

SKAMOKAWA CHUM SALMON SPAWNING CHANNEL

EMLEN / DNR SITE

PROJECT LOCATION

SURVEY DISCLAIMER

THIS IS NOT A BOUNDARY SURVEY. ELEVATIONS SHOWN ARE BASED ON AN ASSUMED DATUM. TOPOGRAPHIC INFORMATION WAS GATHERED UNDER THE DIRECTION OF THE ENGINEER FOR THE SOLE PURPOSE OF DESIGN AND CONSTRUCTION OF THIS PROJECT. PROPERTY LINES, EASEMENTS, AND RIGHT OF WAY LOCATIONS DISPLAYED ARE APPROXIMATE AND BASED ON INFORMATION OBTAINED FROM RECORDED DOCUMENTS, FOR REFERENCE PURPOSES ONLY.

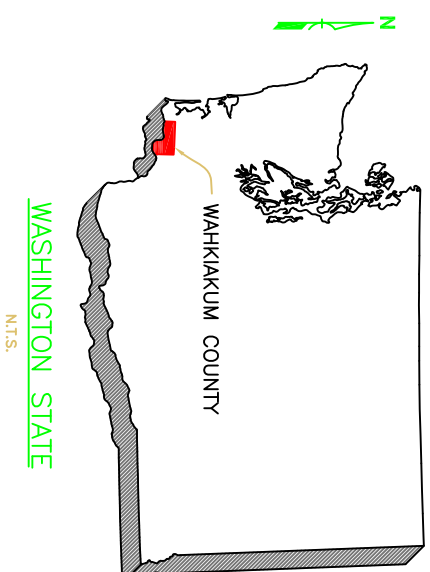
SEC. 29, T.10N, R.6W, WM,
WAHIAKUM COUNTY

PROJECT LOCATION

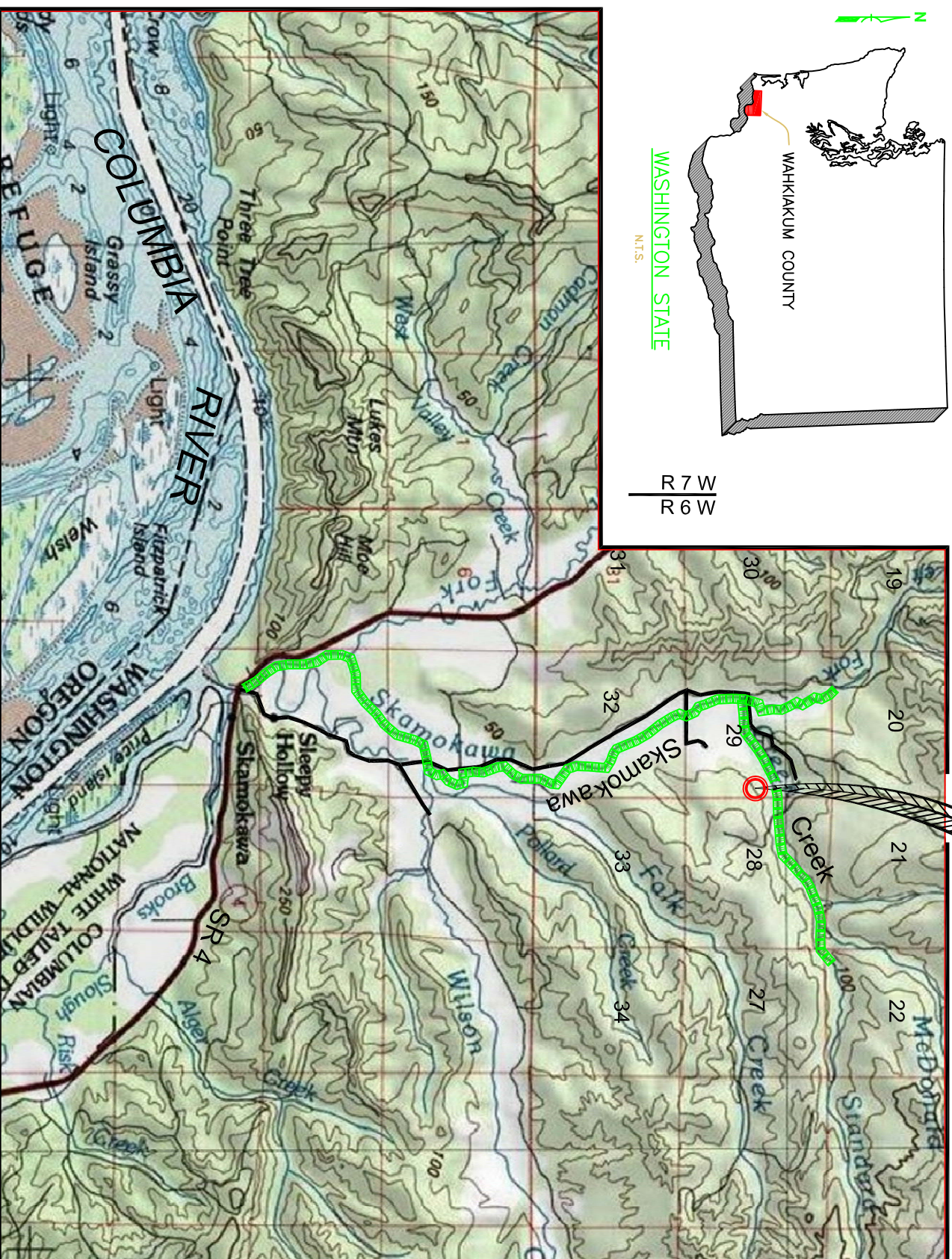
LAT 46° 19' 19.6" N,
LONG -123° 26' 40.19" W

SHEET INDEX

1. COVER SHEET
2. PROJECT SITE PLAN
3. PROPOSED CHANNEL PLAN
4. PROPOSED CHANNEL PROFILE
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11. REVEGETATION PLAN
12. REVEGETATION DETAILS
13. MONITORING WEIR

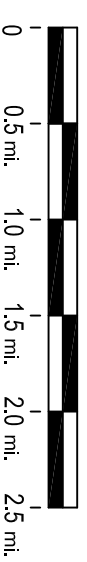


R 7 W
R 6 W



T 10 N
T 9 N

VICINITY MAP
SCALE : 1" = 1/2 Mile



STATE OF WASHINGTON
DEPARTMENT OF FISH & WILDLIFE
HABITAT PROGRAM

SYM	DATE:	BY:	REVISION DESCRIPTION



PROJECT NO.: _____
DESIGNED BY: P. KLAVAS
CHECKED BY: D. PONDER
DRAWN BY: B. GOWEN
FILE: _____

SCALE VERIFICATION
0 1 INCH
BAR MEASURES ONE INCH ON ORIGINAL DRAWINGS

SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLEN / DNR SITE
COVER SHEET

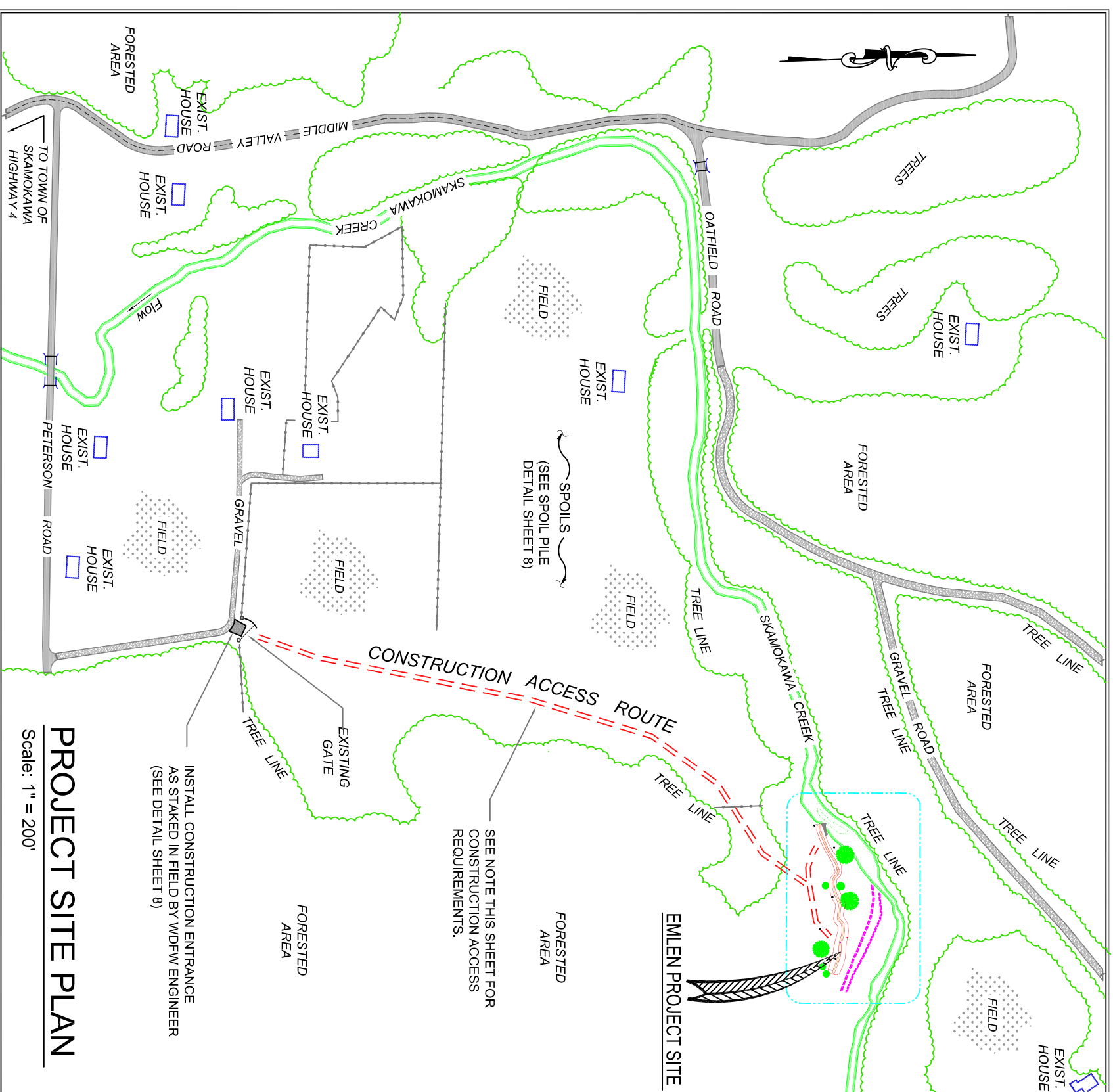
Date: 10 - 01 - 15
Sheet: 1 of 13

PROJECT SITE DIRECTIONS:

UPSTREAM SITE: (EMLEN/ DNR PROPERTY)
 SR 4 TO TOWN OF SKAMOKAWA, WA. TURN NORTH ON
 E. SKAMOKAWA VALLEY RD., 2.2 MI. TO PETERSON RD.
 INTERSECTION. RIGHT ON PETERSON ROAD AND
 FOLLOW TO END. TURN LEFT ON GRAVEL RD. AND
 CONTINUE NORTH UNTIL ROAD HITS GATED PASTURE
 FENCE.
 CONTINUE THROUGH GATE ALONG EDGE OF PASTURE
 (APPROX. 2,000 FT.), PROJECT ACCESS ROUTE BEYOND
 GATE TO BE STAKED IN FIELD BY WDFW PRIOR TO
 CONTRACTOR ACCESS.

