

**WORKING DRAFT
FOR REVIEW AND
REVISION**

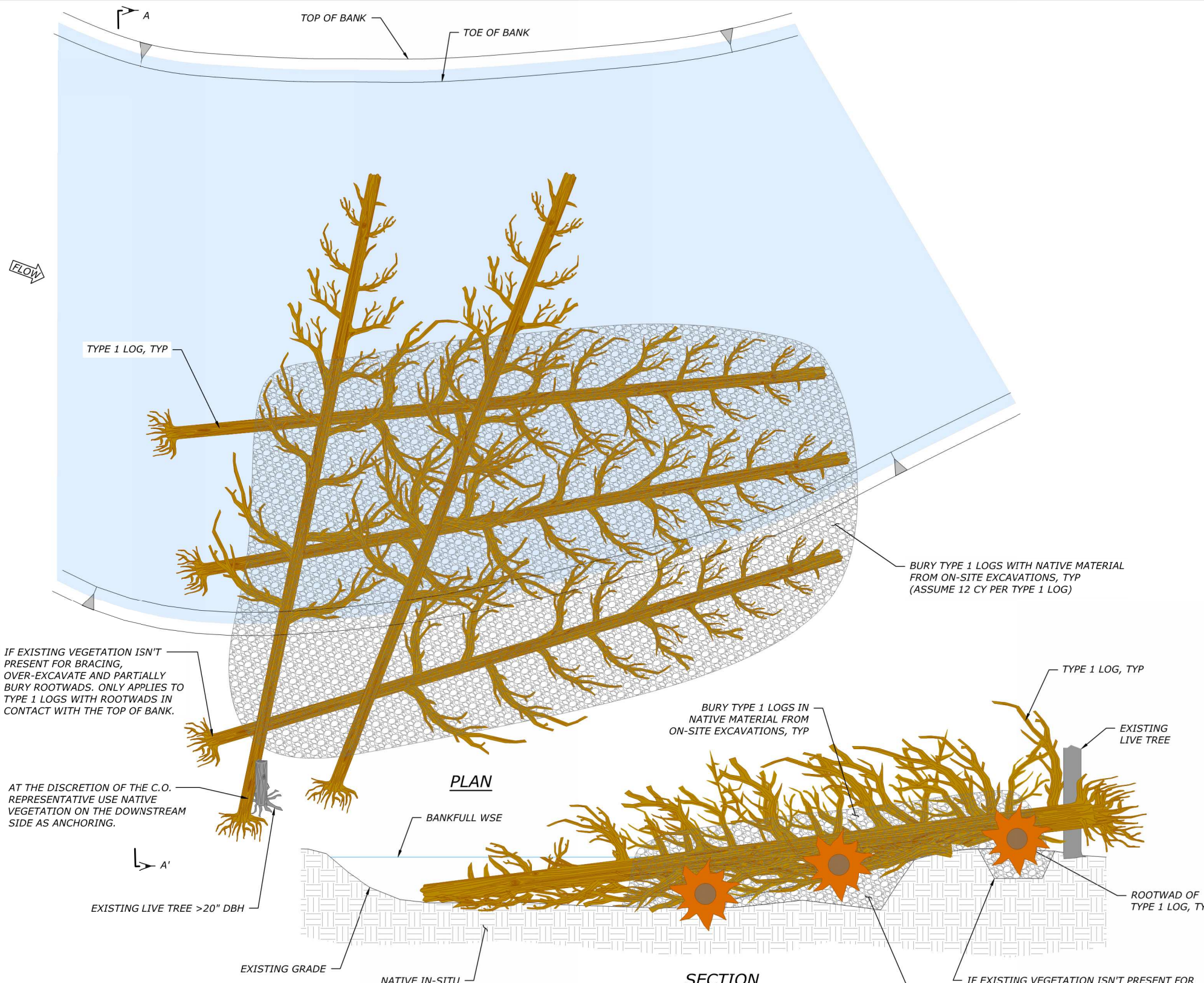
