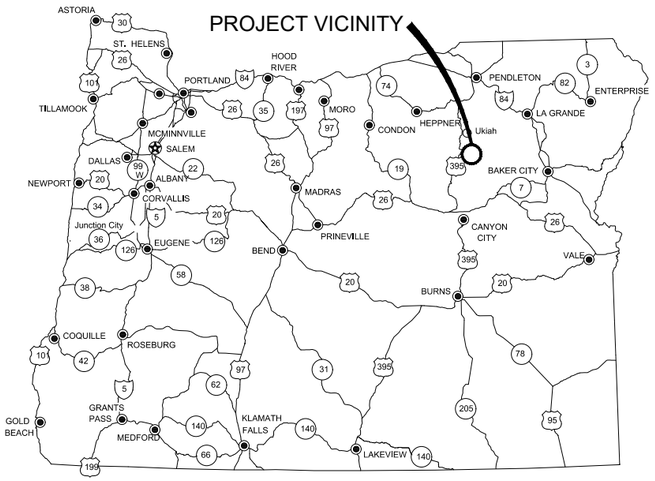
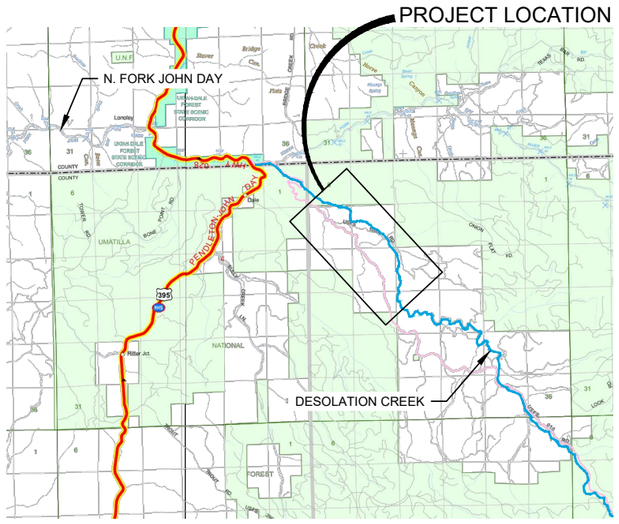
FINAL DESIGN
JAN 2022

DESOLATION CREEK REACH 3 RESTORATION PROJECT

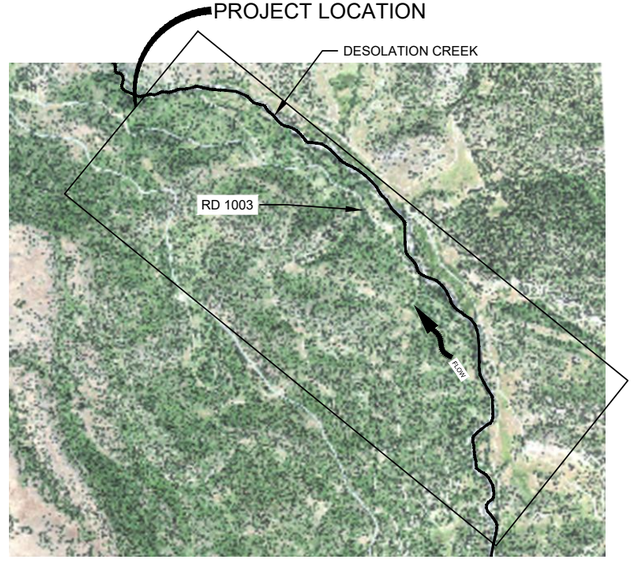
GRANT COUNTY, OR



REGIONAL MAP
NTS



PROJECT VICINITY
NTS



PROJECT SITE
NTS

PROJECT TEAM

PROJECT SPONSOR
CONFEDERATED TRIBES OF THE UMATILLA
INDIAN RESERVATION (CTUIR)
JOHN ZAKRAJSEK
46411 TIMINE WAY
PENDLETON, OR 97801
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PROPERTY OWNER
DESOLATION CREEK, LLC

ENGINEER
WOLF WATER RESOURCES, INC.
AMANDA JONES, PE
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

PROJECT INFO

SPATIAL REFERENCE
HORIZONTAL:
NAD 83 OREGON STATE PLANE
(POLYCONIC) NORTH ZONE, INT FT
VERTICAL: NAVD88
LIDAR: JOHN DAY RIVER
TOPOBATHYMETRIC LIDAR (2016)

PROJECT SITE LOCATION:
DALE, OREGON
GRANT COUNTY
LATITUDE: 44°58'18.01"
LONGITUDE: -118°52'59.01"
WATERBODY: DESOLATION CREEK

SHEET INDEX

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C2.1	HABITAT PLAN 1	C6.2	MOONSHINE CREEK CULVERT DETAILS
C2.2	HABITAT PLAN 2	C6.3	UNNAMED TRIBUTARY CULVERT DETAILS
C2.3	HABITAT PLAN 3	C7.1	PLANTING PLAN
C2.4	HABITAT PLAN 4	C7.2	PLANTING SCHEDULE
C2.5	HABITAT PLAN 5	ESC1.1	EROSION AND SEDIMENT CONTROL NOTES
C2.6	HABITAT PLAN 6	ESC1.2	EROSION AND SEDIMENT CONTROL DETAILS
C2.7	HABITAT PLAN 7		
C2.8	HABITAT PLAN 8		

CALL 48 HOURS BEFORE YOU DIG
1-800-424-5555
"It's the Law"
NORTHWEST UTILITIES NOTIFICATION CENTER

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

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
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PORTLAND, OR 97214
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DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DATE	DESCRIPTION	REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

VICINITY MAP & SHEET INDEX

JOB NO. 20180019

SHEET NO. G1.1

DWG: Z:\Shared\W2p\CAD\20180019-Desolation Crk\DWG\SHEETS\G01 - VICINITY MAP & SHEET INDEX.dwg USER: ajones
DATE: Jan 06, 2022 5:24pm XREFS:X-TB-22X34 X-AERIAL

FINAL DESIGN
JAN 2022

GENERAL NOTES:

1. DRIVING DIRECTIONS:
   FROM PENDELTON HEAD SOUTH ON HWY 395 FOR APPROXIMATELY 63.5 MILES. PASS MILE POST 63B AND TURN EAST AT THE BRIDGE ONTO NF-053. TAKE THE FIRST RIGHT ONTO NF-100. CONTINUE ONTO NF-10. TURN LEFT ONTO NF-1003.
2. GENERAL SITE TOPOGRAPHY DERIVED FROM THE JOHN DAY RIVER TOPOBATHYMETRIC LIDAR PUBLISHED IN 2016 SUPPLEMENTED BY SURVEY FROM W2R TAKEN ON 09/28/18. SUPPLEMENTAL SURVEY WAS FOCUSED ON STRUCTURES & LIDAR CONFIRMATION.
3. HORIZONTAL DATUM IS NAD83 OREGON STATE PLANE NORTH, INT. FT.
4. VERTICAL DATUM IS NAVD88, FT.
5. ALL SCALES SHOWN ARE FOR 22" X 34" SHEETS.
6. ALL EQUIPMENT SHALL BE WASHED PRIOR TO MOBILIZATION TO THE SITE TO MINIMIZE THE INTRODUCTION OF FOREIGN MATERIALS AND FLUIDS TO THE PROJECT SITE. ALL EQUIPMENT SHALL BE FREE OF OIL, HYDRAULIC FLUID, AND DIESEL FUEL LEAKS. TO PREVENT INVASION OF NOXIOUS WEEDS OR THE SPREAD OF WHIRLING DISEASE SPORES. ALL EQUIPMENT SHALL BE POWER WASHED OR CLEANED TO REMOVE MUD AND SOIL PRIOR TO MOBILIZATION INTO THE PROJECT AREA. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO INSURE THAT ADEQUATE MEASURES HAVE BEEN TAKEN.
7. CONTRACTOR SITE ACCESS IS SHOWN ON SHEET C01 AND C02.
8. CONTRACTOR SHALL RESTORE EXISTING ACCESS ROAD AND REMOVE NEW ACCESS ROADS AS SPECIFIED BEFORE COMPLETION OF CONSTRUCTION.
9. THE CONTRACTOR SHALL ATTEND A MANDATORY PRE-BID MEETING ON SITE.
10. ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF ODOT STANDARD PLANS & SPECIFICATIONS UNLESS INDICATED OTHERWISE BY CONTRACT DOCUMENTS.
11. CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL AT NO ADDITIONAL COST.
12. CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF CULVERTS OFF SITE.
13. SEE SHEET C01.2 FOR THE PROJECT SITE CONTROL POINT.

CONSTRUCTION ACCESS/TRAFFIC CONTROL:

1. CONTRACTOR SHALL SUBMIT AN ACCESS, STAGING, WATER MANAGEMENT, AND STOCKPILE PLAN TO CTUIR FOR APPROVAL PRIOR TO MOBILIZATION.
2. ACCESS TO/ALONG ROADWAYS SHALL BE MAINTAINED AT ALL TIMES.
3. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL OR ACCESS PERMITS.
4. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING ANY REQUIRED TRAFFIC CONTROL INCLUDING, BUT NOT LIMITED TO, SIGNAGE AND FLAGGERS.
5. THE CONTRACTOR SHALL KEEP THE WORK AREAS IN NEAT CONDITION, FREE OF DEBRIS AND LITTER FOR THE DURATION OF THE PROJECT.
6. CONTRACTOR SHALL IMPLEMENT MEASURES TO CONTROL AND MINIMIZE WIND BLOWN DUST FROM THE SITE.
7. ACCESS ROUTES OTHER THAN ESTABLISHED ROADS SHALL NOT BE CLEARED OR GRADED.
8. ALL DISTURBED AREAS INCLUDING ROADS, DRIVEWAYS AND ACCESS ROUTES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AND RE-VEGETATED PER PLANS.
9. ALL DISTURBED AREAS OUTSIDE THE GRADING AREA LIMITS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE OWNER.
10. AVOID WETLAND DISTURBANCE, EXCEPT WHERE DIRECT WORK IS REQUIRED.

LEGEND AND SYMBOLS

- 1 — EX MINOR CONTOUR
- 5 — EX MAJOR CONTOUR
- EX ROAD
- OHW — EX ORDINARY HIGH WATER
- EX WETLANDS
- 1 — PROP MINOR CONTOUR
- 5 — PROP MAJOR CONTOUR
- APPROX GRADING AREA LIMIT
- < — TEMPORARY DIVERSION
- STAGING AREA
- WHS TYPE 1
- WHS TYPE 2
- WHS TYPE 3
- WHS TYPE 4
- WHS TYPE 5
- WHS TYPE 6
- WHS TYPE 7
- WHS TYPE 8
- WHS TYPE 9
- BEAVER DAM ANALOGUE
- WILLOW TRENCH

ABBREVIATIONS:

APPROX	APPROXIMATE
BDA	BEAVER DAM ANALOGUE
BFE	BASE FLOOD ELEVATION
BMP	BEST MANAGEMENT PRACTICE
CAR	CONTRACTING AGENCY REPRESENTATIVE (CTUIR)
CHNL	CHANNEL
CL	CENTERLINE
CO	CONTRACTING OFFICER
CONC	CONCRETE
CONSTR	CONSTRUCTION
CTUIR	CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION
CY	CUBIC YARD
DEPT	DEPARTMENT
EG	EXISTING GRADE/GROUND
ELEV, EL	ELEVATION
ENH	ENHANCEMENT
ESC	EROSION AND SEDIMENT CONTROL
EX, EXIST	EXISTING
FG	FINISHED GRADE/GROUND
FT	FEET
HAB	HABITAT
HVF	HIGH VISIBILITY FENCE
IN	INCHES
IE	INVERT ELEVATION
LBS	POUNDS
LS	LIVESTAKE
LW	LARGE WOOD
MNGMT	MANAGEMENT
MIN	MINIMUM
N/A	NOT AVAILABLE
NIC	NOT IN CONTRACT
NAVD88	NORTH AMERICAN VERTICAL DATUM (1988)
NTS	NOT TO SCALE
ODFW	OREGON DEPT OF FISH & WILDLIFE
ODEQ	OREGON DEPT OF ENVIRONMENTAL QUALITY
OHW	ORDINARY HIGH WATER
OHWM	ORDINARY HIGH WATER MARK
PROP	PROPOSED
PIP	PROTECT IN PLACE
PLS	PURE LIVE SEED
REINF	REINFORCED
ROW	RIGHT OF WAY
S	SLOPE
SF	SQUARE FEET
SHT	SHEET
SPEC	SPECIFICATION
ST	STREET
STA	STATION
STD	STANDARD
TEMP	TEMPORARY
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
TOB	TOP OF BANK
TOE	TOE OF SLOPE
TOP	TOP OF SLOPE
TYP	TYPICAL
VIF	VERIFY IN FIELD
W/	WITH
WHS	WOOD HABITAT STRUCTURE
WSE	WATER SURFACE ELEVATION

WORK PERIODS:

1. WORK WITHIN ORDINARY HIGH WATER SHALL BE LIMITED TO JULY 15TH THROUGH AUGUST 15TH.
2. SEEDING SHALL TAKE PLACE BETWEEN SEPTEMBER 1ST AND OCTOBER 15TH.
3. PLANTING OF TREES SHALL TAKE PLACE BETWEEN NOVEMBER 1ST AND MARCH 15TH.

UTILITIES:

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR SHALL CALL 800-322-2344 FOR UTILITY LOCATE PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.
4. THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO ADDITIONAL COST.

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
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DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION	REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

NOTES & ABBREVIATIONS

JOB NO. 20180019

SHEET NO. G1.2

HIP III GENERAL CONSERVATION MEASURES APPLICABLE TO ALL ACTIONS

DOCUMENTATION: TO BE POSTED ONSITE BY THE CONTRACTOR IN A LOCATION VISIBLE TO THE PUBLIC.

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

SITE PREPARATION

1) SITE LAYOUT AND FLAGGING: PRIOR TO CONSTRUCTION, THE ACTION AREA WILL BE CLEARLY FLAGGED TO IDENTIFY THE FOLLOWING:

A) SENSITIVE RESOURCE AREAS, SUCH AS AREAS BELOW ORDINARY HIGH WATER, SPAWNING AREAS,SPRINGS, AND WETLANDS;
B) EQUIPMENT ENTRY AND EXIT POINTS;
C) ROAD AND STREAM CROSSING ALIGNMENTS;
D) STAGING, STORAGE, AND STOCKPILE AREAS; AND
E) NO-SPRAY AREAS AND BUFFERS.

2) TEMPORARY ACCESS ROADS AND PATHS:

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

3) TEMPORARY STREAM CROSSINGS:

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

4) STAGING, STORAGE, AND STOCKPILE AREAS:

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

5) EQUIPMENT: MECHANIZED EQUIPMENT AND VEHICLES WILL BE SELECTED, OPERATED, AND MAINTAINED IN A MANNER THAT MINIMIZES ADVERSE IMPACTS ON THE ENVIRONMENT (E.G., MINIMALLY-SIZED, LOW PRESSURE TIRES; MINIMAL HARD-TURN PATHS FOR TRACKED VEHICLES;

TEMPORARY MATS OR PLATES WITHIN WET AREAS OR ON SENSITIVE SOILS). ALL VEHICLES AND OTHER MECHANIZED EQUIPMENT WILL BE:

A) STORED, FUELED, AND MAINTAINED IN A VEHICLE STAGING AREA PLACED 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND OR ON AN ADJACENT, ESTABLISHED ROAD AREA;
B) REFUELED IN A VEHICLE STAGING AREA PLACED 150 FEET OR MORE FROM A NATURAL WATERBODY OR WETLAND, OR IN AN ISOLATED HARD ZONE, SUCH AS A PAVED PARKING LOT OR ADJACENT, ESTABLISHED ROAD (THIS MEASURE APPLIES ONLY TO GAS-POWERED EQUIPMENT WITH TANKS LARGER THAN 5 GALLONS);
C) BIODEGRADABLE LUBRICANTS AND FLUIDS SHOULD BE USED, IF POSSIBLE, ON EQUIPMENT OPERATING IN AND ADJACENT TO THE STREAM CHANNEL AND LIVE WATER.
D) INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND; AND
E) THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER, AND AS OFTEN AS NECESSARY DURING OPERATION,TO REMAIN GREASE FREE.

6) EROSION CONTROL: EROSION CONTROL MEASURES WILL BE PREPARED AND CARRIED OUT, COMMENSURATE IN SCOPE WITH THE ACTION, THAT MAY INCLUDE THE FOLLOWING:

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

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

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

8) DUST ABATEMENT: THE PROJECT SPONSOR WILL DETERMINE THE APPROPRIATE DUST CONTROL MEASURES (IF NECESSARY) BY CONSIDERING SOIL TYPE, EQUIPMENT USAGE, PREVAILING WIND DIRECTION, AND THE EFFECTS CAUSED BY OTHER EROSION AND SEDIMENT CONTROL MEASURES. IN ADDITION, THE FOLLOWING CRITERIA WILL BE FOLLOWED:

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

9) SPILL PREVENTION, CONTROL, AND COUNTER MEASURES: THE USE OF MECHANIZED MACHINERY INCREASES THE RISK FOR ACCIDENTAL SPILLS OF FUEL, LUBRICANTS, HYDRAULIC FLUID, OR OTHER CONTAMINANTS INTO THE RIPARIAN ZONE OR DIRECTLY INTO THE WATER. ADDITIONALLY, UNCURED CONCRETE AND FORM MATERIALS ADJACENT TO THE ACTIVE STREAM CHANNEL MAY RESULT IN ACCIDENTAL DISCHARGE INTO THE WATER. THESE CONTAMINANTS CAN DEGRADE HABITAT, AND INJURE OR KILL AQUATIC FOOD ORGANISMS AND ESA-LISTED SPECIES. THE PROJECT SPONSOR WILL ADHERE TO THE FOLLOWING MEASURES:

A) A DESCRIPTION OF HAZARDOUS MATERIALS TO BE USED (INVENTORY & STORAGE) AND HANDLING PROCEDURES WILL BE AVAILABLE ON-SITE.
B) WRITTEN PROCEDURES FOR NOTIFYING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.
C) SPILL CONTAINMENT KITS (INCLUDING INSTRUCTIONS FOR CLEANUP AND DISPOSAL) ADEQUATE FOR THE TYPES AND QUANTITY OF HAZARDOUS MATERIALS USED AT THE SITE WILL BE AVAILABLE AT THE WORK SITE.
D) WORKERS WILL BE TRAINED IN SPILL CONTAINMENT PROCEDURES AND WILL BE INFORMED OF THE LOCATION OF SPILL CONTAINMENT KITS.
E) ANY WASTE LIQUIDS GENERATED AT THE STAGING AREAS WILL BE TEMPORARILY STORED UNDER AN IMPERVIOUS COVER, SUCH AS A TARPAULIN, UNTIL THEY CAN BE PROPERLY TRANSPORTED TO AND DISPOSED OF AT A FACILITY THAT IS APPROVED FOR RECEIPT OF HAZARDOUS MATERIALS.

10) INVASIVE SPECIES - EQUIPMENT CLEANING AND MAINTENANCE: THE FOLLOWING MEASURES WILL BE FOLLOWED TO AVOID INTRODUCTION OF INVASIVE PLANTS AND NOXIOUS WEEDS INTO PROJECT AREAS:

A) PRIOR TO ENTERING THE SITE, ALL VEHICLES AND EQUIPMENT WILL BE POWER WASHED, ALLOWED TO FULLY DRY, AND INSPECTED TO MAKE SURE NO PLANTS, SOIL, OR OTHER ORGANIC MATERIAL ADHERES TO THE SURFACE.
B) WATERCRAFT, WADERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN OR NEAR WATER WILL BE INSPECTED FOR AQUATIC INVASIVE SPECIES. WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES.

FINAL DESIGN
JAN 2022

REGISTERED PROFESSIONAL ENGINEER
AMANDA L. JONES
84779PE
OREGON
MAR. 8, 2016
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE. SUITE #180
PORTLAND, OR 97214
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DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION	REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

HIP GENERAL
NOTES 1

JOB NO. 20180019

SHEET NO. G1.3

DWG: Z:\Shared\Wzn\CAD\20180019-Desolation Crk\DWG\SHEETS\G03G04 - HIP III CONSERVATION NOTES.dwg USER: ajones
DATE: Jan 06, 2022 5:29pm XREFS:X-TB-22X34

FINAL DESIGN
JAN 2022

WORK AREA ISOLATION & FISH SALVAGE

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

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

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

1) ISOLATE:

A) BLOCK NETS WILL BE INSTALLED AT UPSTREAM AND DOWNSTREAM LOCATIONS AND MAINTAINED IN A SECURED POSITION TO EXCLUDE FISH FROM ENTERING THE PROJECT AREA.

B) BLOCK NETS WILL BE SECURED TO THE STREAM CHANNEL BED AND BANKS UNTIL FISH CAPTURE AND TRANSPORT ACTIVITIES ARE COMPLETE. BLOCK NETS MAY BE LEFT IN PLACE FOR THE DURATION OF THE PROJECT TO EXCLUDE FISH.

C) IF BLOCK NETS REMAIN IN PLACE MORE THAN ONE DAY, THE NETS WILL BE MONITORED AT LEAST DAILY TO ENSURE THEY ARE SECURED TO THE BANKS AND FREE OF ORGANIC ACCUMULATION. IF THE PROJECT IS WITHIN BULL TROUT SPAWNING AND REARING HABITAT, THE BLOCK NETS MUST BE CHECKED EVERY FOUR HOURS FOR FISH IMPINGEMENT ON THE NET. LESS FREQUENT INTERVALS MUST BE APPROVED THROUGH A VARIANCE REQUEST.

D) NETS WILL BE MONITORED HOURLY ANYTIME THERE IS IN-STREAM DISTURBANCE.

2) SALVAGE: -AS DESCRIBED BELOW, FISH TRAPPED WITHIN THE ISOLATED WORK AREA WILL BE CAPTURED TO MINIMIZE THE RISK OF INJURY, THEN RELEASED AT A SAFE SITE:

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

3) ELECTROFISHING: ELECTROFISHING WILL BE USED ONLY AFTER OTHER SALVAGE METHODS HAVE BEEN EMPLOYED OR WHEN OTHER MEANS OF FISH CAPTURE ARE DETERMINED TO NOT BE FEASIBLE OR EFFECTIVE. IF ELECTROFISHING WILL BE USED TO CAPTURE FISH FOR SALVAGE, THE SALVAGE OPERATION WILL BE LED BY AN EXPERIENCED FISHERIES BIOLOGIST AND THE FOLLOWING GUIDELINES WILL BE FOLLOWED:

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

4) DEWATER: DEWATERING, WHEN NECESSARY, WILL BE CONDUCTED OVER A SUFFICIENT PERIOD OF TIME TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA AND WILL BE LIMITED TO THE SHORTEST LINEAR EXTENT PRACTICABLE.

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

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

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

CONSTRUCTION AND POST-CONSTRUCTION CONSERVATION MEASURES FOR AQUATIC SPECIE

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

2) CONSTRUCTION AND DISCHARGE WATER:

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

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

4) CESSATION OF WORK: PROJECT OPERATIONS WILL CEASE UNDER THE FOLLOWING CONDITIONS:

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

5) SITE RESTORATION: WHEN CONSTRUCTION IS COMPLETE:

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

6) RE-VEGETATION: LONG-TERM SOIL STABILIZATION OF DISTURBED SITES WILL BE ACCOMPLISHED WITH REESTABLISHMENT OF NATIVE VEGETATION USING THE FOLLOWING CRITERIA:

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

7) IMPLEMENTATION MONITORING: PROJECT SPONSOR STAFF OR THEIR DESIGNATED REPRESENTATIVE WILL PROVIDE IMPLEMENTATION MONITORING TO ENSURE COMPLIANCE WITH THE APPLICABLE BIOLOGICAL OPINION, INCLUDING:

A) GENERAL CONSERVATION MEASURES ARE ADEQUATELY FOLLOWED; AND
B) EFFECTS TO LISTED SPECIES ARE NOT GREATER THAN PREDICTED AND INCIDENTAL TAKE LIMITATIONS ARE NOT EXCEEDED.