CONSTRUCTION ACCESS ROUTE NOTES:

1. ACCESS ROUTE LIMITS OF DISTURBANCE TO BE A MAXIMUM WIDTH OF 20 FT.
2. EXACT ROUTE TO BE STAKED IN FIELD BY WDFW PROJECT ENGINEER PRIOR TO CONSTRUCTION ACTIVITIES.
3. ALL MATERIALS USED IN THE CONSTRUCTION OR IMPROVEMENT OF THE CONSTRUCTION ACCESS ROUTE SHALL BE REMOVED BY THE CONTRACTOR AND PLACED IN AN APPROVED LOCATION UPON PROJECT COMPLETION.
4. ALL DISTURBED AREAS OF THE CONSTRUCTION ACCESS ROUTE SHALL BE RESTORED TO PRE-EXISTING CONDITIONS AND PLANTED WITH APPROVED PASTURE GRASS OR NATIVE PLANT MATERIAL PER DIRECTION OF WDFW BIOLOGIST.



PROJECT SITE PLAN

Scale: 1" = 200'



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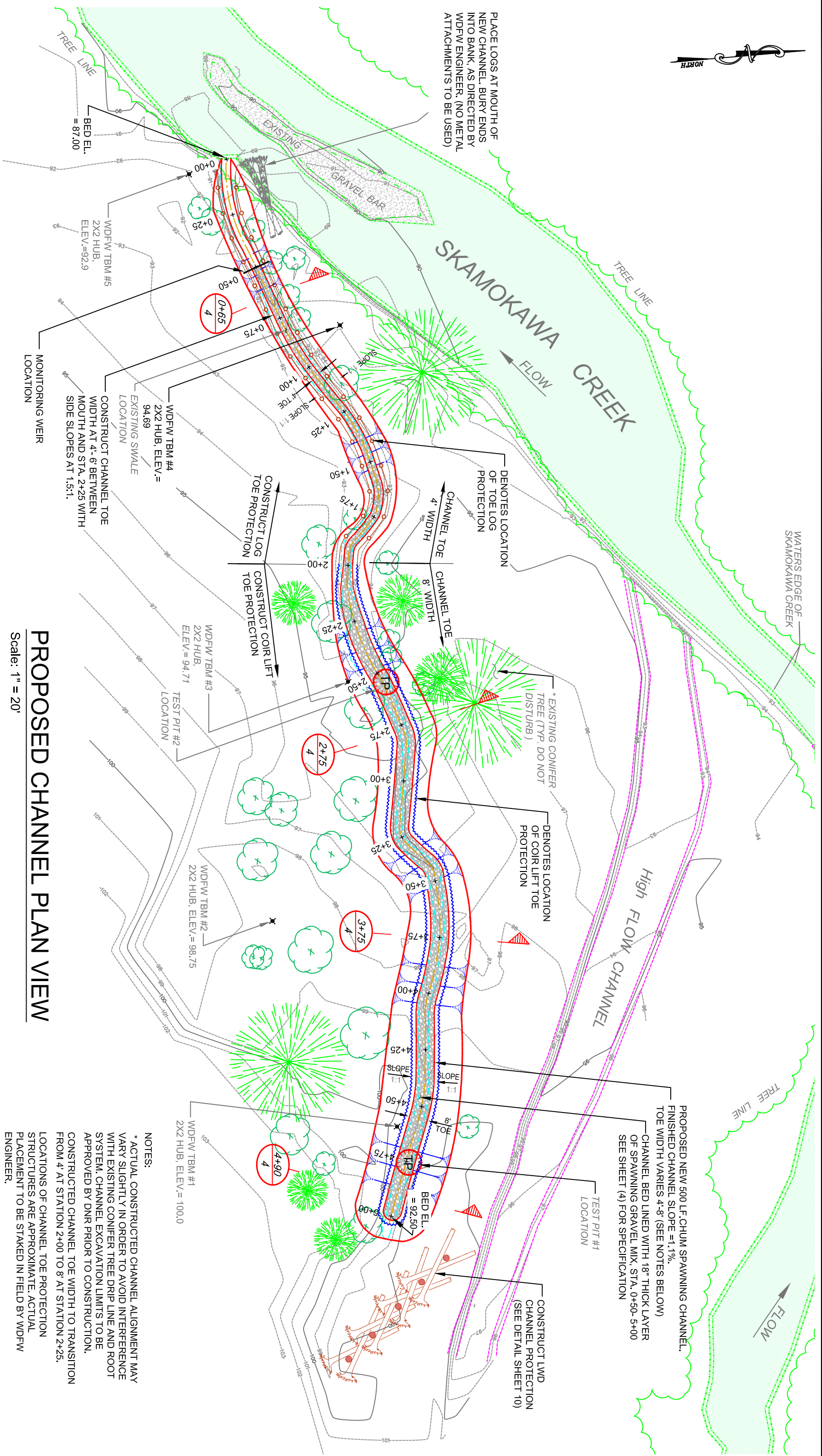
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0 50' 100' 150' 200' 400'
Scale: 1" = 200'

SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLEN / DNR SITE
PROJECT SITE PLAN

Date:	10 - 01 - 15
Sheet:	2 of 13



PLACE LOGS AT MOUTH OF NEW CHANNEL. BURY ENDS INTO BANK. AS DIRECTED BY WDFW ENGINEER. (NO METAL ATTACHMENTS TO BE USED)



PROPOSED CHANNEL PLAN VIEW

Scale: 1" = 20'

NOTES:

- * ACTUAL CONSTRUCTED CHANNEL ALIGNMENT MAY VARY SLIGHTLY IN ORDER TO AVOID INTERFERENCE WITH EXISTING CONIFER TREE DRIP LINE AND ROOT SYSTEM. CHANNEL EXCAVATION LIMITS TO BE APPROVED BY DNR PRIOR TO CONSTRUCTION.
- CONSTRUCTED CHANNEL TOE WIDTH TO TRANSITION FROM 4' AT STATION 2+00 TO 8' AT STATION 2+25.
- LOCATIONS OF CHANNEL TOE PROTECTION STRUCTURES ARE APPROXIMATE. ACTUAL PLACEMENT TO BE STAKED IN FIELD BY WDFW ENGINEER.

PROPOSED NEW 500 LF CHUM SPAWNING CHANNEL. FINISHED CHANNEL SLOPE = 1.19%. TOE WIDTH VARIES 4'-8' (SEE NOTES BELOW)

CHANNEL BED LINED WITH 18" THICK LAYER OF SPAWNING GRAVEL MIX. STA. 0+50-5+00 SEE SHEET (4) FOR SPECIFICATION

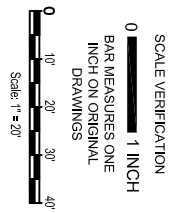


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SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLEN / DNR SITE
PROPOSED CHANNEL PLAN

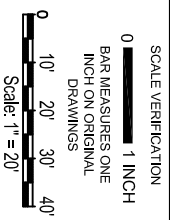
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Sheet: 3 of 13



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REVISION DESCRIPTION		

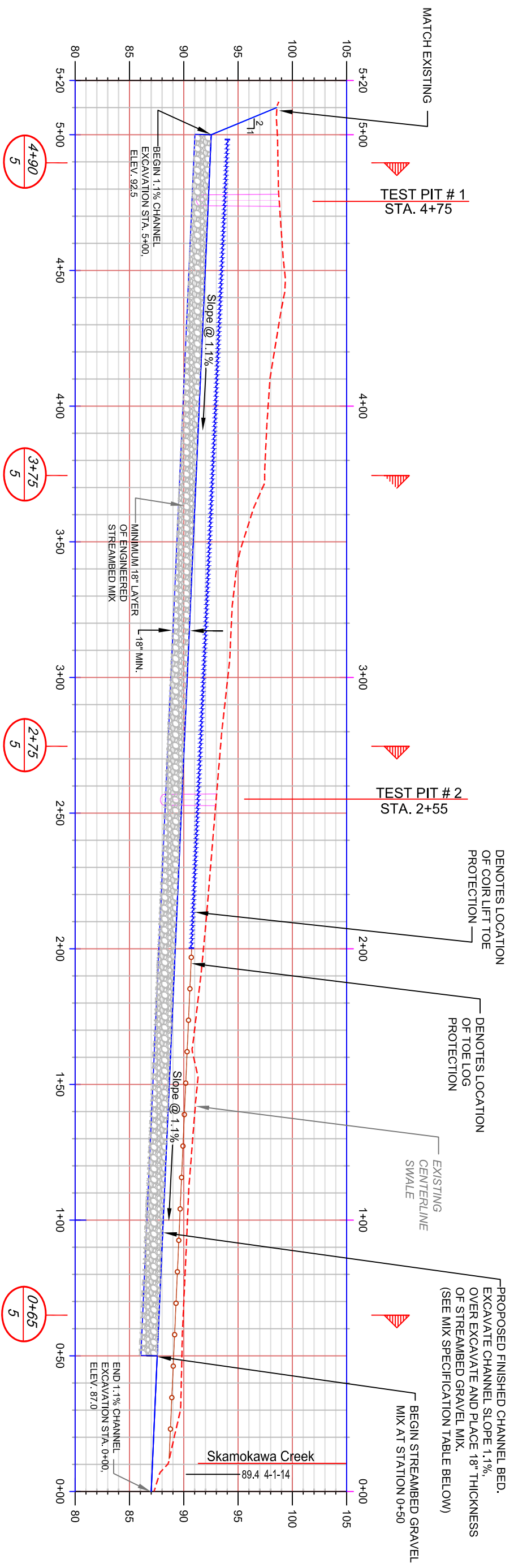


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FILE:



SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLEN / DNR SITE
PROPOSED CHANNEL PROFILE

Date: 10 - 01 - 15
Sheet: 4 of 13



PROPOSED CHANNEL PROFILE

Scale: 1" = 20' Horz., 1" = 5' Vert.

