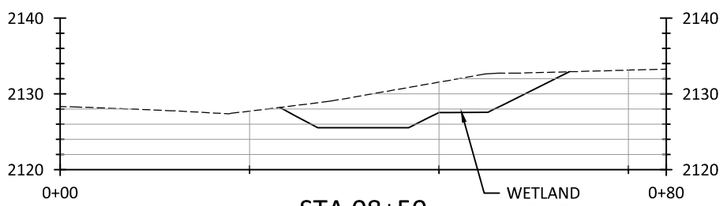

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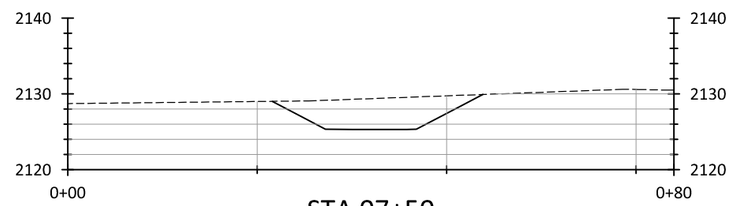

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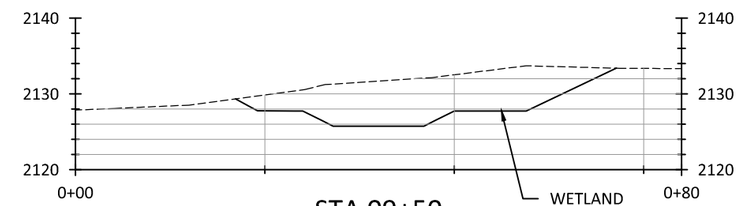

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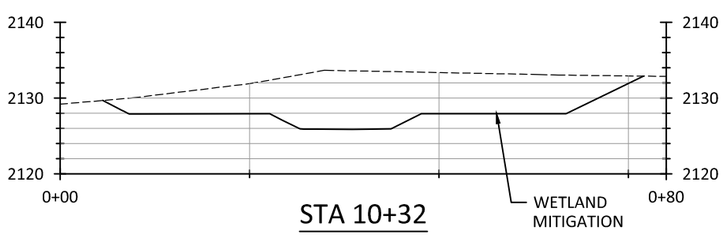

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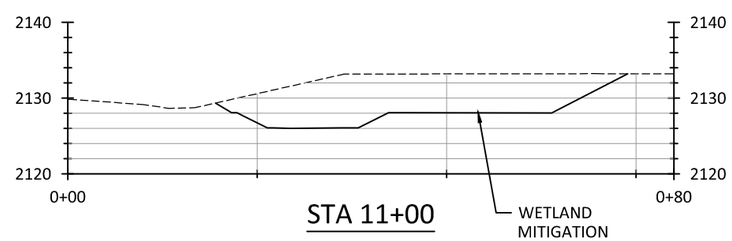

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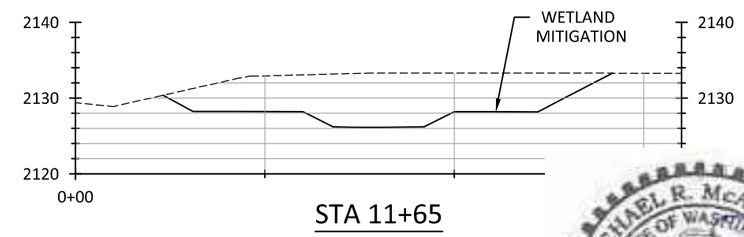

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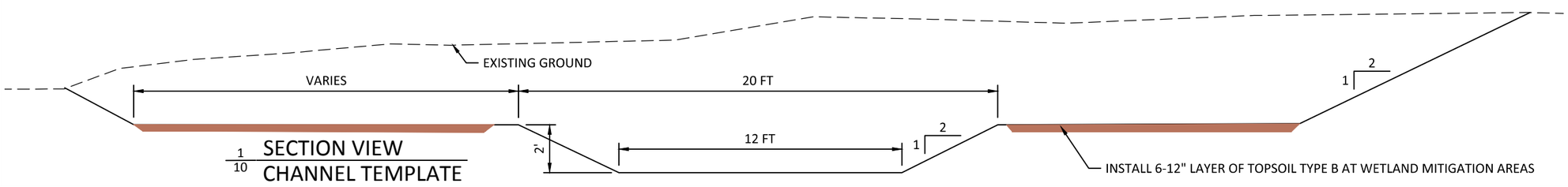

1/10 SECTION VIEW
CHANNEL TEMPLATE

NO.	BY	DATE	REVISION DESCRIPTION
1	mrm	4/23/15	add channel template

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/23/15	
APPROVED	DATE	PROJECT

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- FISH HABITAT ENHANCEMENT PROJECT

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SIDE CHANNEL GRADING
CROSS SECTIONS

SHEET
10 OF 22

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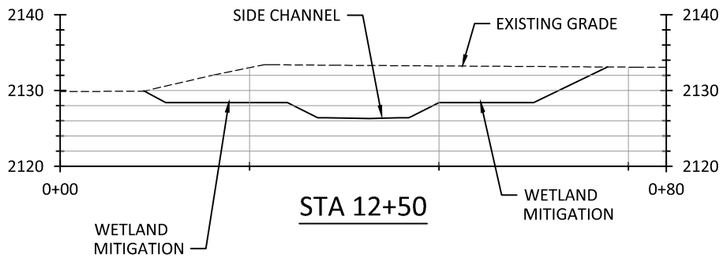

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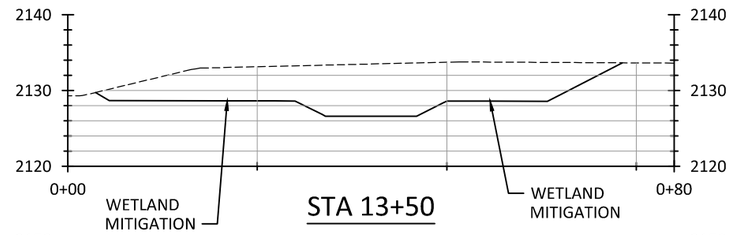

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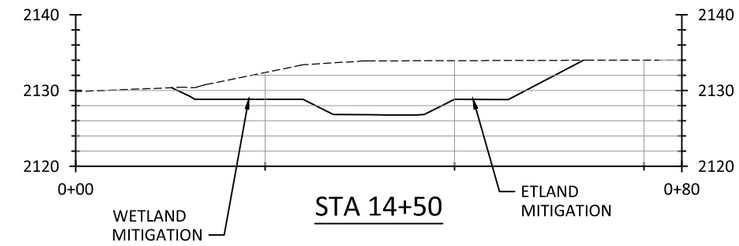

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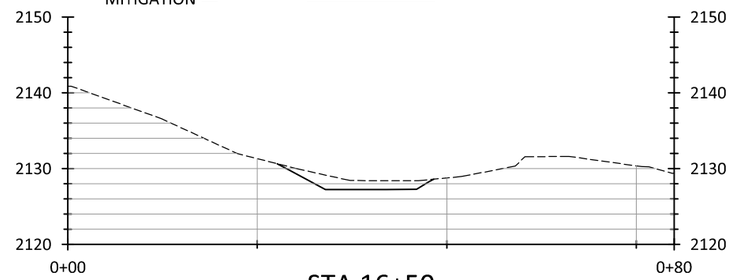
STA 15+00



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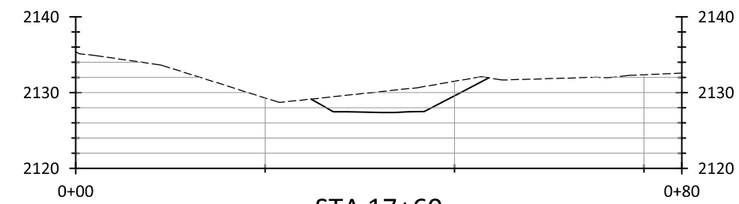

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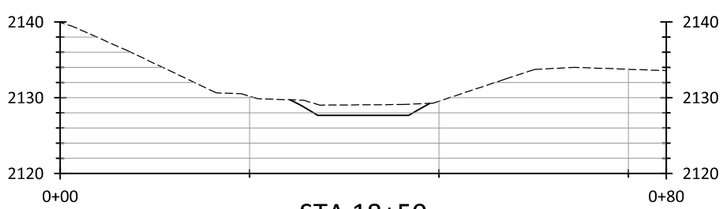

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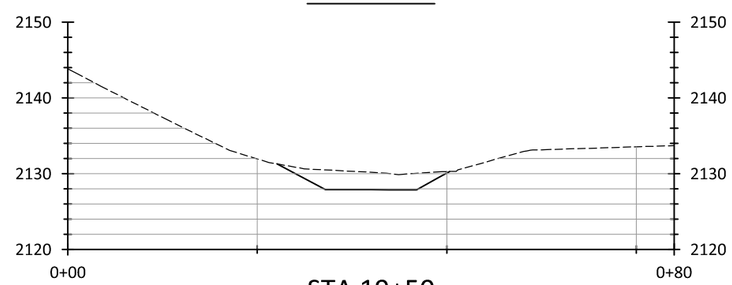

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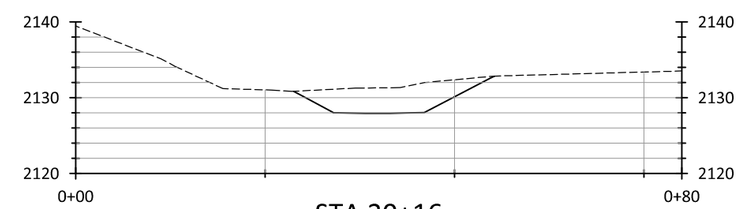

