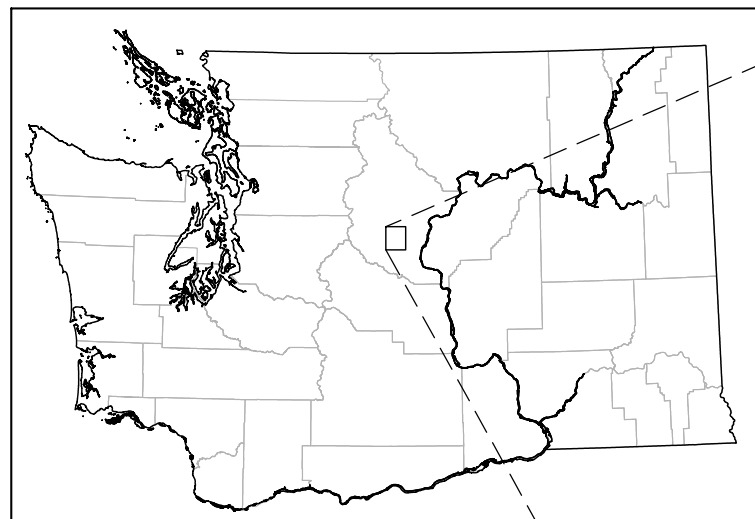


EAGLE CREEK ALLUVIAL WATER STORAGE PROJECT

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT



WASHINGTON STATE MAP

SCALE: 1" = 50 MILES
50 25 0 50 100



PROJECT LOCATION

VICINITY MAP

SCALE: 1" = 2000'

SHEET LIST INDEX	
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	SITE OVERVIEW AND ACCESS PLAN
3	SITE 1 PLAN
4	SITE 2 PLAN
5	CHANNEL STRUCTURE DETAILS
6	TYPICAL DETAILS AND STRUCTURE SCHEDULE

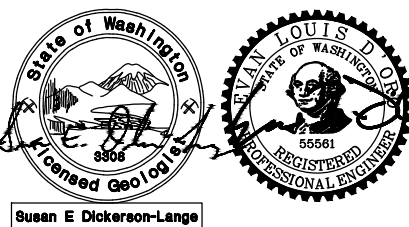
CONTACT INFORMATION

NATURAL SYSTEMS DESIGN, INC

1900 N NORTHLAKE WAY, SUITE 211
SEATTLE, WA 98103
(206) 834-0175

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT

411 WASHINGTON STREET, SUITE 201
WENATCHEE, WA 98801
(509) 667-6533



IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.



NAME OR INITIALS AND DATE	GEOGRAPHIC INFORMATION
DESIGNED ED, SDL	LATITUDE 47.654 N
CHECKED TA	LONGITUDE -120.517W
DRAWN ED	TN/SC/RG T25N/S19/R19E
CHECKED SDL	DATE MAY 2021