***ENGINEERED STREAMBED MIX SPECIFICATION:**
70% STREAMBED SEDIMENT WSDOT 9-03.11(1)
30% 4" COBBLE WSDOT 9-03.11(2)
ALL MIXES REFERENCED PER WSDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2012 SECTION 9-03.11 BLEND MATERIALS ON SITE TO ACHIEVE WELL GRADED MIX.
IF RECYCLED OR RE-PURPOSED MATERIALS ARE TO BE USED FOR STREAMBED MATERIAL, THEY MUST MEET THE ABOVE PROPOSED GRADATION PER VISUAL INSPECTION BY ENGINEER.

STREAMBED GRAVEL MIX			
STREAMBED SEDIMENT 70%	STREAMBED COBBLES 30%		
WSDOT 9-03.11(1)	WSDOT 9-03.11(2)		
SIEVE SIZE	% PASSING	SIEVE SIZE	% PASSING
2 1/2"	99-100	4"	99-100
2"	65-95	3"	70-90
1"	50-85	1 1/2"	20-50
No. 4	26-44	3/4"	10 MAX.
No. 40	16 MAX.		
No. 200	5.0-9.0		

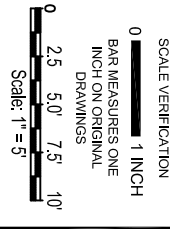


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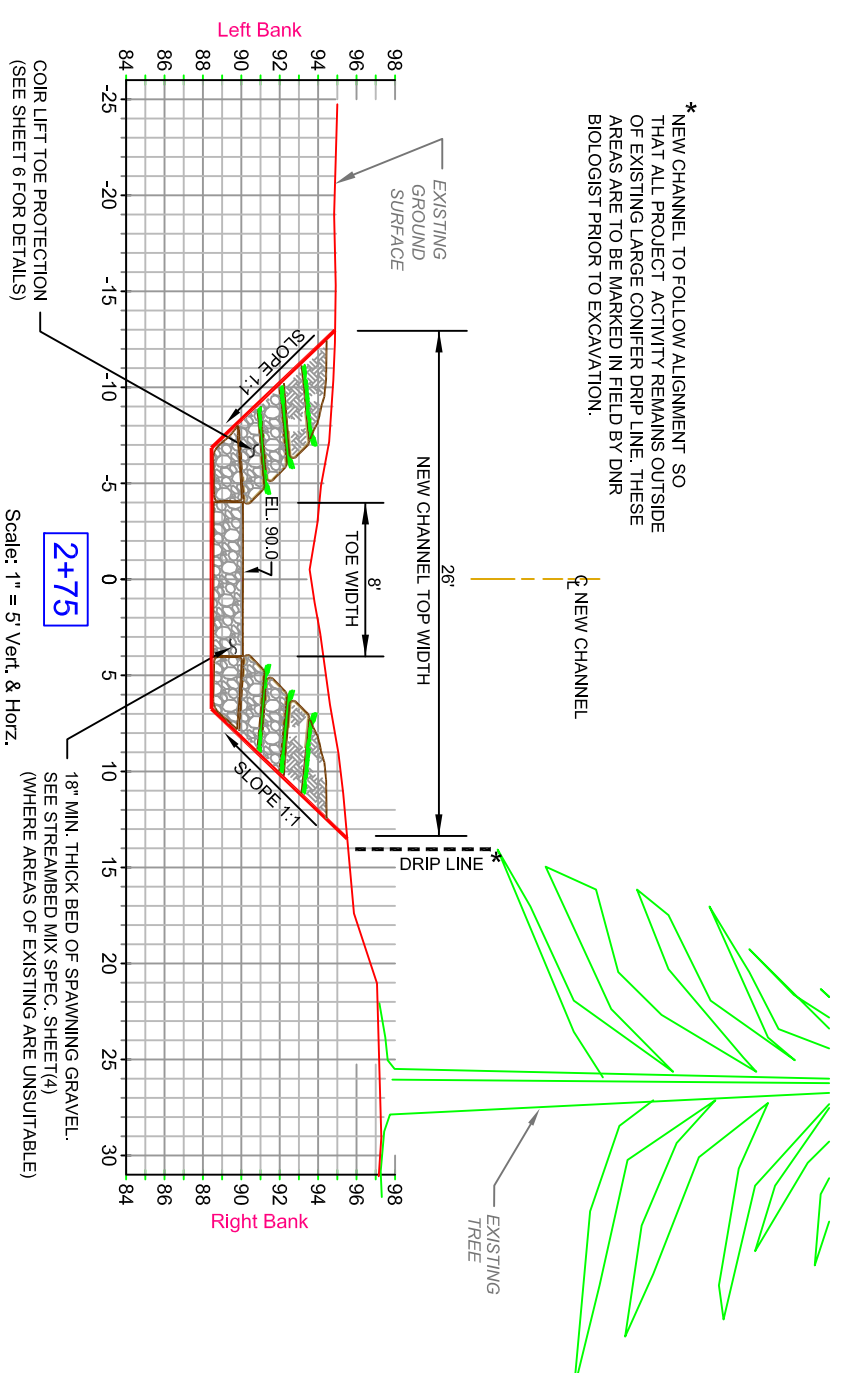
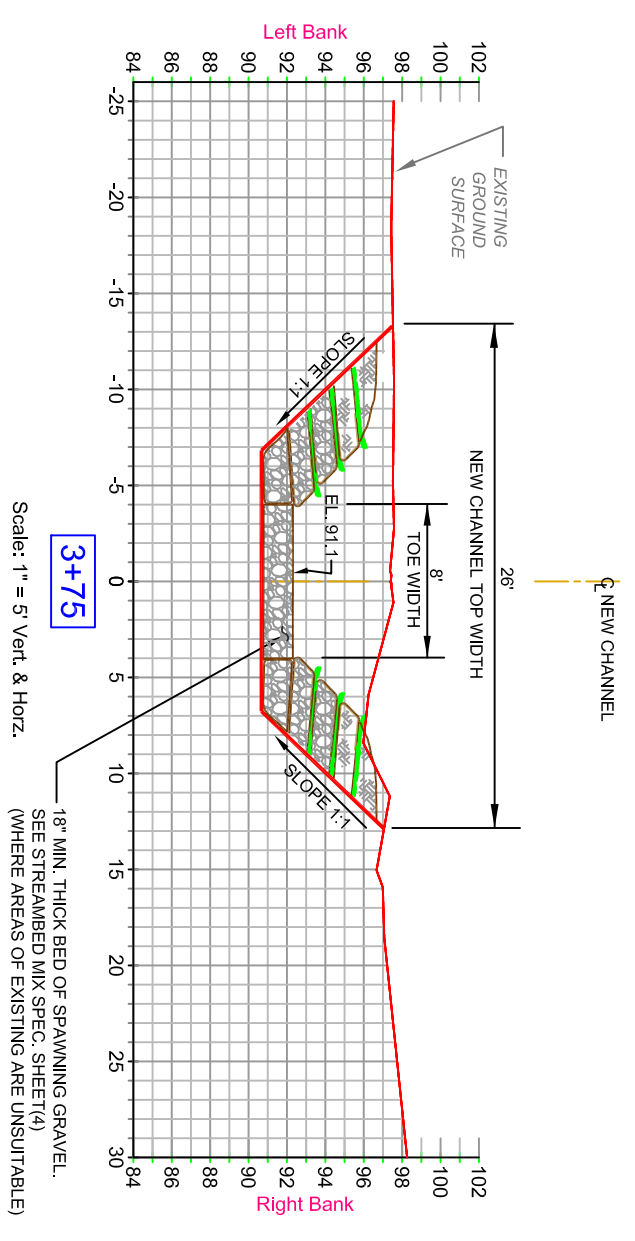
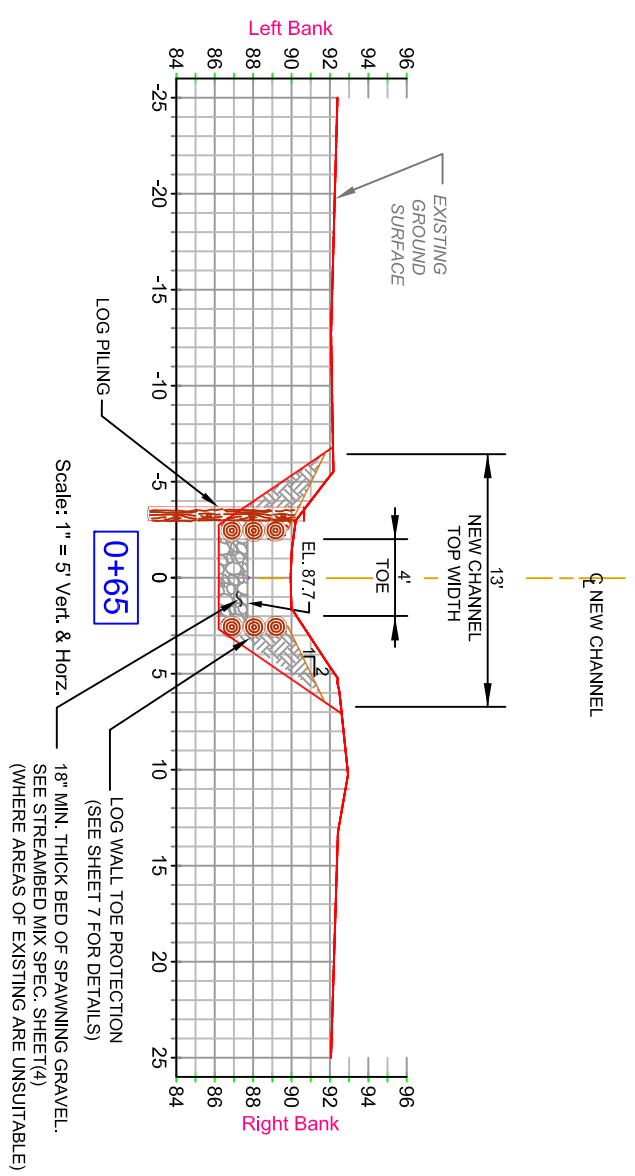