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

TURBIDITY MONITORING PROTOCOL

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

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

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

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

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

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

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE. SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION	REVISION

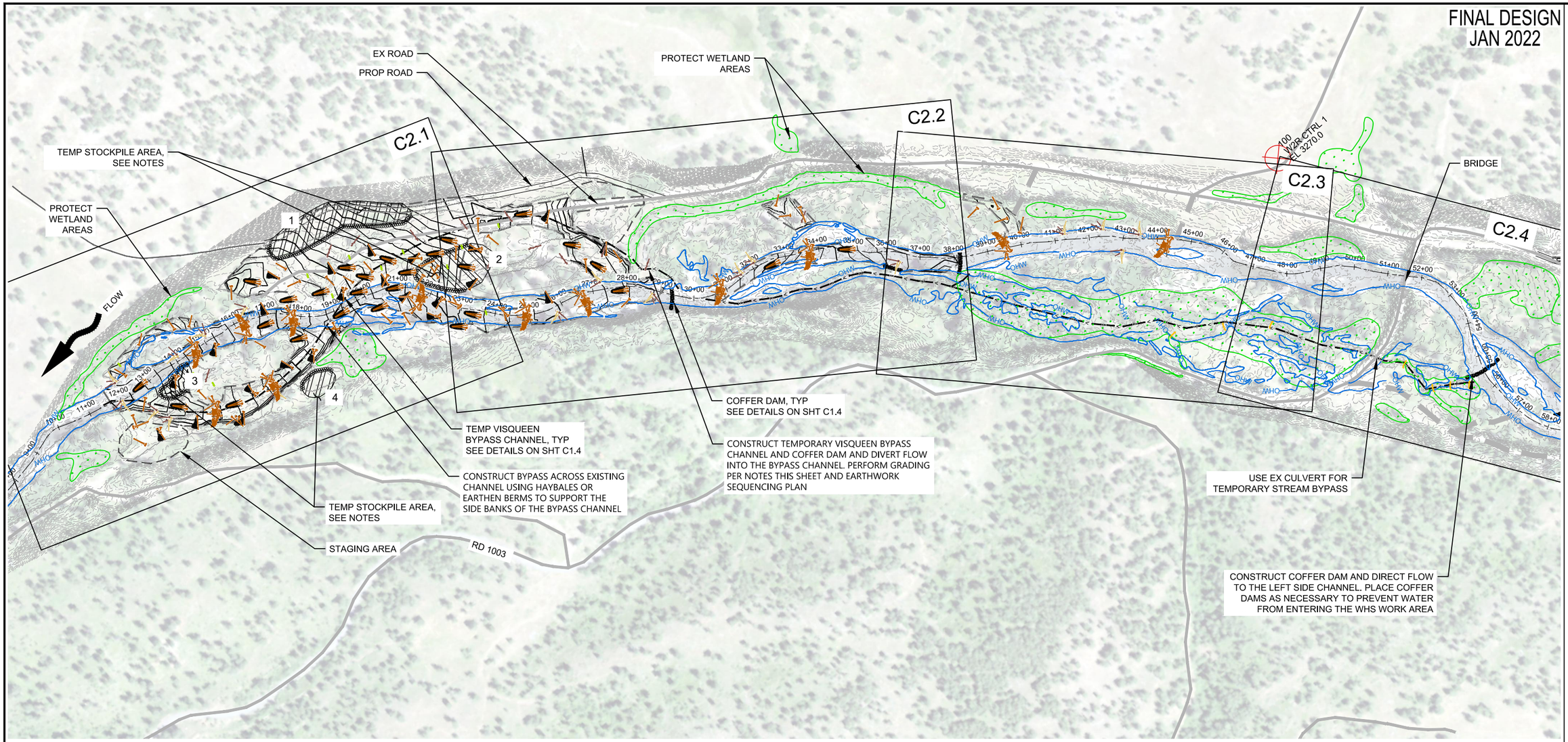
CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

HIP GENERAL NOTES 2

JOB NO. 20180019

SHEET NO. G1.4

FINAL DESIGN
JAN 2022



NOTES:

GENERAL:

1. EARTHWORK QUANTITIES UPSTREAM AND DOWNSTREAM OF THE BRIDGE ARE APPROXIMATELY BALANCED WITH IN PLACE CUT AND FILL ESTIMATES. NO OVERWINTERING OF STOCKPILES SHALL BE NECESSARY.
2. PROJECT SEQUENCING CAN BE PERFORMED IN 2-YEARS IF NECESSARY.

PRIOR TO IN WATER WORK:

1. SCRAPE FINES TO AREAS 1 & 4.
2. SCRAPE GRAVELS TO AREAS 2 & 3.
3. PLACE STRAW WATTLES AT DOWNSTREAM END OF STOCKPILE.
4. CONSTRUCT DIVERSION CHANNEL PER DETAIL 2 ON SHEET C1.4.

IN WATER WORK (1 MONTH):

1. DEWATER CHANNEL VIA DIVERSION CHANNEL AND EARTHWORK SEQUENCING PLAN ON SHEET C1.3.
2. CONSTRUCT ELEMENTS WITHIN EXISTING CHANNEL.
   - 2.1. CONSTRUCT RIFFLES.
   - 2.2. FILL EXISTING CHANNEL WITH ALLUVIUM, INCORPORATING LOG STRUCTURES AS PER PLANS (STA 11+00 TO 38+00).
   - 2.3. LOCALLY ISOLATE AND DEWATER CHANNEL, THEN CONSTRUCT LOGJAMS UPSTREAM OF STATION 38+00.
3. DIVERT WATER BACK TO EX CHANNEL.
4. ISOLATE FLOODPLAIN AREAS TO FINALIZE FLOODPLAIN WORK (LOG JAMS.

AFTER IN WATER WORK:

1. CONSTRUCT LOGS JAMS/ROAD IN FLOODPLAIN (OUTSIDE OF OHW).
2. FINISH FLOODPLAIN GRADING.

SCALE
150 0 75 150 300
SCALE FEET

CONTROL POINTS					
POINT #	NAME	ELEV	NORTHING	EASTING	DESCRIPTION
100	W2R CTRL 1	3269.96	480513.60	8620508.31	REBAR STAKE

SHEET INDEX, CONSTRUCTION PHASING, EROSION CONTROL & WATER MANAGEMENT

SCALE: 1" = 150'

REGISTERED PROFESSIONAL ENGINEER
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OREGON
MAR. 8, 2016
AMANDA L JONES
RENEWS: 6/30/2023

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DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DESCRIPTION	DATE

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

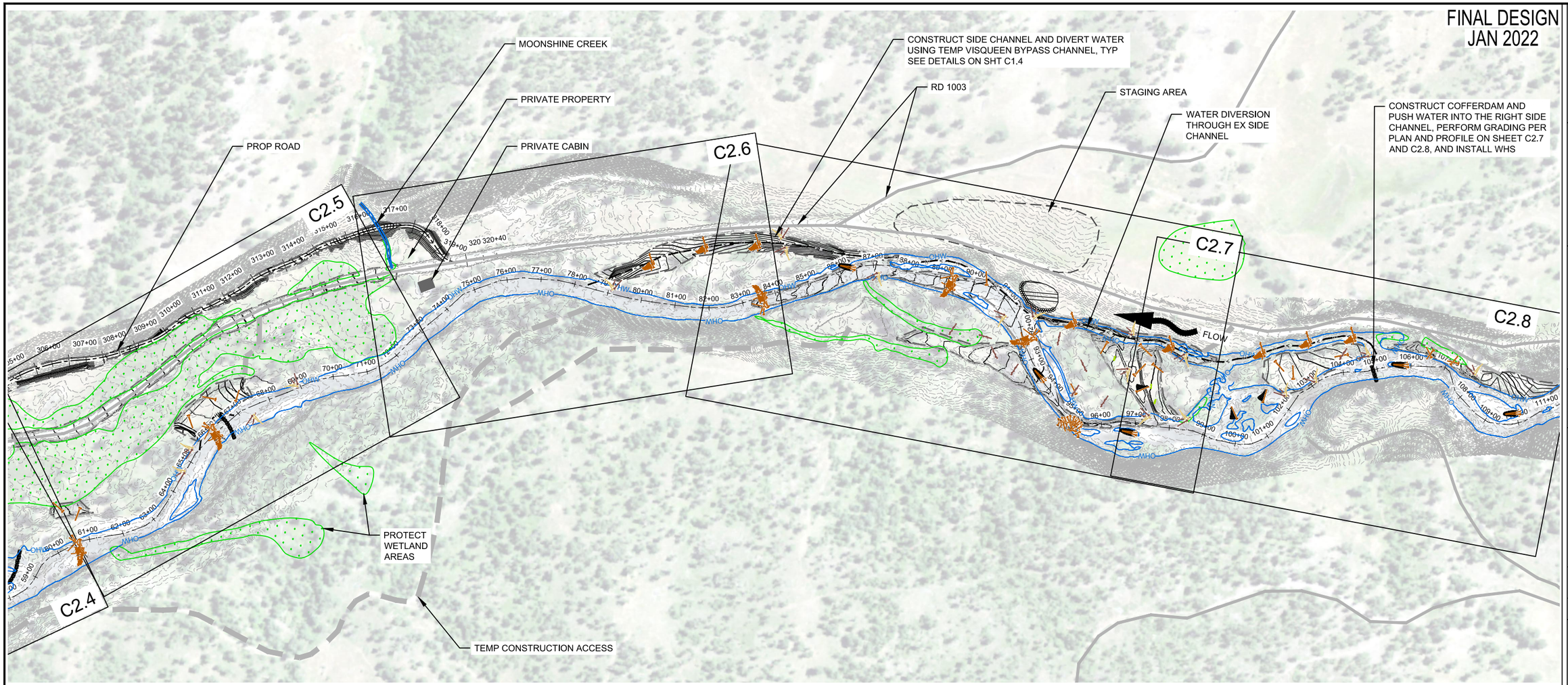
DOWNSTREAM
SHEET INDEX, CONSTRUCTION PHASING
EROSION CNTRL & WATER MNGMT

JOB NO. 20180019

SHEET NO. C1.1

DWG: Z:\Shared\W2r\CAD\20180019-Desolation Crk\DWG\SHEETS\C02 - SHEET INDEX & WATER MANAGEMENT.dwg USER: ajones
DATE: Jan 07, 2022 7:53am XREFS:X-TB-22X34 X-AERIAL X-SURFACE X-SURVEY X-DESIGN X-WHS

FINAL DESIGN
JAN 2022



NOTES:

GENERAL:

1. EARTHWORK QUANTITIES UPSTREAM AND DOWNSTREAM OF THE BRIDGE ARE APPROXIMATELY BALANCED WITH IN PLACE CUT AND FILL ESTIMATES. NO OVERWINTERING OF STOCKPILES SHALL BE NECESSARY.
2. PROJECT SEQUENCING CAN BE PERFORMED IN 2-YEARS IF NECESSARY.

PRIOR TO IN WATER WORK:

1. CONSTRUCT SIDE CHANNEL 1 & 2 IN DRY.
2. FLOODPLAIN GRADING IN DRY.
3. STOCKPILE GRAVELS NEAR EX CHANNEL.
4. PLACE STRAW WADDLES AT DOWNSTREAM END OF STOCKPILE.
5. CONSTRUCT BYPASS, STA 83+00-92+00.

IN WATER WORK:

1. DIVERT CREEK THROUGH EX SIDE CHANNEL AND CONSTRUCTED BYPASS.
2. CONSTRUCT ELEMENTS WITHIN EX CHANNEL.
   - 2.1. CONSTRUCT RIFFLES.
   - 2.2. FILL EX CHANNEL WITH ALLUVIUM, INCORPORATING LOG STRUCTURES AS PER PLANS (STA 84+00 TO 97+00).
   - 2.3. LOCALLY ISOLATE AND DEWATER CHANNEL, THEN CONSTRUCT LOG JAMS DOWNSTREAM OF STA 80+00 AND UPSTREAM OF STA 98+00.
3. DIVERT WATER BACK TO FILLED MAIN CHANNEL
4. ISOLATE & COMPLETE IN WATER WORK W/IN SIDE CHANNELS.
5. LOCALLY ISOLATE LOGJAM PLACEMENTS, STA 28+00-52+00.

AFTER IN WATER WORK:

1. FLOODPLAIN WOOD.

SCALE
150 0 75 150 300
SCALE FEET

SHEET INDEX, CONSTRUCTION PHASING, EROSION CONTROL & WATER MANAGEMENT

SCALE: 1" = 200'

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DESCRIPTION	DATE

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

UPSTREAM
SHEET INDEX, CONSTRUCTION PHASING
EROSION CNTRL & WATER MNGMT

JOB NO. 20180019

SHEET NO. C1.2

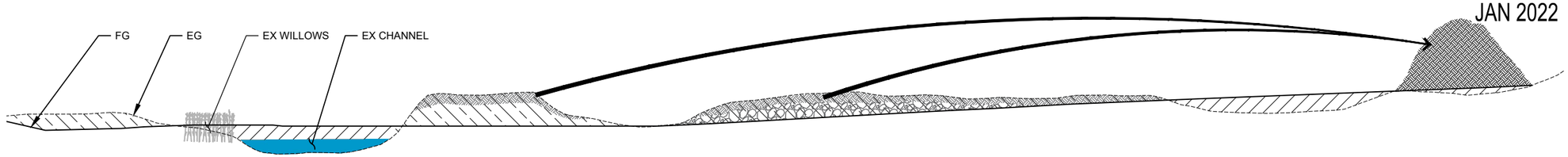
DWG: Z:\Shared\W2z\CAD\20180019-Desolation Crk\DWG\SHEETS\C02 - SHEET INDEX & WATER MANAGEMENT.dwg USER: ajones
DATE: Jan 07, 2022 7:54am XREFS:X-TB-22X34 X-AERIAL X-SURFACE X-SURVEY X-DESIGN X-WHS

FINAL DESIGN
JAN 2022

STEP 1

GRADE TOPSOIL TO TEMP STOCKPILE AREAS AT VALLEY MARGIN

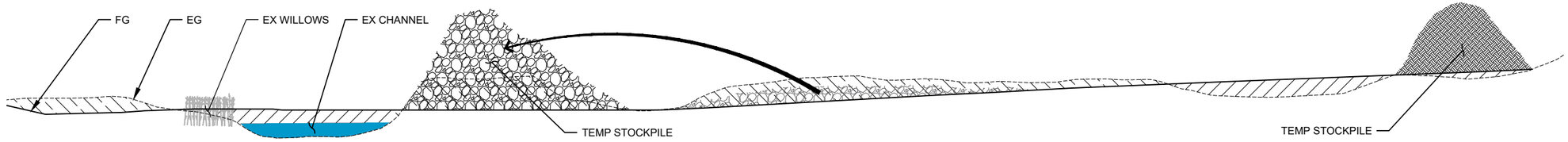
COMPLETE PRIOR TO IN-WATER WORK PERIOD



STEP 2

GRADE COARSE FLOODPLAIN ALLUVIUM TO TEMP STOCKPILE AREA NEAR CHANNEL.

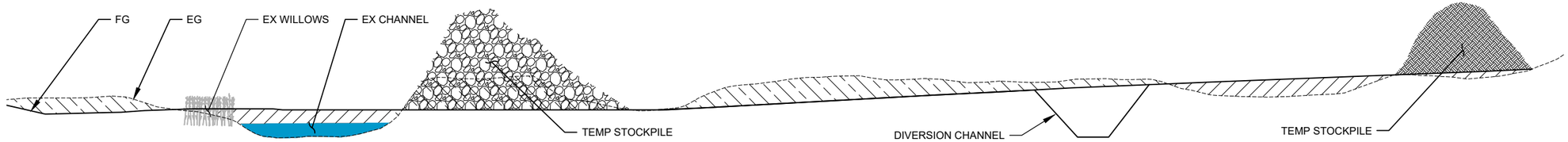
COMPLETE PRIOR TO IN-WATER WORK PERIOD



STEP 3

CONSTRUCT DIVERSION CHANNEL.

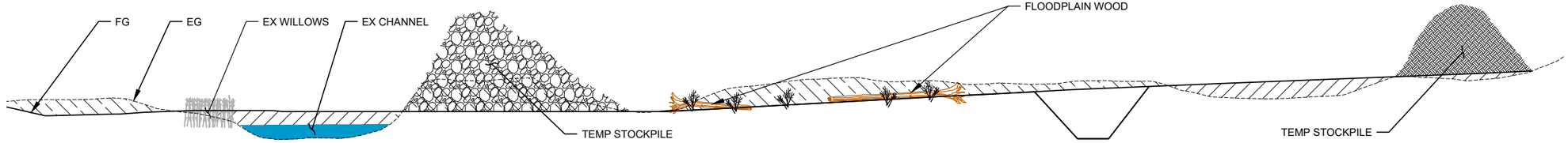
COMPLETE PRIOR TO IN-WATER WORK PERIOD



STEP 4

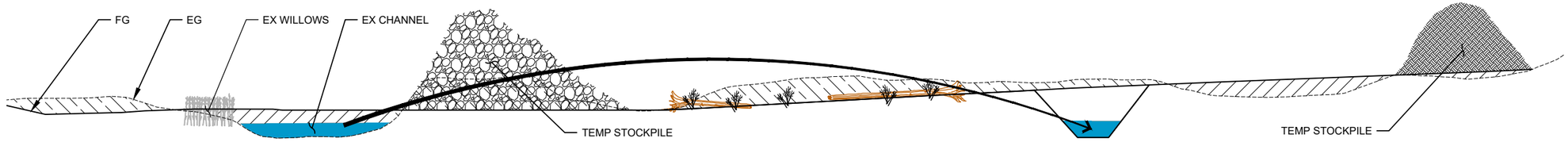
INSTALL FLOODPLAIN WOOD IN DRY FINISHED GRADE AREAS.

COMPLETE PRIOR TO IN -WATER WORK PERIOD



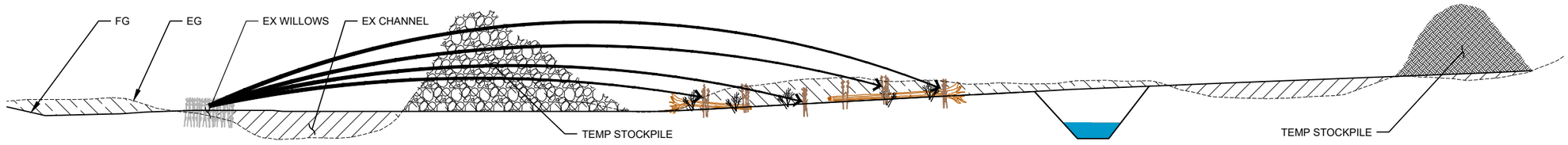
STEP 5

DEWATER AND FISH SALVAGE EXISTING CHANNEL AND DIVERT FLOW TO BYPASS CHANNEL.



STEP 6

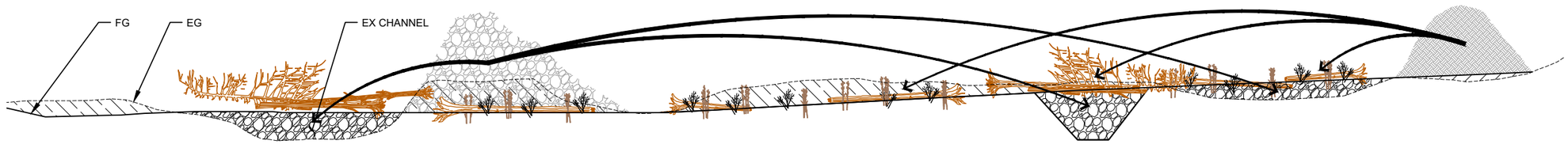
SALVAGE WILLOWS FROM AREAS WITHIN GRADING LIMITS.



STEPS 7 & 8

7. CONSTRUCT RIFFLES, FILL EXISTING CHANNELS TO GRADE WITH COARSE ALLUVIUM

8. CONSTRUCT REMAINING WHS PER PLANS, DRESS WHS AND FLOODPLAIN AREAS WITH TOPSOIL PER DIRECTION OF CO



REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

TYPICAL EARTHWORK SEQUENCING

JOB NO. 20180019

SHEET NO. C1.3

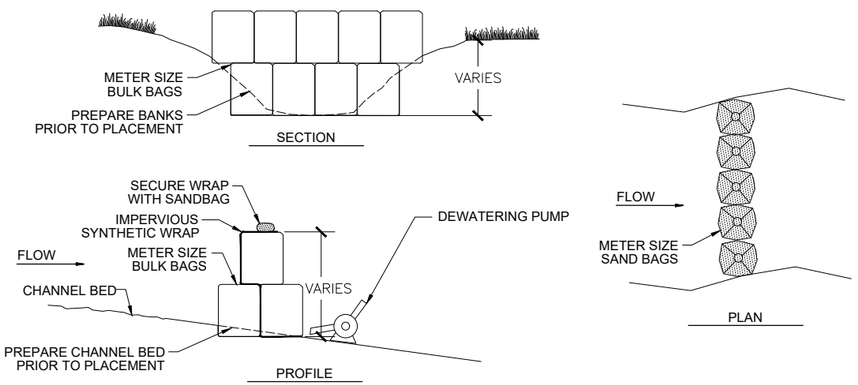
DWG: Z:\Shared\2r\CAD\20180019-Desolation Crk\DWG\SHEETS\CX\X - SEQUENCING DETAIL.dwg USER: ajones
DATE: Jan 06, 2022 5:45pm XREFS:X-DESIGN X-TB-22X34

FINAL DESIGN
JAN 2022

NOTES:

1. REFER TO SHEET C1.1 FOR TEMPORARY BYPASS PLANVIEW AND SEQUENCING.
2. CLEAR AND GRUB CHANNEL AREAS FOR CHANNEL CONSTRUCTION.
3. EXCAVATE RECTANGULAR PORTION OF CHANNEL ONE BUCKET-FULL WIDTH (APPROX 6 FEET) AND 1.5 FEET DEEP.
4. THE SIDE SLOPES SHALL DAYLIGHT SO THAT THE TOTAL CHANNEL DEPTH IS APPROXIMATELY 4 FEET DEEP.
5. CONSTRUCT 1' HIGH GRAVEL CHECK DAMS EVERY 25' TO PROVIDE ADEQUATE FISH PASSAGE IN THE BYPASS CHANNEL. CREST WIDTH (LONGITUDINAL) SHALL BE 2' WIDE, WITH A MINIMUM 14' BASE. SMOOTH OUT THE DOWNSTREAM FACE OF THE DAM TO A MINIMUM LENGTH OF 10' TO PROVIDE A SHORT RIFFLE. COMPACT GRADE CONTROLS USING AN EXCAVATOR BUCKET. PLACE BOULDERS PER C.O. ON GRADE CONTROL FACE FOR ENERGY DISSIPATION AND FISH RESTING.

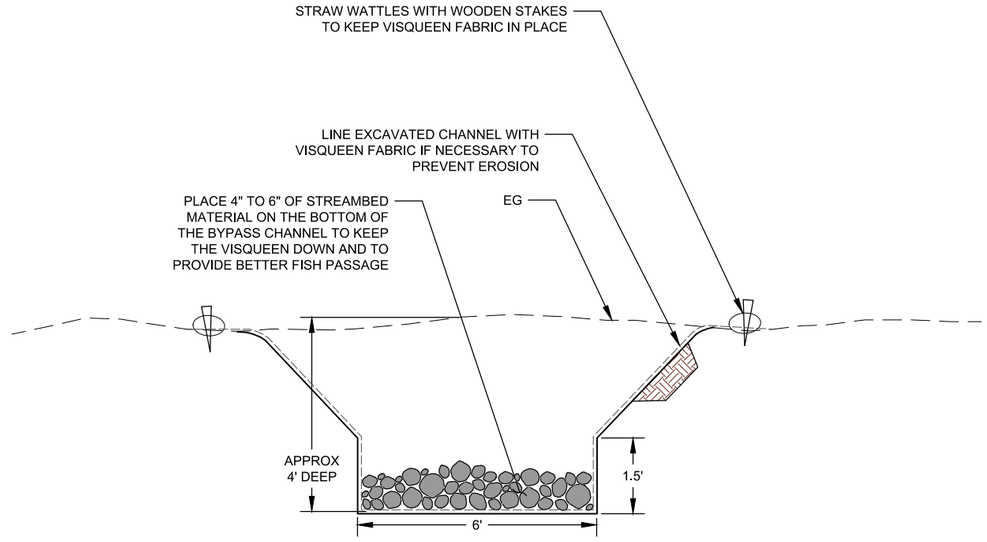
1 VISQUEEN TEMP BYPASS CHANNEL PLAN
NOT TO SCALE



NOTE:

1. CONSTRUCTION CREWS SHALL INSTALL BULK BAG COFFER DAMS AS SHOWN ON PLAN TO ISOLATE THE EXCAVATION AREAS.
2. IN ADDITION TO BULK BAGS, USE AN IMPERVIOUS SYNTHETIC LINER TO REDUCE PERMEABILITY OF BLUK BAG COFFER DAM.
3. HEIGHT OF THE BULK BAG COFFER DAMS SHALL BE HIGH ENOUGH TO PREVENT BYPASS FLOWS FROM ENTERING THE ISOLATED WORK AREA. DAM HEIGHTS AND MATERIALS SHALL BE INCLUDED IN THE CONTRACTOR'S WORK CONTAINMENT AND DEWATERING PLAN.