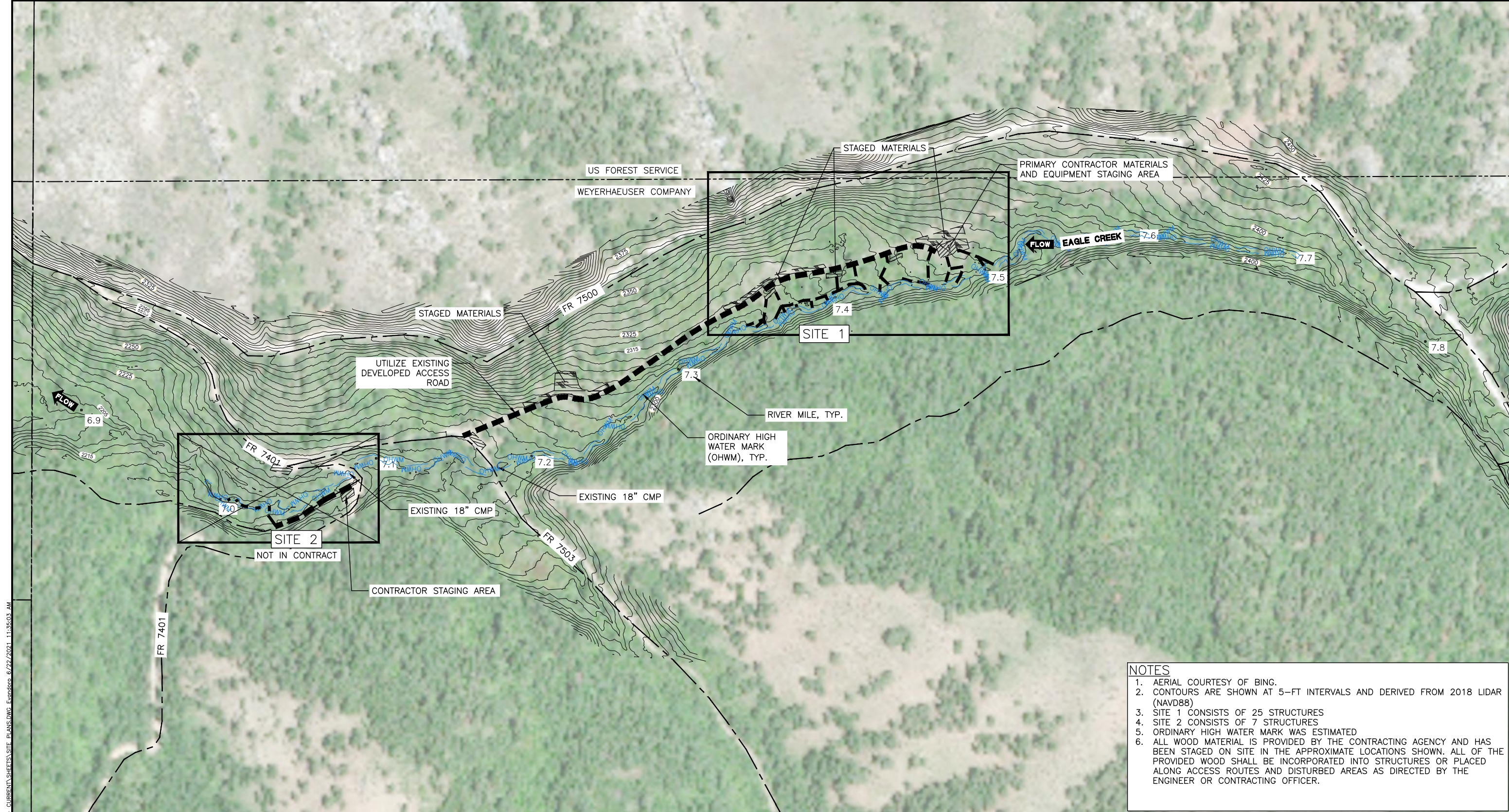
EAGLE CREEK ALLUVIAL WATER STORAGE PROJECT

COVER SHEET

1
SHEET 1 OF 6

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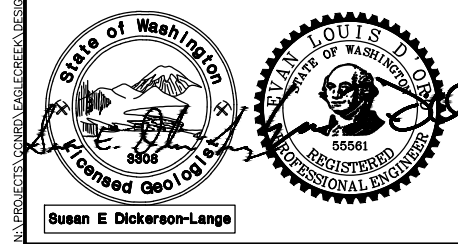
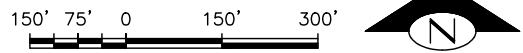
Jun 22, 2021 FINAL PLANS



- NOTES**
1. AERIAL COURTESY OF BING.
 2. CONTOURS ARE SHOWN AT 5-FT INTERVALS AND DERIVED FROM 2018 LIDAR (NAVD88)
 3. SITE 1 CONSISTS OF 25 STRUCTURES
 4. SITE 2 CONSISTS OF 7 STRUCTURES
 5. ORDINARY HIGH WATER MARK WAS ESTIMATED
 6. ALL WOOD MATERIAL IS PROVIDED BY THE CONTRACTING AGENCY AND HAS BEEN STAGED ON SITE IN THE APPROXIMATE LOCATIONS SHOWN. ALL OF THE PROVIDED WOOD SHALL BE INCORPORATED INTO STRUCTURES OR PLACED ALONG ACCESS ROUTES AND DISTURBED AREAS AS DIRECTED BY THE ENGINEER OR CONTRACTING OFFICER.