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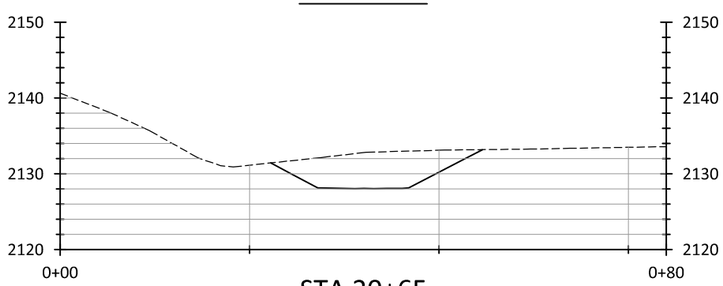

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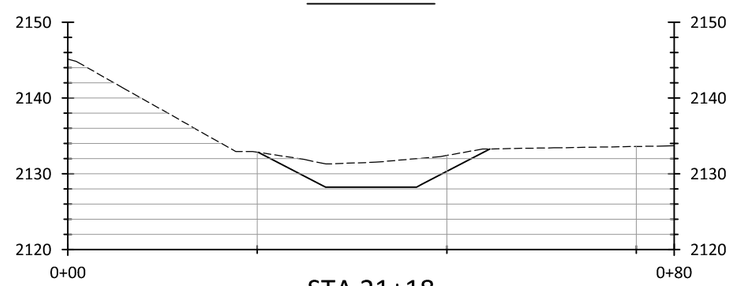

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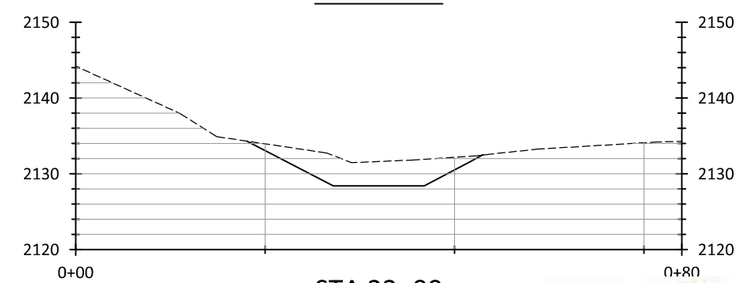

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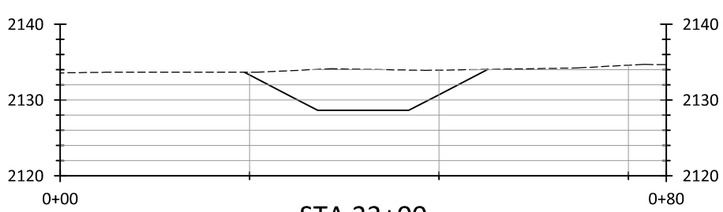

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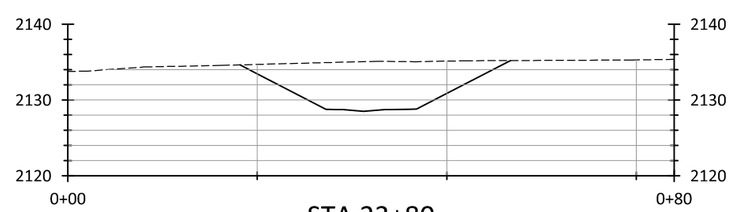

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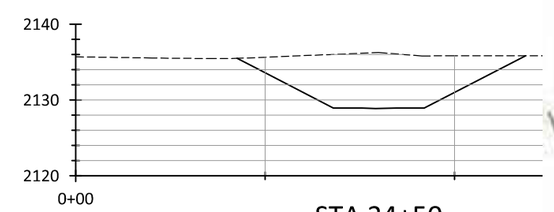

STA 24+50

NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/1/15	
APPROVED	DATE	PROJECT

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SIDE CHANNEL GRADING
CROSS SECTIONS

SHEET
11 OF 22

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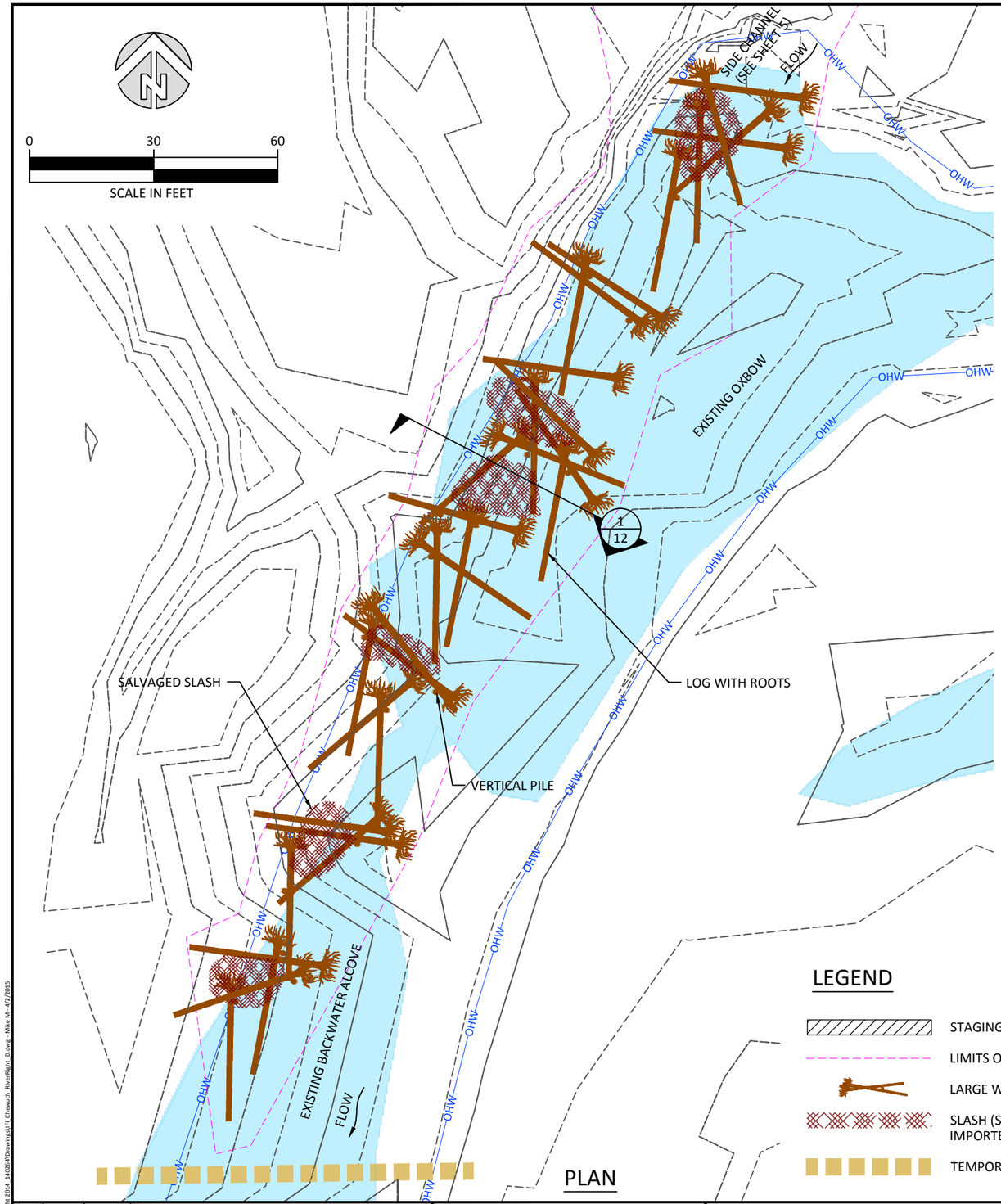
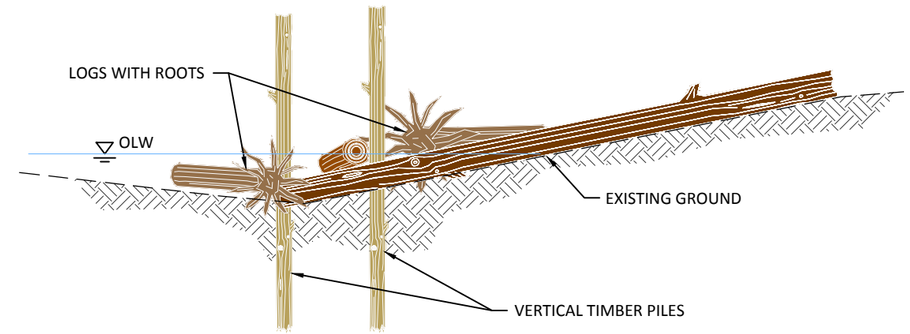


PLAN



1/12 SECTION - TYPICAL STRUCTURE

SCALE: 1" = 10'

SIDE CHANNEL OUTLET CONSTRUCTION QUANTITIES

ITEM	QUANTITY
LOGS WITH ROOTS	33
TIMBER PILES	19
CABLE LOG TO PILE	24

NOTE:

EACH PILE SHALL BE CABLED TO AT LEAST ONE LOG. SEE SHEET 19 FOR CABLING DETAILS

*70 BOULDERS WILL ONLY BE USED IF VERTICAL PILES CANNOT BE DRIVEN DUE TO BEDROCK OR LARGE SUBSTRATE. SEE SHEET 18 FOR BOULDER BALLAST DETAILS.