2 TEMPORARY BULK BAG COFFER DAM
NOT TO SCALE



3 VISQUEEN TEMP BYPASS CHANNEL TYPICAL SECTION
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

TEMPORARY BYPASS DETAILS

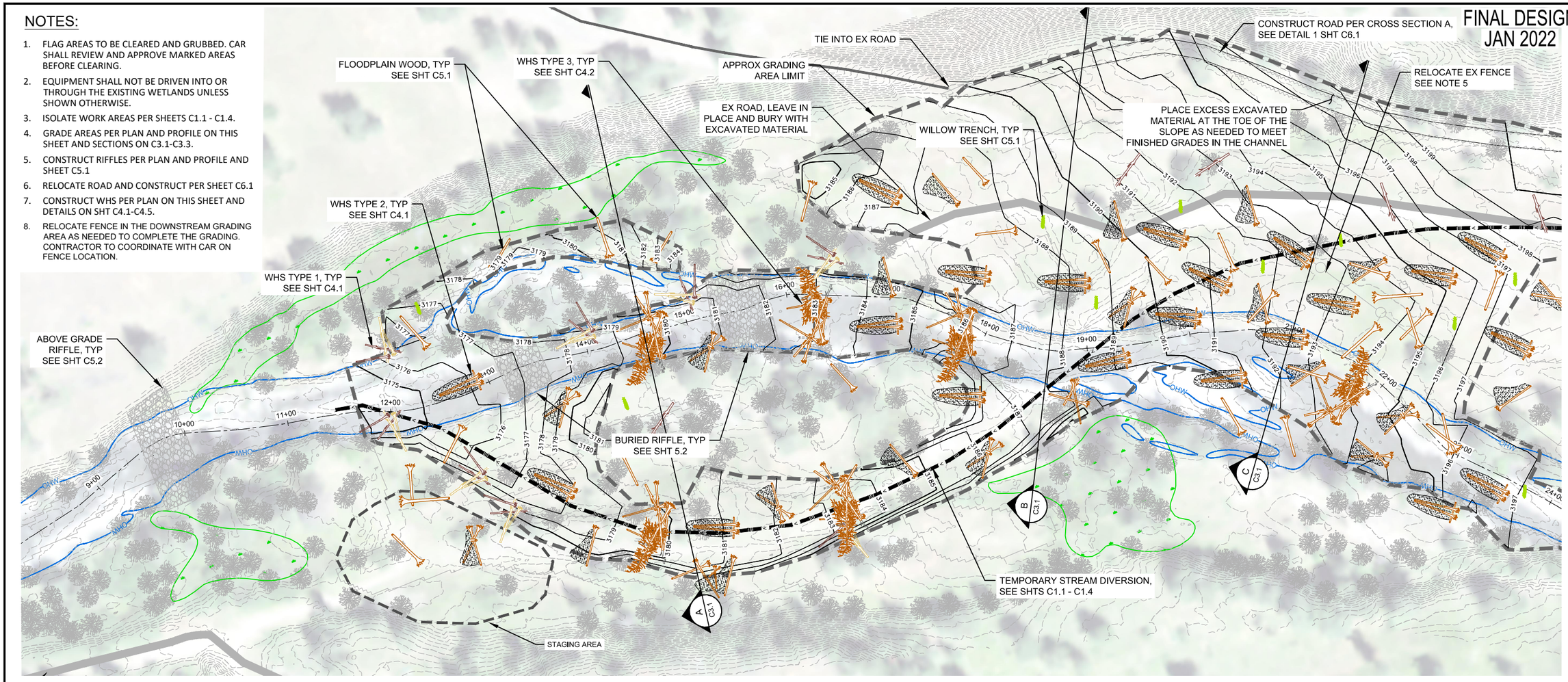
JOB NO. 20180019

SHEET NO. C1.4

DWG: Z:\Shared\W2r\CAD\20180019-Desolation Crk\DWG\SHEETS\XX - BYPASS-DETAIL.dwg USER: ajones
DATE: Jan 06, 2022 6:00pm XREFS:X-TB-22X34 X-DESIGN X-SURFACE

NOTES:

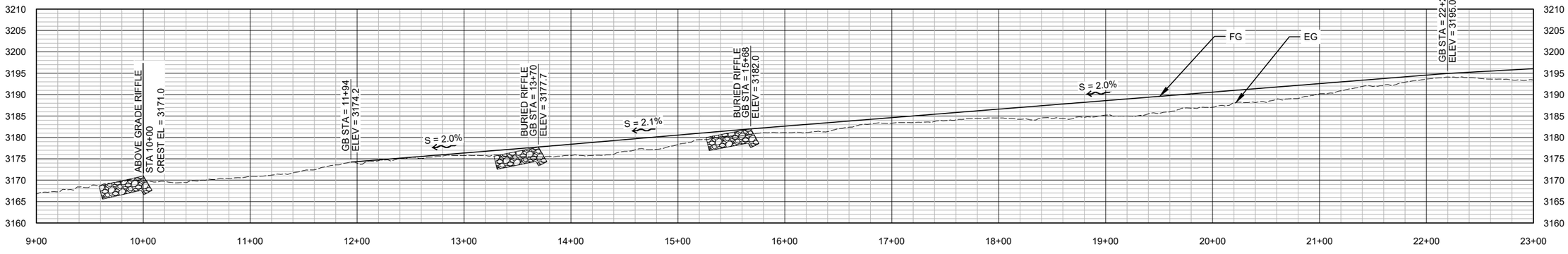
1. FLAG AREAS TO BE CLEARED AND GRUBBED. CAR SHALL REVIEW AND APPROVE MARKED AREAS BEFORE CLEARING.
2. EQUIPMENT SHALL NOT BE DRIVEN INTO OR THROUGH THE EXISTING WETLANDS UNLESS SHOWN OTHERWISE.
3. ISOLATE WORK AREAS PER SHEETS C1.1 - C1.4.
4. GRADE AREAS PER PLAN AND PROFILE ON THIS SHEET AND SECTIONS ON C3.1-C3.3.
5. CONSTRUCT RIFFLES PER PLAN AND PROFILE AND SHEET C5.1
6. RELOCATE ROAD AND CONSTRUCT PER SHEET C6.1
7. CONSTRUCT WHS PER PLAN ON THIS SHEET AND DETAILS ON SHT C4.1-C4.5.
8. RELOCATE FENCE IN THE DOWNSTREAM GRADING AREA AS NEEDED TO COMPLETE THE GRADING. CONTRACTOR TO COORDINATE WITH CAR ON FENCE LOCATION.



HABITAT PLAN 1

SCALE: 1" = 50'

SCALE
50 0 25 50 100
SCALE FEET



PROFILE: STA 9+00 TO 23+00

SCALE: HORIZONTAL 1" = 50'
VERTICAL EXAGGERATION = 1:4

FINAL DESIGN
JAN 2022

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6888

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION	REVISION

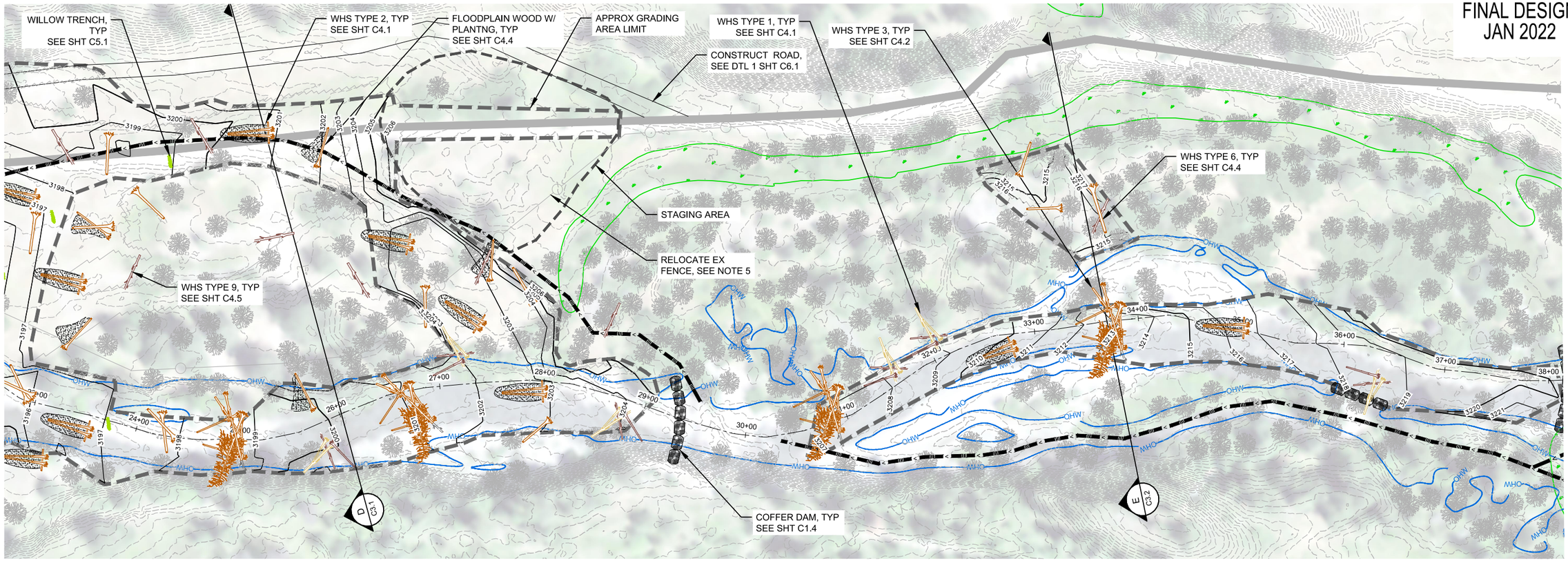
CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

HABITAT PLAN 1

JOB NO. 20180019

SHEET NO. C2.1

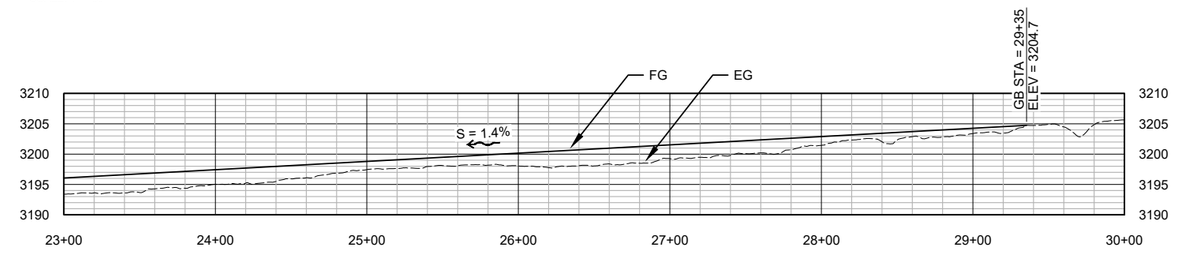
DWG: Z:\Shared\W2\rCAD\20180019-Desolation Crk\DWG\SHEETS\C03-C05 - REACH A-C PLAN.dwg USER: ajones
DATE: Jan 07, 2022 8:33am XREFS:X-SURVEY X-AERIAL X-DESIGN X-TB-22X34 X-WHS X-SURFACE



FINAL DESIGN
JAN 2022

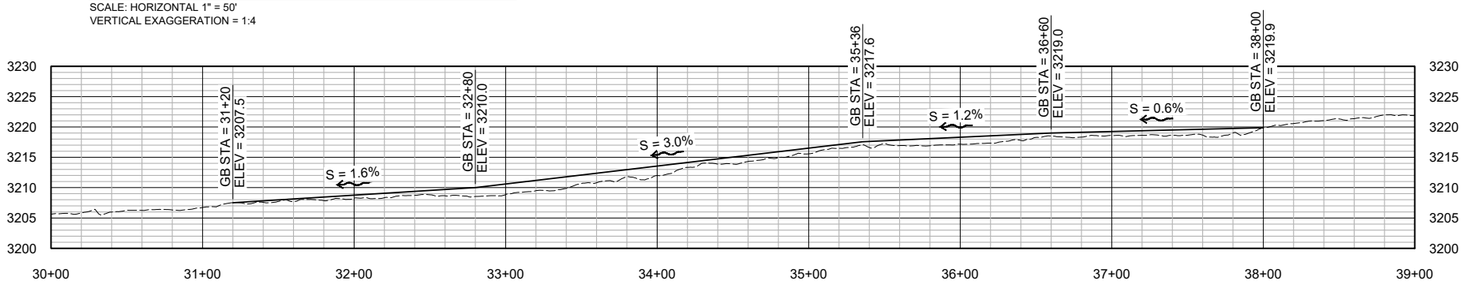
HABITAT PLAN 2

SCALE: 1" = 50'



PROFILE: STA 23+00 TO 30+00

SCALE: HORIZONTAL 1" = 50'
VERTICAL EXAGGERATION = 1:4



PROFILE: STA 30+00 TO 39+00

SCALE: HORIZONTAL 1" = 100'
VERTICAL EXAGGERATION = 1:4

N

SCALE
50 0 25 50 100
SCALE FEET

NOTES:

1. FLAG AREAS TO BE CLEARED AND GRUBBED. CAR SHALL REVIEW AND APPROVE MARKED AREAS BEFORE CLEARING.
2. EQUIPMENT SHALL NOT BE DRIVEN INTO OR THROUGH THE EXISTING WETLANDS UNLESS SHOWN OTHERWISE.
3. ISOLATE WORK AREAS PER SHEETS C1.1 - C1.4.
4. GRADE AREAS PER PLAN AND PROFILE ON THIS SHEET AND SECTIONS ON C3.1-C3.3.
5. CONSTRUCT RIFFLES PER PLAN AND PROFILE AND SHEET C5.1
6. RELOCATE ROAD AND CONSTRUCT PER SHEET C6.1
7. CONSTRUCT WHS PER PLAN ON THIS SHEET AND DETAILS ON SHT C4.1-C4.5.
8. RELOCATE FENCE IN THE DOWNSTREAM GRADING AREA AS NEEDED TO COMPLETE THE GRADING. CONTRACTOR TO COORDINATE WITH CAR ON FENCE LOCATION.

REGISTERED PROFESSIONAL ENGINEER
AMANDA L JONES
84779PE
OREGON
MAR. 8, 2016
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

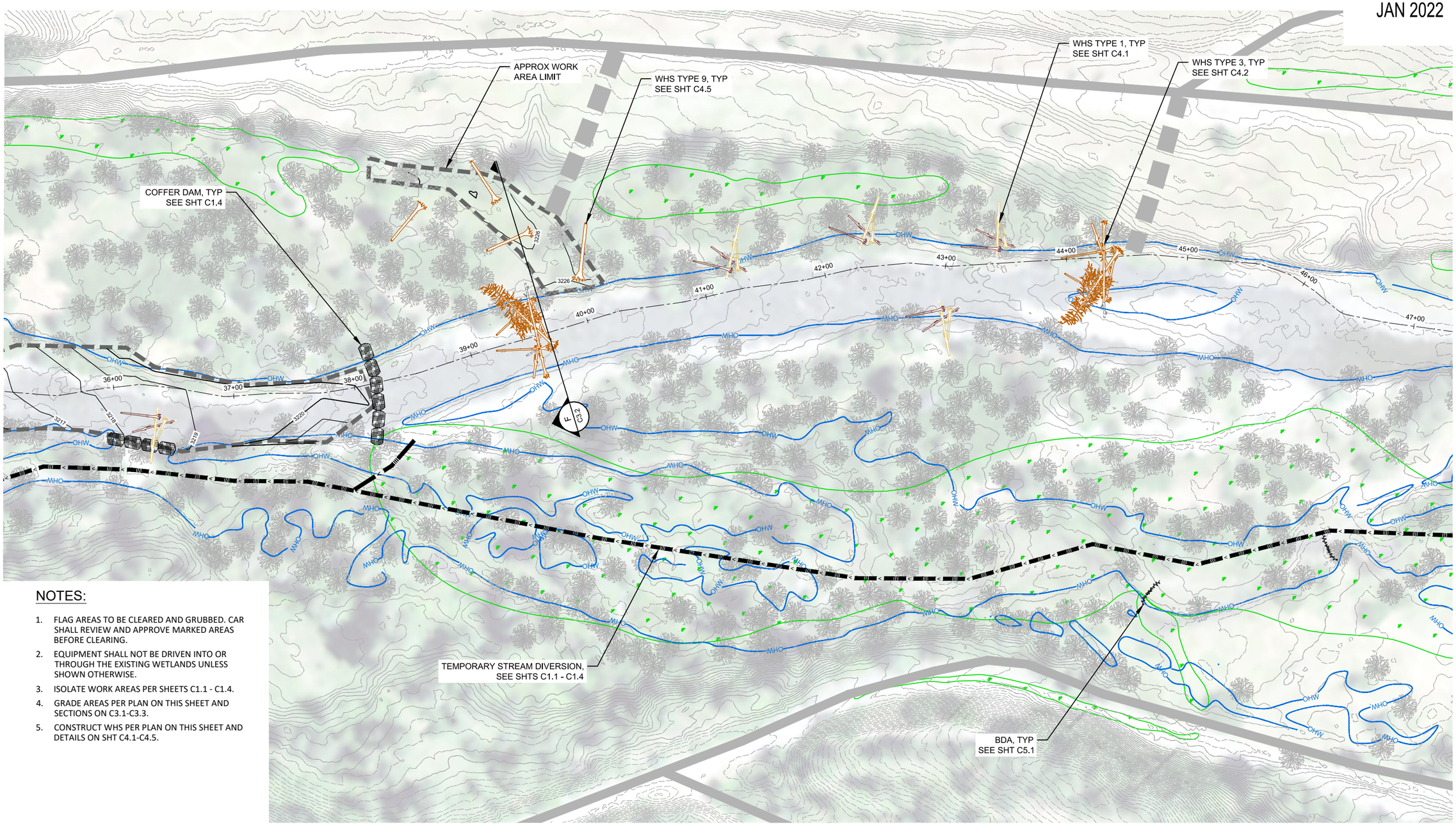
HABITAT PLAN 2

JOB NO. 20180019

SHEET NO. C2.2

DWG: Z:\Shared\W2r\CAD\20180019-Desolation Crk\DWG\SHEETS\C03-C05 - REACH A-C PLAN.dwg USER: ajones
DATE: Jan 07, 2022 8:38am XREFS:X-SURVEY X-AERIAL X-DESIGN X-TB-22X34 X-WHS X-SURFACE

FINAL DESIGN
JAN 2022



NOTES:

1. FLAG AREAS TO BE CLEARED AND GRUBBED. CAR SHALL REVIEW AND APPROVE MARKED AREAS BEFORE CLEARING.
2. EQUIPMENT SHALL NOT BE DRIVEN INTO OR THROUGH THE EXISTING WETLANDS UNLESS SHOWN OTHERWISE.
3. ISOLATE WORK AREAS PER SHEETS C1.1 - C1.4.
4. GRADE AREAS PER PLAN ON THIS SHEET AND SECTIONS ON C3.1-C3.3.
5. CONSTRUCT WHS PER PLAN ON THIS SHEET AND DETAILS ON SHT C4.1-C4.5.

HABITAT PLAN 3

SCALE: 1" = 40'

N

SCALE
40 0 20 40 80
SCALE FEET

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L JONES
Amanda Jones
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

HABITAT PLAN 3

JOB NO. 20180019

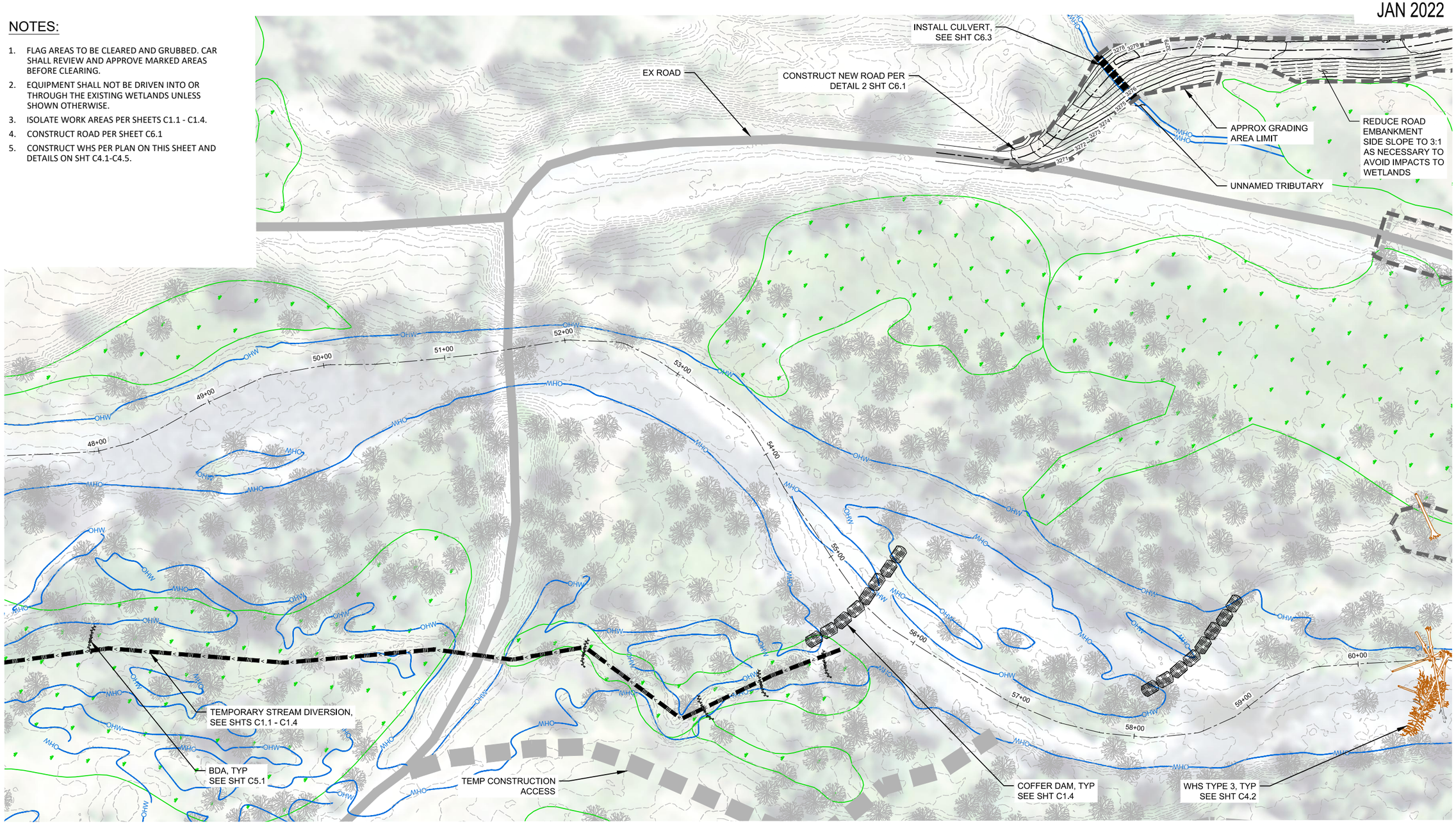
SHEET NO. C2.3

DWG: Z:\Shared\W2r\CAD\20180019-Desolation Crk\DWG\SHEETS\C06-C08 - REACH D-F PLAN.dwg USER: ajones
DATE: Jan 07, 2022 9:33am XREFS:X-SURVEY X-AERIAL X-DESIGN X-TB-22X34 X-WHS X-SURFACE

FINAL DESIGN
JAN 2022

NOTES:

1. FLAG AREAS TO BE CLEARED AND GRUBBED. CAR SHALL REVIEW AND APPROVE MARKED AREAS BEFORE CLEARING.
2. EQUIPMENT SHALL NOT BE DRIVEN INTO OR THROUGH THE EXISTING WETLANDS UNLESS SHOWN OTHERWISE.
3. ISOLATE WORK AREAS PER SHEETS C1.1 - C1.4.
4. CONSTRUCT ROAD PER SHEET C6.1
5. CONSTRUCT WHS PER PLAN ON THIS SHEET AND DETAILS ON SHT C4.1-C4.5.