LEGEND

- EXISTING ROAD
- PARCEL BOUNDARY, APPROXIMATE
- ==== MAIN ACCESS ROAD, EXISTING OR NEEDS MINOR IMPROVEMENT
- TEMPORARY UNIMPROVED ACCESS ROAD FOR STREAM ACCESS



IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.



NAME OR INITIALS AND DATE		GEOGRAPHIC INFORMATION	
DESIGNED	ED, SDL	LATITUDE	47.654 N
CHECKED	TA	LONGITUDE	-120.517W
DRAWN	ED	TN/SC/RG	T25N/S19/R19E
CHECKED	SDL	DATE	MAY 2021

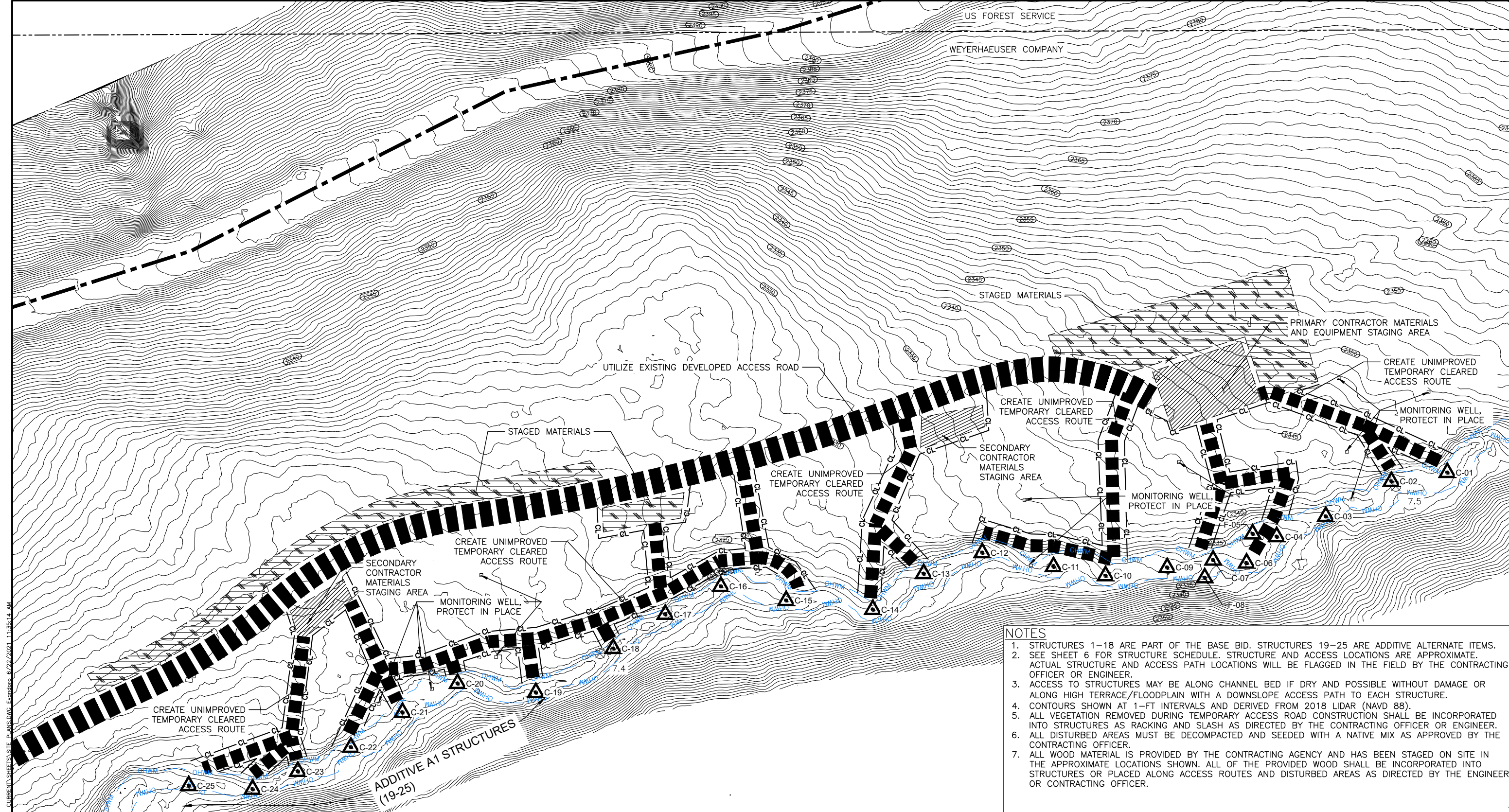
EAGLE CREEK ALLUVIAL WATER STORAGE PROJECT