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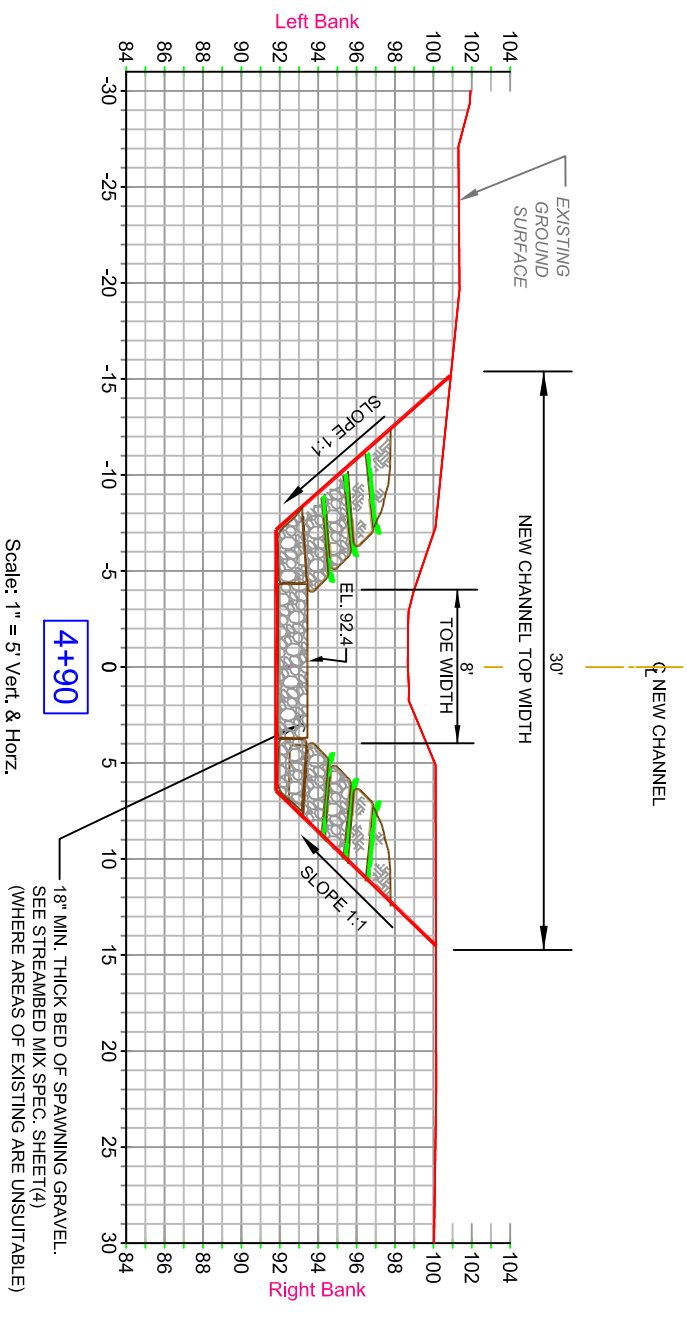


SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLEN / DNR SITE
PROPOSED CHANNEL SECTIONS

Date: 10 - 01 - 15
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*NEW CHANNEL TO FOLLOW ALIGNMENT SO THAT ALL PROJECT ACTIVITY REMAINS OUTSIDE OF EXISTING LARGE CONIFER DRIP LINE. THESE AREAS ARE TO BE MARKED IN FIELD BY DNR BIOLOGIST PRIOR TO EXCAVATION.

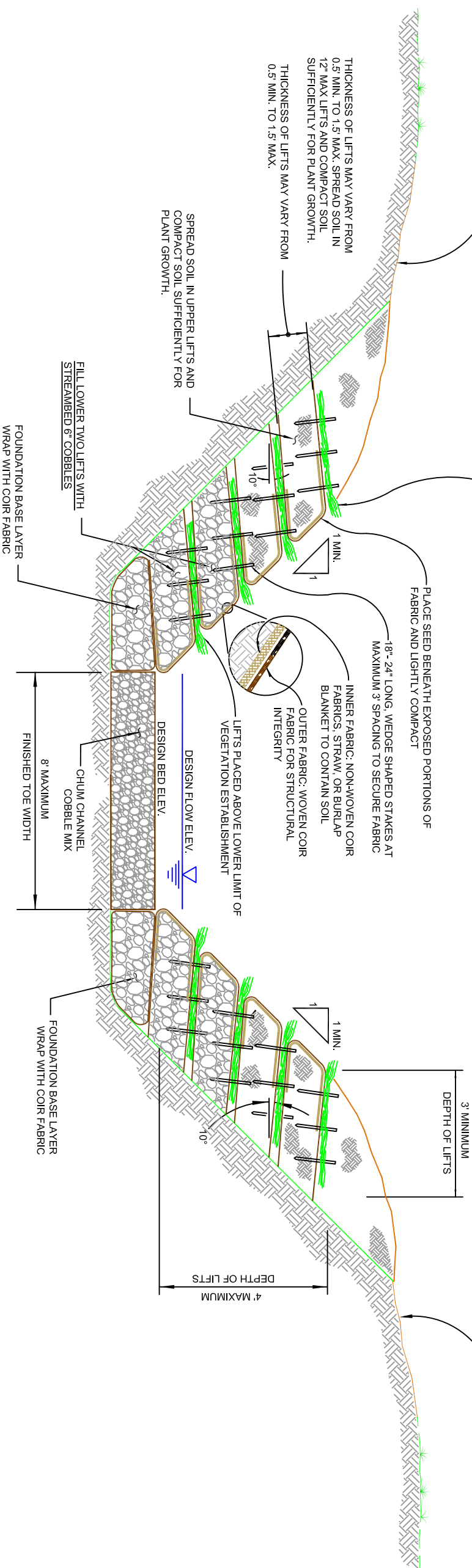


*NEW CHANNEL TO FOLLOW ALIGNMENT SO THAT ALL PROJECT ACTIVITY REMAINS OUTSIDE OF EXISTING LARGE CONIFER DRIP LINE. THESE AREAS ARE TO BE MARKED IN FIELD BY DNR BIOLOGIST PRIOR TO EXCAVATION.

APPLY EROSION CONTROL FABRIC AND REVEGETATE WITH NATIVE SPECIES IN AREAS DISTURBED BY CONSTRUCTION

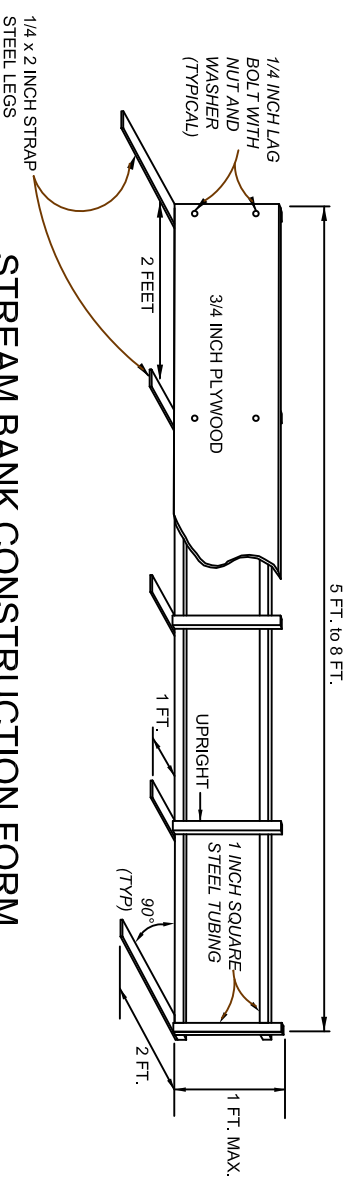
LIVE CUTTINGS: MINIMUM LENGTH 3' WITH 1/2" MINIMUM DIAMETER. BRANCHES SHOULD BE PLACED WITH BUTTS ENDS TOUCHING THE BANK, ROUGHLY PERPENDICULAR TO THE STREAM FLOW. TIPS SHOULD EXTEND SLIGHTLY BEYOND FINISHED BANKLINE. CUTTINGS SHOULD BE PLACED 2'-6" APART. PLACE SEVERAL INCHES OF SOIL AROUND ROOTING ZONE OF CUTTINGS. WATER THOROUGHLY AND LIGHTLY COMPACT TO ENSURE GOOD SOIL CONTACT WITH THE CUTTINGS.

APPLY EROSION CONTROL FABRIC AND REVEGETATE WITH NATIVE SPECIES IN AREAS DISTURBED BY CONSTRUCTION



COIR FABRIC ENCAPSULATED SOIL LIFTS

NOT TO SCALE



STREAM BANK CONSTRUCTION FORM

ISOMETRIC VIEW FROM REAR



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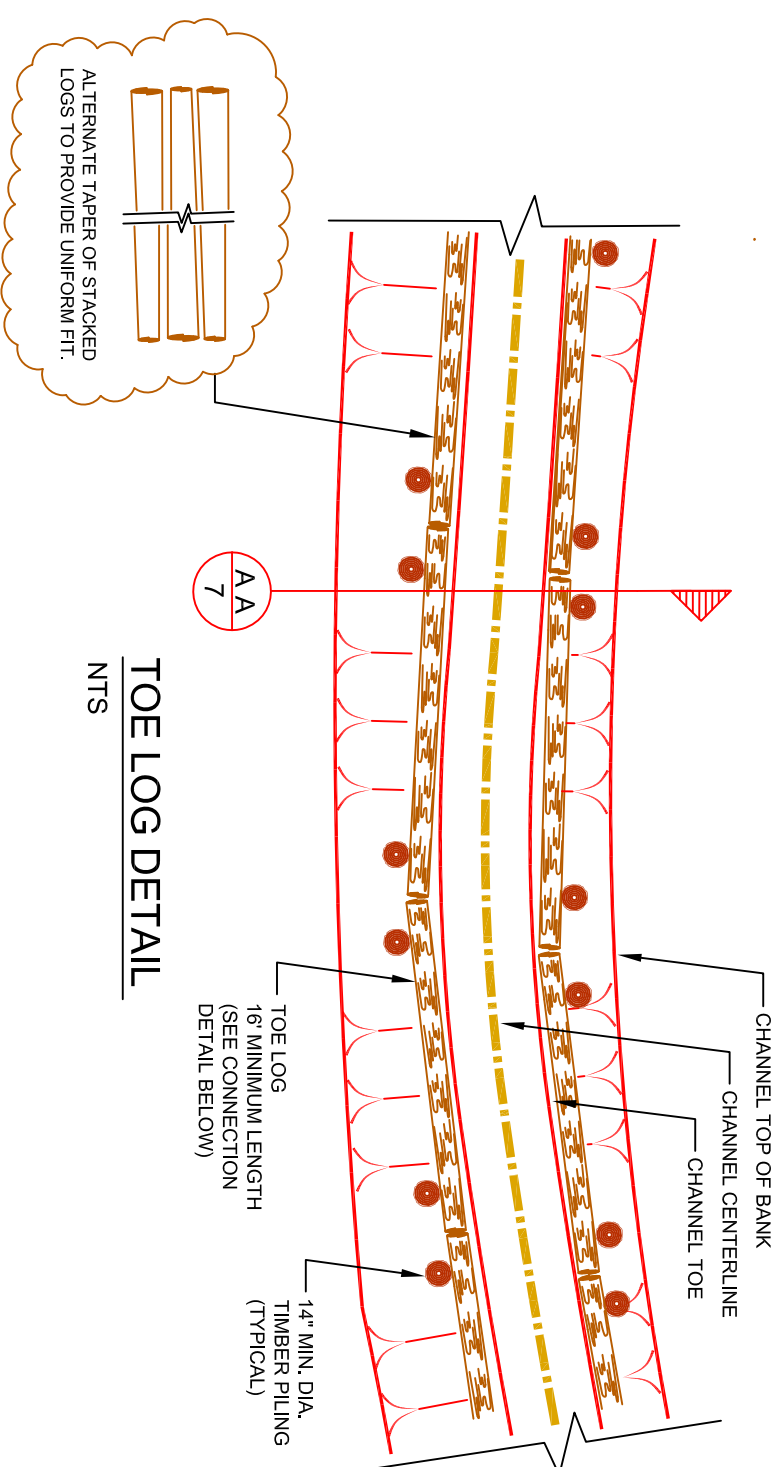
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BAR MEASURES ONE INCH ON ORIGINAL DRAWINGS

SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLEN / DNR SITE
COIR TOE PROTECTION DETAILS

Date: 10 - 01 - 15
Sheet: 6 of 13

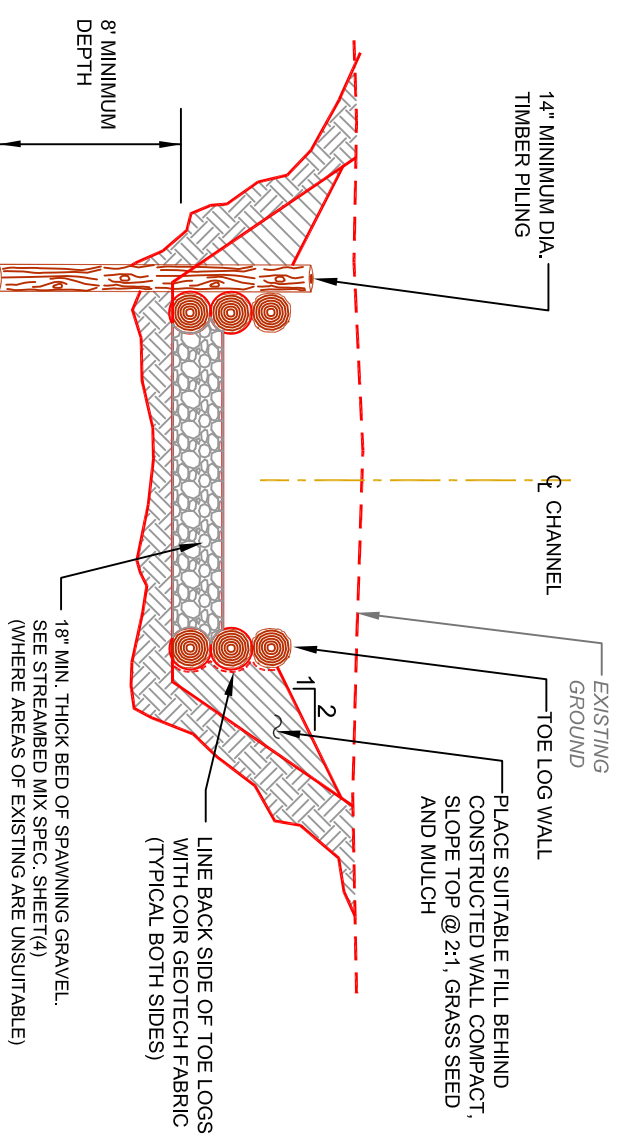
SPECIFICATION

LOGS:
 PILING'S MINIMUM DIAMETER 10-14". SPECIES DOUGLAS FIR OR CEDAR. ALL LOGS SHALL BE SOUND AND FREE FROM ROT.
 MINIMUM LENGTH OF PILING'S 12 FT.
 MINIMUM LENGTH OF HORZ. LOGS 16 FT.



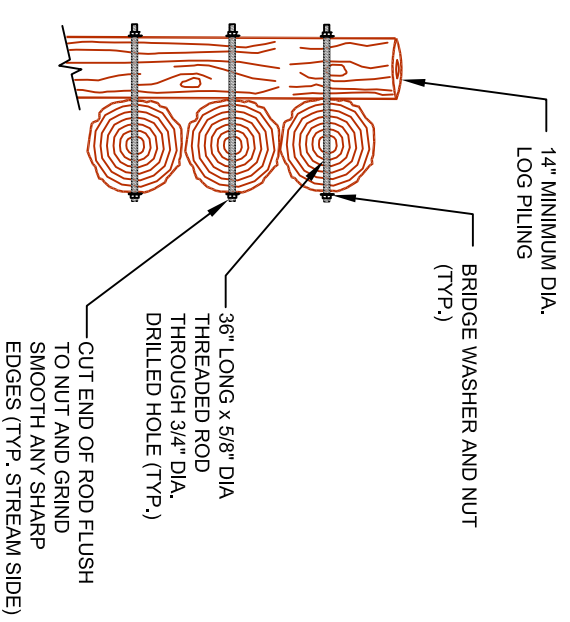
TOE LOG DETAIL

NTS



TOE LOG SECTION VIEW

NTS



THREADED ROD CONNECTION DETAIL

NTS



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SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
 EMLEN / DNR SITE
 LOG TOE PROTECTION DETAILS

Date: 10 - 01 - 15
 Sheet: 7 of 13

NOTE:
SPOIL MATERIAL TO BE SPREAD IN FIELD AT LOCATIONS APPROVED BY BOTH WDFW ENGINEER AND LAND OWNER. STOCKPILED MATERIAL SHALL BE SLOPED TO DRAIN AS SHOWN. SPREAD GRASS SEED AND MULCH.

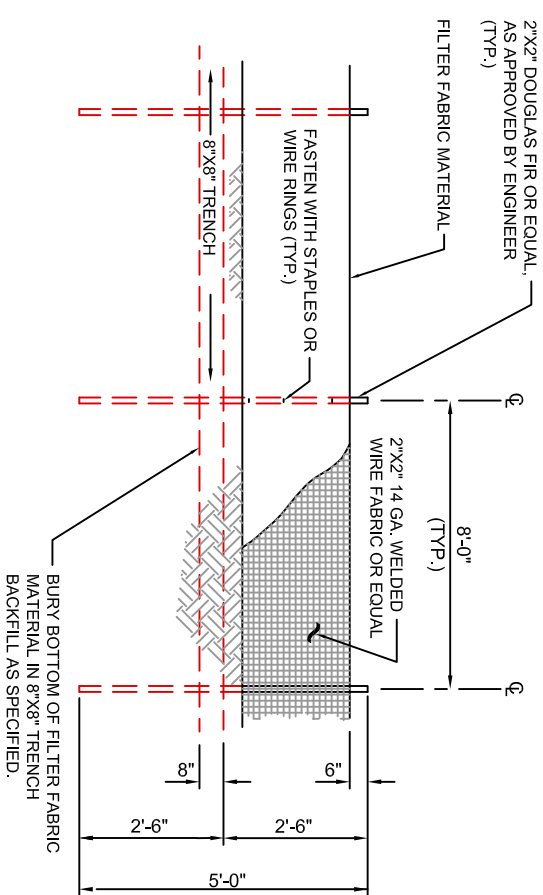


TYPICAL SPOIL PILE SECTION

Scale : N.T.S.

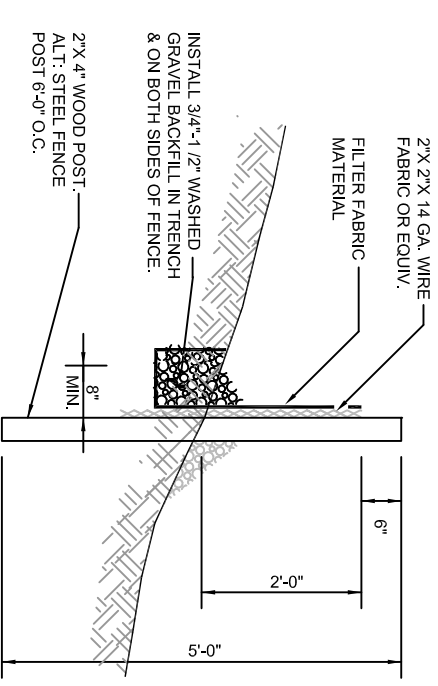
FILTER FABRIC NOTES:

1. FILTER FABRIC PURCHASED IN CONTINUOUS ROLL SHALL BE CUT TO LENGTH AS NEEDED. IF JOINTS ARE NECESSARY FABRIC SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POSTS WITH A MINIMUM OF (6) INCH OVERLAP. BOTH ENDS SHALL BE SECURED AS REQUIRED.
2. FILTER FABRIC SHALL BE INSTALLED TO FOLLOW CONTOURS. FENCE POSTS SHALL BE SPACED A MAXIMUM OF EIGHT (8) FEET APART UNLESS OTHERWISE SHOWN HEREIN. ALL POSTS SHALL BE DRIVEN INTO THE GROUND A MINIMUM OF 30 INCHES.
3. A TRENCH SHALL BE EXCAVATED, ROUGHLY EIGHT (8) INCHES WIDE BY EIGHT (8) INCHES DEEP UPSLOPE AND ADJACENT TO THE POST TO ALLOW THE FILTER FABRIC TO BE BURIED.
4. WHEN STANDARD STRENGTH FILTER FABRIC IS UTILIZED, A WIRE SINGLE SPACE MESH SUPPORT FENCE SHALL BE FASTENED TO THE UPSLOPE (OR UPSTREAM) SIDE OF THE POSTS USING ONE (1) INCH MINIMUM LENGTH WIRE STAPLES, THE WIRE OR APPROVED HOG RINGS. ALL WIRE SUPPORT SHALL EXTEND INTO THE TRENCH A MINIMUM OF FOUR (4) INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE ORIGINAL GRADE.
5. ALL FILTER FABRIC SHALL BE STAPLED OR WIRED TO SUPPORT FENCING AND A MINIMUM OF 20 INCHES OF FABRIC SHALL BE EXTENDED INTO THE TRENCH. FILTER FABRIC SHALL NOT BE STAPLED OR FASTENED TO EXISTING TREES OF STRUCTURES UNLESS OTHERWISE APPROVED BY THE ENGINEER.
6. IF HIGH STRENGTH FILTER FABRIC AND CLOSER SPACING ARE USED, THE WIRE SUPPORT FENCING MAY BE ELIMINATED. HIGH STRENGTH FABRIC SHALL BE STAPLED OR WIRED DIRECTLY TO POSTS AS REQUIRED BY THE ENGINEER.
7. CUTOFF TRENCH SHALL BE BACKFILLED WITH 3/4 INCH MINIMUM DIAMETER WASHED GRAVEL OR OTHER SIMILAR SOURCE AS APPROVED BY THE ENGINEER.
8. FILTER FENCING SHALL BE INSTALLED WHERE SHOWN ON THE PLAN OR AS MARKED IN THE FIELD BY THE ENGINEER. PRIOR TO COMMENCEMENT OF WORK, ALL FENCING SHALL BE INSPECTED DAILY DURING CONSTRUCTION AND AFTER EACH SIGNIFICANT RAINFALL EVENT UNTIL SITE HAS BEEN PERMANENTLY STABILIZED. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
9. REMOVAL OF TRAPPED SEDIMENT SHALL BE PERFORMED WHEN AMOUNTS REACH APPROXIMATELY 1/3 HEIGHT OF THE FENCE ABOVE GROUND.
10. FILTER FENCING SHALL REMAIN IN PLACE UNTIL SITE HAS BEEN REVEGETATED TO ORIGINAL CONDITION OR DIRECTED BY THE ENGINEER.