LEGEND

- STAGING/STOCKPILE
- LIMITS OF DISTURBANCE
- LARGE WOODY MATERIAL
- SLASH (SALVAGED OR IMPORTED)
- TEMPORARY COFFERDAM

NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/1/15	
APPROVED	DATE	PROJECT

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LOG INSTALLATIONS NEAR SIDE CHANNEL OUTLET

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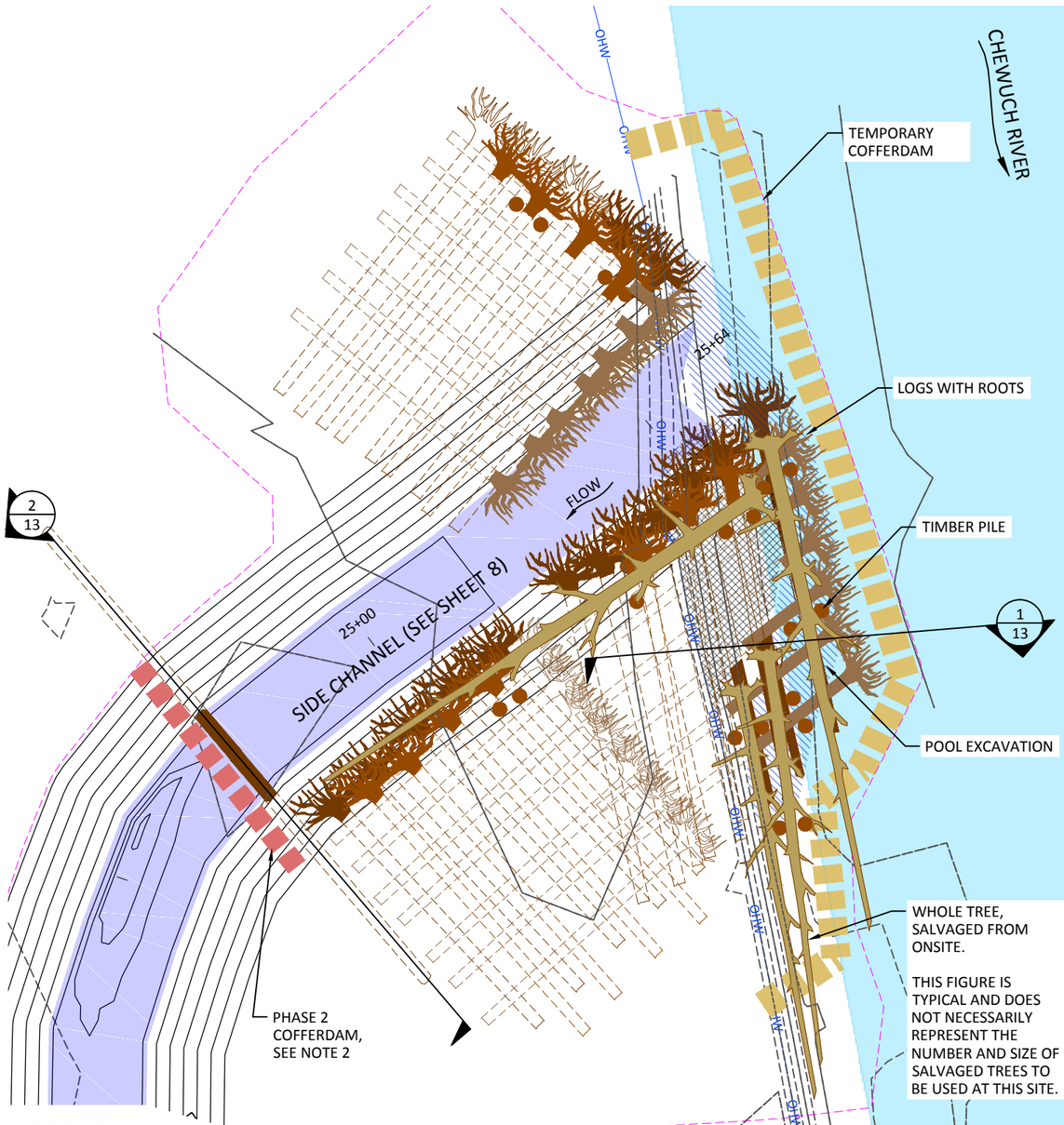


LEGEND

- OHW — ORDINARY HIGH WATER
- TEMPORARY COFFERDAM
- PHASE 2 COFFERDAM
- LIMITS OF DISTURBANCE
- LARGE WOODY MATERIAL

PLAN

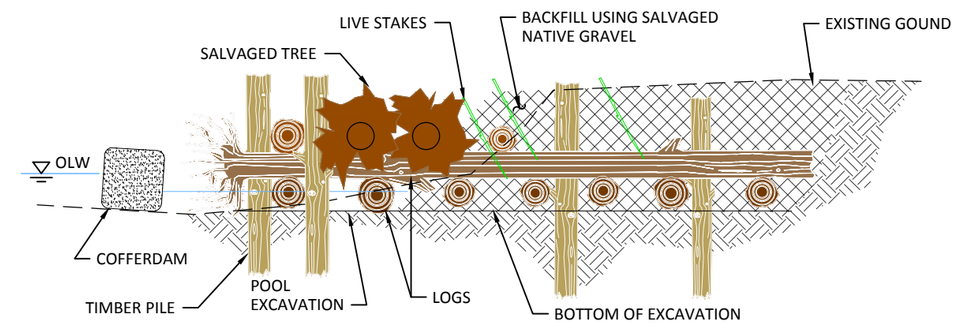
- POOL EXCAVATION
- BACKFILL

0 20 40
SCALE IN FEET

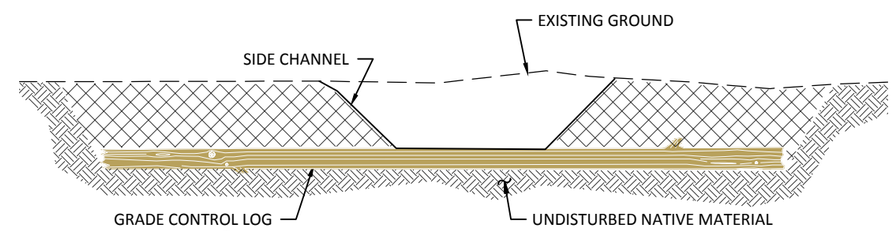
ITEM	QUANTITY
EXCAVATION	1420 CY
BACKFILL	1420 CY
LOGS WITH ROOTS	48
TIMBER PILES	24
SALVAGED TREES	5-6
COFFERDAM	170 FT

QUANTITIES NOTES:

1. ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED AGAINST THE PROJECT FINAL CONDITION.
2. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL AT NO ADDITIONAL MEASURE OR COST TO THE OWNER.
3. MEASUREMENTS BY WEIGHT OR TRUCK MEASUREMENT SHALL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL.



1/13 SECTION - DOWNSTREAM LOG STRUCTURE



2/13 SECTION - GRADE CONTROL LOG

0 10 20
SCALE IN FEET

NOTES:

1. SALVAGED TREES SHALL BE INCORPORATED INTO HABITAT STRUCTURES.
2. PHASE 2 TEMPORARY COFFERDAM SANDBAGS TO BE FILLED WITH SPAWNING GRAVEL. TO BE REMOVED BY MANUAL LABOR UPON PROJECT COMPLETION. INSTALLED BY CONTRACTOR, REMOVED BY OWNER.

NO.	BY	DATE	REVISION DESCRIPTION
1	mrm	4/23/15	changed salvaged trees from "4-5" to "5-6"

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/23/15	
APPROVED	DATE	PROJECT

CONFEDERATED TRIBES AND BANDS OF THE YAKAMA NATION
CHEWUCH RIVER RIGHT
- FISH HABITAT ENHANCEMENT PROJECT

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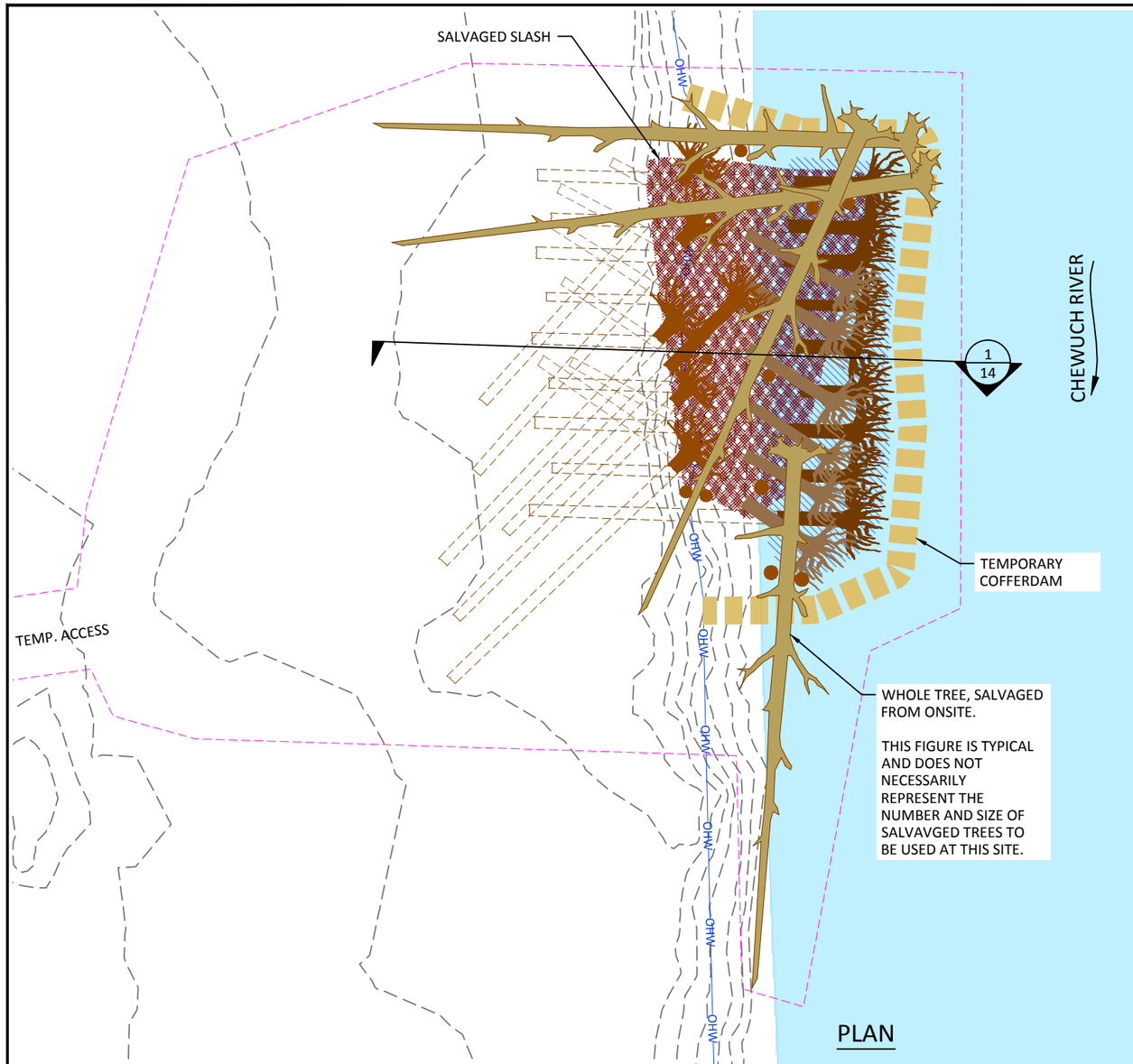
LOG STRUCTURE AT INLET