HABITAT PLAN 4

SCALE: 1" = 40'

SCALE
40 0 20 40 80
SCALE FEET

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

HABITAT PLAN 4

JOB NO. 20180019

SHEET NO. C2.4

DWG: Z:\Shared\W2a\CAD\20180019-Desolation Crk\DWG\SHEETS\C06-C08 - REACH D-F PLAN.dwg USER: ajones
DATE: Jan 06, 2022 6:11pm XREFS:X-SURVEY X-AERIAL X-DESIGN X-TB-22X34 X-WHS X-SURFACE

FINAL DESIGN
JAN 2022

CONSTRUCT 10' WIDE, 50' LONG TURNOUT WITH SMOOTH TAPERED ENDS. PLACE FILL TO A FIRM AND UNYEILDING CONDITION WITH MAX 4:1 SIDE SLOPES

AVOID IMPACTS TO WETLANDS AND TREES TO THE GREATEST EXTENT POSSIBLE

TEMPORARY STREAM DIVERSION, SEE SHTS C1.1 - C1.4

ROAD DEMO NOT INCLUDED IN CONTRACT

CONSTRUCT NEW ROAD PER DETAIL 2 SHT C6.1

COFFER DAM, TYP SEE SHT C1.4

WHS TYPE 1, TYP SEE SHT C4.1

WHS TYPE 3, TYP SEE SHT C4.2

APPROX GRADING AREA LIMIT

PRIVATE PROPERTY (NOT SURVEYED)

DESOLATION CR LLC
LARRY PARKER

HABITAT PLAN 5

SCALE: 1" = 40'

NOTES:

1. FLAG AREAS TO BE CLEARED AND GRUBBED. CAR SHALL REVIEW AND APPROVE MARKED AREAS BEFORE CLEARING.
2. EQUIPMENT SHALL NOT BE DRIVEN INTO OR THROUGH THE EXISTING WETLANDS UNLESS SHOWN OTHERWISE.
3. ISOLATE WORK AREAS PER SHEETS C1.1 - C1.4.
4. GRADE AREAS PER PLAN THIS SHEET AND SECTIONS ON C3.1-C3.3.
5. CONSTRUCT ROAD PER SHEET C6.1
6. CONSTRUCT WHS PER PLAN ON THIS SHEET AND DETAILS ON SHT C4.1-C4.5.

N

SCALE
40 0 20 40 80
SCALE FEET

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION / REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

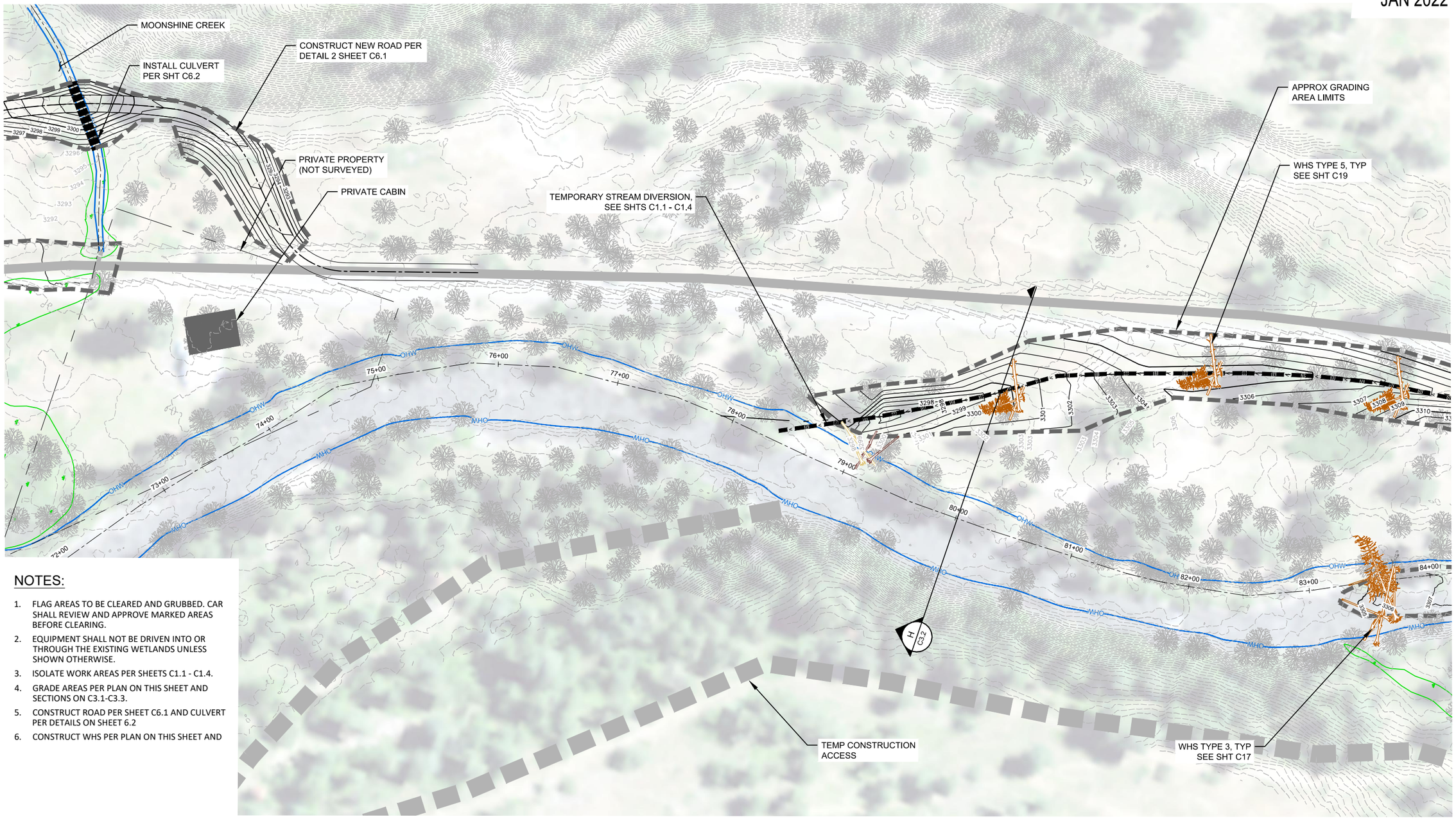
HABITAT PLAN 5

JOB NO. 20180019

SHEET NO. C2.5

DWG: Z:\Shared\W2r\CAD\20180019-Desolation Crk\DWG\SHEETS\C06-C08 - REACH D-F PLAN.dwg USER: ajones
DATE: Jan 06, 2022 6:13pm XREFS:X-SURVEY X-AERIAL X-DESIGN X-TB-22X34 X-WHS X-SURFACE

FINAL DESIGN
JAN 2022



NOTES:

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2. EQUIPMENT SHALL NOT BE DRIVEN INTO OR THROUGH THE EXISTING WETLANDS UNLESS SHOWN OTHERWISE.
3. ISOLATE WORK AREAS PER SHEETS C1.1 - C1.4.
4. GRADE AREAS PER PLAN ON THIS SHEET AND SECTIONS ON C3.1-C3.3.
5. CONSTRUCT ROAD PER SHEET C6.1 AND CULVERT PER DETAILS ON SHEET 6.2
6. CONSTRUCT WHS PER PLAN ON THIS SHEET AND

HABITAT PLAN 6
SCALE: 1" = 40'

N

SCALE
40 0 20 40 80
SCALE FEET

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DESCRIPTION	DATE
	REVISION	

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

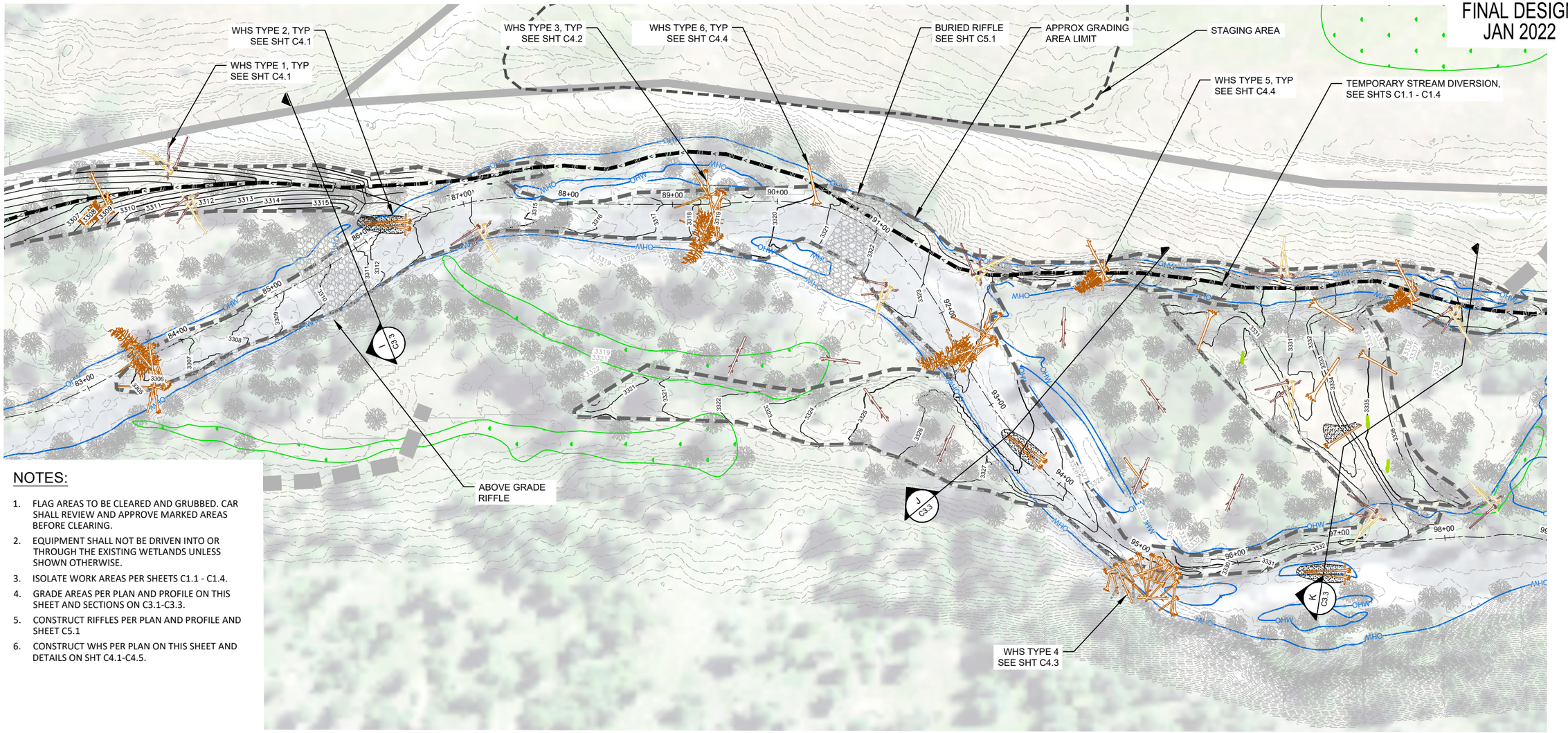
HABITAT PLAN 6

JOB NO. 20180019

SHEET NO. C2.6

DWG: Z:\Shared\W2r\CAD\20180019-Desolation Crk\DWG\SHEETS\C09-C11 - REACH G-I PLAN.dwg USER: ajones
DATE: Jan 07, 2022 7:56am XREFS:X-SURVEY X-DESIGN X-TB-22X34 X-SURFACE X-WHS X-AERIAL

FINAL DESIGN
JAN 2022



NOTES:

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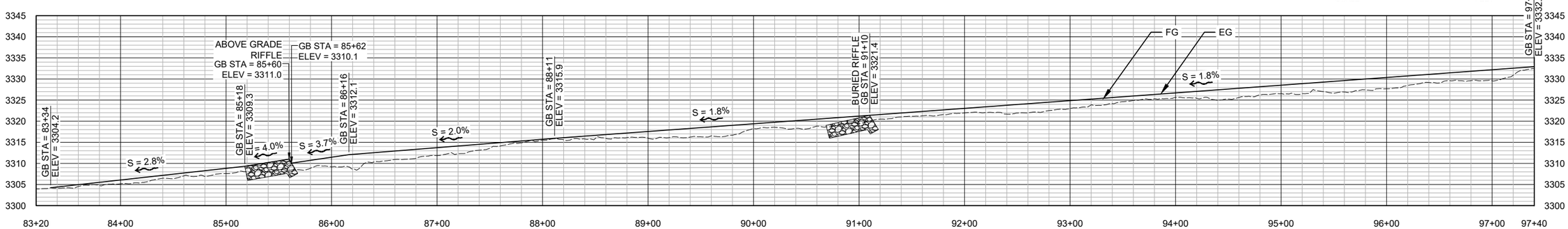
2. EQUIPMENT SHALL NOT BE DRIVEN INTO OR THROUGH THE EXISTING WETLANDS UNLESS SHOWN OTHERWISE.
3. ISOLATE WORK AREAS PER SHEETS C1.1 - C1.4.
4. GRADE AREAS PER PLAN AND PROFILE ON THIS SHEET AND SECTIONS ON C3.1-C3.3.
5. CONSTRUCT RIFFLES PER PLAN AND PROFILE AND SHEET C5.1
6. CONSTRUCT WHS PER PLAN ON THIS SHEET AND DETAILS ON SHT C4.1-C4.5.

HABITAT PLAN 7

SCALE: 1" = 50'

SCALE
50 0 25 50 100
SCALE FEET



PROFILE: STA 83+20 TO 97+40

SCALE: HORIZONTAL 1" = 50'
VERTICAL EXAGGERATION = 1:4

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6888

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

HABITAT PLAN 7

JOB NO. 20180019

SHEET NO. C2.7

DWG: Z:\Shared\W2\CAD\20180019-Desolation Crk\DWG\SHEETS\C09-C11 - REACH G-I PLAN.dwg USER: ajones
DATE: Jan 07, 2022 9:40am XREFS:X-SURVEY X-DESIGN X-TB-22X34 X-SURFACE X-WHS X-AERIAL

FINAL DESIGN
JAN 2022

WHS TYPE 5, TYP
SEE SHT C4.4

TEMPORARY STREAM DIVERSION,
SEE SHTS C1.1 - C 1.4

WHS TYPE 2, TYP
SEE SHT C4.1

DECOMMISSION, RIP UP
ROAD SURFACE, AND SEED

EX PARKING AREA
TO BE REMOVED

SPUR ROAD

COFFER DAM, TYP
SEE SHT C4.1

WHS TYPE 1, TYP
SEE SHT C4.1

NOTES:

1. FLAG AREAS TO BE CLEARED AND GRUBBED. CAR SHALL REVIEW AND APPROVE MARKED AREAS BEFORE CLEARING.
2. EQUIPMENT SHALL NOT BE DRIVEN INTO OR THROUGH THE EXISTING WETLANDS UNLESS SHOWN OTHERWISE.
3. ISOLATE WORK AREAS PER SHEETS C1.1 - C1.4.
4. GRADE AREAS PER PLAN AND PROFILE ON THIS SHEET AND SECTIONS ON C3.1-C3.3.
5. CONSTRUCT WHS PER PLAN ON THIS SHEET AND DETAILS ON SHT C4.1-C4.5.

HABITAT PLAN 8

SCALE: 1" = 40'

SCALE
40 0 20 40 80
SCALE FEET

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
Amanda Jones
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

HABITAT PLAN 8

JOB NO. 20180019

SHEET NO. C2.8

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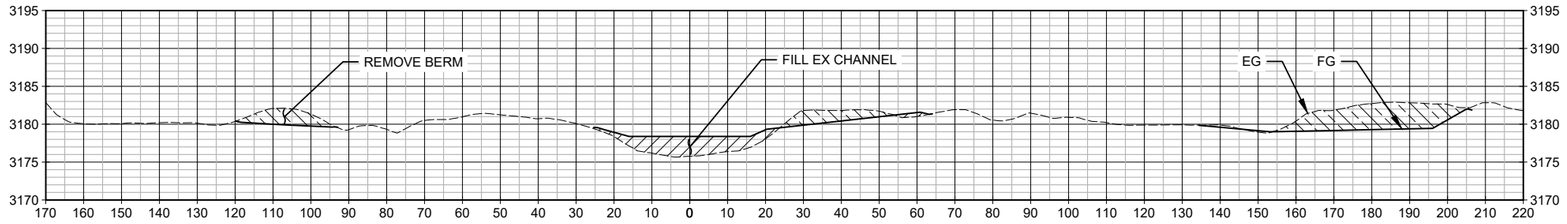
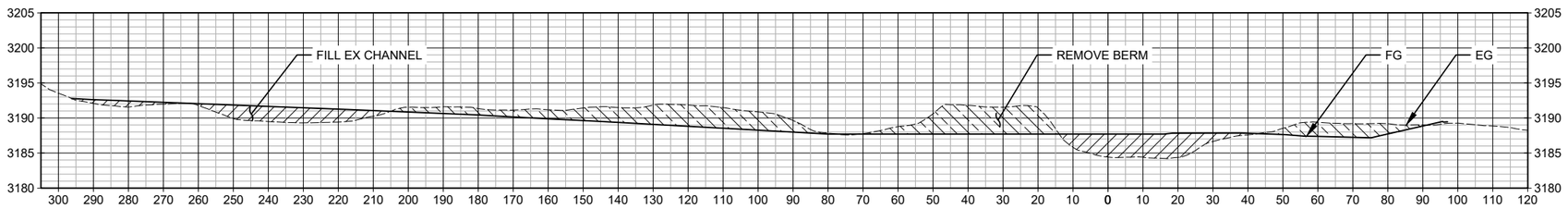
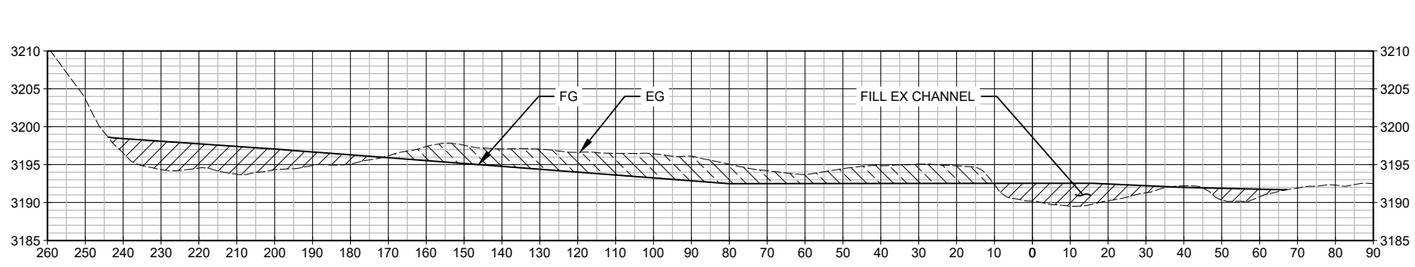


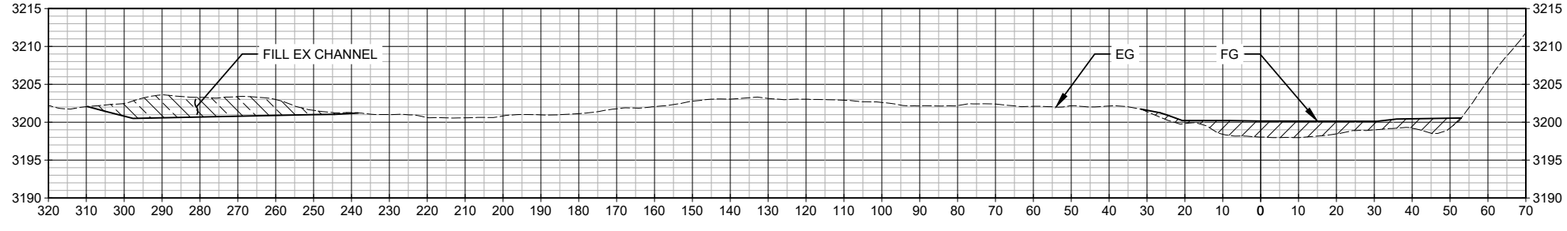
A SECTION: STA 14+56
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



B SECTION: STA 18+60
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



C SECTION: STA 21+00
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



D SECTION: STA 26+00
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2

FINAL DESIGN
JAN 2022

NOTES:

1. SECTION VERTICAL EXAGGERATION IS 2:1.
2. VERTICAL DATUM IS ELEVATION IN UNITS OF FEET (NAVD88).
3. CHANNEL SECTIONS ARE LOOKING DOWNSTREAM.
4. FINISHED GRADE ELEVATIONS SHALL BE AS SHOWN ON THESE SECTIONS AND PER PLAN AND PROFILES.

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

SECTIONS A-D

JOB NO. 20180019

SHEET NO. C3.1

DWG: Z:\Shared\W2r\CAD\20180019-Desolation Crk\DWG\SHEETS\C13\C14 - SECTIONS.dwg USER: ajones
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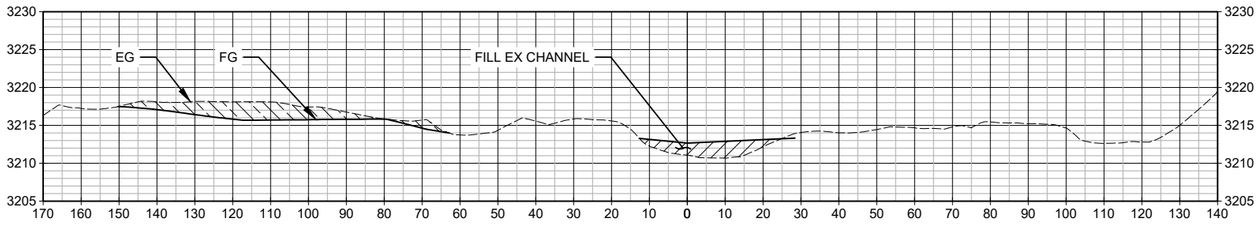
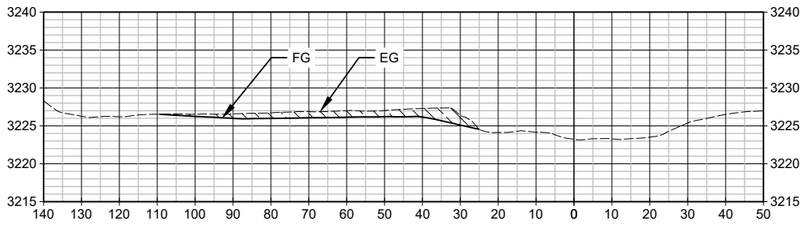


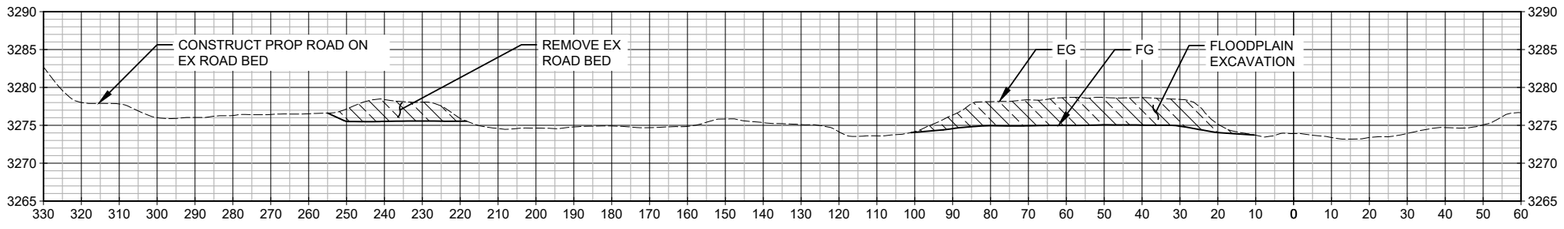
E
-
SECTION: STA 33+70

SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



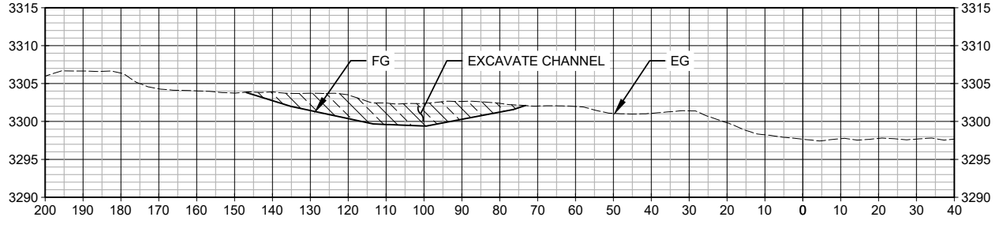
F
-
SECTION: STA 39+80

SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



G
-
SECTION: STA 67+00

SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



H
-
SECTION: STA 80+00

SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2

NOTES:

1. SECTION VERTICAL EXAGGERATION IS 2:1.
2. VERTICAL DATUM IS ELEVATION IN UNITS OF FEET (NAVD88).
3. CHANNEL SECTIONS ARE LOOKING DOWNSTREAM.
4. FINISHED GRADE ELEVATIONS SHALL BE AS SHOWN ON THESE SECTIONS AND PER PLAN AND PROFILES.