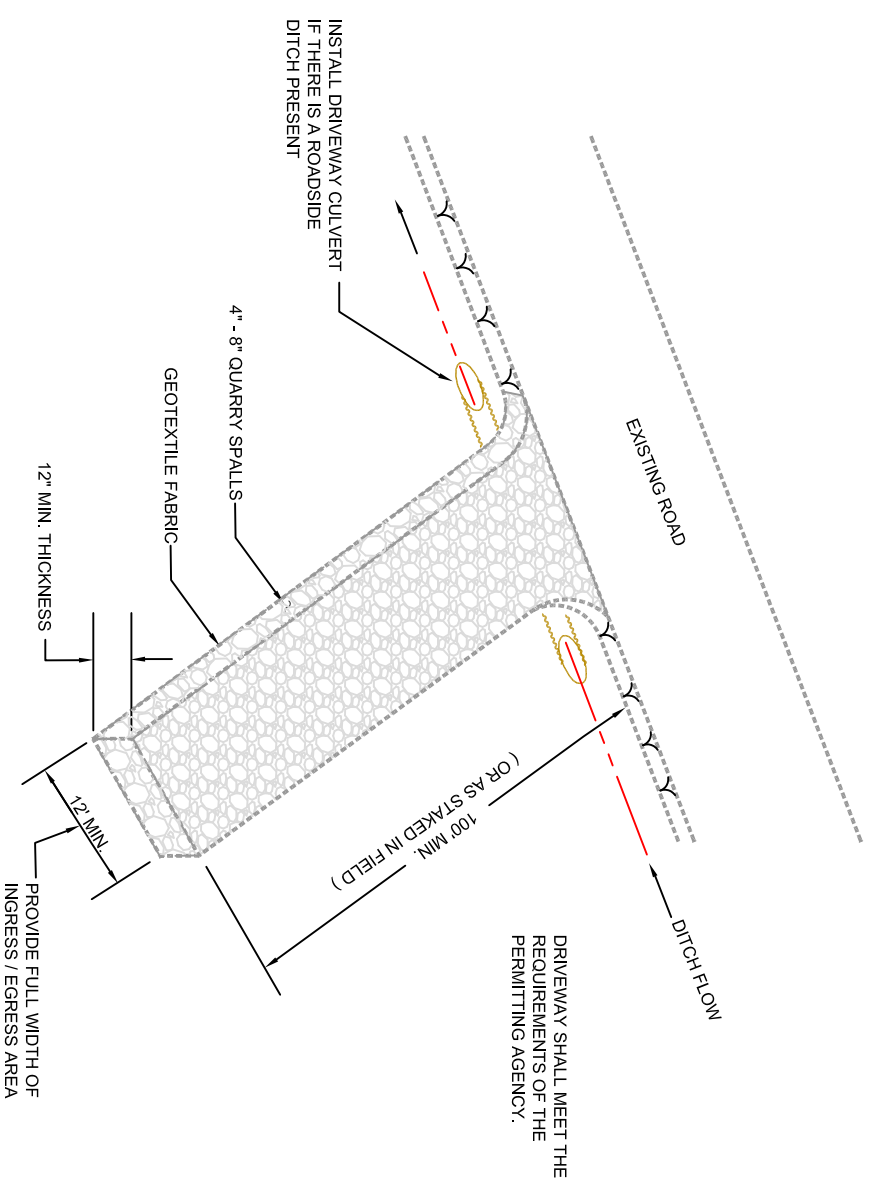
TYPICAL SILT FENCE DETAIL

Scale: N.T.S.



TYPICAL SILT FENCE SECTION VIEW

Scale: N.T.S.



STABILIZED CONSTRUCTION ENTRANCE

Scale: N.T.S.



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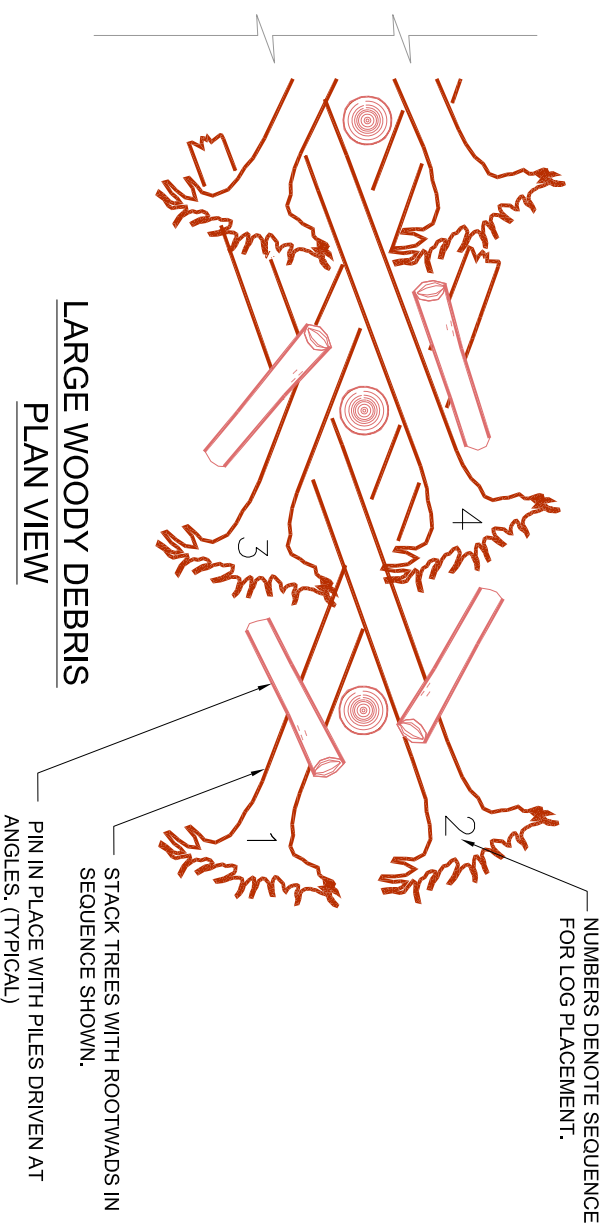


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DRAWN BY: B. GOVEN
FILE:

SCALE VERIFICATION
0 1 INCH
BAR MEASURES ONE INCH ON ORIGINAL DRAWINGS

SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLEN / DNR SITE
EROSION CONTROL

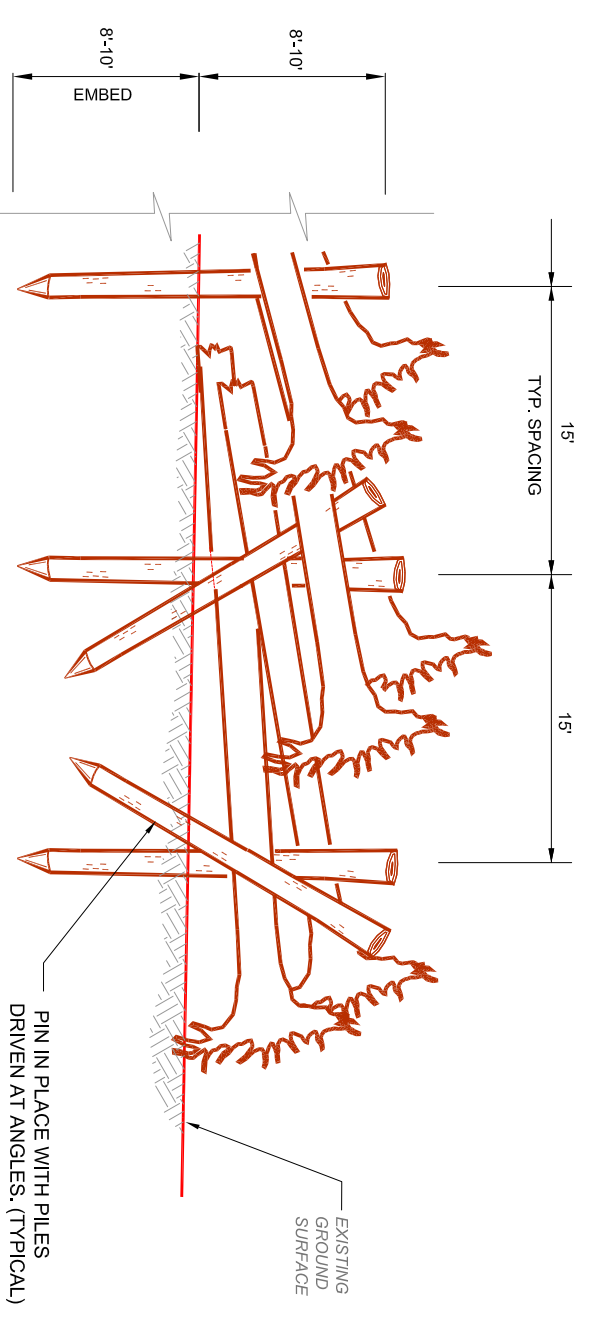
Date: 10 - 01 - 15
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LARGE WOODY DEBRIS

PLAN VIEW

Scale: 1" = 5'



LARGE WOODY DEBRIS

ELEVATION

SCALE: 1" = 5'

ROOTWAD LOG SPECIFICATIONS:
 ROOTWADS MINIMUM DIAMETER 6 FT. LEAVING ROCKS AND SOIL ATTACHED TO ROOTWADS IS PREFERRED.

STACKED ROOTWAD LOGS MINIMUM DIAMETER 18". STACKED SAW LOGS MINIMUM DIAMETER 16". SPECIES PONDEROSA PINE, DOUGLAS FIR OR CEDAR. ALL LOGS SHALL BE SOUND AND FREE FROM ROT. MINIMUM LENGTH 40 FT.

RACKED LOGS BELOW WATERLINE MINIMUM DIAMETER 14" FOR CONIFERS, 18" FOR HARDWOODS. MINIMUM LENGTH 40 FT. LOGS MAY HAVE BRANCHES ATTACHED AS LONG AS THEY DO NOT PREVENT THE BOLES FROM TOUCHING. RACKED LOGS ABOVE WATERLINE NO MINIMUM DIAMETER: WITH OR W/O ROOTWADS OR BRANCHES. MINIMUM LENGTH 15 FT.