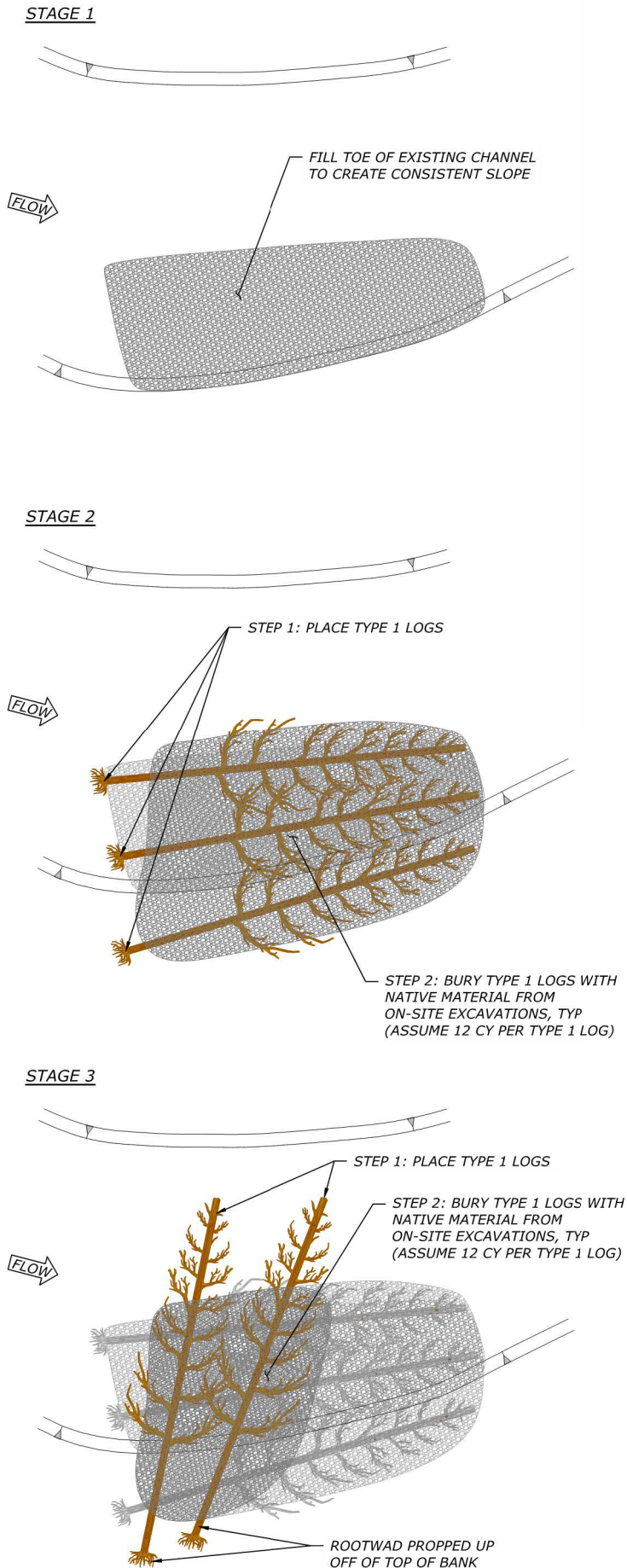
DATE: 10/15/2025
DESIGNED: JF, RR, ZS, MG
APPROVED: JF