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DATE	DESCRIPTION
		REVISION

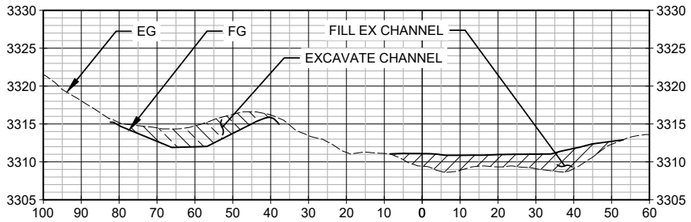
CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

SECTIONS E-H

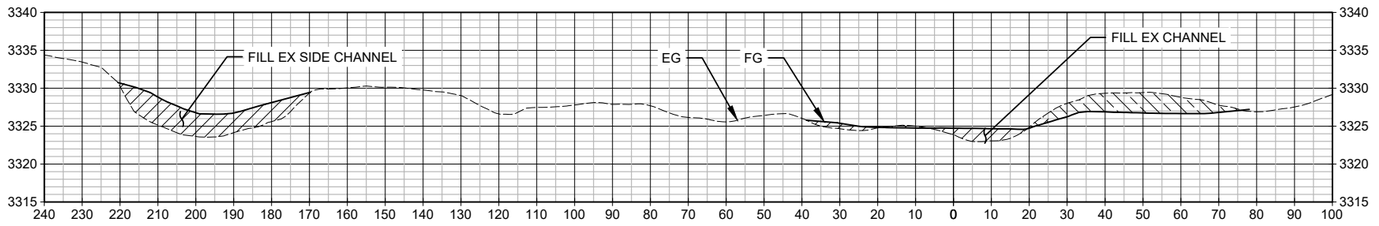
JOB NO. 20180019

SHEET NO. C3.2

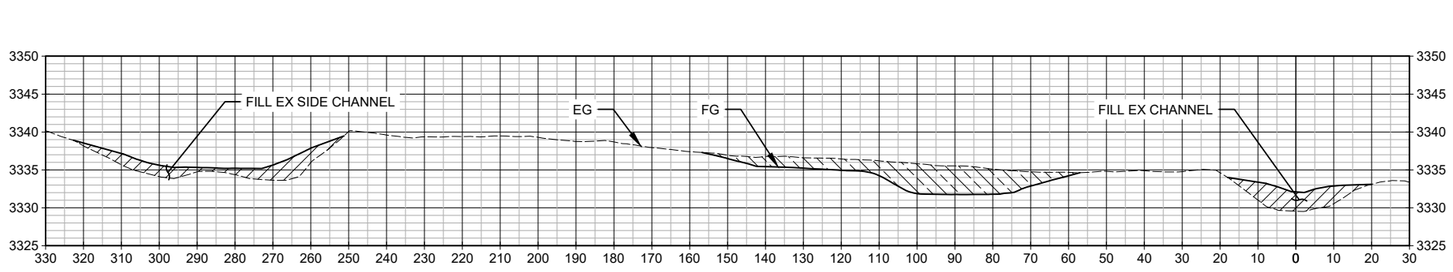
FINAL DESIGN
JAN 2022



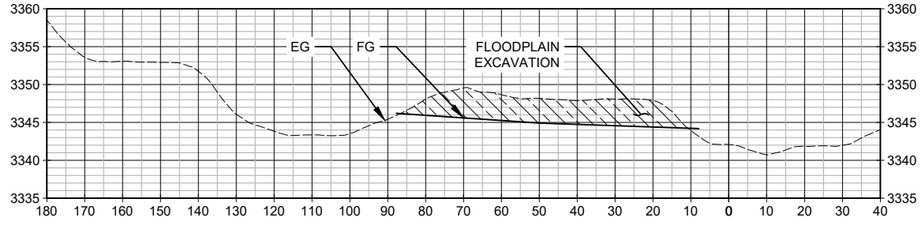
I
-
SECTION: STA 85+90
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



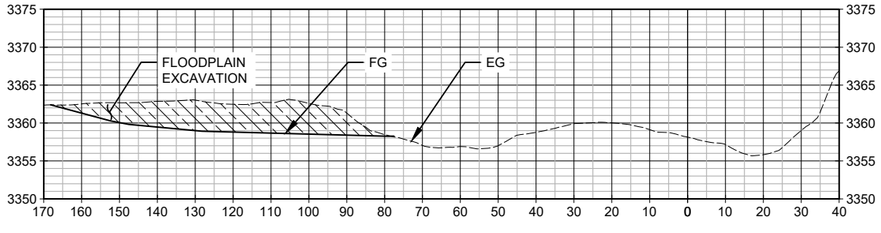
J
-
SECTION: STA 93+33
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



K
-
SECTION: STA 96+88
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



L
-
SECTION: STA 103+26
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2



M
-
SECTION: STA 110+00
SCALE: HORIZONTAL 1" = 20'
VERTICAL EXAGGERATION = 1:2

NOTES:

1. SECTION VERTICAL EXAGGERATION IS 2:1.
2. VERTICAL DATUM IS ELEVATION IN UNITS OF FEET (NAVD88).
3. CHANNEL SECTIONS ARE LOOKING DOWNSTREAM.
4. FINISHED GRADE ELEVATIONS SHALL BE AS SHOWN ON THESE SECTIONS AND PER PLAN AND PROFILES.

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

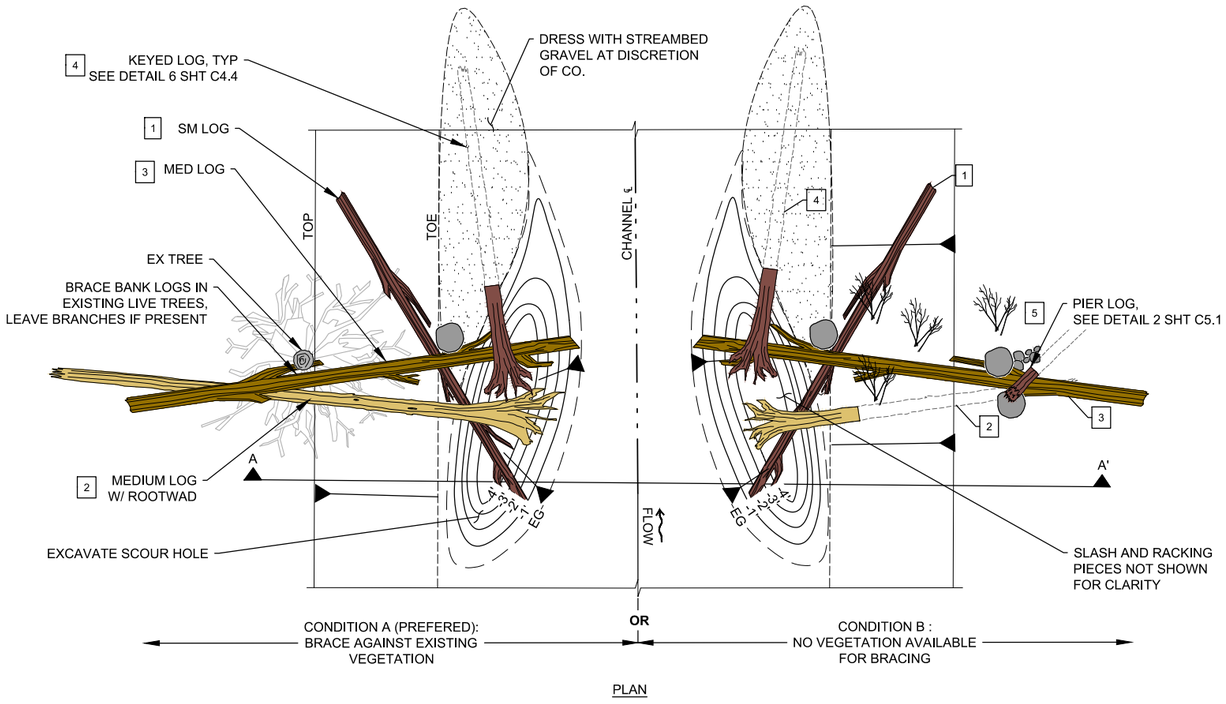
SECTIONS I-M

JOB NO. 20180019

SHEET NO. C3.3

DWG: Z:\Shared\W2r\CAD\20180019-Desolation Crk\DWG\SHEETS\C13C14 - SECTIONS.dwg USER: ajones
DATE: Jan 06, 2022 6:32pm XREFS:X-DESIGN X-TB-22X34

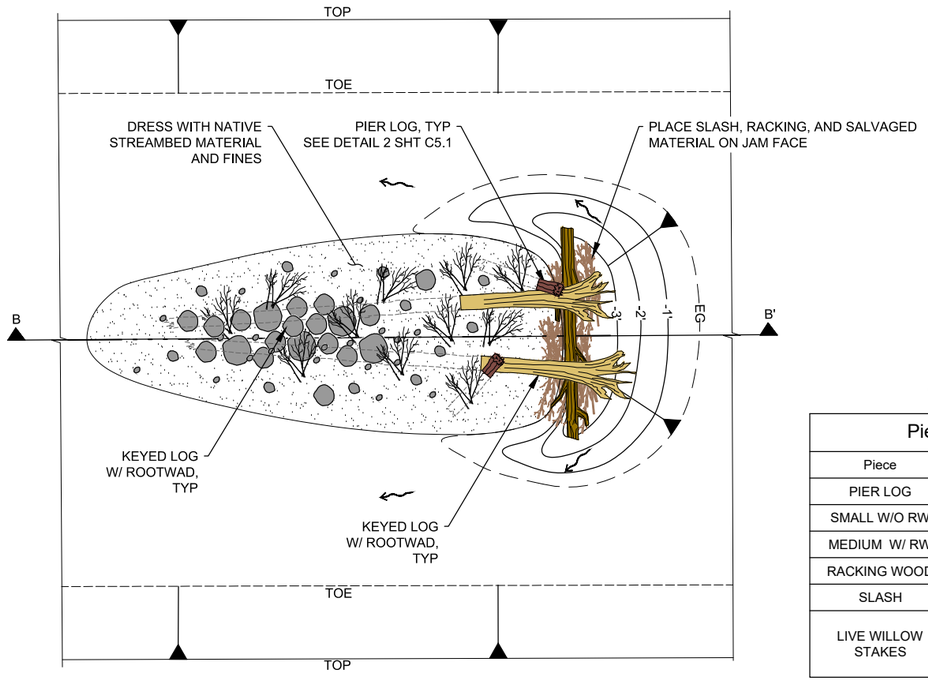
FINAL DESIGN
JAN 2022



PLAN

1 WHS TYPE 1 - MARGIN DEFLECTOR JAM

NOT TO SCALE



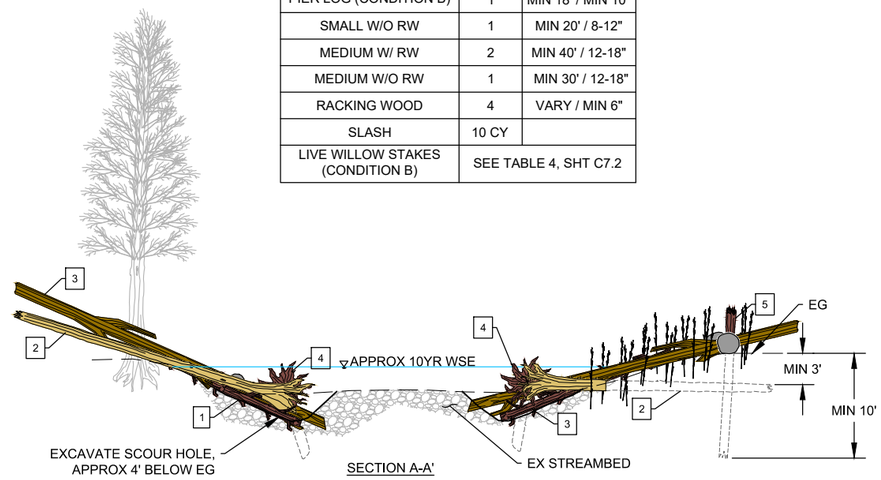
PLAN

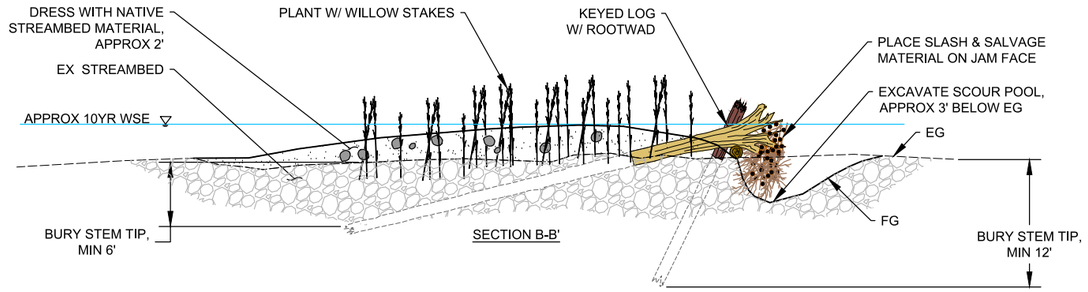
2 WHS TYPE 2 - APEX JAM

NOT TO SCALE

WHS TYPE 1

Piece Summary		
Piece	QTY	LENGTH / DBH
PIER LOG (CONDITION B)	1	MIN 18' / MIN 10"
SMALL W/O RW	1	MIN 20' / 8-12"
MEDIUM W/ RW	2	MIN 40' / 12-18"
MEDIUM W/O RW	1	MIN 30' / 12-18"
RACKING WOOD	4	VARY / MIN 6"
SLASH	10 CY	
LIVE WILLOW STAKES (CONDITION B)	SEE TABLE 4, SHT C7.2	





WHS TYPE 2

Piece Summary		
Piece	QTY	LENGTH / DBH
PIER LOG	2	MIN 18' / MIN 10"
SMALL W/O RW	1	MIN 15' / MAX12"
MEDIUM W/ RW	2	MIN 30' / 12-18"
RACKING WOOD	4	VARY / MIN 6"
SLASH	5 CY	
LIVE WILLOW STAKES	SEE TABLE 4, SHT C7.2	

LOG INSTALLATION NOTES:

1. NATIVE STREAMBED BACKFILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO FIRM UNYIELDING CONDITION.
2. CONTRACTOR TO COORDINATE LOG PLACEMENT WITH ENGINEER PRIOR TO CONSTRUCTION. ENGINEER SHALL APPROVE PLACEMENT BEFORE COMPLETION.
3. WHERE POSSIBLE, LOGS PROTRUDING FROM BANK SHALL BE PLACED CANTILEVERED BETWEEN EXISTING LIVE TREES. THE SUPPORTING TREE NEAREST TO THE BANK SHALL BE ON THE DOWNSTREAM SIDE OF THE LOGS.
4. EMBEDDED LOGS SHALL BE INSTALLED BY EXCAVATING A TRENCH, PLACING THE LOG, BACKFILLING, AND MACHINE COMPACTING BACKFILL PER SPECIFICATIONS. WHERE EXCAVATION IS NOT POSSIBLE LOG ENDS SHALL BE TIED INTO NATIVE MATERIAL AND BURIED WITH NATIVE MATERIAL PER SPECIFICATIONS.
5. SALVAGE ADJACENT BOULDERS FOR USE IN STRUCTURE.
6. FOR BURIED KEYED LOGS EMBED A MINIMUM OF ⅔ THE TOTAL LENGTH OF THE LOG. MIN 6' COVER AT STEM TIP (MEASURED FROM EG).
7. EMBED ROOTWAD AS NEEDED TO ACHIEVE REQUIRED BURIAL DEPTH AND ALLOW FOR FULL CONTACT BETWEEN THE BOTTOM OF THE LOG AND THE BOTTOM OF THE CHANNEL. BACKFILL AROUND ROOTWAD WITH NATIVE STREAMBED MATERIAL.
8. SEE SPECIFICATIONS FOR TREE SPECIES. KEYED LOG DIAMETER MEASURED AT BREAST HEIGHT (DBH) AND LENGTH AS SHOWN ON PLANS.
9. CRUSH ALL EXPOSED SAW-CUT FACES.

[#] DENOTES PLACEMENT ORDER

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

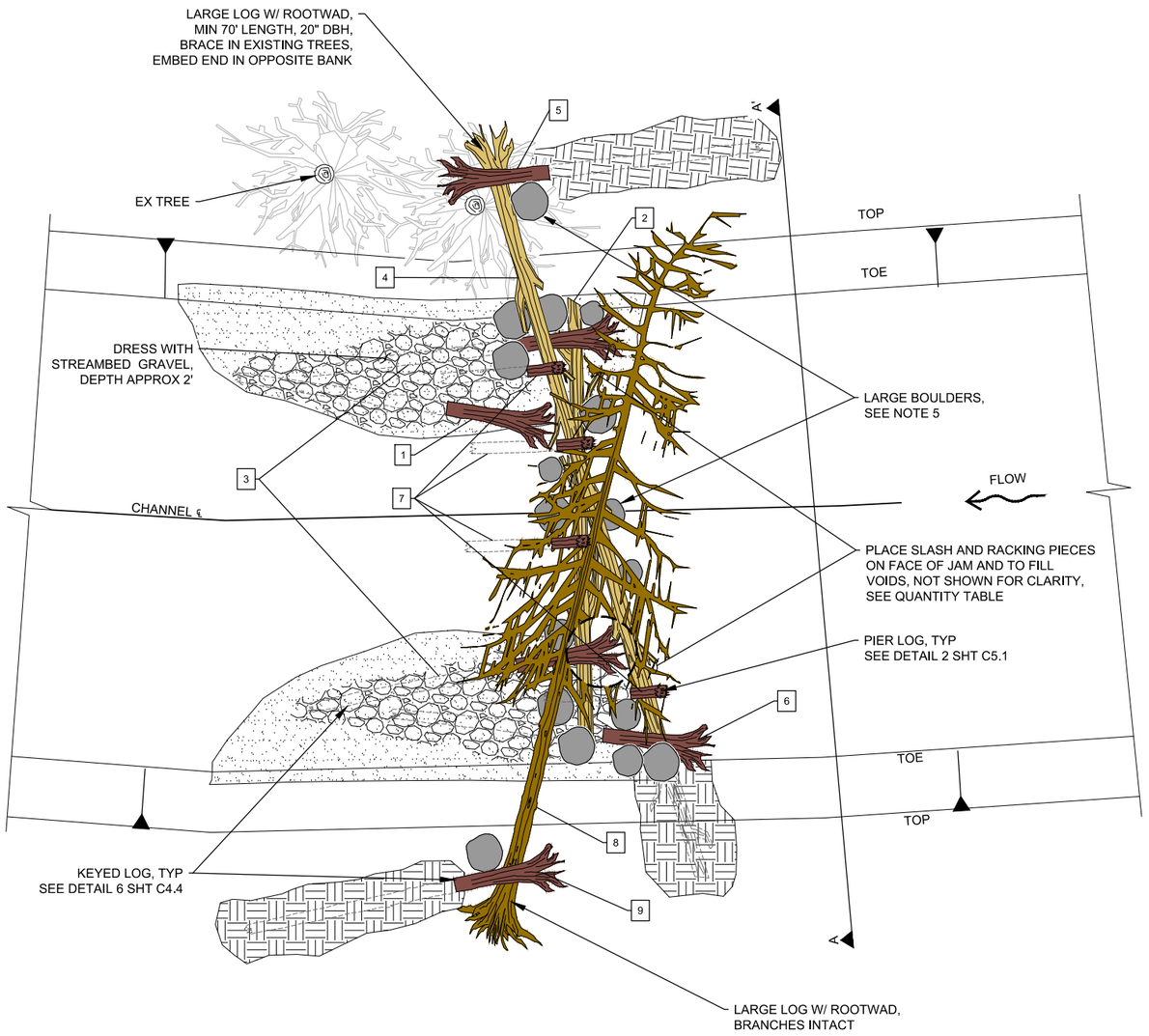
WHS DETAILS 1

JOB NO. 20180019

SHEET NO. C4.1

DWG: Z:\Shared\2r\CAD\20180019-Desolation Crk\DWG\SHEET\SC-15-C17 - HABITAT-WOOD DETAILS.dwg USER: ajones
DATE: Jan 06, 2022 6:41pm XREFS:X-TB-22X34

FINAL DESIGN
JAN 2022



PLAN

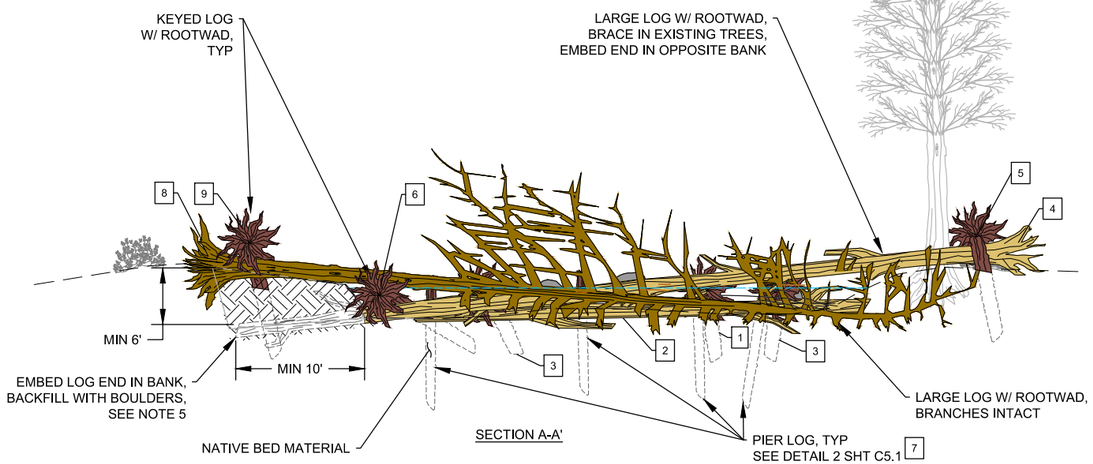
LOG INSTALLATION NOTES:

1. NATIVE STREAMBED BACKFILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO FIRM UNYIELDING CONDITION.
2. CONTRACTOR TO COORDINATE LOG PLACEMENT WITH ENGINEER PRIOR TO CONSTRUCTION. ENGINEER SHALL APPROVE PLACEMENT BEFORE COMPLETION.
3. WHERE POSSIBLE, LOGS PROTRUDING FROM BANK SHALL BE PLACED CANTILEVERED BETWEEN EXISTING LIVE TREES. THE SUPPORTING TREE NEAREST TO THE BANK SHALL BE ON THE DOWNSTREAM SIDE OF THE LOGS.
4. EMBEDDED LOGS SHALL BE INSTALLED BY EXCAVATING A TRENCH, PLACING THE LOG, BACKFILLING, AND MACHINE COMPACTING BACKFILL PER SPECIFICATIONS. WHERE EXCAVATION IS NOT POSSIBLE LOG ENDS SHALL BE TIED INTO NATIVE MATERIAL AND BURIED WITH NATIVE MATERIAL PER SPECIFICATIONS.
5. SALVAGE ADJACENT BOULDERS FOR USE IN STRUCTURE.
6. FOR BURIED KEYED LOGS EMBED A MINIMUM OF ⅔ THE TOTAL LENGTH OF THE LOG. MIN 6' COVER AT STEM TIP (MEASURED FROM EG).
7. EMBED ROOTWAD AS NEEDED TO ACHIEVE REQUIRED BURIAL DEPTH AND ALLOW FOR FULL CONTACT BETWEEN THE BOTTOM OF THE LOG AND THE BOTTOM OF THE CHANNEL. BACKFILL AROUND ROOTWAD WITH NATIVE STREAMBED MATERIAL.
8. SEE SPECIFICATIONS FOR TREE SPECIES. KEYED LOG DIAMETER MEASURED AT BREAST HEIGHT (DBH) AND LENGTH AS SHOWN ON PLANS.
9. CRUSH ALL EXPOSED SAW-CUT FACES.