SITE OVERVIEW AND ACCESS PLAN

2
SHEET **2** OF **6**


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
Jun 22, 2021 FINAL PLANS

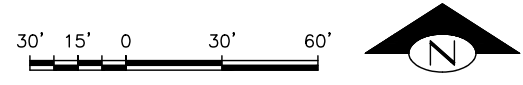




- NOTES**
- STRUCTURES 1-18 ARE PART OF THE BASE BID. STRUCTURES 19-25 ARE ADDITIVE ALTERNATE ITEMS.
 - SEE SHEET 6 FOR STRUCTURE SCHEDULE. STRUCTURE AND ACCESS LOCATIONS ARE APPROXIMATE. ACTUAL STRUCTURE AND ACCESS PATH LOCATIONS WILL BE FLAGGED IN THE FIELD BY THE CONTRACTING OFFICER OR ENGINEER.
 - ACCESS TO STRUCTURES MAY BE ALONG CHANNEL BED IF DRY AND POSSIBLE WITHOUT DAMAGE OR ALONG HIGH TERRACE/FLOODPLAIN WITH A DOWNSLOPE ACCESS PATH TO EACH STRUCTURE.
 - CONTOURS SHOWN AT 1-FT INTERVALS AND DERIVED FROM 2018 LIDAR (NAVD 88).
 - ALL VEGETATION REMOVED DURING TEMPORARY ACCESS ROAD CONSTRUCTION SHALL BE INCORPORATED INTO STRUCTURES AS RACKING AND SLASH AS DIRECTED BY THE CONTRACTING OFFICER OR ENGINEER.
 - ALL DISTURBED AREAS MUST BE DECOMPACTED AND SEEDED WITH A NATIVE MIX AS APPROVED BY THE CONTRACTING OFFICER.
 - ALL WOOD MATERIAL IS PROVIDED BY THE CONTRACTING AGENCY AND HAS BEEN STAGED ON SITE IN THE APPROXIMATE LOCATIONS SHOWN. ALL OF THE PROVIDED WOOD SHALL BE INCORPORATED INTO STRUCTURES OR PLACED ALONG ACCESS ROUTES AND DISTURBED AREAS AS DIRECTED BY THE ENGINEER OR CONTRACTING OFFICER.

LEGEND

C-# CHANNEL STRUCTURE 

F-# FLOODPLAIN ROUGHNESS 

Susan E Dickerson-Lange
Licensed Geologist

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.



Natural Systems Design

NAME OR INITIALS AND DATE	GEOGRAPHIC INFORMATION
DESIGNED ED, SDL	LATITUDE 47.654 N
CHECKED TA	LONGITUDE -120.517W
DRAWN ED	TN/SC/RG T25N/S19/R19E
CHECKED SDL	DATE MAY 2021