SHEET 13 OF 22

G:\CAD\Chewuch River Right 2014 - 140264\Drawings\IFR Chewuch RiverRight 0.dwg - Mike M - 4/23/2015



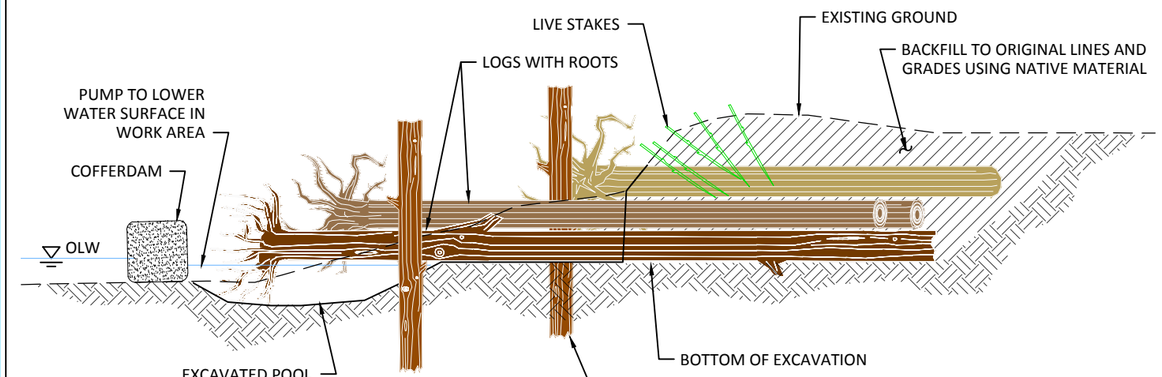
PLAN

LOG STRUCTURE RR1 CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATION	700 CY
BACKFILL	650 CY
HAUL AND DISPOSE EXCESS FILL	50 CY
LOG WITH ROOTS	21
TIMBER PILES	10
SALVAGED TREES	4-5
COFFERDAM	130 FT

QUANTITIES NOTES:

1. ALL MATERIALS QUANTITIES ARE BASED ON IN-PLACE CONDITION DETERMINED BY THE PRE-PROJECT CONDITION COMPARED AGAINST THE PROJECT FINAL CONDITION.
2. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL AT NO ADDITIONAL MEASURE OR COST TO THE OWNER.
3. MEASUREMENTS BY WEIGHT OR TRUCK MEASUREMENT SHALL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL.



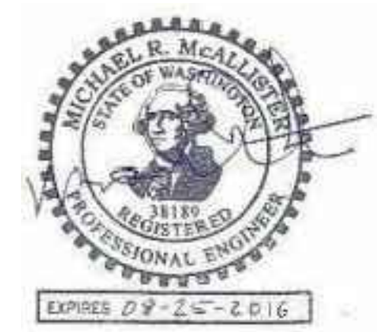
1/14 SECTION VIEW - LOG STRUCTURE

0 10 20
SCALE IN FEET

LEGEND

- OHW — ORDINARY HIGH WATER
- TEMPORARY COFFERDAM
- STAGING/STOCKPILE
- LIMITS OF DISTURBANCE
- LARGE WOODY MATERIAL
- SLASH (SALVAGED OR IMPORTED)
- POOL EXCAVATION

0 20 40
SCALE IN FEET



NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/1/15	
APPROVED	DATE	PROJECT

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LOG STRUCTURE RR1

SHEET 14 OF 22

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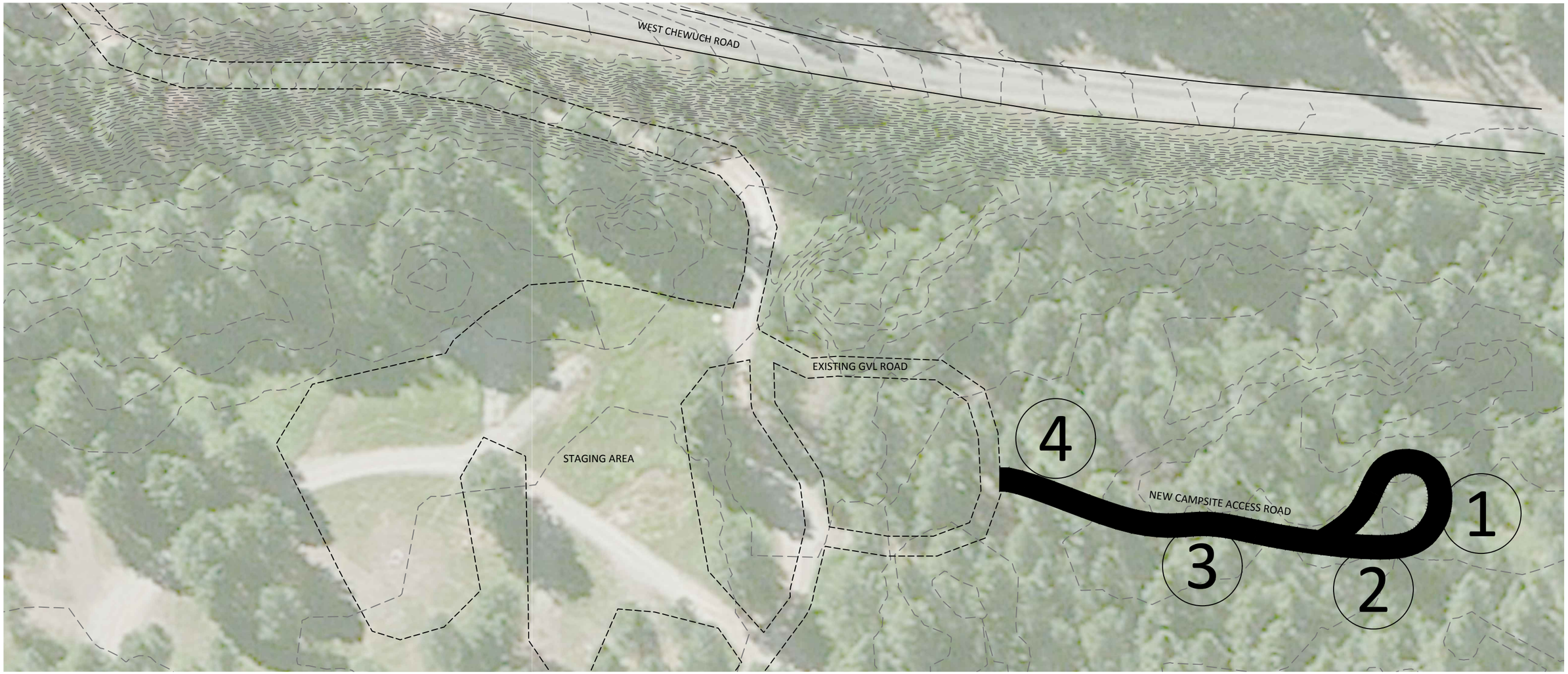

PLAN

0 50 100

SCALE IN FEET

LEGEND

EXISTING ROAD

CAMPSITE

NOTES:

ALL TREES AND SHRUBS REMOVED DURING CLEARING AND GRUBBING SHALL BE SALVAGED TO BE USED AS WOODY MATERIAL IN HABITAT STRUCTURES.

ROAD ALIGNMENT, AND CAMPSITE LOCATIONS AND SIZES SHOWN ON PLANS ARE APPROXIMATE. ACTUAL ROAD ALIGNMENT AND CAMPSITE CONFIGURATIONS TO BE STAKED IN THE FIELD BY OWNER.

RESTORE STAGING AREA TO ORIGINAL OR BETTER CONDITION. CLEAN UP DISTURBED AREAS, DECOMPACT GROUND AS NEEDED, SMOOTH OUT IRREGULAR SURFACES CAUSED BY CONSTRUCTION OR STOCKPILING ACTIVITIES, AND BLADE AND GRAVEL ROAD.

CAMPSITES

1. CAMPSITE ACCESS ROAD SHALL BE 12 FEET WIDE. LENGTH SHALL BE 500 FEET OR LESS. GRAVEL SURFACING SHALL BE A 4" COMPACTED LAYER OF 1"-MINUS CRUSHED ROCK.
2. CAMPSITE VEHICLE PARKING PADS SHALL NOT EXCEED 24' X 12'. GRAVEL SURFACING SHALL BE A 4" COMPACTED LAYER OF 1"-MINUS CRUSHED ROCK.
3. TENT PADS SHALL BE APPROXIMATELY 24'X30'. ACTUAL DIMENSIONS SHALL BE DEVELOPED IN THE FIELD AS DIRECTED BY THE WILDLIFE AREA MANAGER.
4. CAMPFIRE RINGS SHALL BE 30" CIRCUMFERENCE, DOUBLE-FLANGE METAL WITH HEAT RESISTANT FINISH, NON-ADJUSTABLE FIRE GRATES, AND ANCHORS. PROVIDE SUBMITTAL FOR REVIEW AND APPROVAL.

NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/1/15	
APPROVED	DATE	PROJECT

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CAMPSITE MITIGATION

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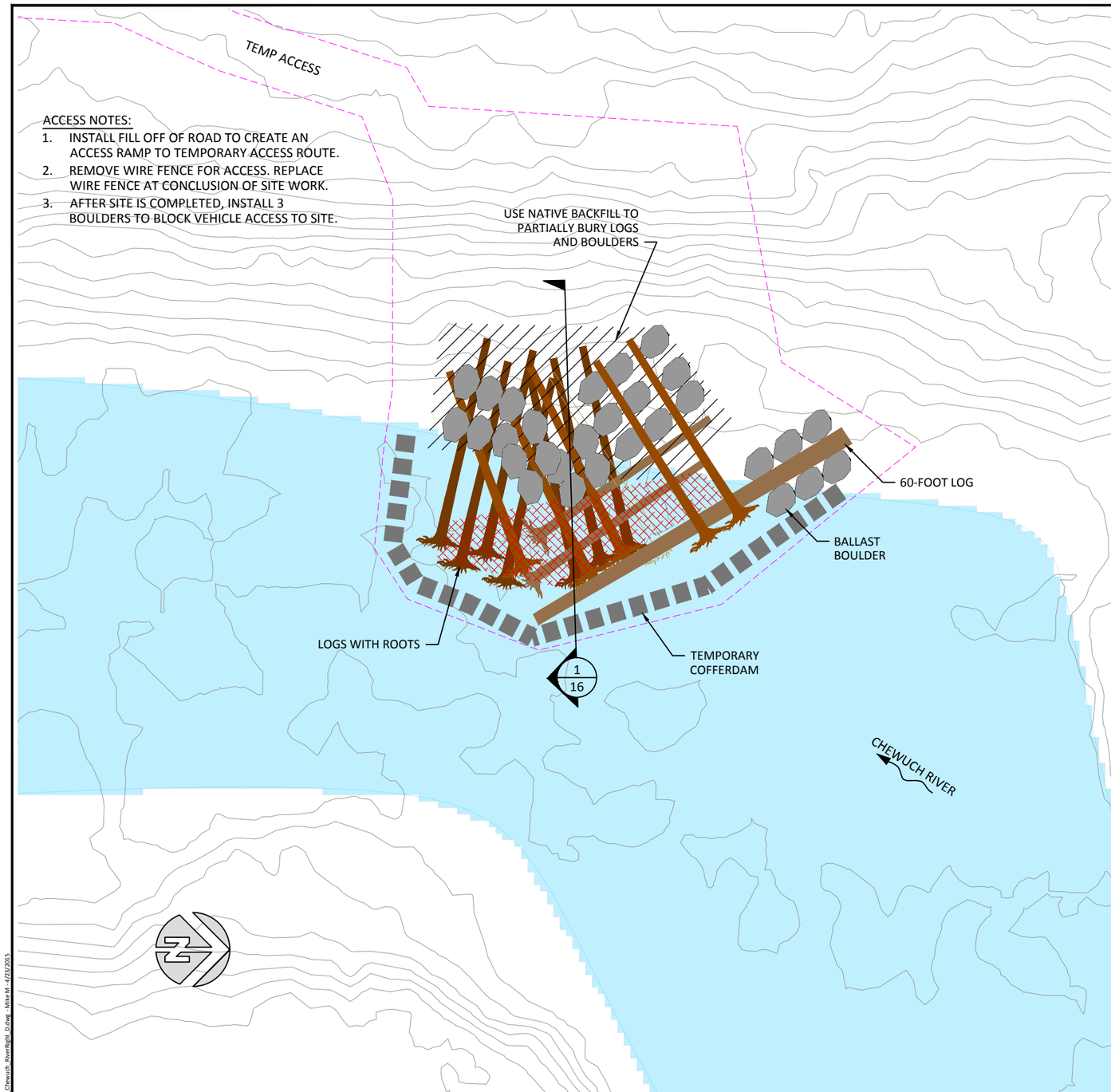


ACCESS NOTES:

1. INSTALL FILL OFF OF ROAD TO CREATE AN ACCESS RAMP TO TEMPORARY ACCESS ROUTE.
2. REMOVE WIRE FENCE FOR ACCESS. REPLACE WIRE FENCE AT CONCLUSION OF SITE WORK.
3. AFTER SITE IS COMPLETED, INSTALL 3 BOULDERS TO BLOCK VEHICLE ACCESS TO SITE.

SITE PLAN A

LEGEND

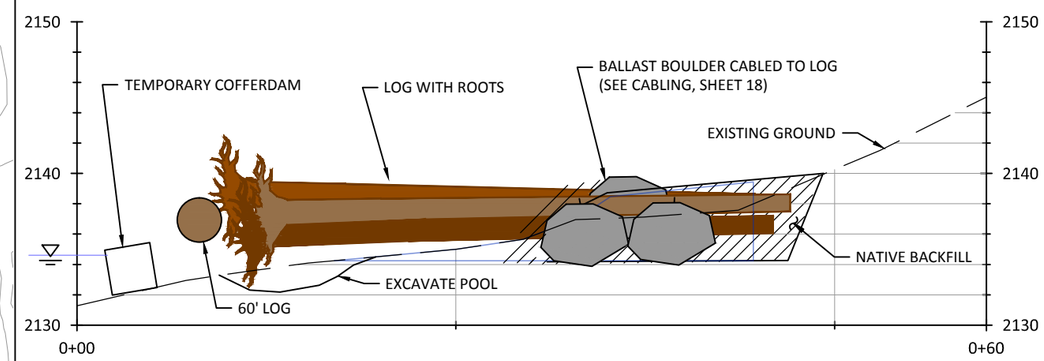
- LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM
- APPROXIMATE LOW WATER
- IMPORTED SLASH
- EXCAVATION AND BACKFILL
- LOG LAYER 1
- LOG LAYER 2
- LOG LAYER 3
- BOULDER

CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATION	95 CY
BACKFILL	75 CY
HAUL EXCESS TO BORROW PIT	20 CY
LOG WITH ROOTS	14
OVERSIZE LOG	1
4' DIAMETER BOULDER	32
SALVAGED SLASH	20 CY
COFFERDAM	110 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. EMBANKMENT COMPACT EXCESS FILL DISPOSAL AT BORROW PIT.
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.
6. OWNER PROVIDED BOULDERS ARE PROVIDED AT EAST PAUL MOUNTAIN BORROW PIT AND LEROY PIT.
7. REMOVE DESIGNATED TREES FROM EAST PAUL MOUNTAIN BORROW PIT TO BE USED AS SLASH AT SITE A.



1/16 SECTION VIEW - SITE A

0 10 20
SCALE IN FEET

LOG NOTES:

1. LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
2. TO THE EXTENT PRACTICABLE, INSTALLED BOULDERS SHALL BE BURIED TO HIDE CABLE.
3. INSTALL SLASH LOOSELY BETWEEN LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.

NO.	BY	DATE	REVISION DESCRIPTION
1	mrm	4/23/15	acquire slash from borrow pit

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/23/15	
APPROVED	DATE	PROJECT

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LOG STRUCTURE SITE A

SHEET 16 OF 22

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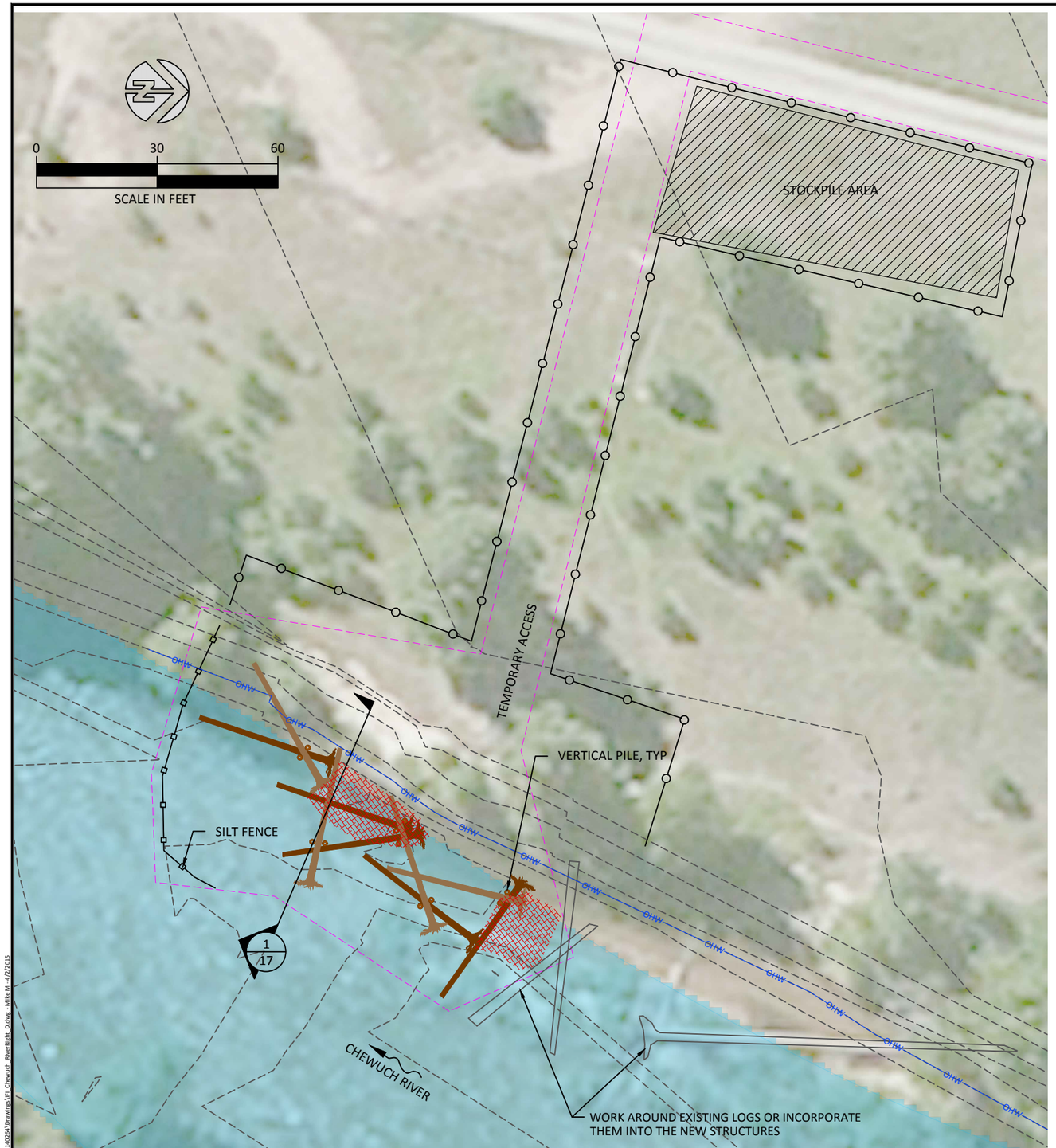
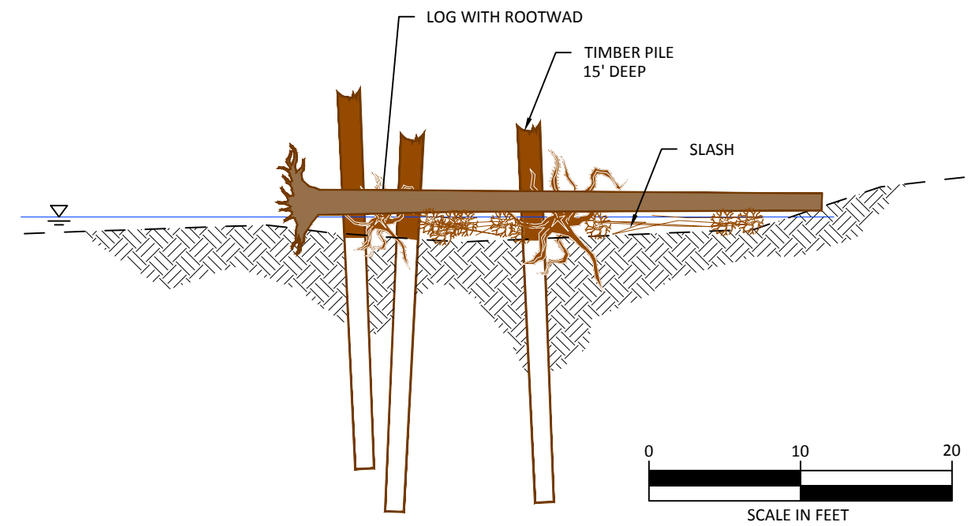