NOTE:
 PLACE LARGE WOODY DEBRIS STRUCTURE NEAR THE MOUTH OF COMPLETED CHANNEL AS SHOWN ON PLAN VIEW SHEET (3).
 WOOD TO BE SELECTED BY PROJECT ENGINEER FROM TREES SALVAGED FROM PROJECT CONSTRUCTION. A MINIMUM OF (2) LOGS ARE TO BE USED, COMPLETE WITH ROOT WADS.
 ACTUAL LOCATION AND ARRANGEMENT OF LOGS TO BE DIRECTED BY PROJECT ENGINEER.
 CONNECTION OF LWD TO FOLLOW DETAIL SHOWN, AND STRUCTURE TO BE ANCHORED TO EXISTING BANKS TREES OR PILING DRIVEN ON STREAM TOP BANK.

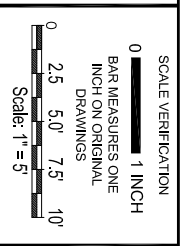


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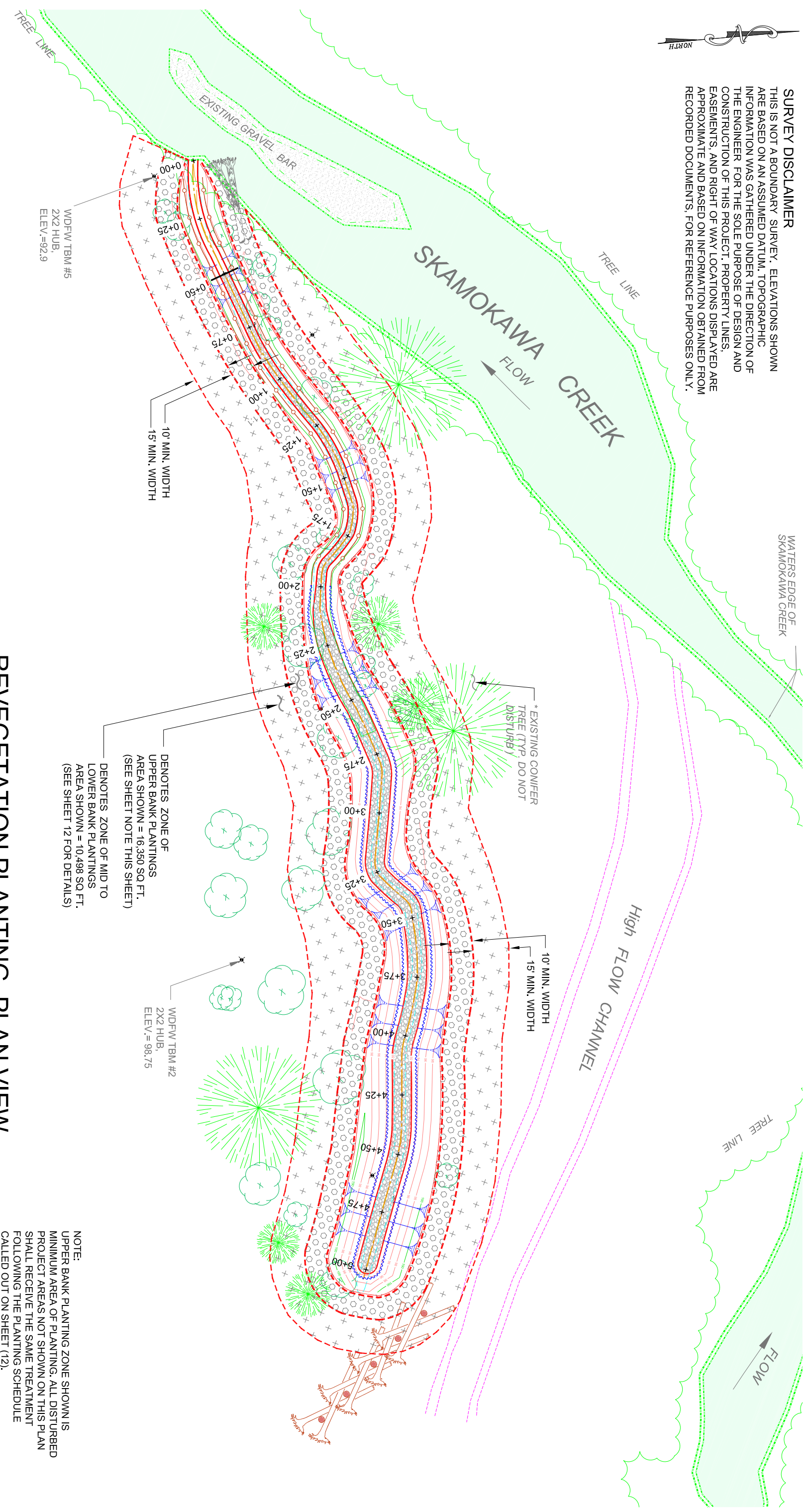
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SKAMOKAWA CREEK
CHUM SALMON GROUNDWATER
SPAWNING CHANNEL
EMLEN / DNR SITE

Date: 10 - 01 - 15
 Sheet: 10 of 13

SURVEY DISCLAIMER
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REVEGETATION PLANTING PLAN VIEW

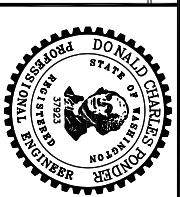
Scale: 1" = 20'

NOTE:
 UPPER BANK PLANTING ZONE SHOWN IS MINIMUM AREA OF PLANTING. ALL DISTURBED PROJECT AREAS NOT SHOWN ON THIS PLAN SHALL RECEIVE THE SAME TREATMENT FOLLOWING THE PLANTING SCHEDULE CALLED OUT ON SHEET (12).



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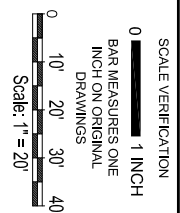
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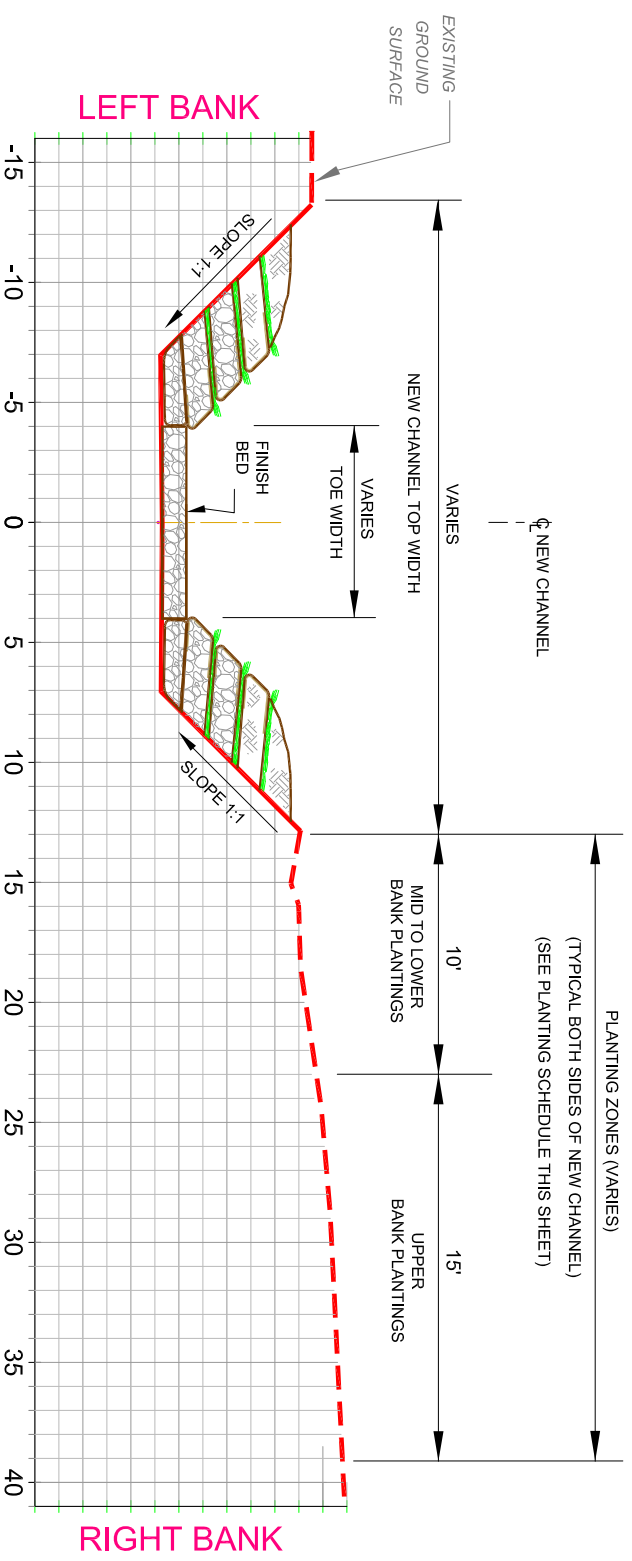


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SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLÉN / DNR SITE
REVEGETATION PLAN

Date:	10 - 01 - 15
Sheet:	11 of 13





TYPICAL PLANTING ZONE SECTION

Scale: N.T.S.

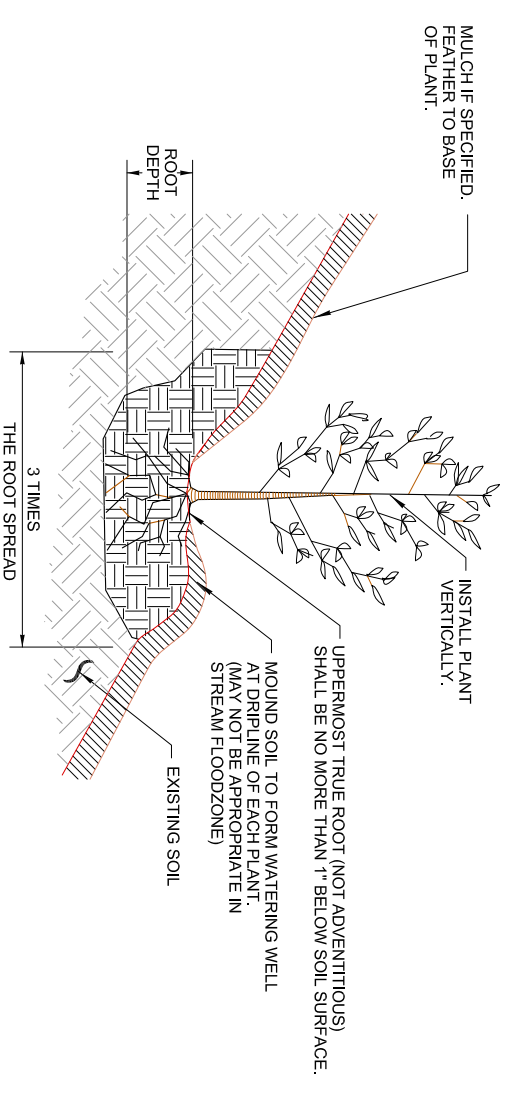
UPPER BANK PLANTING	SPACING	MID TO LOWER BANK PLANTING	SPACING
12" DOUGLAS FIR	20' ON CENTER	8" RED ALDER	10'-15' ON CENTER
12" WESTERN RED CEDAR	20' ON CENTER	8" PACIFIC NINEBARK	3- 5' ON CENTER
8" THIMBLEBERRY	3- 5' ON CENTER	8" SALMONBERRY	3- 5' ON CENTER
8" NOOTKA ROSE	3- 5' ON CENTER	8" VINE MAPLE	3- 5' ON CENTER
12" BIGLEAF MAPLE	20' ON CENTER		

PLANTING ZONE SCHEDULE

Scale: N.T.S.