[#] DENOTES PLACEMENT ORDER

WHS TYPE 3

Piece Summary		
Piece	QTY	LENGTH / DBH
PIER LOG	4	MIN 18' / MIN 10"
MEDIUM W/ RW	6	MIN 40' / 12-18"
MEDIUM W/O RW	1	MIN 40' / 12-18"
LARGE W/ RW	1	MIN 80' / MIN18"
LARGE W/ RW	1	MIN 80' / MIN18"
RACKING WOOD	10	VARY / MIN 6"
SLASH	40 CY	-



SECTION A-A'

3 WHS TYPE 3 - CHANNEL SPANNING JAM
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
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NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

WHS DETAILS 2

JOB NO. 20180019

SHEET NO. C4.2

DWG: Z:\Shared\2r\CAD\20180019-Desolation Crk\DWG\SHEET\SC15-C17 - HABITAT-WOOD DETAILS.dwg USER: ajones
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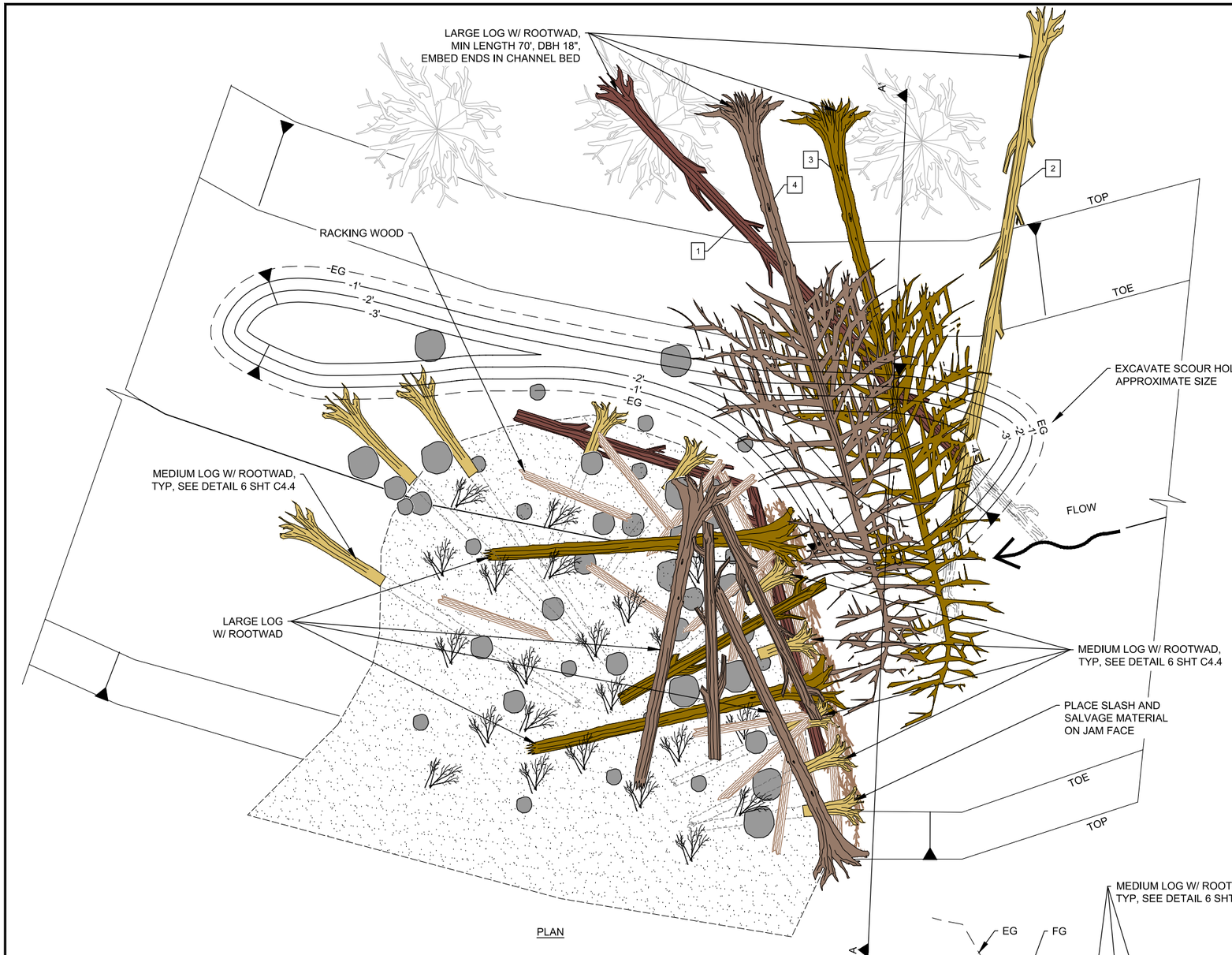
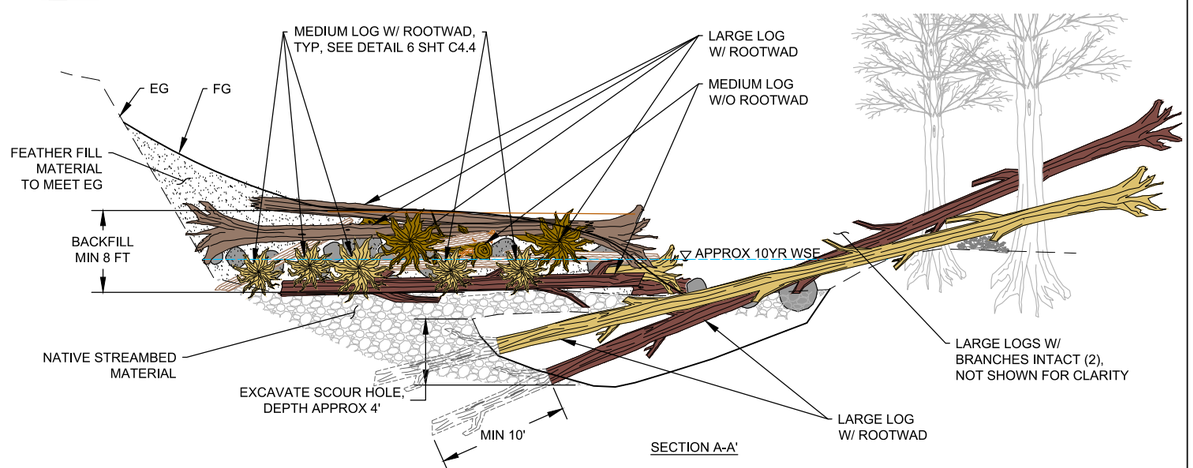


PLAN



SECTION A-A'

4 WHS TYPE 4 - LANDSLIDE JAM

NOT TO SCALE

FINAL DESIGN JAN 2022

LOG INSTALLATION NOTES:

1. NATIVE STREAMBED BACKFILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO FIRM UNYIELDING CONDITION.
2. CONTRACTOR TO COORDINATE LOG PLACEMENT WITH ENGINEER PRIOR TO CONSTRUCTION. ENGINEER SHALL APPROVE PLACEMENT BEFORE COMPLETION.
3. WHERE POSSIBLE, LOGS PROTRUDING FROM BANK SHALL BE PLACED CANTILEVERED BETWEEN EXISTING LIVE TREES. THE SUPPORTING TREE NEAREST TO THE BANK SHALL BE ON THE DOWNSTREAM SIDE OF THE LOGS.
4. EMBEDDED LOGS SHALL BE INSTALLED BY EXCAVATING A TRENCH, PLACING THE LOG, BACKFILLING, AND MACHINE COMPACTING BACKFILL PER SPECIFICATIONS. WHERE EXCAVATION IS NOT POSSIBLE LOG ENDS SHALL BE TIED INTO NATIVE MATERIAL AND BURIED WITH NATIVE MATERIAL PER SPECIFICATIONS.
5. SALVAGE ADJACENT BOULDERS FOR USE IN STRUCTURE.
6. FOR BURIED KEYED LOGS EMBED A MINIMUM OF ⅔ THE TOTAL LENGTH OF THE LOG. MIN 6' COVER AT STEM TIP (MEASURED FROM EG).
7. EMBED ROOTWAD AS NEEDED TO ACHIEVE REQUIRED BURIAL DEPTH AND ALLOW FOR FULL CONTACT BETWEEN THE BOTTOM OF THE LOG AND THE BOTTOM OF THE CHANNEL. BACKFILL AROUND ROOTWAD WITH NATIVE STREAMBED MATERIAL.
8. SEE SPECIFICATIONS FOR TREE SPECIES. KEYED LOG DIAMETER MEASURED AT BREAST HEIGHT (DBH) AND LENGTH AS SHOWN ON PLANS.
9. CRUSH ALL EXPOSED SAW-CUT FACES.

[#] DENOTES PLACEMENT ORDER

Piece Summary

Piece	QTY	LENGTH / DBH
OPPOSITE BANK		
LARGE W/ RW	2	MIN 70' / MIN 18"
LARGE W/ RW BRANCHES INTACT	2	MIN 70' / MIN 18"
LAYER 1		
MEDIUM W/O RW	2	MIN 30' / 12-18"
LAYER 2		
MEDIUM W/ RW	10	MIN 30' / 12-18"
LAYER 3		
MEDIUM W/O RW	1	MIN 30' / 12-18"
LARGE W/ RW	2	MIN 50' / MIN18"
LAYER 4		
MEDIUM W/O RW	2	MIN 30" / 12-18"
LARGE W/ RW	2	MIN 50' / MIN18"
ADDITIONAL		
RACKING WOOD	25	VARY / MIN 6"
SLASH	50 CY	
LIVE WILLOW STAKES	SEE TABLE 4, SHT C7.2	

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

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503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION	REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

WHS DETAILS 3

JOB NO. 20180019

SHEET NO. C4.3

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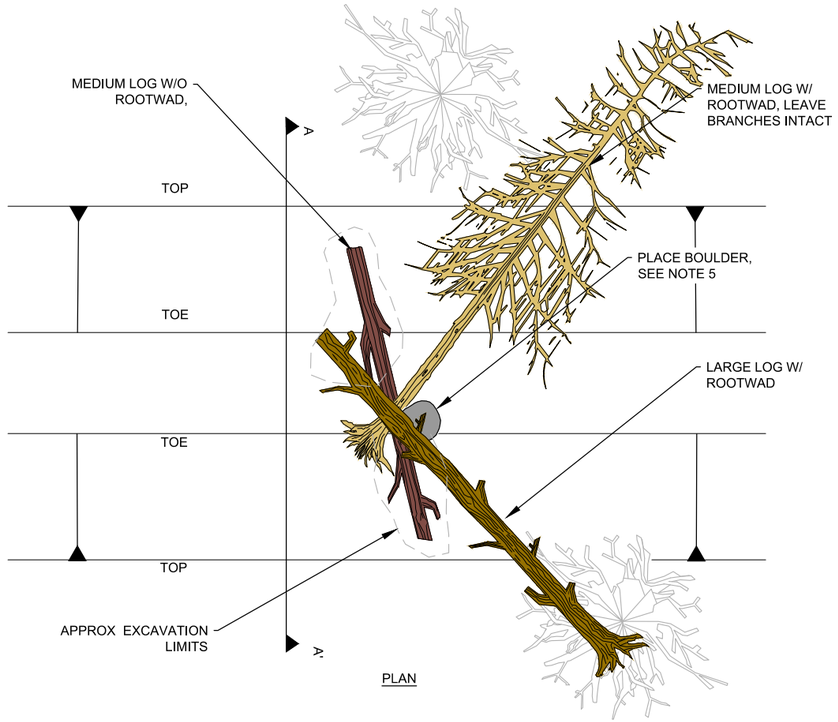
FINAL DESIGN
JAN 2022



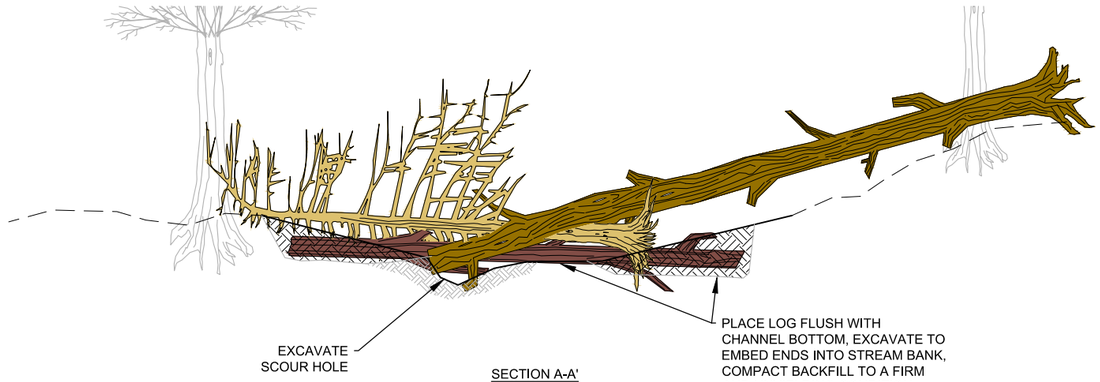
PLAN

WHS TYPE 5

Piece Summary		
Piece	QTY	LENGTH / DBH
MEDIUM W/ RW	1	MIN 40' / 12-18"
MEDIUM W/O RW	1	MIN 30' / 12-18"
LARGE W/ RW	1	MIN 50' / MIN 18"

LOG INSTALLATION NOTES:

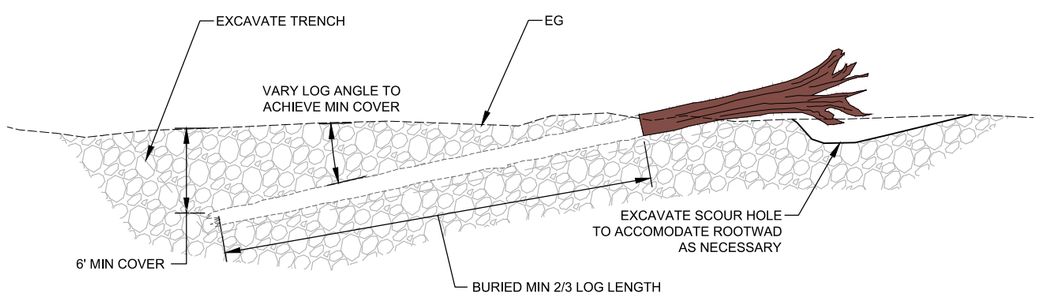
1. NATIVE STREAMBED BACKFILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO FIRM UNYIELDING CONDITION.
2. CONTRACTOR TO COORDINATE LOG PLACEMENT WITH ENGINEER PRIOR TO CONSTRUCTION. ENGINEER SHALL APPROVE PLACEMENT BEFORE COMPLETION.
3. WHERE POSSIBLE, LOGS PROTRUDING FROM BANK SHALL BE PLACED CANTILEVERED BETWEEN EXISTING LIVE TREES. THE SUPPORTING TREE NEAREST TO THE BANK SHALL BE ON THE DOWNSTREAM SIDE OF THE LOGS.
4. EMBEDDED LOGS SHALL BE INSTALLED BY EXCAVATING A TRENCH, PLACING THE LOG, BACKFILLING, AND MACHINE COMPACTING BACKFILL PER SPECIFICATIONS. WHERE EXCAVATION IS NOT POSSIBLE LOG ENDS SHALL BE TIED INTO NATIVE MATERIAL AND BURIED WITH NATIVE MATERIAL PER SPECIFICATIONS.
5. SALVAGE ADJACENT BOULDERS FOR USE IN STRUCTURE.
6. FOR BURIED KEYED LOGS EMBED A MINIMUM OF ⅔ THE TOTAL LENGTH OF THE LOG. MIN 6' COVER AT STEM TIP (MEASURED FROM EG).
7. EMBED ROOTWAD AS NEEDED TO ACHIEVE REQUIRED BURIAL DEPTH AND ALLOW FOR FULL CONTACT BETWEEN THE BOTTOM OF THE LOG AND THE BOTTOM OF THE CHANNEL. BACKFILL AROUND ROOTWAD WITH NATIVE STREAMBED MATERIAL.
8. SEE SPECIFICATIONS FOR TREE SPECIES. KEYED LOG DIAMETER MEASURED AT BREAST HEIGHT (DBH) AND LENGTH AS SHOWN ON PLANS.
9. CRUSH ALL EXPOSED SAW-CUT FACES.



SECTION A-A'

5 WHS TYPE 5 - SIDE CHANNEL JAM

NOT TO SCALE



6 WHS 6 - SINGLE KEYED LOG

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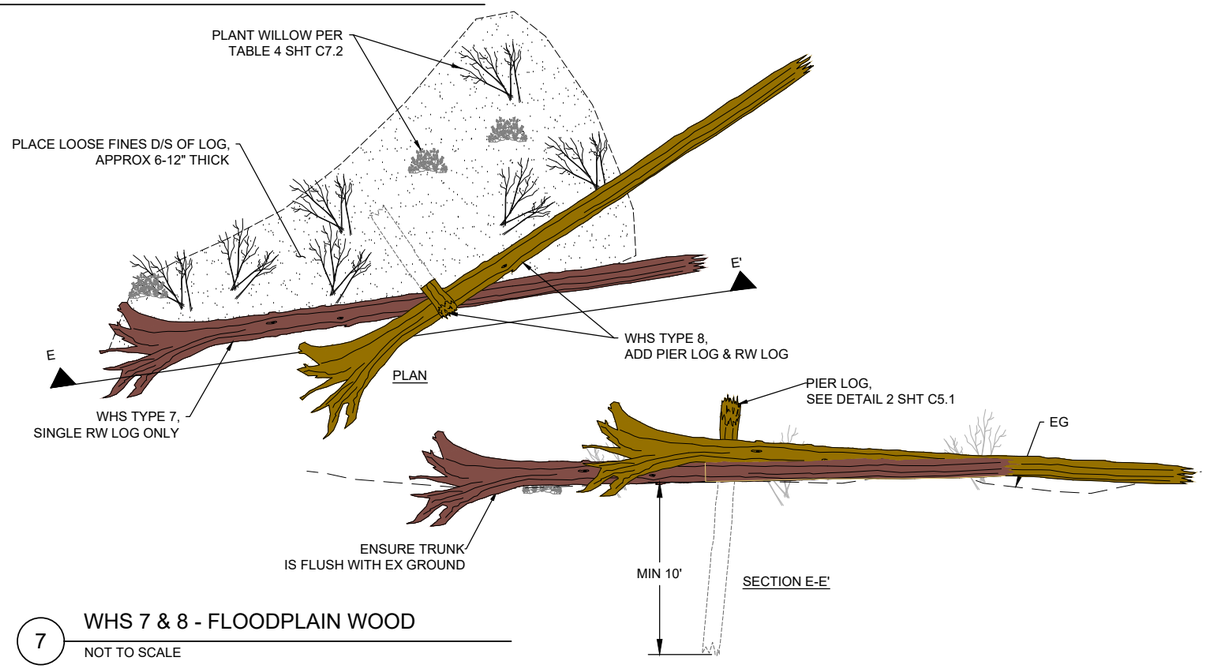

7 WHS 7 & 8 - FLOODPLAIN WOOD

NOT TO SCALE

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84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

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DALE, OR

WHS DETAILS 4

JOB NO. 20180019

SHEET NO. C4.4

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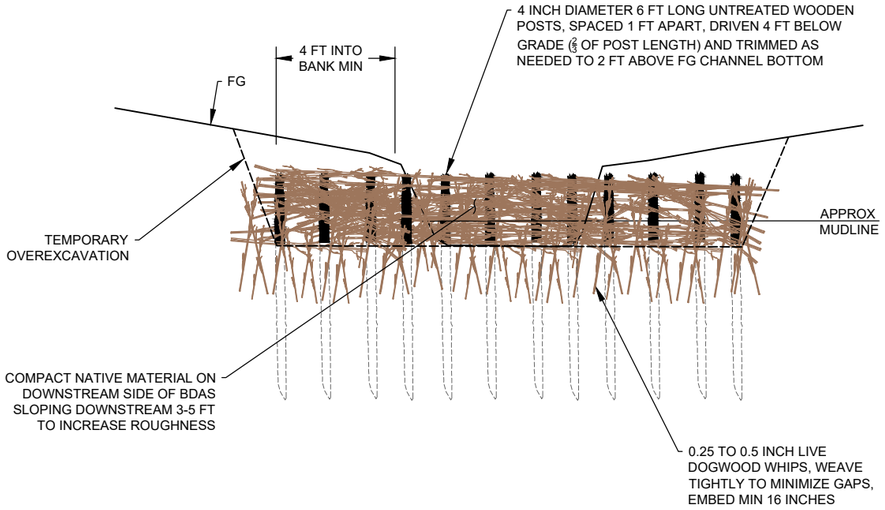

1 BEAVER DAM ANALOGUE DETAIL

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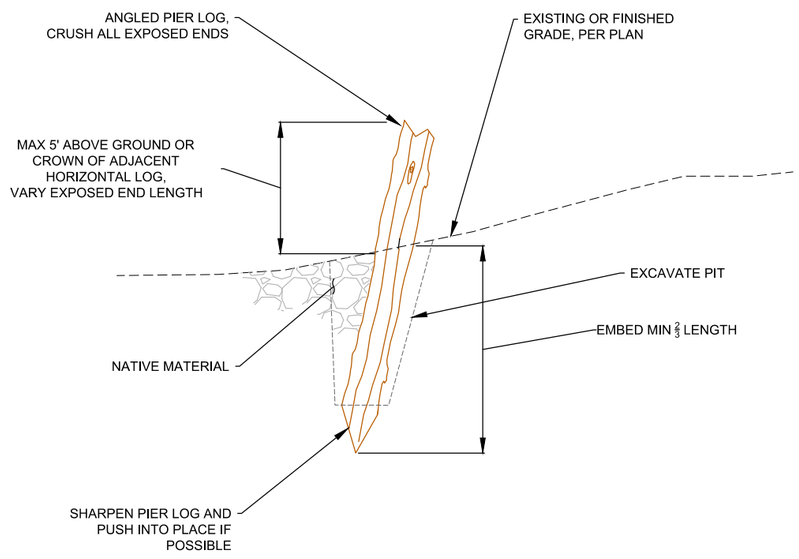

2 PIER LOG TYPICAL DETAIL

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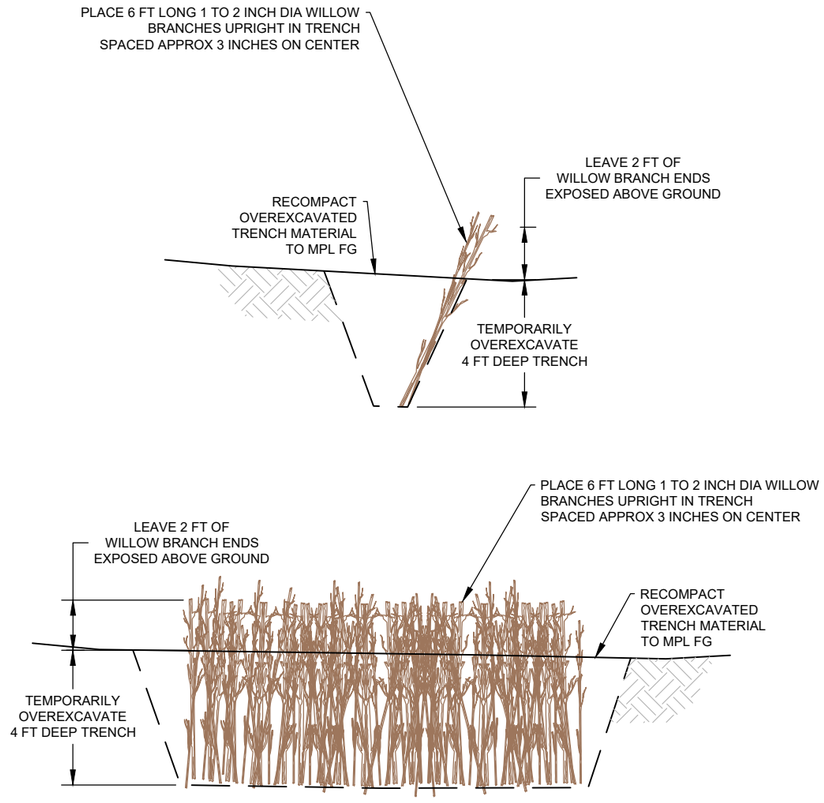

3 WILLOW TRENCH DETAIL

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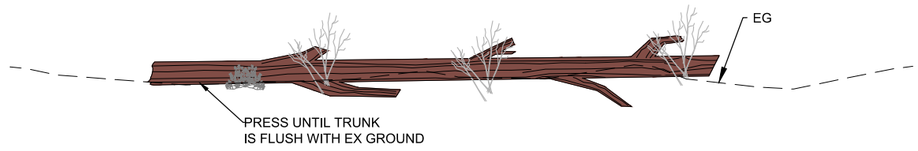

SECTION

4 WHS 9 - HABITAT WOOD

NOT TO SCALE

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84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