NOTES:

1. WOOD PLACEMENTS SHOWN ON PLANS ARE APPROXIMATE AND SUBJECT TO CHANGE IN THE FIELD.
2. VARY THE APPEARANCE OF TIMBER PILES BY INSTALLING THEM AT ANGLES AND WITH DIFFERENT TOP HEIGHTS. BREAK THE TOPS IF POSSIBLE.
3. REPLACE PORTIONS OF FENCE REMOVED FOR SITE ACCESS.
4. THIS SITE IS IN A CAMPGROUND. WORK SHALL OCCUR MON-THUR, 8AM-5PM.
5. AVOID IMPACTS TO EXISTING TREES.

CONSTRUCTION QUANTITIES

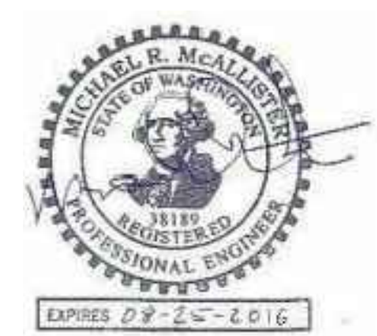
ITEM	QUANTITY
LOG WITH ROOTS	9 EA
TIMBER PILE	11 EA
IMPORTED SLASH	20 CY



1/17 SIDE VIEW - SITE K

LEGEND

- SILT FENCE
- LIMITS OF DISTURBANCE
- SAFETY FENCE
- EXISTING LOW WATER APPROX.
- SALVAGED SLASH



NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	4/1/15	
APPROVED	DATE	PROJECT

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LOG STRUCTURE SITE K

SHEET 17 OF 22

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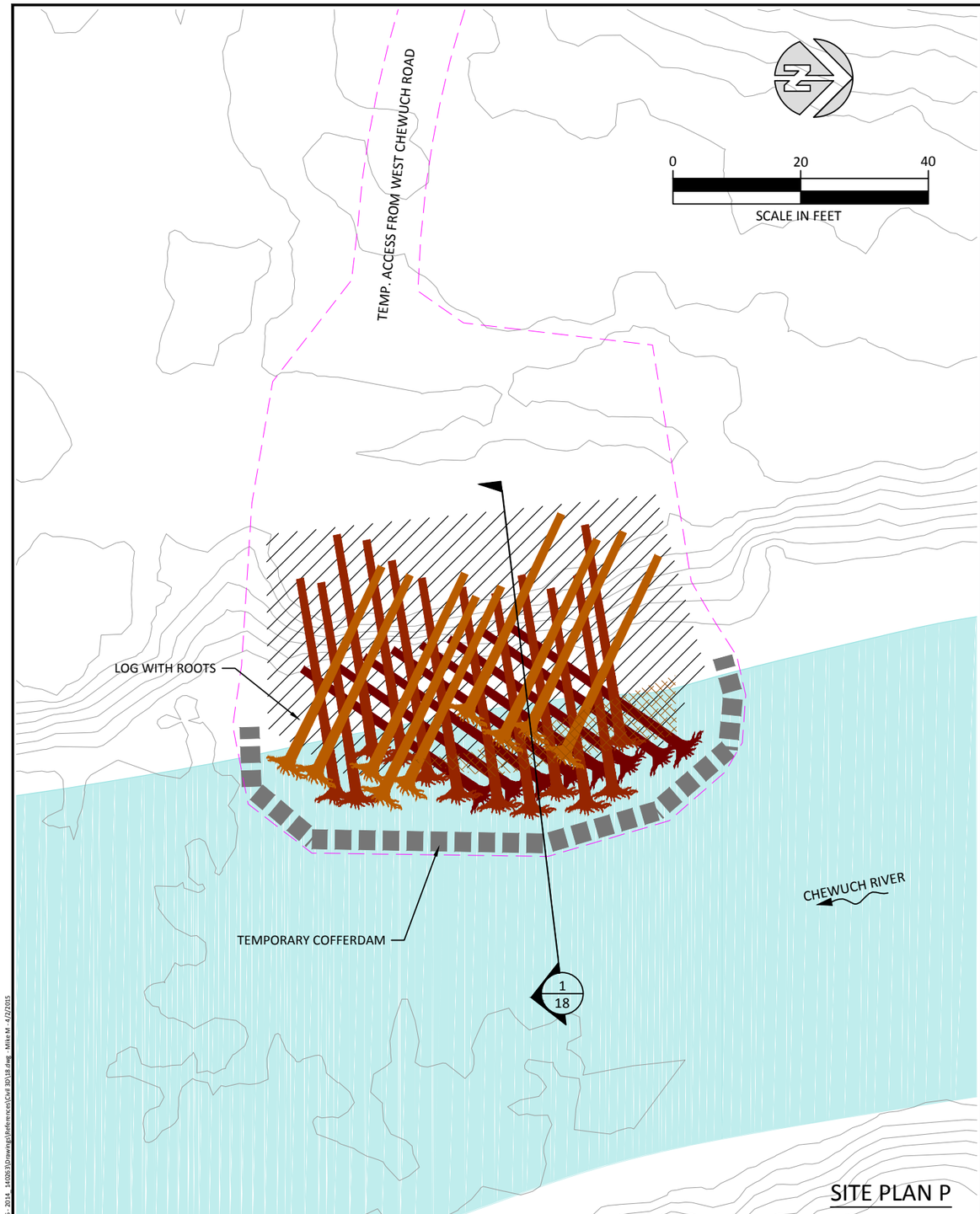


SITE PLAN P

LEGEND

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

LOG NOTES:

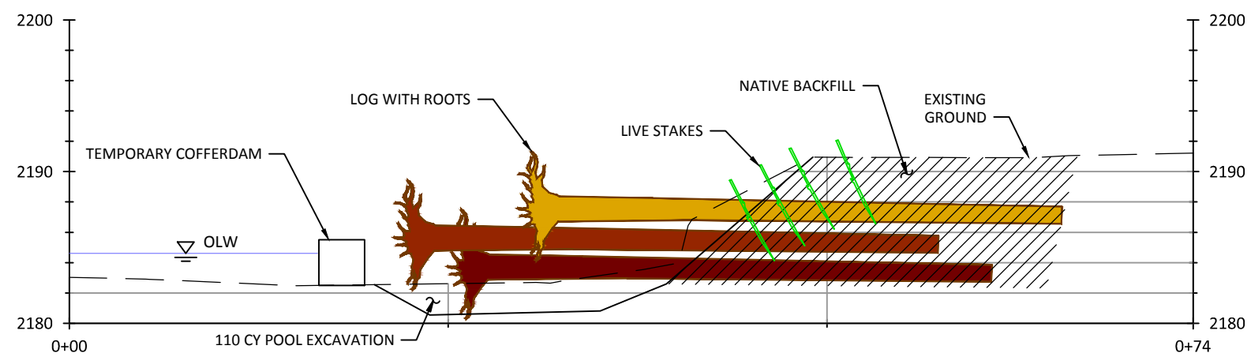
1. LOG LOCATIONS, SIZES, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS.
2. INSTALL SLASH LOOSELY BETWEEN LOGS NEAR THE WATERWARD EDGE OF THE STRUCTURE. DO NOT BURY SLASH.

CONSTRUCTION QUANTITIES

ITEM	QUANTITY
EXCAVATION	510 CY
BACKFILL	360 CY
HAUL EXCESS FILL TO BORROW PIT	150 CY
LOG WITH ROOTS	29
IMPORTED SLASH (FROM BORROW PIT)	20 CY
COFFERDAM	110 FT

QUANTITIES NOTES:

1. OWNER SUPPLIED LOGS WILL BE DECKED NEAR WEST CHEWUCH ROAD ROAD AT THE TEMPORARY ACCESS ROUTE.
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. EMBANKMENT COMPACT FILL DISPOSAL AT THE BORROW PIT.
6. SLASH FOR SITE P SHALL BE HAULED FROM THE BORROW PIT.