DRAWING NAME
DETAILS

COLLECTOR JAM

DRAWING NO.
D12
SHEET 52 OF 57

STRUCTURE SEQUENCING



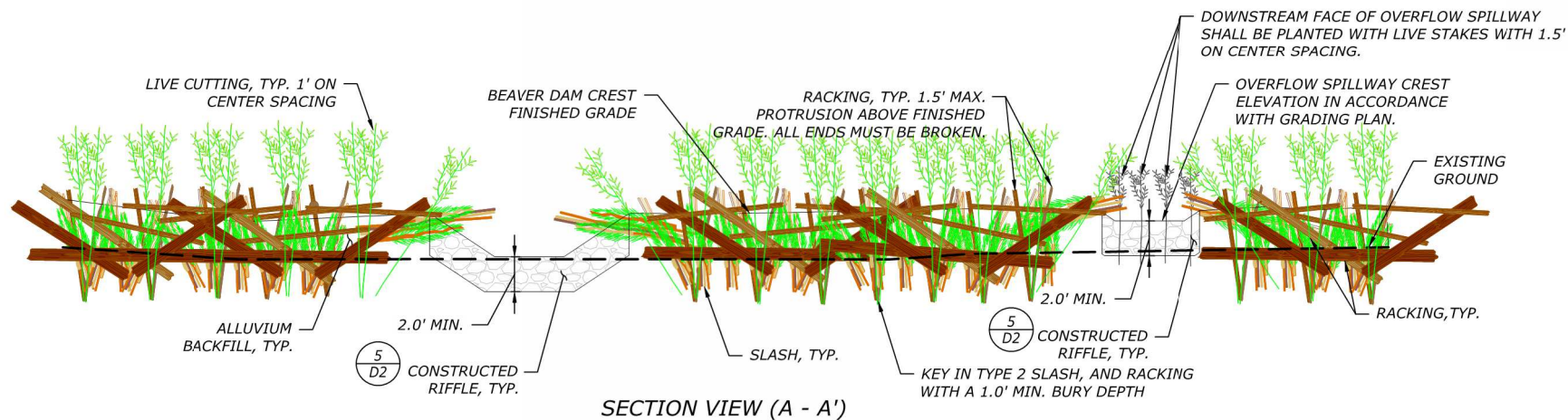
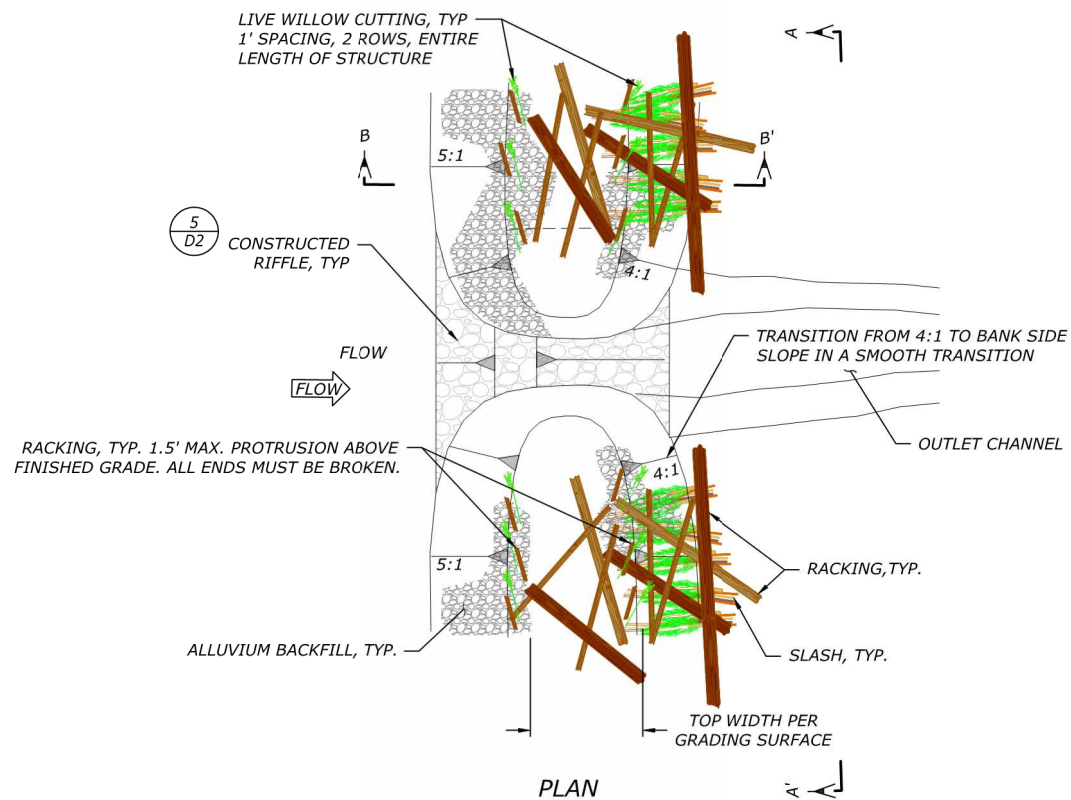
- NOTES:**
- THIS DETAIL COVERS THE CONSTRUCTION SCENARIO WHERE WOOD IS DELIVERED VIA HELICOPTER AND PLACED WITH EQUIPMENT
 - THE EXACT LOCATION OF STRUCTURE SHALL BE LOCATED PRIOR TO INSTALLATION FOR APPROVAL BY THE CONTRACTING OFFICER'S REPRESENTATIVE.
 - SEE STRUCTURE SCHEDULE FOR NUMBER OF STRUCTURES, LOCATIONS, LOGS, AND ASSOCIATED MATERIAL QUANTITIES.
 - WHOLE TREES SHALL BE HANDLED TO REDUCE LOSS OF LIMBS, FOLIAGE, ETC..
 - RACKING AND SLASH MATERIAL SHALL BE INCORPORATED INTO THE STRUCTURE WHILE PLACING LAYERS SUCH THAT IT IS WOVEN INTO STRUCTURE IN BETWEEN PLACED LOGS AT EACH STEP THROUGHOUT CONSTRUCTION AS DIRECTED BY THE CONTRACTING OFFICER'S REPRESENTATIVE.
 - LOG PLACEMENT MAY BE ADJUSTED IN THE FIELD BY THE CONTRACTING OFFICER TO PROVIDE VARIABILITY FROM STRUCTURE TO STRUCTURE.

COLLECTOR JAM MATERIAL SCHEDULE					
LOG TYPE	SIZE (DBH)	ROOTWAD	MIN. ROOTWAD DIA. (FT)	BRANCHES	QUANTITY
TYPE 1	18" (MIN.)	YES	4.5	YES	5 EA
RACKING BUNDLES	4" - 16"	OPTIONAL	NA	YES	1 EA (ONE BUNDLE)

FILE: R:\PROJECTS\WALLOVA_HUC1418\BEAR_CR_OD\DWG\PRODUCTION\BEAR-CREEK-DETAILS.DWG, SAVED BY: ZACH SIDMAN, PLOT DATE: 10/14/2025 4:19 PM