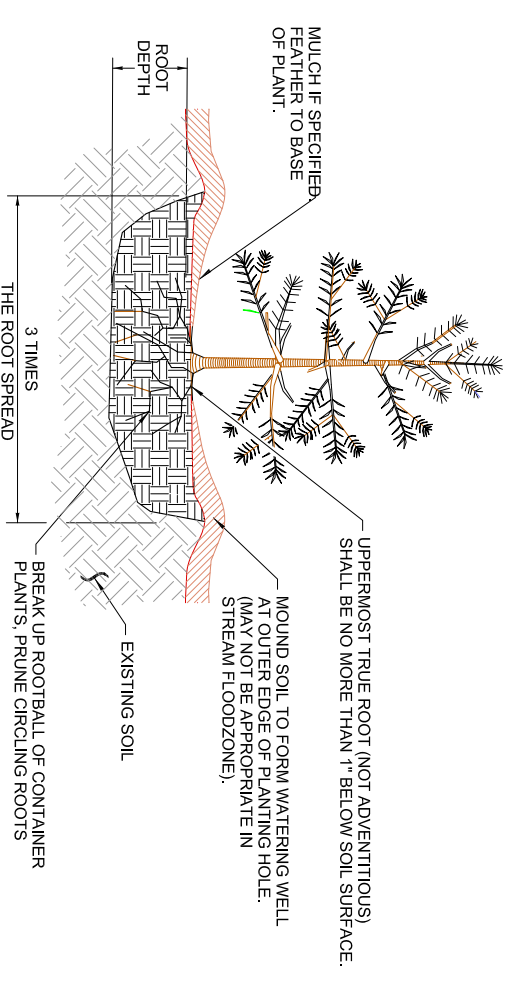
NOTES:

- 1 WDFW PROJECT BIOLOGIST SHALL FLAG ADDITIONAL AREAS THAT SHALL RECEIVE PLANTINGS
- 2 PLANTING ZONES PROVIDED ARE APPROXIMATE. APPROPRIATE PLANT SPECIES AND DISTRIBUTION VARY WITH EACH INDIVIDUAL SITE AND PLANT SPECIES CHARACTERISTICS.
- 3 HERBACEOUS PLANTINGS MAY BE APPROPRIATE WITH WOODY PLANTINGS.
- 4 PLANTING TO OCCUR WINTER OR EARLY SPRING.
- 5 PLANTS SHALL BE MIN. 2-YRS. OLD.
- 6 IF CONTAINERIZED PLANTS USED - MIN. 1 GA. CONTAINERS.
- 7 IF BARE ROOT STOCK USED, PLANTS SHALL BE PLANTED WITHIN (2) DAYS.



SLOPE PLANTING DETAIL

(INCLUDES ALL PLANTS ON SLOPES)
Scale: N.T.S.



SHRUB, TREE AND GROUND COVER PLANTING DETAIL

Scale: N.T.S.

STATE OF WASHINGTON
DEPARTMENT OF FISH & WILDLIFE
HABITAT PROGRAM

SWM	DATE	BY:	REVISION DESCRIPTION

PROJECT NO: _____

DESIGNED BY: P. KLAVAS

CHECKED BY: D. PONDER

DRAWN BY: B. GOWEN

FILE: _____

SCALE VERIFICATION

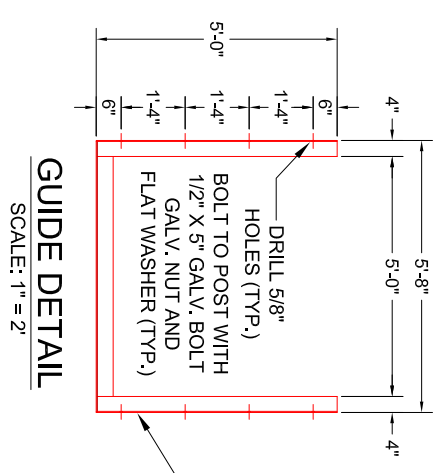
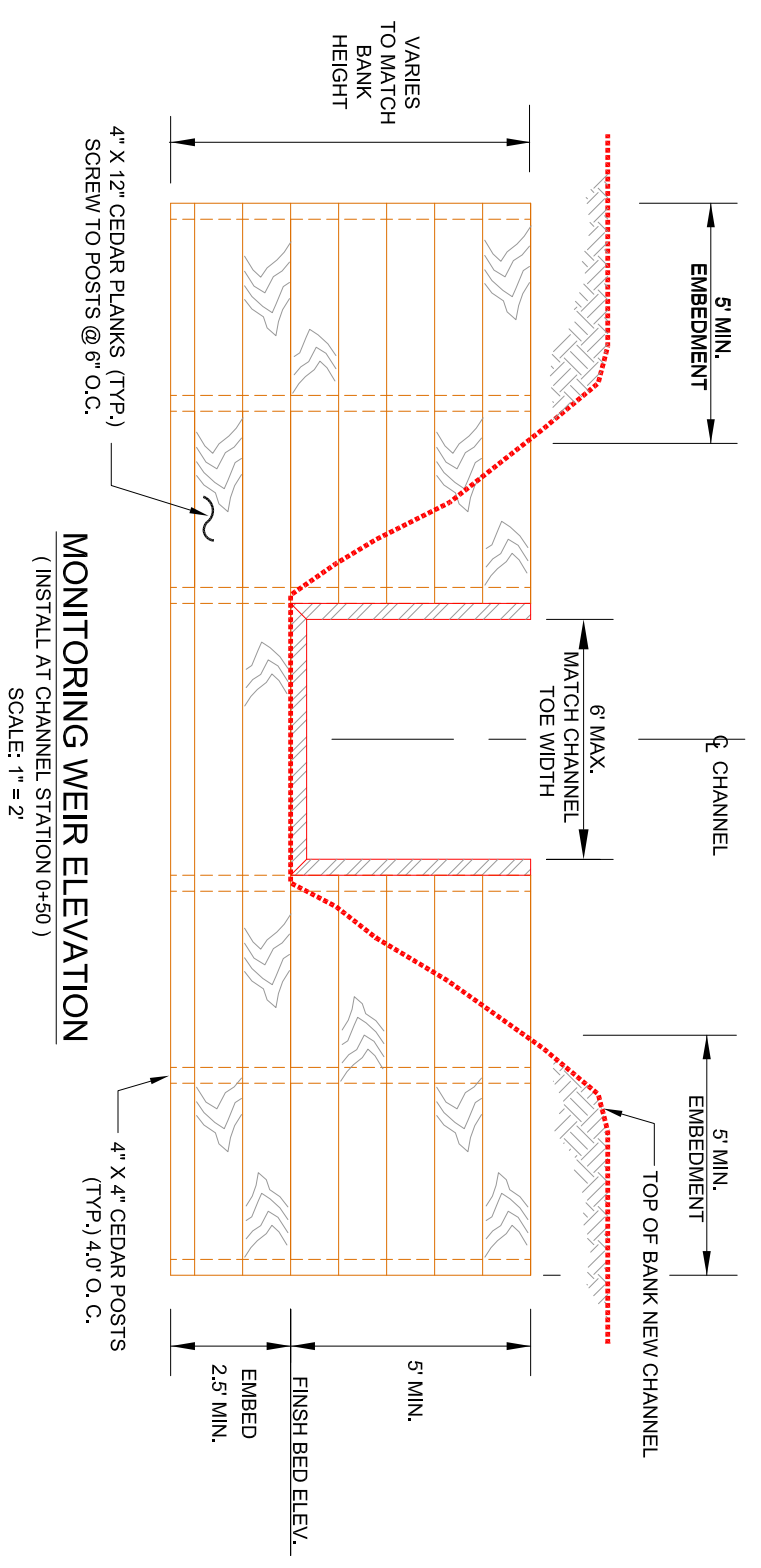
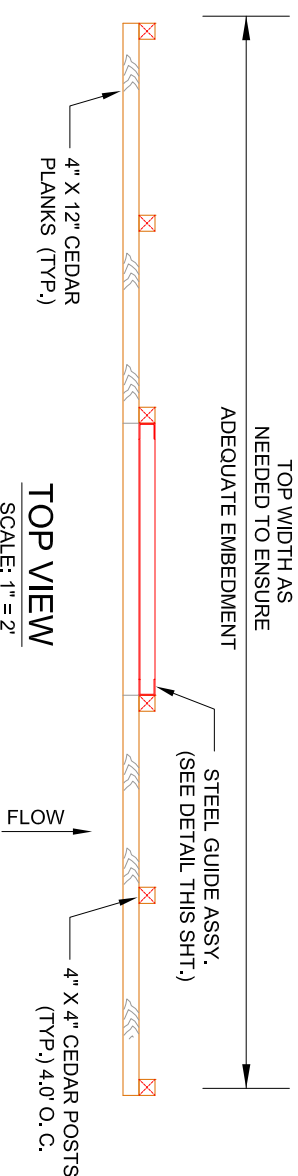
0 1 INCH

BAR MEASURES ONE INCH ON ORIGINAL DRAWINGS

SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLÉN / DNR SITE
REVEGETATION DETAILS

Date: 10 - 01 - 15

Sheet: 12 of 13

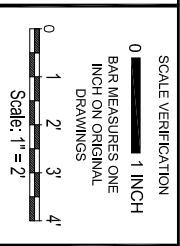


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SKAMOKAWA CREEK
CHUM SALMON SPAWNING CHANNEL
EMLEN / DNR SITE
MONITORING WEIR

Date: 10 - 01 - 15
Sheet: 13 of 13