1/18 SECTION VIEW - SITE P

NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	3/31/15	
APPROVED	DATE	PROJECT

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LOG STRUCTURE SITE P

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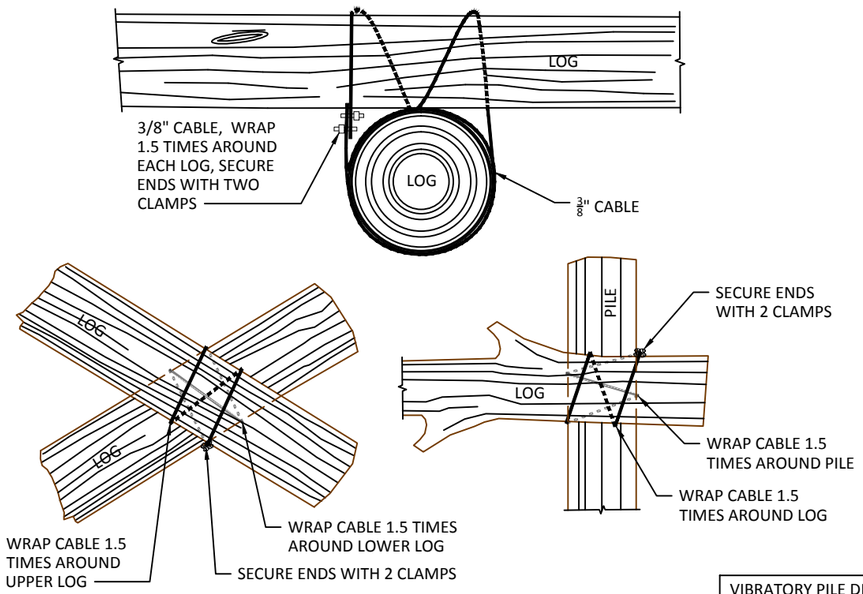
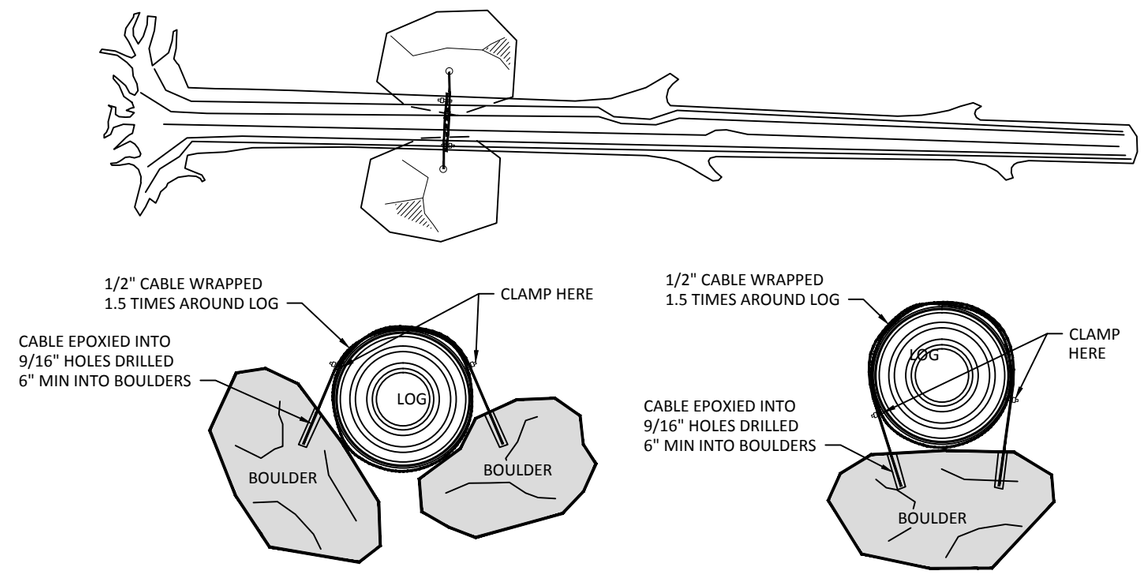


1/19 TYPICAL LOG CABLING

NOT TO SCALE



2/19 DOUBLE BOULDER BALLAST

NOT TO SCALE

3/19 SINGLE BOULDER BALLAST

NOT TO SCALE

VIBRATORY PILE DRIVING SHALL BE THE PRIMARY METHOD OF STABILIZATION. BOULDER BALLAST SHALL ONLY BE USED AFTER EXPRESSED PERMISSION FROM THE OWNER IF PILE DRIVING IS NOT POSSIBLE.

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 FULL 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 EXCEEDING 13' BELOW GROUND SURFACE. IF PILES CANNOT MEET THE DEPTH REQUIREMENT, BOULDERS SHALL BE USED IN LIEU OF PILES.

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.

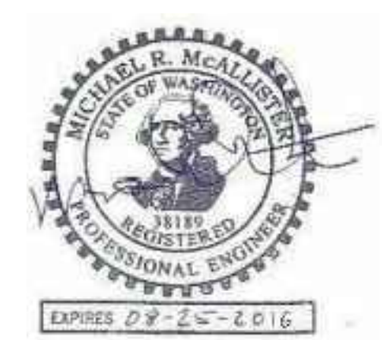
CONSTRUCTION

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 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 ENBOUGH 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.

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.



NO.	BY	DATE	REVISION DESCRIPTION

DF	MB,MM,CM	MB
DRAWN	DESIGNED	CHECKED
MM	9/23/14	
APPROVED	DATE	PROJECT

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BALLAST AND CABLE TYPICAL DETAILS

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.

1. 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.

2. 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.

3. 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).

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.

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.

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 - CLEARING AND GRUBBING

This item consists of clearing and grubbing for construction as shown on the plans including those areas required for Temporary Access Routes and in accordance with Section 2-01 of the Standard Specifications, and as amended by these Special Provisions.

Areas for Clearing and Grubbing are shown in the Plans. These areas will be flagged in the field by the Owner prior to Clearing and Grubbing work. Clearing and Grubbing shall not occur outside of the designated limits.

Included in this item are the removal and salvage of trees, varying in size from 10" to 30" diameter at breast height (dbh) within the clearing limits. Salvaged trees shall be reused as woody debris during installation of Logs. To the maximum practical extent, the Contractor shall excavate the root wads and then push over the trees in order to salvage logs with intact attached roots. Trees to be salvaged will be identified in the field by the Owner's Representative.

Vegetation protection and restoration per Section 1-07.16(2) shall be incidental to Clearing and Grubbing.

The Contractor shall provide minimum 5 days advance notice to the Owner before clearing and grubbing. The Contractor shall understand that clearing and grubbing requires coordination with the Owner and only after the Owner has completed Hurptile rescue can clearing and grubbing begin.

Measurement

Removal and Salvage of trees shall be considered incidental to Clearing and Grubbing bid item. Measurement and compensation for the installation of the salvaged trees is described under "Logs" and paid under that item. No additional compensation will be allowed.

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

Payment

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

ITEM 004 - 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.

1. Portions of work will be in water.

2. This item includes hauling of excavated material to the designated fill disposal site. The unit contract price per cubic yard shall include "Haul".

3. This item includes earth embankment construction at the designated fill area. 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.

4. No work shall occur outside of the limits of disturbance shown in the Plans unless authorized by the Owner.

5. RECLAMATION OF EAST PAUL MOUNTAIN BORROW PIT

Locations within the East Paul Mountain Borrow Pit will be staked for placement of waste material. Upon completion of Haul, the contractor shall shape the material to blend with the surrounding topography.

6. Apply water to roads to control dust. Water supply, hauling, and application shall be in accordance with Section 891 below.

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.

ITEM 005 - TOPSOIL TYPE B

This item shall be as shown in the Plans and meet the requirements of Section 8-02 of the Standard Specifications, but with the following modifications:

Topsoil Type B shall include Soil Salvage for Wetland Mitigation Site and will be designated in the Plans and by the Owner in the field as Topsoil B1 and Topsoil B2.

Upper and Lower Wetland topsoils (Topsoils B1 and B2) in Zone 1 (wetlands) will be stripped and salvaged during the excavation of the proposed side channel, by the Construction Contractor. The Construction Contractor will take care, while excavating soil from the proposed channel, to stockpile upper (Topsoil B1) and lower (Topsoil B2) topsoil layers separately in the staging area(s).

Topsoil B1 stripping shall refer to material salvaged to an average depth of 6 inches below ground surface following Clearing and Grubbing.

Topsoil B2 stripping shall refer to material salvaged between an average 6 to 18 inches below ground surface.

Metal or other unnatural debris shall be separated from all salvaged topsoil and disposed of at the contractor's expense.

Salvaged topsoil shall be reused by placing salvaged topsoil in reverse order: Topsoil B1 placed below Topsoil B2.

Salvaged topsoil shall be reused by placing Topsoil B1 to a compacted depth of 3 to 6 inches over wetland mitigation Zone 2, followed by placing Topsoil B2 to a compacted depth of 3 to 6 inches.

Temporary stockpiling of topsoil shall occur only within limits of disturbance shown in the Plans unless authorized by the Owner.

Addition of salvaged soil will bring wetland mitigation zones up to final grade depicted in Plans. Non-wetland topsoil adjacent to wetlands will be used to supplement wetland soil if wetland impact soil volume is insufficient. Remaining topsoil shall be hauled off site to designated fill area.

Measurement

"Topsoil Types B1 and B2" will be measured by the acre of the area covered.

Payment

Payment will be made in accordance with Section 1-09.9 for the following bid items: "Topsoil Types B1 and B2" per acre.

DIVISION 8 - MISCELLANEOUS CONSTRUCTION (continued)

ITEM 006 - 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 Project Manager.

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. A sandbag cofferdam shall be installed at the side channel inlet as shown in the Plans. This sandbag cofferdam shall remain in place after project completion. Sandbags shall be filled with washed stream gravel.