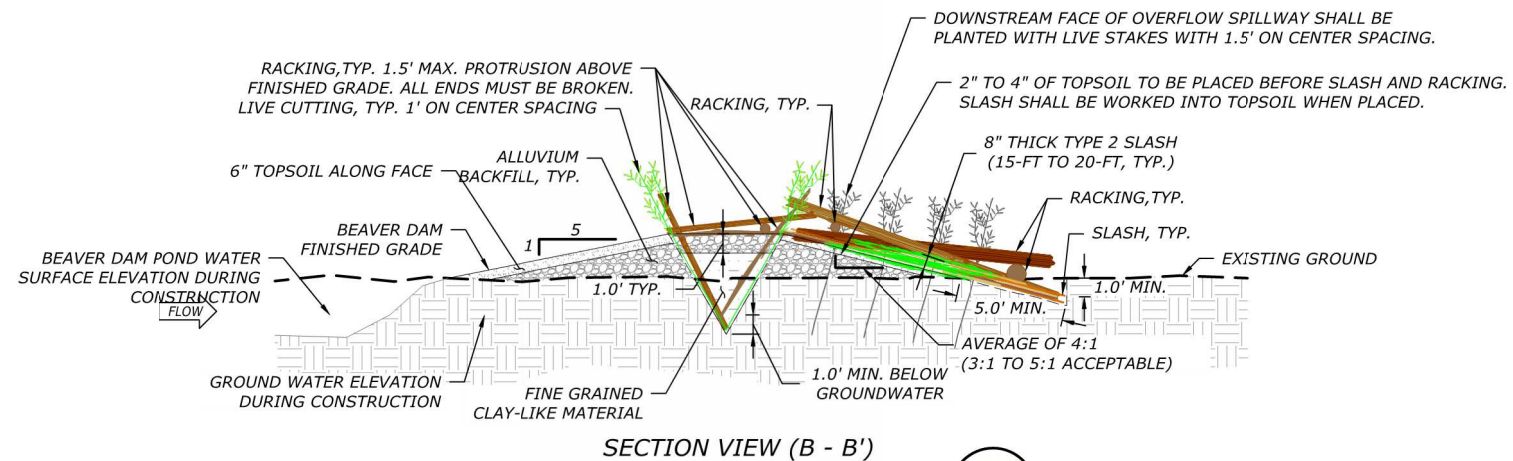


EXAMPLE OF A BEAVER DAM ANALOGUE ON A SIDE CHANNEL OF THE LEMHI RIVER IN IDAHO. PHOTO WAS TAKEN DURING SEASONAL PEAK FLOW IN THE SPRING, FLOW IS LEFT TO RIGHT.



FLOODPLAIN RELICT BDA MATERIAL SCHEDULE (PER LINEAR FOOT)

LOG TYPE	SIZE (DBH)	ROOTWAD	MIN. ROOTWAD DIA. (FT)	BRANCHES	QUANTITY (PER LF)
RACKING BUNDLES	4" - 16"	OPTIONAL	NA	YES	0.02 EA



INSTALLING FLOODPLAIN RELICT BEAVER DAM STRUCTURES:

1. THE ENGINEER SHALL SUPERVISE THE INSTALLATION OF THE FIRST RELICT BEAVER DAM STRUCTURE TO INSURE PROPER INSTALLATION. THE CONTRACTOR MAY PROCEED WITH UNSUPERVISED INSTALLATION OF THE REST OF THE STRUCTURES, ONCE THE ENGINEER HAS SIGNED OFF THAT THEY ARE PROPERLY TRAINED.
2. ALL STRUCTURES SHALL BE PLACED AS SHOWN ON THE DRAWINGS.

SLASH AND RACKING:

1. PLACE SLASH AND RACKING SUCH THAT PIECES ARE INTERLACED WITH PARTIALLY BURIED MEMBERS. NO RACKING AND SLASH SHALL BE PLACED LOOSELY ON THE GROUND SUCH THAT IT WOULD FLOAT AWAY IN THE EVENT OF HIGH WATER.
2. RACKING PIECES SHALL NOT EXTEND BEYOND 1.5' ABOVE FINISHED GRADE.

RELIC BEAVER DAM BACKFILL MATERIAL:

1. BEAVER DAM CORE BACKFILL MATERIAL SHALL CONSIST OF FINE GRAINED CLAY-LIKE MATERIAL LARGELY FREE OF GRAVELS AND COBBLES TO REDUCE PERMEABILITY AND TO ALLOW INFILLING OF VOID SPACE BETWEEN RACKING AND SLASH MATERIAL.
2. BEAVER DAM GENERAL BACKFILL MATERIAL SHALL BE A MIX OF COBBLES, GRAVELS, AND FINES TO REDUCE PERMEABILITY. MATERIAL SHALL BE GENERATED FROM STOCKPILES OF EXCAVATED MATERIAL FROM PROJECT EXCAVATIONS.
3. BACKFILL MATERIALS SHALL BE APPROVED BY THE CONTRACTING OFFICER OR ENGINEER PRIOR TO PLACEMENT.