EAGLE CREEK ALLUVIAL WATER STORAGE PROJECT

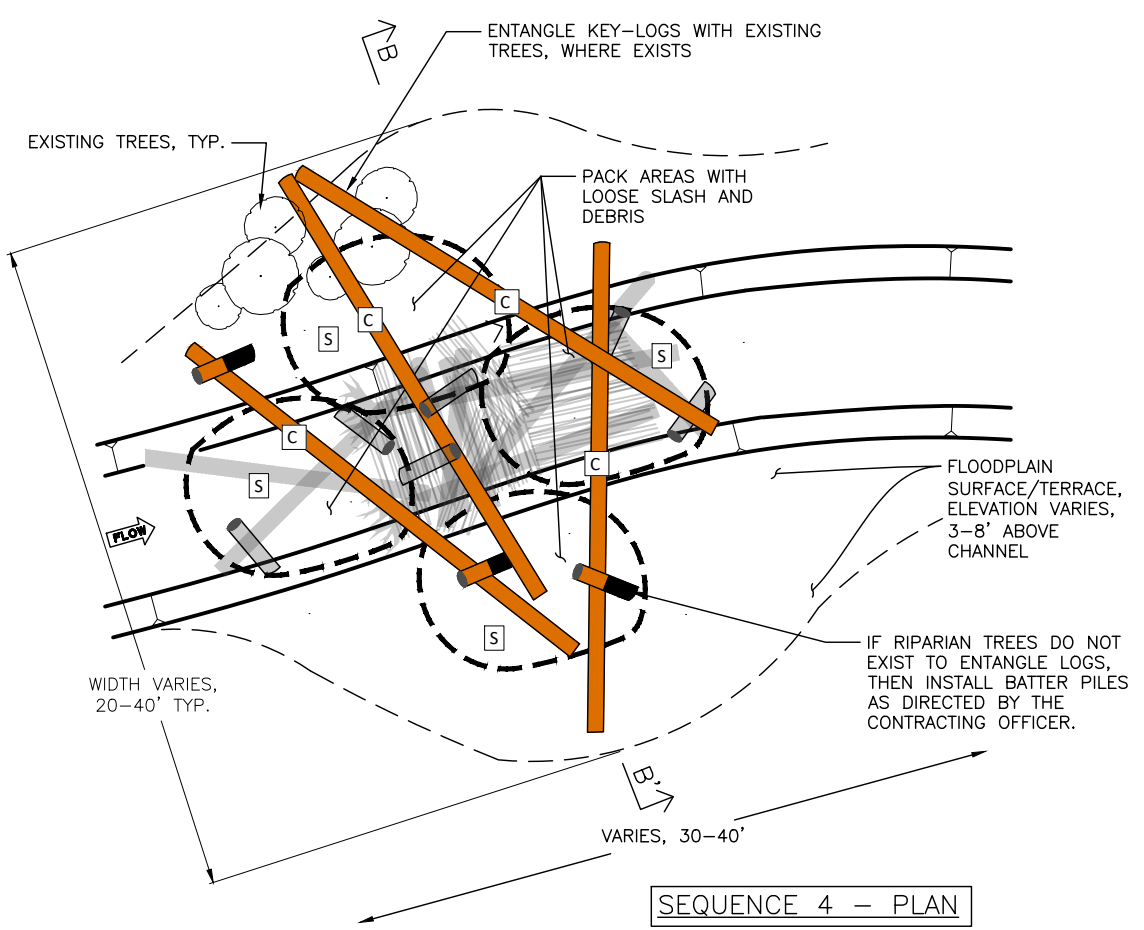