3. 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 007 - 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 trash pump(s) 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. If additional environmental protection measures are required to control turbidity, they shall be considered incidental to pumping and no additional compensation will be made.

ITEM 008 - LOG STRUCTURES

Description

Log Structures includes all references to installing logs, logs with roots, timber piles, salvaged trees, slash, boulders, and cabling in the Plans and these Special Provisions. This item includes movement from stockpiles to installation areas, excavation and backfill to partially bury Log Structures, and installing Cable. Loading and hauling boulders is included in this work.

Materials

1. Logs

Logs and Logs with roots will be supplied by the Owner to the site staging areas. Quantities of Owner supplied Logs are shown in the Plans. Owner supplied Logs will have the following characteristics:

Logs with Roots: 40' long and 18-24" dbh.

Logs: 40' long and 12-18" dia diameter at scaled end.

Timber Piles: 40' long and 17" dia in middle of log.

Salvaged Trees: whole trees including roots.

2. Boulders

Boulders shall be 4-foot diameter or greater. Boulders shall conform to Section 9-03.11(3) and shall be hard, durable, resistant to weathering and to water action, and be free from overburden, spoil, shale, limestone, structural defects and organic material. The density of the boulders shall be 165 pounds per cubic foot, specific gravity of 2.65.

Boulders may be from a contractor supplied source. The Contractor shall submit the source location to the Owner and gain approval prior to hauling Boulders to the project site.

The Contractor may elect to load and haul Owner supplied boulders from a pre-approved source: Leroy Pit. Conditions of using the Leroy Pit will be described at the pre-bid meeting. See Pit Development below.

3. Cabling

Cable for log-boulders connections shall be galvanized, steel core, 1/2-inch diameter wire rope with minimum nominal tensile strength of 10 tons. Minimum two clamps shall be for used for each connection.

Cable for log-to-log connections shall be galvanized, steel core, 3/8-inch diameter wire rope with minimum nominal tensile strength of 6 tons. Minimum two clamps shall be for used for each connection.

Cable clamps shall be galvanized steel and shall meet the performance requirements of Federal Specification FF-C-450 TYPE 1 CLASS 1. Cable clamps shall be Crosby Clips, "G-450" or approved equal.

Epoxy adhesive used to secure cable to rock boulders shall be Hilti HIT HY 150 epoxy or approved equivalent.

Cable as specified in the Plans. Up to 30 log-to-pile and 10 log-to-log cablings may be required.

4. Hog Fuel:

This item includes transporting 70 cubic yards of Hog Fuel to multiple areas along the side channel construction for use by others during replanting. The Owner will provide Hog Fuel that will be stockpiled at the staging area.

5. Slash

Shrubs and trees removed within limits of disturbance shall be stockpiled for use in the log structures. The Owner will supply slash.

6. Live Stakes

The Owner will provide live Cottonwood poles to be installed as live stake in Log Structure where indicated in the Plans.

Construction Requirements

Logs:

Locations of Logs shall generally be as indicated on the Plans. However, final location will depend upon the size, shape and quantity of material delivered or salvaged. Installation of Logs shall be understood to require a "fit in the field" approach as directed by the Owner's Representative. Logs shall be stabilized by partial burial and/or bracing provided by Timber Piles. Some Logs shall be Cabled to Timber Piles or other Logs.

Salvaged Trees:

Salvaged trees shall be installed in log structures as shown in the Plans. Care shall be taken when moving and installing salvaged trees so that branches and roots remain attached to the tree. Salvaged Trees shall be stabilized by bracing to Timber Piles. Cable may be required.

Live Stakes:

Live stakes shall be installed during log structure construction. The Owner shall be present to supervise the installation of live stakes. Live stakes will be installed in conjunction with log structure backfill.Care shall be taken to ensure that live stakes are not damaged during backfill.

Timber Piles:

Construction of Timber Piles shall include on-site movement and installation of timber piles at Sites H, I, and Q. Timber Piles shall be per the approximate numbers and quantities indicated on the plans. Specific locations shall be determined in the field and directed by the Owner. The required embedment depth is indicated on the plans. Installed Timber Piles shall also have the following field-directed characteristics:.

a. Timber Piles shall have varying heights above ground to break up a uniform appearance.

b. Each Timber Pile log shall have a broken tops unless directed otherwise by the Owner's Representative. The preferred method shall be to break off the top 4-8 feet before installing the pile.

c. Timber Piles shall be installed at various angles to pin down Logs to the floodplain surface.

2. Timber Piles shall be installed by vibratory hammer. Vibratory hammer shall have the following characteristics:

a. Minimum of 800 kN (80 tons) of centrifugal force.

b. Side grip with minimum 16" space between ends of jaws so that 16" diameter log will fit into the jaws.

3. At each pile installation site, one pile shall be tested for pullout resistance. Each test will require up to four individual pulls, each at a deeper depth. The Owner will provide the testing equipment.

Slash:

Intermingle, stack, and rack slash material to the installed logs and piles to emulate natural accumulations of wood material.

Earthwork:

Where partial burial of logs is required, excavate to subgrade. Stockpile the fill within the designated disturbance area. Backfill the logs as each layer is installed.

Cable logs where directed by Owner.

Measurement

Measurement will be based on the portion of work completed, measured as each completed site.

"Log Structures" will be measured by lump sum.

Payment

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

The contract price for "Log Structures" shall be full compensation for all costs incurred for equipment, materials and labor for installing and securing logs, timber piles, and salvaged trees as outlined in the plans. Excavation and backfill, installing slash and cable shall be incidental to Log Structures.

ITEM 009 - CAMPSITES

This item includes all aspects of constructing new campgrounds depicted in Plans. Additional guidance will be provided by a WDFW manager.

1. Campsite access road
2. Campsite vehicle parking pads
3. Tent pads
4. Campfire rings

ITEM 010 - ROAD MAINTENANCE

Roads used for hauling materials shall be maintained by blading and watering. The following U.S.F.S. specifications shall be used for this work.

Description

This work consists of surface blading the traveled way to a condition to facilitate traffic and provide proper drainage. Blading includes shaping the crown or slope of traveled way, and drainage dips, in accordance with this specification. Watering shall be incidental to this item.

Maintenance Requirements

A. General-

1. Blade and shape the existing traveled way and shoulders, including turnouts unless otherwise ordered, to produce a surface which is uniform, consistent to grade, and crowned or cross-sloped as indicated by the character of the existing surface, unless otherwise specified. Thoroughly loosen surfacing material to no less than 2 inches depth or the depth of potholes or corrugations.

2. Apply water during blading when sufficient moisture is not present to prevent surface material segregation. Water supply, hauling, and application shall be in accordance with Section 891 (see below).

3. Shape existing native rock or aggregate surfaced drainage dips to divert surface runoff to existing outlet devices, ditches, and discharge locations.

4. Establish a blading pattern which provides a uniform driving surface, retains the surfacing on the roadbed, and provides a thorough mixing of the materials within the completed surface width. Upon final blading, no disturbed rock shall protrude more than 2 inches above the adjacent surface unless otherwise specified. Remove and place outside the roadbed material not meeting this dimension so as not to obstruct drainageways or structures. This material may be scattered off the roadbed if there is free drainage.

B. Routine Blading

Shape roadbed width in excess of the dimensions shown only as needed to provide drainage away from the traveled way. Do not remove established grasses and other vegetation from the excess width except as incidental to providing drainage or unless otherwise directed.

C. Undercutting - Undercutting roadway back slope is not permitted.

D. Intersections - At intersections, blade the roadbeds of side roads which are not closed or restricted from vehicular use to ensure smooth transitions.

E. Cleaning of Structures - Do not allow materials resulting from work under this Section to remain on or in structures, such as bridges, culverts, cattle guards, or drainage dips.

F. Smooth blading - Smooth blading may be used as an interim measure to remove loose surfacing material from the wheel paths and store it in a recoverable windrow until blade processing, as described in this section, is feasible. Watering will not be required for smooth blading. Accomplish smooth blading without distorting the existing cross-slope or crown of the traveled way.

Move and store loose surfacing materials on the high side of super-elevated curves and sections with uniform inslope or outslope. In crowned sections, store the material on either or both sides as elected. Windrow and place stored materials to provide not less than 12 feet of smooth traveled way on one-lane segments. Cut holes through windrows, which may collect water on the road, for drainage at least every 500 feet.

G. Signing - Place suitable temporary traffic warning signs at each end of the work area. Such signing shall conform to the Federal Highway Administration's publication "Manual for Uniform Traffic Control Devices", or MUTCD. An appropriate sign is the W21-3, measuring 36"x36", "ROAD MACHINERY AHEAD", black text on reflective orange background. Such signing should be placed on temporary supports, where it is readily visible to oncoming traffic but does not pose a hazard to vehicles.

891 WATER SUPPLY AND WATERING (2/02)

Description

This work consists of providing facilities to furnish an adequate water supply, hauling and applying water.

891.02

Materials

If the Permittee elects to provide water from other than designated sources, the Permittee is responsible to obtain the right to use the water, including any cost for royalties involved. The rate of applications is based on ground conditions.

Suitable and adequate water sources designated available for Contractor's use is available at 8 Mile Ranch Snowmobile Park.

891.03

Equipment

A. Mobile watering equipment shall have watertight tanks.

B. The water tender must have controls in the cab for opening and closing water flow, to prevent ponding and washing at the beginning and ending of work areas.

C. An air gap or positive anti-siphon device shall be provided between the water source and the vehicle being loaded if the vehicle has been used for other than water haul, if the source is a domestic potable water supply, or the water is used for tank mixing with any other materials.

D. The designated water source may require some work prior to their use. Contractor shall be responsible for obtaining appropriate hardware to connect to existing infrastructure. The landowner requires 72 hours advance notice prior to use.

E. The intake of any pump used for water supply from designated fish bearing streams or other water bodies shall have a fish screen installed, operated and maintained according to NMFS' fish screen criteria (NMFS 1997; NMFS 2008).