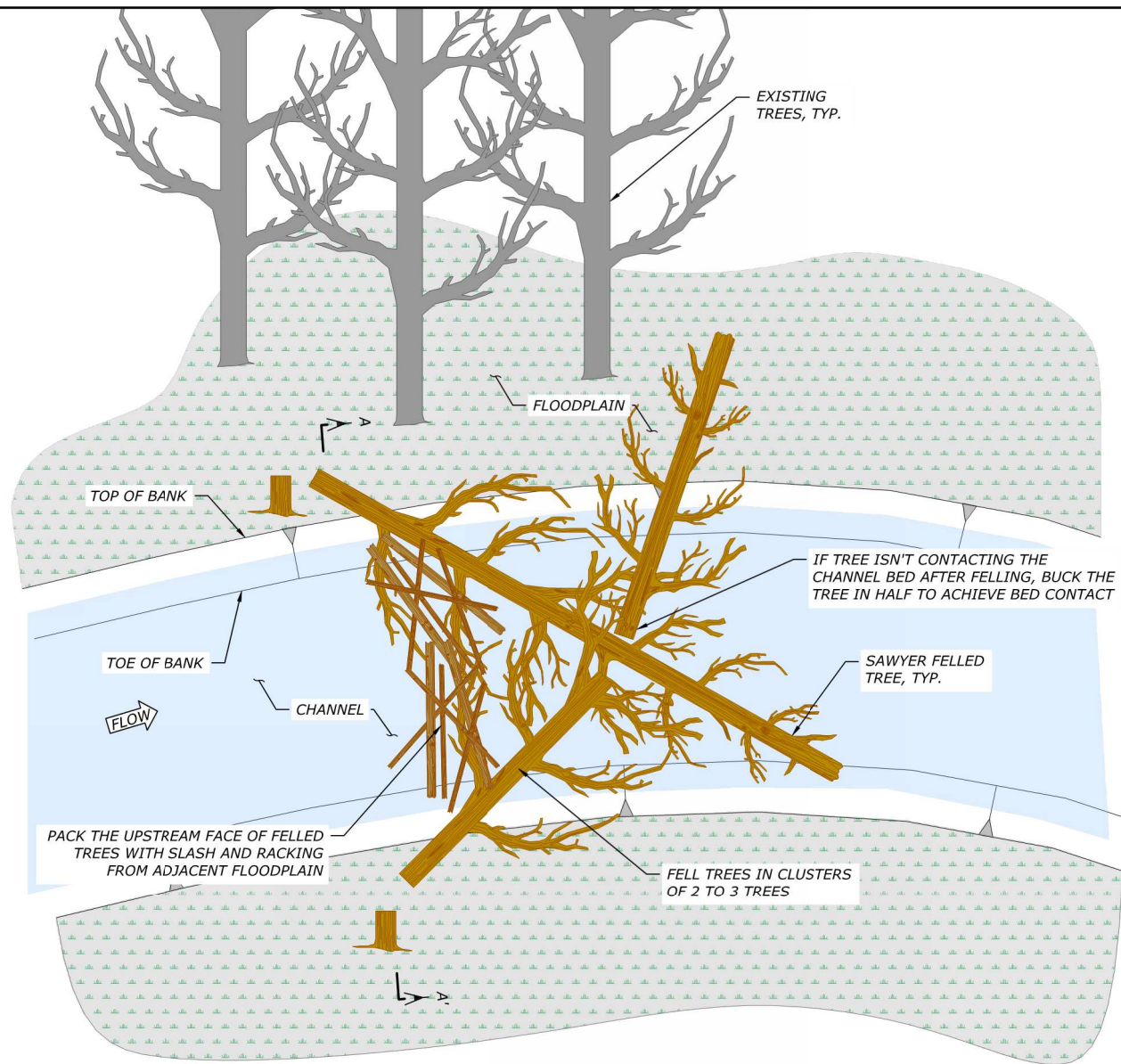
WORKING DRAFT
FOR REVIEW AND
REVISION

DATE: 10/15/2025
DESIGNED: JF, RR, ZS, MG
APPROVED: JF

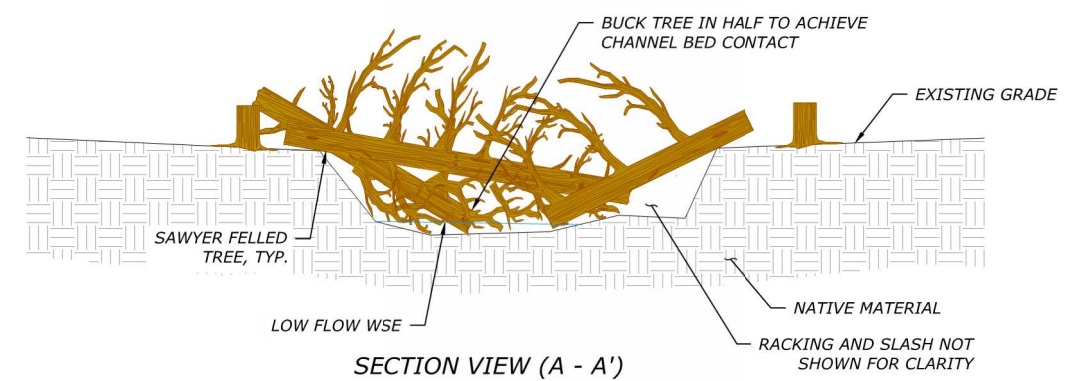
DRAWING NAME
DETAILS

FLOODPLAIN RELICT BDA

DRAWING NO.
D13
SHEET 53 OF 57



PLAN



SECTION VIEW (A - A')

NOTES:

1. SAWYER FELLED TREES SHALL BE 12" TO 16" DBH AND A MINIMUM HEIGHT OF 30-FT.
2. IF INDIVIDUAL TREES ARE NOT SHOWN ON PLANS, FELL ONE TREE FOR EVERY 10-FT OF PROPOSED TREATMENT.
3. THIS STRUCTURE IS INTENDED TO BE CONSTRUCTED BY HAND CREWS WITHOUT THE USE OF HEAVY MACHINERY.
4. THE EXACT LOCATION OF STRUCTURE SHALL BE LOCATED BASED ON THE LOCATION OF EXISTING TREES TO HARVEST PRIOR TO INSTALLATION FOR APPROVAL BY THE CONTRACTING OFFICER'S REPRESENTATIVE.
5. RACKING AND SLASH MATERIAL SHALL BE HARVESTED FROM THE IMMEDIATE FLOODPLAIN AND INCORPORATED INTO THE UPSTREAM FACE OF THE STRUCTURE SUCH THAT IT IS WOVEN INTO STRUCTURE AS DIRECTED BY THE CONTRACTING OFFICER'S REPRESENTATIVE.
6. LOG PLACEMENT MAY BE ADJUSTED IN THE FIELD BY THE CONTRACTING OFFICER TO PROVIDE VARIABILITY FROM STRUCTURE TO STRUCTURE.



BEAR CREEK & LITTLE BEAR CREEK-SAUVAGE
 FISH HABITAT RESTORATION PROJECT
 80% DESIGN DRAWINGS
 GRANDE RONDE MODEL WATERSHED
 BEAR CREEK
 GRANDE RONDE RIVER BASIN, OREGON

WORKING DRAFT
 FOR REVIEW AND
 REVISION

DATE: 10/15/2025
 DESIGNED: JF, RR, ZS, MG
 APPROVED: JF

DRAWING NAME
 DETAILS
 SAWYER FELLED TREES

DRAWING NO.
 D14
 SHEET 54 OF 57

FILE: R:\PROJECTS\WALLOVA_HUC141\BEAR_CR_ODD\CADD\PRODUCTION\BEAR-CREEK-DETAILS.DWG, SAVED BY: ZACH SUDMAN, PLOT DATE: 10/14/2025 4:19 PM



REVEGETATION - REVEGETATION PLAN-1

RIPARIAN SEED MIX		
COMMON NAME	SCIENTIFIC NAME	PLS* (LBS/AC)
SLENDER WHEATGRASS	ELYMUS TRACHYCAULUS	2
SANDBERG BLUEGRASS	POA SECUNDA	3
TUFTED HAIRGRASS	DESCHAMPSEA CAESPITOSA	4
BLUE WILDRYE	ELYMUS GLAUCUS	6
THICKSPIKE WHEATGRASS	ELYMUS LANCEOLATUS	3
BALTIC RUSH	JUNCUS BALTICUS	2
BEAKED SEDGE	CAREX ROSTRATA	8
NEBRASKA SEDGE	CAREX NEBRASCENSIS	4
COMMON SPIKERUSH	ELOCHARIS PALUSTRIS	4
DAGGERLEAF RUSH	JUNCUS ENSIFOLIUS	2
COMMON YARROW	ACHILLEA MILLEFOLIUM	1
BLUEJOINT REEDGRASS	CALAMAGROSTIS CANADENSIS	4
TOTAL PLS/AC		43

UPLAND SEED MIX		
COMMON NAME	SCIENTIFIC NAME	PLS* (LBS/AC)
BLUEBUNCH WHEATGRASS	PSEUDOROEGNERIA SPICATA	12
SQUIRRELTAIL	ELYMUS ELYMOIDES	8
IDAHO FESCUE	FESTUCA IDAHOENSIS	12
SANDBERG BLUEGRASS	POA SECUNDA	4
COMMON YARROW	ACHILLEA MILLEFOLIUM	1
TOTAL PLS/AC		37

LIVE STAKE TREATMENT			
COMMON NAME	SCIENTIFIC NAME	CUTTING SPACING (O.C.)	QUANTITY (EA)
COYOTE WILLOW	SALIX EXIGUA	15	576
GEYER'S WILLOW	SALIX GEYERIANA	15	576
BEBB'S WILLOW	SALIX BEBBIANA	15	576
BLACK COTTONWOOD	POPULUS BALSAMIFERA SSP. TRICHOCARPA	15	576
RED-OSIER DOGWOOD	CORNUS SERICEA SSP. SERICEA	15	576

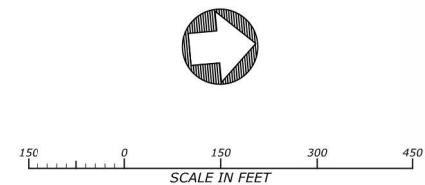
SEEDING AREAS			
	PHASE 1	PHASE 2	TOTAL
TOTAL RIPARIAN SEEDING AREA (AC)	7.0	2.4	9.3
TOTAL UPLAND SEEDING AREA (AC)	4.8	1.6	6.4

LIVE STAKE TREATMENT AREA			
	PHASE 1	PHASE 2	TOTAL
LIVE STAKE PLANTING AREA (AC)	2.6	0.0	2.6

- NOTES:**
1. ALL SEEDING AREAS SHALL RECEIVE CERTIFIED WEED FREE STRAW MULCH FOLLOWING SEED APPLICATION AND IS CONSIDERED INCIDENTAL TO SEEDING.
 2. ALL TEMPORARY ACCESS ROUTES, STAGING AREAS, AND GROUND DISTURBANCE, INCLUDING ROUTES THAT THE CONTRACTOR CREATED NOT SHOWN ON THIS PLAN, SHALL BE SEEDED, AND MULCHED.
 3. ALL GROUND DISTURBANCE ASSOCIATED WITH STRUCTURE INSTALLATION SHALL BE SEEDED AND MULCHED AND IS NOT SHOWN ON THIS PLAN.