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WHS DETAILS 5

JOB NO. 20180019

SHEET NO. C4.5

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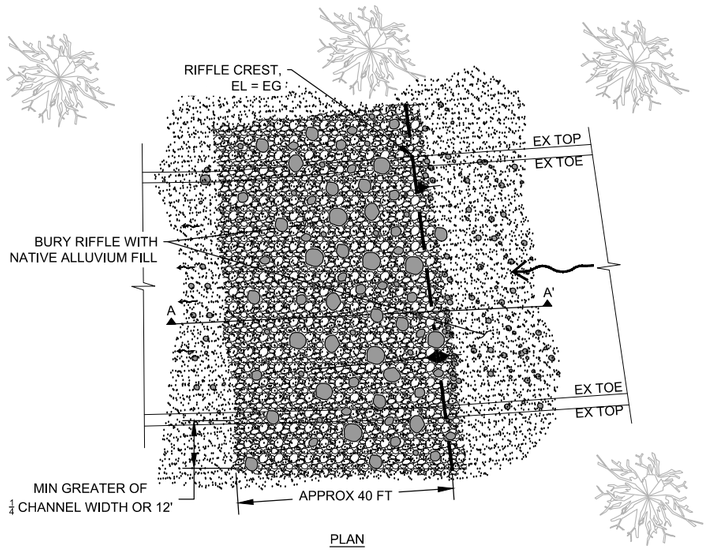
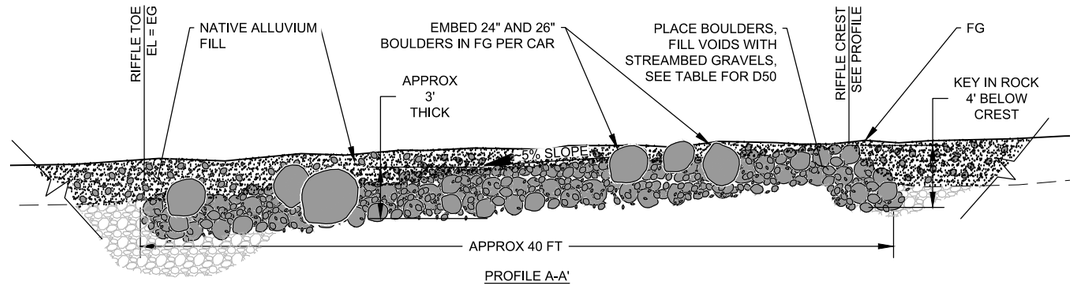
RIFFLE ROCK SIZE					
STA	10+00	13+50	15+50	85+50	91+00
TYPE	2	1	1	2	1
D50 (IN)	18	18	18	18	18

RIFFLE CONSTRUCTION NOTES:

1. RIFFLES SHALL BE CONSTRUCTED ACCORDING TO PLAN AND PROFILE ON SHEETS C03-C11.
2. BOULDERS AND NATIVE BACKFILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO FIRM, UNYIELDING CONDITION.
3. PLACE EXCAVATED STREAMBED MATERIAL AS TOP DRESSING ON ABOVE GRADE RIFFLE.
4. SEE SPECIFICATIONS FOR GRADATIONS



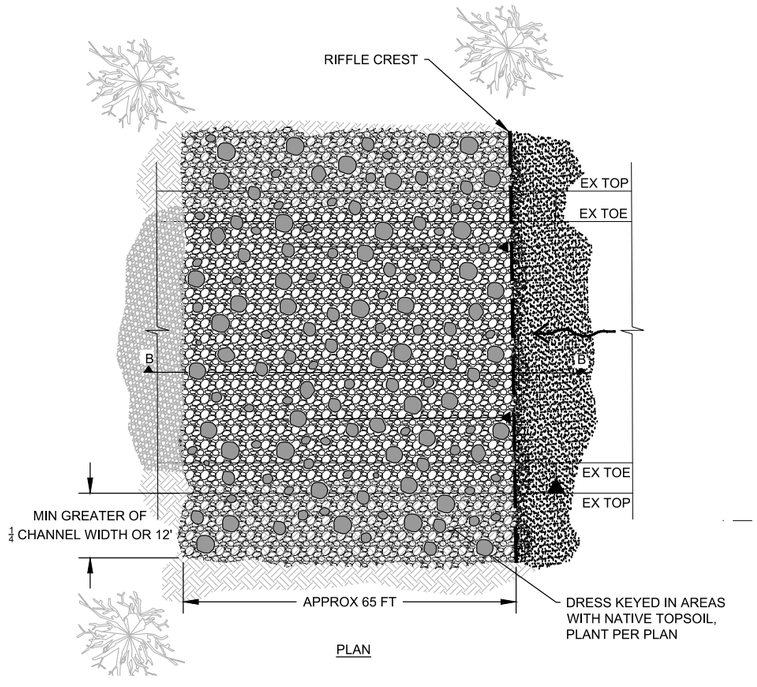
PLAN



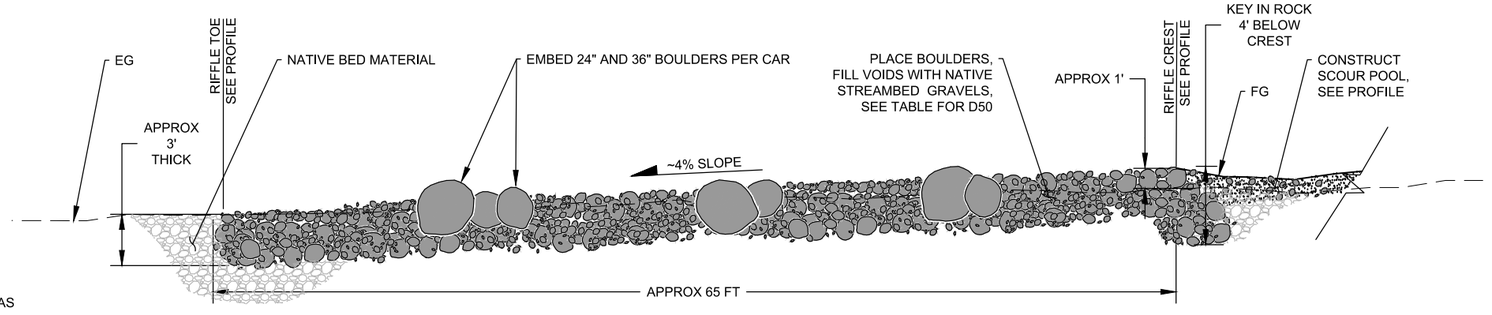
PROFILE A-A'

3 BURIED RIFFLE - TYPE 1

NOT TO SCALE



PLAN



PROFILE B-B'

4 ABOVE GRADE RIFFLE - TYPE 2

NOT TO SCALE

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84779PE
OREGON
MAR. 8, 2016
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RENEWS: 6/30/2023

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503.207.6688

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APPROVED BY NL

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DALE, OR

RIFFLE DETAILS

JOB NO. 20180019

SHEET NO. C5.1

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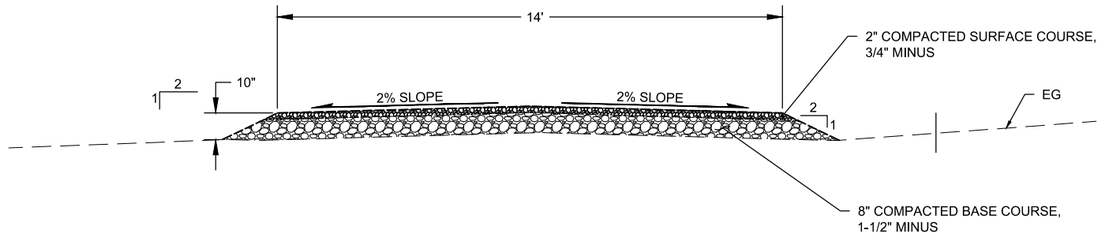

1 ROAD - TYPICAL SECTION A

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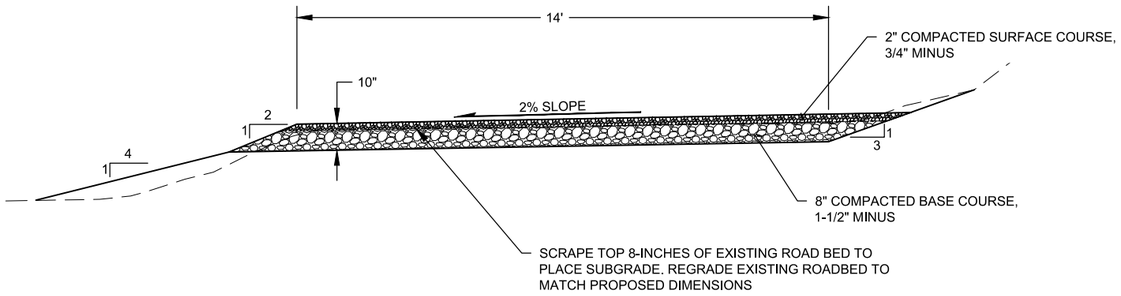
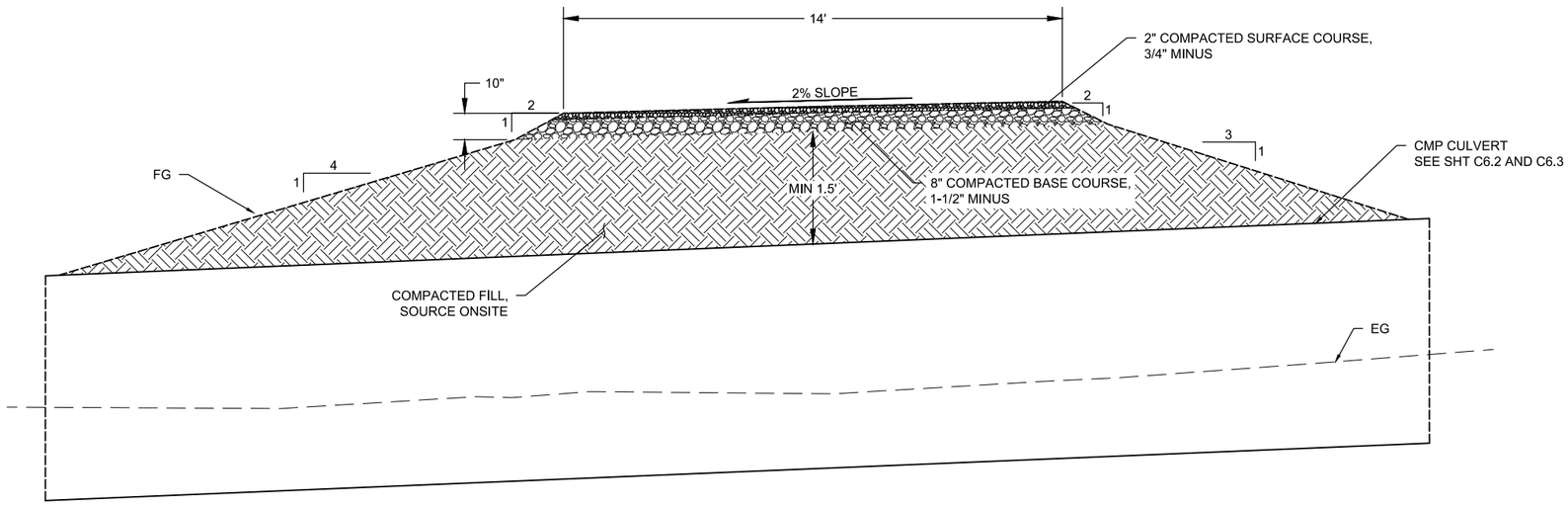


2 ROAD - TYPICAL SECTION B

NOT TO SCALE



3 ROAD CULVERT CROSSING - TYPICAL SECTION C

NOT TO SCALE

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MAR. 8, 2016
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RENEWS: 6/30/2023

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APPROVED BY NL

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ROAD SECTIONS

JOB NO. 20180019

SHEET NO. C6.1

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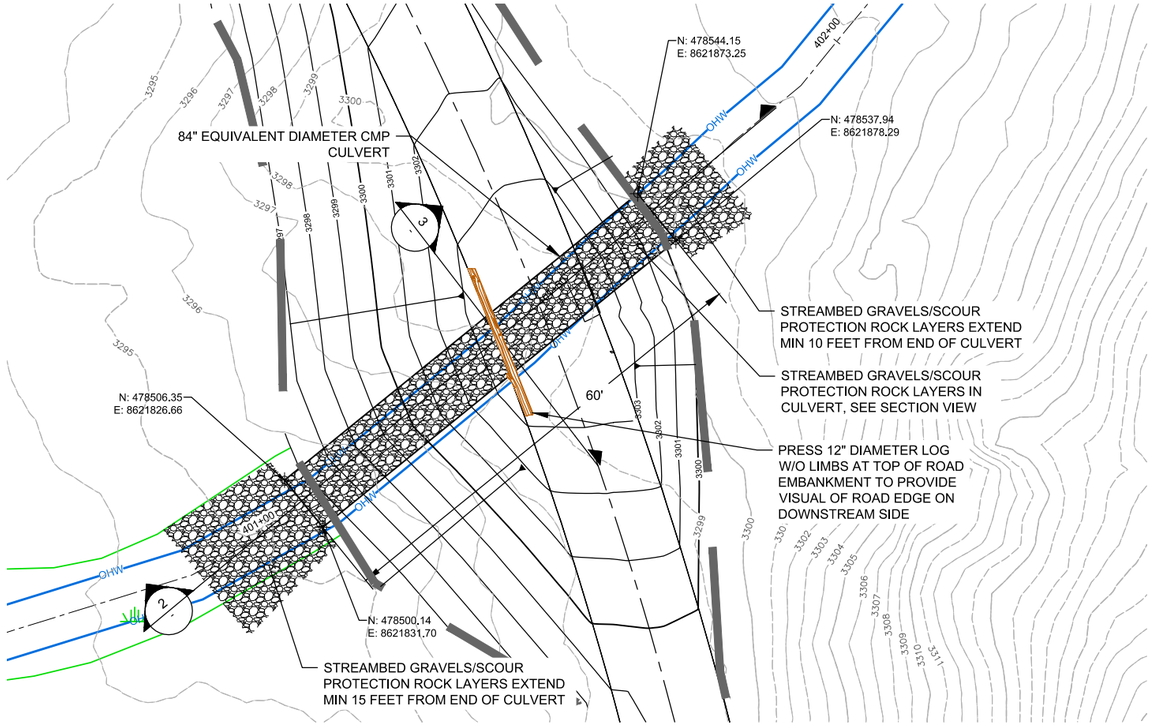


1 MOONSHINE CULVERT PLAN

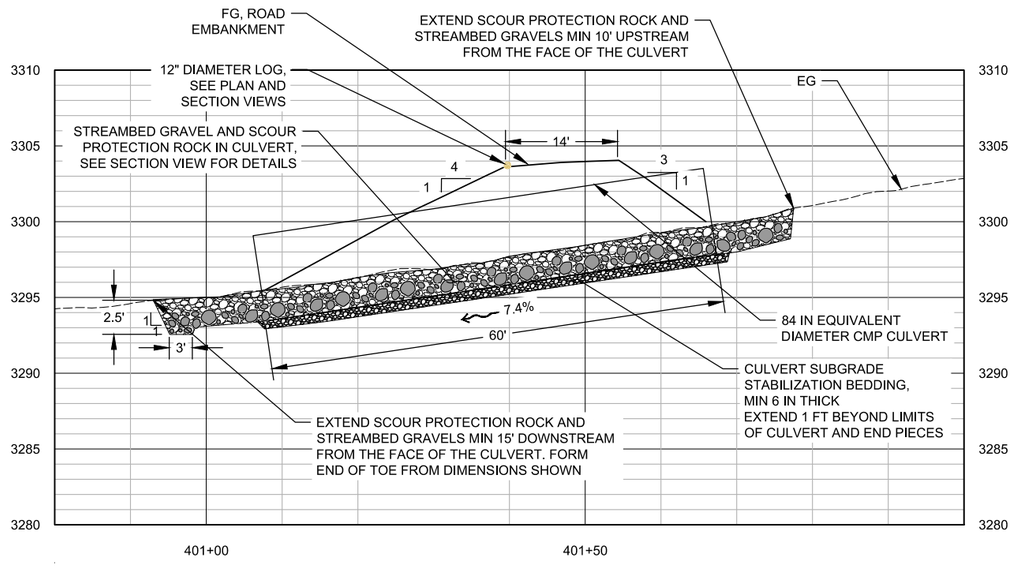
SCALE: 1"=10'

SCALE

10 0 5 10 20

SCALE FEET

N



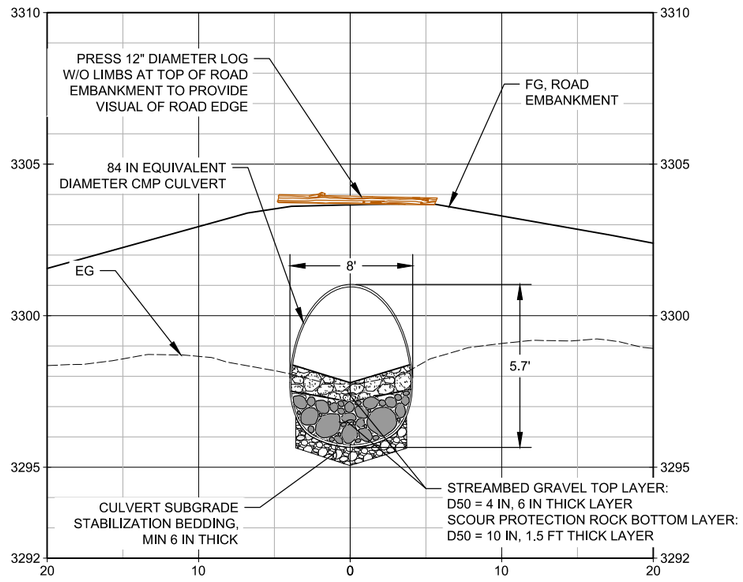
2 MOONSHINE CULVERT PROFILE

HORIZONTAL SCALE: 1"=5'
VERTICAL EXAGGERATION: 1:2

FINAL DESIGN
JAN 2022

NOTES:

1. CLEAR AND GRUB CHANNEL AREAS FOR CHANNEL CONSTRUCTION.
2. TOPOGRAPHY OF STREAMBED IS APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE ENGINEER PRIOR TO CONSTRUCTION OF CULVERTS.
3. OVEREXCAVATE 2.5' AND PLACE SUBGRADE STABILIZATION. COMPACT AND PREFORM CULVERT BED AND HAUNCHES TO A FIRM AND UNYIELDING CONDITION PRIOR TO PLACING THE CULVERT.
4. COUNTERSINK THE CULVERT TO ACCOUNT FOR STREAMBED MATERIAL.
5. CONSTRUCT CULVERT PER PLAN AND PROFILE HEREON AND AS DIRECTED IN THE FIELD BY THE ENGINEER. SEE SPECS FOR CULVERT INSTALLATION REQUIREMENTS.
6. PLACE STREAMBED MATERIAL WITHIN AND AT INLET/OUTLET OF CULVERT FOR SCOUR PROTECTION PER PLAN AND PROFILE HEREON.
7. REVEGETATE CHANNEL PER PLANTING PLAN AND PLANTING SCHEDULE.



3 MOONSHINE CULVERT TYPICAL SECTION

HORIZONTAL SCALE: 1"=5'
VERTICAL EXAGGERATION: 1:2

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
RENEWS: 6/30/2023

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MOONSHINE CREEK
CULVERT DETAILS

JOB NO. 20180019

SHEET NO. 6.2

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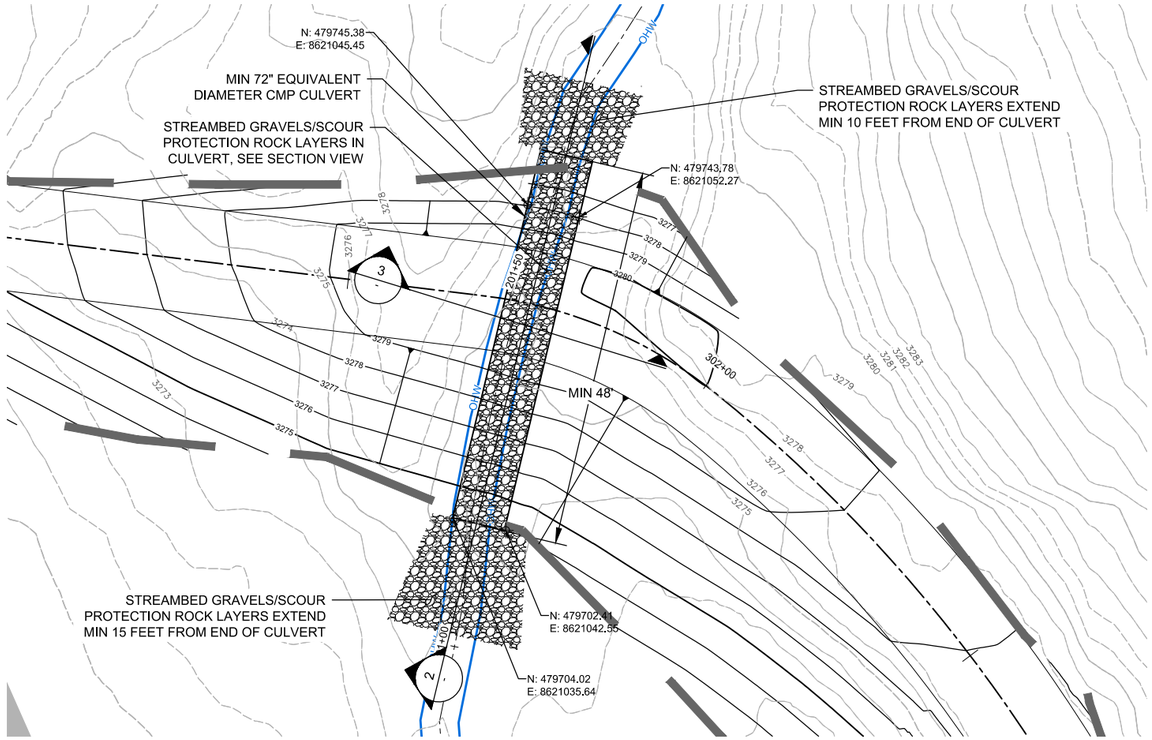


SCALE

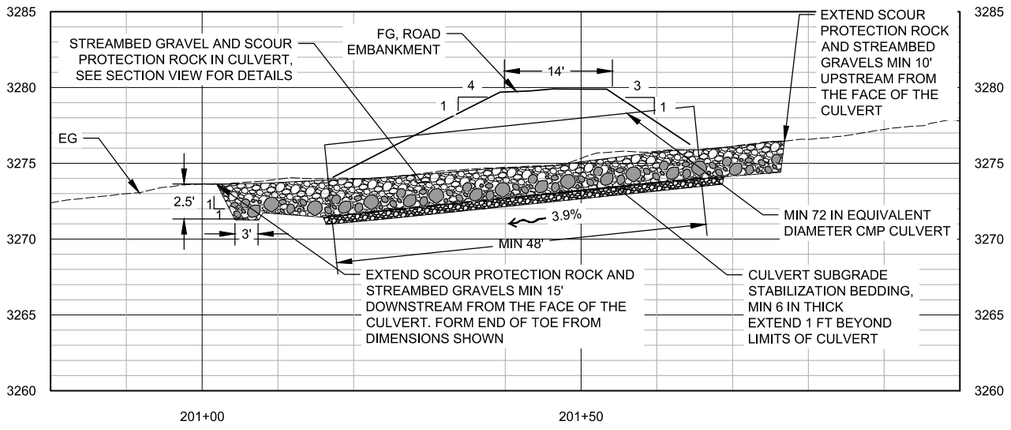
10 0 5 10 20

SCALE FEET

N

1 TRIBUTARY CULVERT PLAN

SCALE: 1"=10'



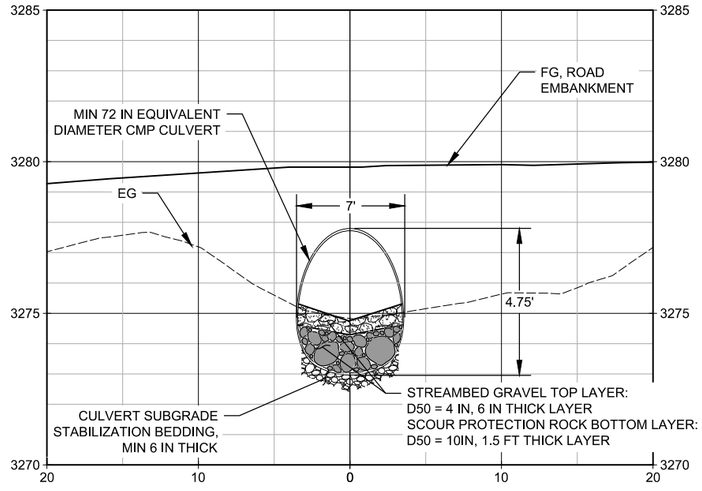
2 TRIBUTARY CULVERT PROFILE

HORIZONTAL SCALE: 1"=5'
VERTICAL EXAGGERATION: 1:2

FINAL DESIGN
JAN 2022

NOTES:

1. CLEAR AND GRUB CHANNEL AREAS FOR CHANNEL CONSTRUCTION.
2. TOPOGRAPHY OF STREAMBED IS APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BY THE ENGINEER PRIOR TO CONSTRUCTION OF CULVERTS.
3. OVEREXCAVATE 2.5' AND PLACE SUBGRADE STABILIZATION. COMPACT AND PREFORM CULVERT BED AND HAUNCHES TO A FIRM AND UNYIELDING CONDITION PRIOR TO PLACING THE CULVERT.
4. COUNTERSINK THE CULVERT TO ACCOUNT FOR STREAMBED MATERIAL.
5. CONSTRUCT CULVERT PER PLAN AND PROFILE HEREON AND AS DIRECTED IN THE FIELD BY THE ENGINEER. SEE SPECS FOR CULVERT INSTALLATION REQUIREMENTS.
6. PLACE STREAMBED MATERIAL WITHIN AND AT INLET/OUTLET OF CULVERT FOR SCOUR PROTECTION PER PLAN AND PROFILE HEREON.
7. REVEGETATE CHANNEL PER PLANTING PLAN AND PLANTING SCHEDULE.