LEGEND

- RIPARIAN SEEDING
- UPLAND SEEDING
- PROPOSED LIVE STAKE PLANTING
- STAGING & STOCKPILING AREA
- TEMPORARY ACCESS ROUTE
- PROPOSED LOW FLOW INUNDATION



BEAR CREEK & LITTLE BEAR CREEK-SAUVAGE FISH HABITAT RESTORATION PROJECT

80% DESIGN DRAWINGS

GRANDE RONDE MODEL WATERSHED
BEAR CREEK
GRANDE RONDE RIVER BASIN, OREGON

WORKING DRAFT FOR REVIEW AND REVISION

DATE: 10/15/2025
DESIGNED: JF, RR, ZS, MG
APPROVED: JF

DRAWING NAME
REVEGETATION

REVEGETATION PLAN-1

DRAWING NO.
L1
SHEET 55 OF 57

FILE: R:\PROJECTS\WALLOWA_FLUC4\1\BEAR_CR_00\DEVELOP\PRODUCT\ION\BEAR-CREEK-REVEG.DWG SAVED BY: ZACH SUDMAN PLOT DATE: 10/14/2025 5:01 PM



REVEGETATION - REVEGETATION PLAN-2

NOTES:

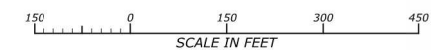
1. ALL SEEDING AREAS SHALL RECEIVE CERTIFIED WEED FREE STRAW MULCH FOLLOWING SEED APPLICATION AND IS CONSIDERED INCIDENTAL TO SEEDING.
2. ALL TEMPORARY ACCESS ROUTES, STAGING AREAS, AND GROUND DISTURBANCE, INCLUDING ROUTES THAT THE CONTRACTOR CREATED NOT SHOWN ON THIS PLAN, SHALL BE SEEDDED, AND MULCHED.
3. ALL GROUND DISTURBANCE ASSOCIATED WITH STRUCTURE INSTALLATION SHALL BE SEEDDED AND MULCHED AND IS NOT SHOWN ON THIS PLAN.

SEEDING AREAS			
	PHASE 1	PHASE 2	TOTAL
TOTAL RIPARIAN SEEDING AREA (AC)	7.0	2.4	9.3
TOTAL UPLAND SEEDING AREA (AC)	4.8	1.6	6.4

LIVE STAKE TREATMENT AREA			
	PHASE 1	PHASE 2	TOTAL
LIVE STAKE PLANTING AREA (AC)	2.6	0.0	2.6

LEGEND

- RIPARIAN SEEDING
- UPLAND SEEDING
- PROPOSED LIVE STAKE PLANTING
- STAGING & STOCKPILING AREA
- TEMPORARY ACCESS ROUTE
- PROPOSED LOW FLOW INUNDATION



**WORKING DRAFT
FOR REVIEW AND
REVISION**

DATE: 10/15/2025
DESIGNED: JF, RR, ZS, MG
APPROVED: JF

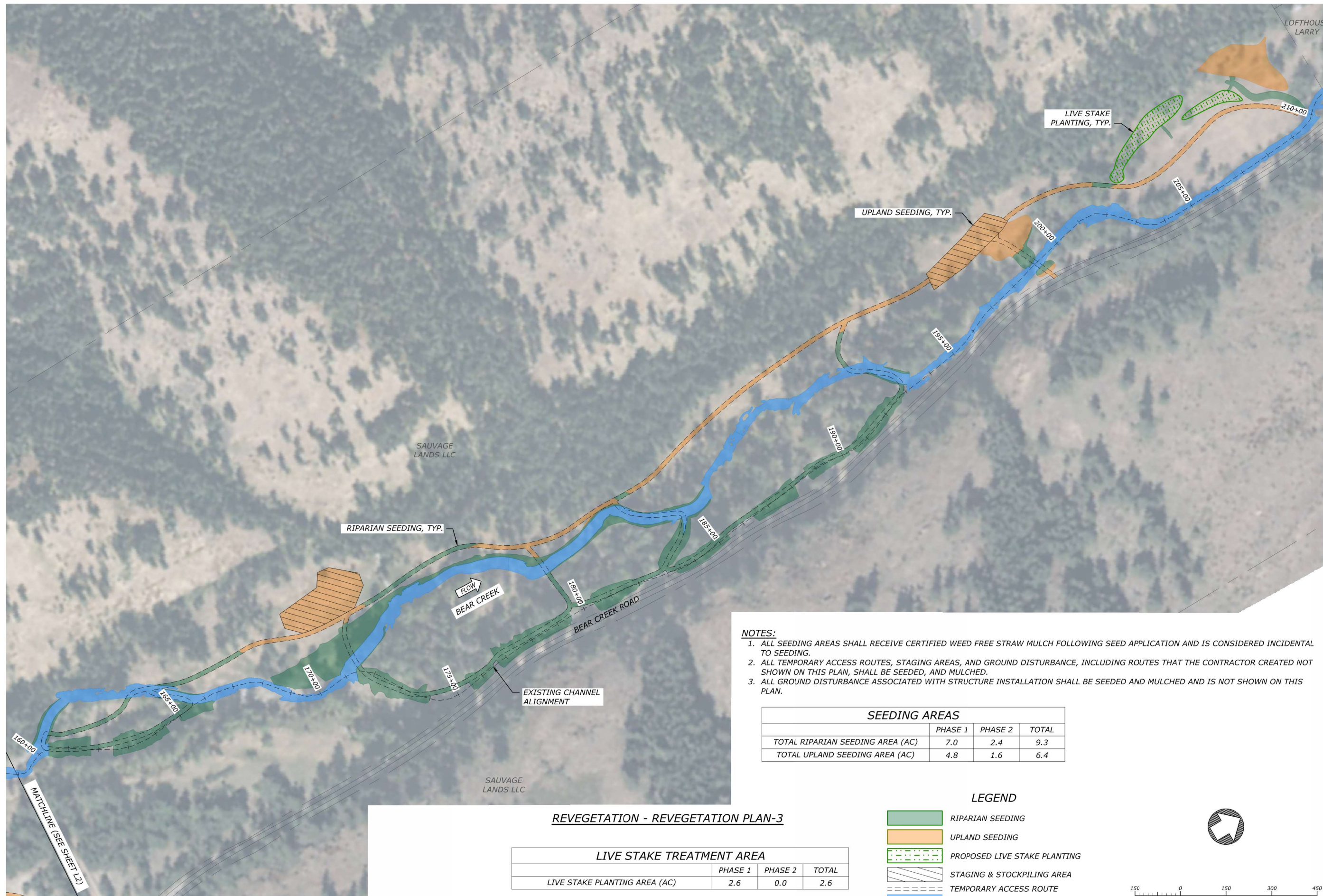
DRAWING NAME
REVEGETATION

REVEGETATION PLAN-2

DRAWING NO.
L2
SHEET 56 OF 57

FILE: R:\PROJECTS\WALLOVA_HUC141\BEAR_CR_00\DWG\CAD\PRODUCTION\BEAR-CREEK-REVEG.DWG SAVED BY: ZACH SUDMAN PLOT DATE: 10/14/2025 5:01 PM

FILE: R:\PROJECTS\WALLOWA_HUC1431\BEAR_CR_ODDEVLCAD\PRODUCTION\BEAR-CREEK-REVEG.DWG SAVED BY: ZACH SUDMAN PLOT DATE: 10/14/2025 5:01 PM



REVEGETATION - REVEGETATION PLAN-3

LIVE STAKE TREATMENT AREA			
	PHASE 1	PHASE 2	TOTAL
LIVE STAKE PLANTING AREA (AC)	2.6	0.0	2.6

NOTES:

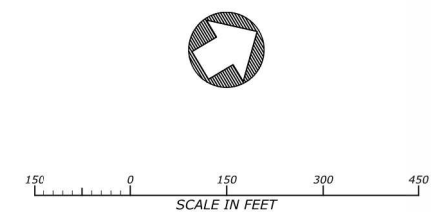
1. ALL SEEDING AREAS SHALL RECEIVE CERTIFIED WEED FREE STRAW MULCH FOLLOWING SEED APPLICATION AND IS CONSIDERED INCIDENTAL TO SEEDING.
2. ALL TEMPORARY ACCESS ROUTES, STAGING AREAS, AND GROUND DISTURBANCE, INCLUDING ROUTES THAT THE CONTRACTOR CREATED NOT SHOWN ON THIS PLAN, SHALL BE SEEDED, AND MULCHED.
3. ALL GROUND DISTURBANCE ASSOCIATED WITH STRUCTURE INSTALLATION SHALL BE SEEDED AND MULCHED AND IS NOT SHOWN ON THIS PLAN.

SEEDING AREAS

	PHASE 1	PHASE 2	TOTAL
TOTAL RIPARIAN SEEDING AREA (AC)	7.0	2.4	9.3
TOTAL UPLAND SEEDING AREA (AC)	4.8	1.6	6.4

LEGEND

- RIPARIAN SEEDING
- UPLAND SEEDING
- PROPOSED LIVE STAKE PLANTING
- STAGING & STOCKPILING AREA
- TEMPORARY ACCESS ROUTE
- PROPOSED LOW FLOW INUNDATION



**BEAR CREEK & LITTLE BEAR CREEK-SAUVAGE
 FISH HABITAT RESTORATION PROJECT**
80% DESIGN DRAWINGS
 GRANDE RONDE MODEL WATERSHED
 BEAR CREEK
 GRANDE RONDE RIVER BASIN, OREGON

WORKING DRAFT
 FOR REVIEW AND
 REVISION

DATE: 10/15/2025
 DESIGNED: JF, RR, ZS, MG
 APPROVED: JF

DRAWING NAME
 REVEGETATION
 REVEGETATION PLAN-3

DRAWING NO.
 L3
 SHEET 57 OF 57