3 TRIBUTARY CULVERT TYPICAL SECTION

HORIZONTAL SCALE: 1"=5'
VERTICAL EXAGGERATION: 1:2

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84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
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DALE, OR

UNNAMED TRIBUTARY
CULVERT DETAILS

JOB NO. 20180019

SHEET NO. 6.3

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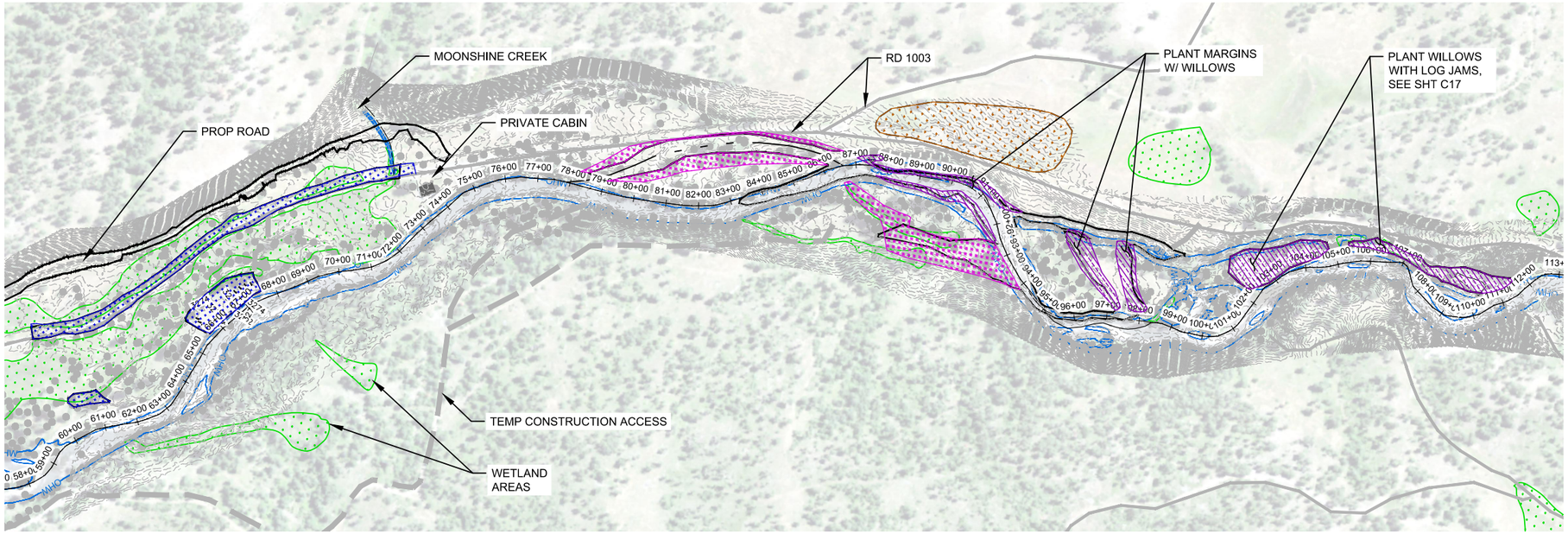
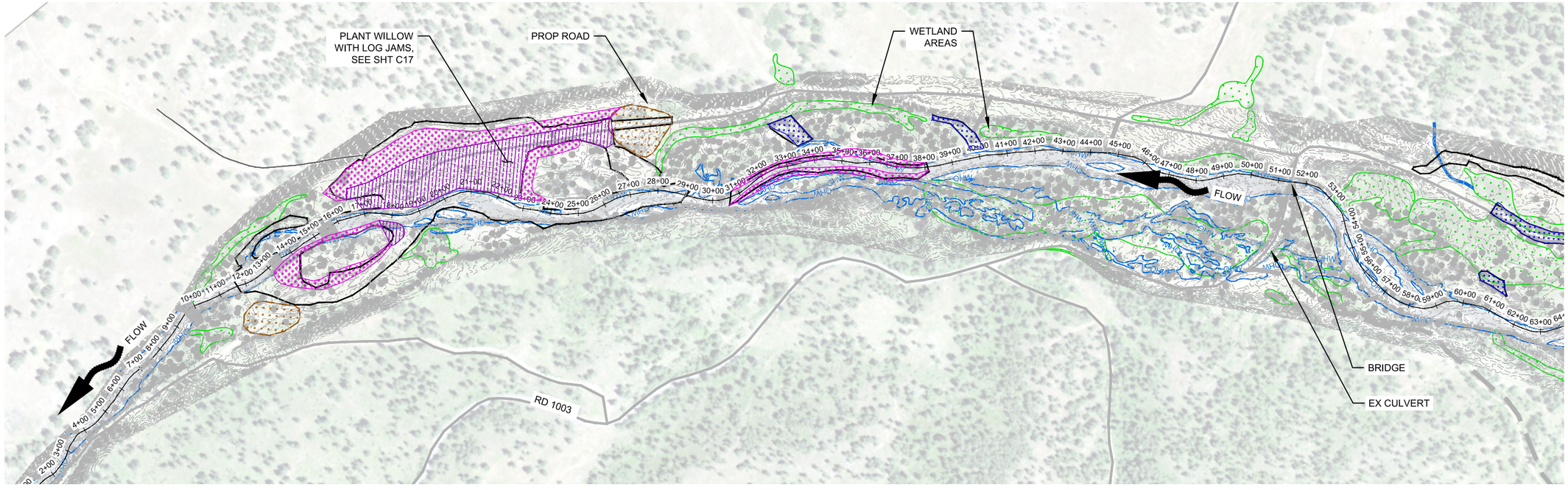


RIPARIAN PLANTINGS

WILLOW & DOGWOOD PLANTINGS

UPLAND SEED MIX

WETLAND SEED MIX



PLANTING PLAN
SCALE: 1" = 200'

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DALE, OR

PLANTING PLAN

JOB NO. 20180019

SHEET NO. C7.1

FINAL DESIGN
JAN 2022

GENERAL PLANTING NOTES

1. SEED ALL DISTURBED AREAS WITH THE APPROPRIATE SEED MIX.
2. SEED ALL STAGING AND ACCESS WITH UPLAND SEED AS SHOWN ON C7.1.
3. PLANT WILLOW STAKES ON THE CHANNEL MARGINS, AND ALL DISTURBED BANKS INCLUDING AREAS EXCAVATED TO EMBED THE WHS PER TABLE 4.
4. PLANT WILLOW STAKES ACCORDING TO HABITAT DETAILS, WHERE SPECIFIED ON SHEETS C2.1 TO C2.8, AND AS DETAILED ON WHS DETAIL SHEETS C4.1 TO C4.5.

TABLE 1: WETLAND SEED MIX (2.0 AC)

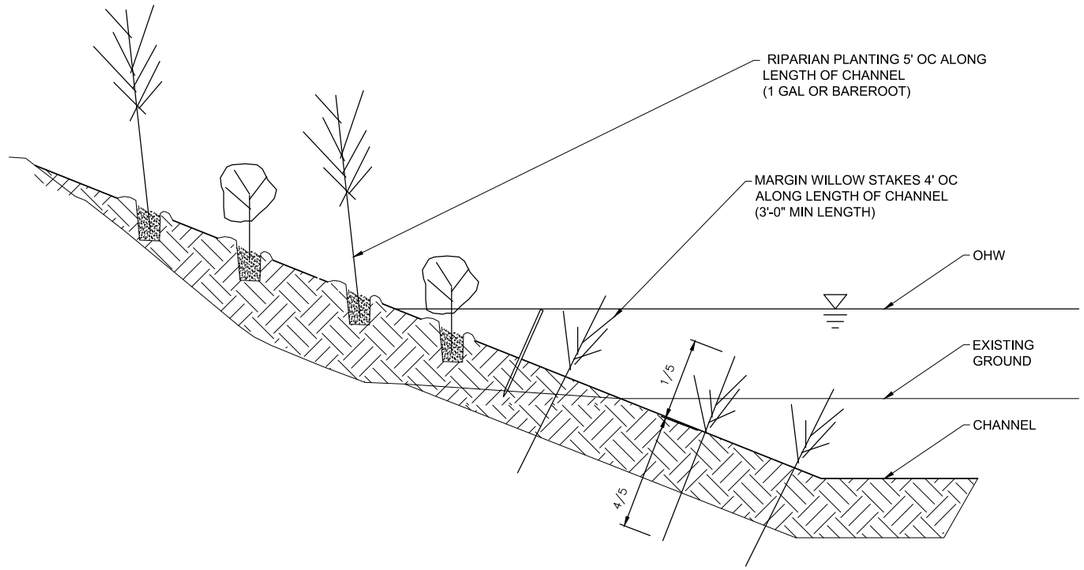
COMMON NAME	BOTANICAL NAME	COMPOSITION (% OF MIX)
BLUE WILDRYE	*ELYMUS GLAUCUS*	20
TUFTED HAIRGRASS	DESCHAMPSOA CESPITOSA	20
CALIFORNIA BROME	*BROMUS CARINATUS*	10
IDAHO FESCUE	*FESTUCA IDAHOENSIS*	10
TALL MANNAGRASS	*GLYCERIA ELATA*	10
COMMON YARROW	*ACHILIA MILLEFOLIUM*	5

TABLE 2: UPLAND SEED MIX (3.0 AC)

COMMON NAME	BOTANICAL NAME	COMPOSITION (% OF MIX)
BLUE WILDRYE	*ELYMUS GLAUCUS*	26
BLUEBUNCH WHEATGRASS	PSEUDOROEGNERIA SPICATA	14
IDAHO FESCUE	*FESTUCA IDAHOENSIS*	18
MOUNTAIN BROME	BROMUS MARGINATUS	18
PRAIRIE JUNEGRASS	KOELERIA MACRANTHA	14

TABLE 3: RIPARIAN PLANTING (5.0 AC)

COMMON NAME	BOTANICAL NAME	QTY	CONDITION	SPACING
BLACK COTTONWOOD	*POPULUS TRICHOCARPA*	4500	1 GAL	5' OC
NINEBARK	*DESCHAMPSIA CESPITOSA*	1200	1 GAL	5' OC
QUAKING ASPEN	*POPULUS TREMULOIDES*	1000	1 GAL	5' OC
RED-OSIER DOGWOOD	*CORNUS SERICEA*	1200	1 GAL	5' OC
DOUGLAS HAWTHORN	*CRATAGUS DOULASII*	600	1 GAL	5' OC
SERVICE BERRY	AMELANCHIER ALNIFOLIA SSP. CUSICHII	600	1 GAL	5' OC



TYPICAL CHANNEL MARGIN PLANTING SECTION
SCALE: NTS

TABLE 4: WILLOW DOGWOOD PLANTING

COMMON NAME	BOTANICAL NAME	QTY	CONDITION	SPACING	LOCATION
PACIFIC WILLOW	*SALIX LASIANDRA*	2800	3-5' LIVESTAKES	4' OC	CHANNEL MARGINS (1.0 AC)
PACIFIC WILLOW	*SALIX LASIANDRA*	1800	3-5' LIVESTAKES	30 PER	LOG JAMS
PACIFIC WILLOW	*SALIX LASIANDRA*	200	3-5' LIVESTAKES	200 PER	WHS TYPE 4
RED-OSIER DOGWOOD	*CORNUS SERICEA*	300	6' LIVE WHIPS	50 PER	BDA
COYOTE WILLOW	*SALIX EXIGUA*	650	6' LIVESTAKES	50 PER	WILLOW TRENCH

REGISTERED PROFESSIONAL ENGINEER
AMANDA L. JONES
84779PE
OREGON
MAR. 8, 2016
RENEWS: 6/30/2023

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1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY NL, AJ
DRAWN BY AD, RW
CHECKED BY AJ
APPROVED BY NL

NO.	DATE	DESCRIPTION
		REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

PLANTING SCHEDULE

JOB NO. 20180019

SHEET NO. C7.2

GENERAL NOTES FOR EROSION, SEDIMENT & POLLUTANT CONTROL

1. EROSION, SEDIMENT AND POLLUTANT CONTROL IS REQUIRED FOR THIS PROJECT.
2. PREPARE AN EROSION, SEDIMENT AND POLLUTANT CONTROL PLAN (ESPCP) BEFORE BEGINNING WORK. KEEP A COPY OF THE ESPCP ON SITE AT ALL TIMES DURING THE PROJECT.
3. THE EROSION AND SEDIMENT CONTROL FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR THE ANTICIPATED SITE AND SEASONAL CONDITIONS. UPGRADE THESE FACILITIES TO ADDRESS CHANGING WORK OR WEATHER CONDITIONS.
4. SELECT BEST MANAGEMENT PRACTICES (BMPs) FROM THE FOLLOWING DOCUMENTS: 1) THE STANDARD ODOT CONSTRUCTION SPECIFICATIONS AND 2) THE PROJECT SPECIAL PROVISIONS.
5. INSTALL, MONITOR, REPLACE AND UPGRADE ALL FACILITIES AND MEASURES. PERFORM MAINTENANCE TO ENSURE THEIR CONTINUED FUNCTIONING.
6. INSPECT AND MAINTAIN ALL FACILITIES AND MEASURES UNTIL WORK AREAS ARE RESURFACED OR STABILIZED.
7. COMPLETE AN EROSION CONTROL MONITORING FORM AFTER EACH INSPECTION. INCLUDE THE INSPECTION DATE AND TIME. RETAIN THESE COMPLETED FORMS ON SITE AND PROVIDE THEM UPON REQUEST.
8. NO VISIBLE AND MEASURABLE SEDIMENT OR POLLUTANT SHALL EXIT THE SITE, ENTER A PUBLIC RIGHT-OF-WAY OR BE DEPOSITED INTO ANY WATER BODY OR STORM DRAINAGE SYSTEM.
9. FOLLOWING A STORM EVENT, INSPECT AND ADJUST, REPAIR, IMPROVE OR REPLACE ALL DEFICIENT OR FAILING FACILITIES AND MEASURES.
10. STABILIZE ALL EXPOSED SOIL IMMEDIATELY FOLLOWING GROUND DISTURBING ACTIVITY.
11. STABILIZE AND PROTECT STOCKPILED SOIL WITH APPROVED MEASURES.
12. REMOVE EROSION AND SEDIMENT CONTROL FACILITIES AFTER THE PROJECT IS COMPLETED AND ACCEPTED.

TURBIDITY MONITORING FREQUENCY

SITE CONDITION	MINIMUM FREQUENCY
1. ACTIVE PERIOD	DAILY WHEN STORMWATER RUNOFF, INCLUDING RUNOFF FROM SNOW MELT, IS OCCURRING. AT LEAST ONCE EVERY 14 DAYS, REGARDLESS OF WHETHER STORMWATER RUNOFF IS OCCURRING.
2. PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY	ONCE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURE ARE IN WORKING ORDER. ANY NECESSARY MAINTENANCE AND REPAIR MUST BE MADE PRIOR TO LEAVING THE SITE.
3. INACTIVE PERIODS GREAT THAN FOURTEEN (14) CONSECUTIVE CALENDAR DAYS	ONCE EVERY MONTH
4. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER	IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.
5. PERIODS DURING WHICH DISCHARGE IS UNLIKELY DUE TO FROZEN CONDITIONS	MONTHLY. RESUME MONITORING IMMEDIATELY UPON MELT, OR WHEN WEATHER CONDITIONS MAKE DISCHARGES LIKELY.

ODEQ STANDARD ESCP NOTES:

1. HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (SCHEDULE A.8.C.I.(3))
2. ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS. (SCHEDULE A.12.B AND SCHEDULE B.1)
3. INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS. (SCHEDULE B.1.C AND B.2)
4. RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, THE ABOVE RECORDS MUST BE RETAINED BY THE PERMIT REGISTRANT BUT DO NOT NEED TO BE AT THE CONSTRUCTION SITE. (SCHEDULE B.2A.C)
5. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT. (SCHEDULE A 8.A)
6. THE ESCP MUST BE ACCURATE AND REFLECT SITE CONDITIONS. (SCHEDULE A.12.C.I)
7. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT WITHIN 10 DAYS. (SCHEDULE A.12.C.IV. AND V)
8. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. (SCHEDULE A.7.A.III)
9. IDENTIFY, MARK, AND PROTECT (BY CONSTRUCTION FENCING OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS. (SCHEDULE A.8.C.I.(1) AND (2))
10. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SCHEDULE A.7.A.V)
11. MAINTAIN AND DELINEATE ANY EXISTING NATURAL BUFFER WITHIN THE 50-FEET OF WATERS OF THE STATE. (SCHEDULE A.7.B.I.AND (2(A)(B))
12. INSTALL PERIMETER SEDIMENT CONTROL, INCLUDING STORM DRAIN INLET PROTECTION AS WELL AS ALL SEDIMENT BASINS, TRAPS, AND BARRIERS PRIOR TO LAND DISTURBANCE. (SCHEDULE A.8.C.I.(5))
13. CONTROL BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND DOWNSTREAM CHANNELS AND STREAMBANKS. (SCHEDULE A.7.C)
14. CONTROL SEDIMENT AS NEEDED ALONG THE SITE PERIMETER AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION, BOTH INTERNALLY AND AT THE SITE BOUNDARY. (SCHEDULE A.7.D.I)
15. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. (SCHEDULE A.8.C.I.(6))
16. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES. TEMPORARY OR PERMANENT STABILIZATIONS MEASURES ARE NOT REQUIRED FOR AREAS THAT ARE INTENDED TO BE LEFT UNVEGETATED, SUCH AS DIRT ACCESS ROADS OR UTILITY POLE PADS.(SCHEDULE A.8.C.II.(3))
17. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. (SCHEDULE A.8.C.I.(7))
18. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: CONSTRUCTION ENTRANCE, GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND- DISTURBING ACTIVITIES. (SCHEDULE A 7.D.II AND A.8.C.I(4))
19. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE. (SCHEDULE A.7.D.II.(5))
20. CONTROL PROHIBITED DISCHARGES FROM LEAVING THE CONSTRUCTION SITE, I.E., CONCRETE WASH-OUT, WASTEWATER FROM CLEANOUT OF STUCCO, PAINT AND CURING COMPOUNDS. (SCHEDULE A.6)
21. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, FERTILIZER, PESTICIDES AND HERBICIDES, PAINTS, SOLVENTS, CURING COMPOUNDS AND ADHESIVES FROM CONSTRUCTION OPERATIONS. (SCHEDULE A.7.E.I.(2))
22. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SCHEDULE A.7.E.III.)
23. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL. (SCHEDULE A 7.A.IV)
24. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE. (SCHEDULE A.9.B.III)
25. IF AN ACTIVE TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS. (SCHEDULE A.9.D)
26. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR. (SCHEDULE A 7.B)
27. AS NEEDED BASED ON WEATHER CONDITIONS, AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS. (SCHEDULE A.7.E.II.(2))
28. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND BARE GROUND ACTIVITIES DURING WET WEATHER. (SCHEDULE A.7.A.I)
29. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL. (SCHEDULE A.9.C.I)
30. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT AND BEFORE BMP REMOVAL. (SCHEDULE A.9.C.I)
31. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT. (SCHEDULE A.9.C.III & IV)
32. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN-UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME. (SCHEDULE A.9.B.I)
33. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS. (SCHEDULE A.9.B.II)
34. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE. (SCHEDULE A.7.F.I)
35. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.7.F.II)
36. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, ALL TEMPORARY EROSION CONTROLS AND RETAINED SOILS MUST BE REMOVED AND DISPOSED OF PROPERLY, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. (SCHEDULE A.8.C.III(1) AND D.3.C.II AND III)

FINAL DESIGN
JAN 2022

REGISTERED PROFESSIONAL ENGINEER
84779PE
OREGON
MAR. 8, 2016
AMANDA L. JONES
Amanda Jones
RENEWS: 6/30/2023

WOLF WATER RESOURCES, INC.
1001 SE WATER AVE, SUITE #180
PORTLAND, OR 97214
503.207.6688

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
NL, AJ	AD, RW	AJ	NL

NO.	DATE	DESCRIPTION	REVISION

CTUIR
DESOLATION CREEK
REACH 3 RESTORATION
DALE, OR

ESC NOTES

JOB NO. 20180019

SHEET NO. ESC1.1

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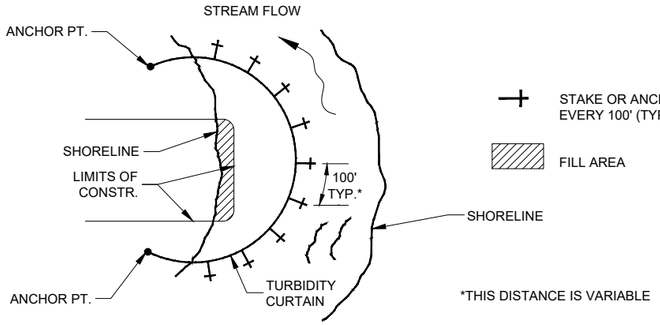
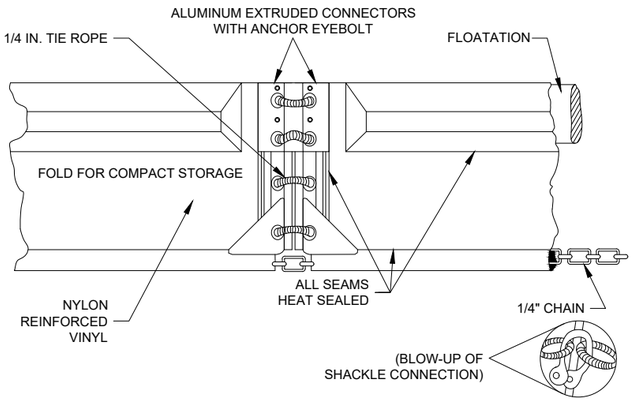
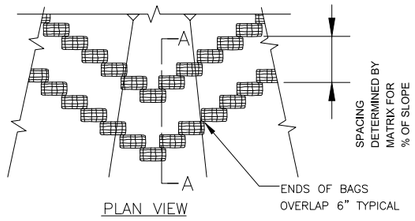
FINAL DESIGN
JAN 2022



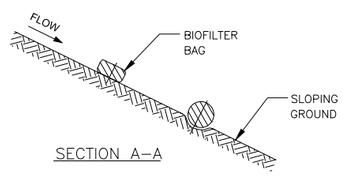


1 - TURBIDITY CURTAIN TYPE 2
NOT TO SCALE

NOTES:
STAKING OF BAGS OR ROLLS MAY BE REQUIRED WITH EITHER METHOD. USING (2) 1"x 2" WOOD STAKES OR APPROVED EQUAL PER BAG OR ROLL.

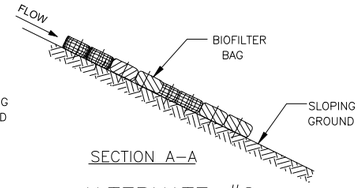


PLAN VIEW



SECTION A–A

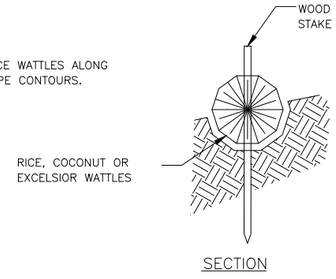
ALTERNATE #1
DRAWING NOT TO SCALE



SECTION A–A

ALTERNATE #2
DRAWING NOT TO SCALE

PROFILE



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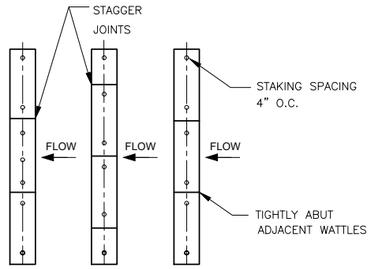

PLAN VIEW

NOTES:
1. STAKING SPECIFICATIONS:
   a. 1"x2" WOODEN STAKES
   b. ADDITIONAL STAKES MAY BE INSTALLED ON DOWNHILL SIDE OF WATTLES, ON STEEP SLOPE OR HIGHLY EROSIVE SOILS.

2 - STRAW WATTLEs
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
AMANDA L. JONES
84779PE
OREGON
MAR. 8, 2016
RENEWS: 6/30/2023

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SHEET NO. ESC1.2

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