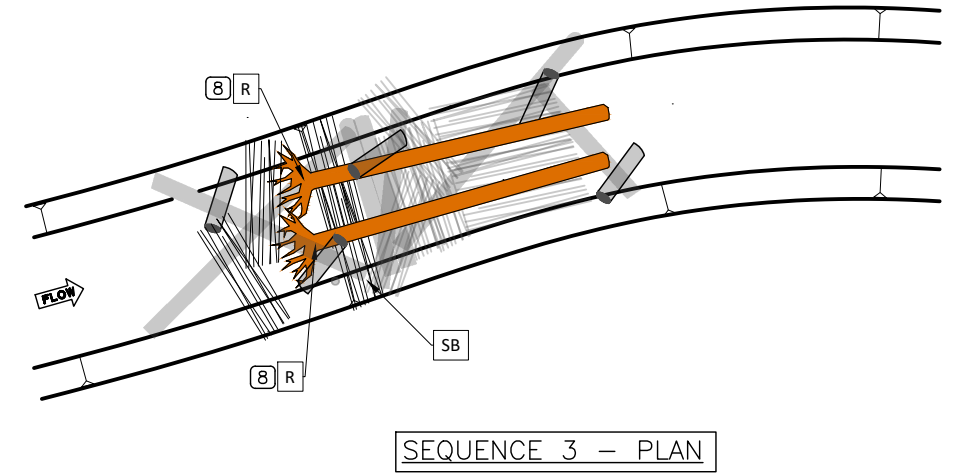
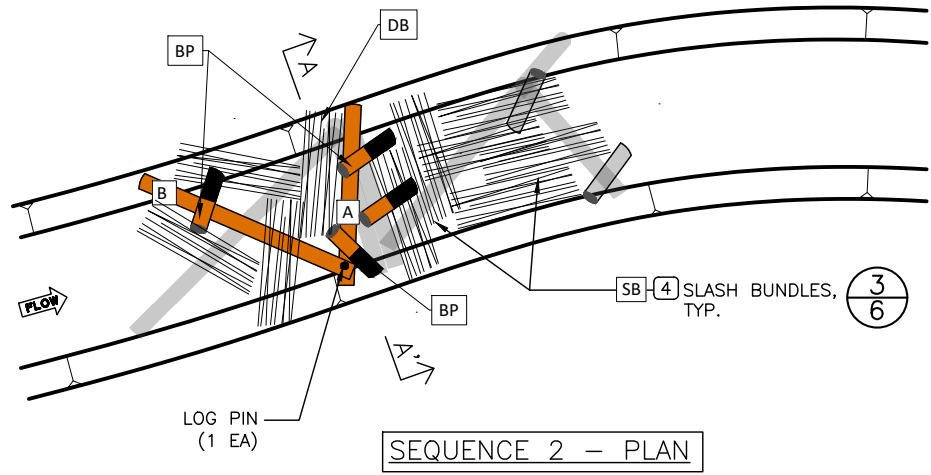
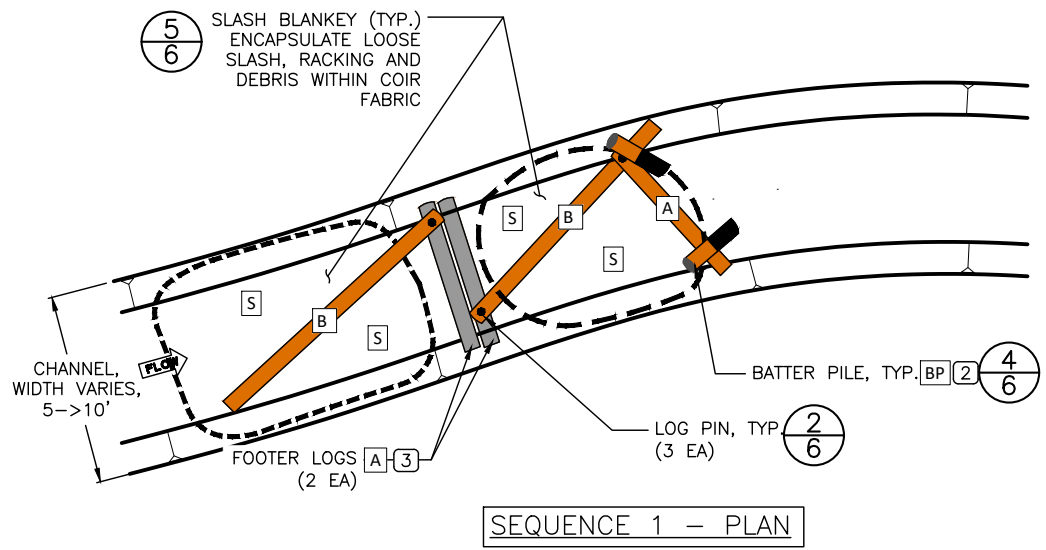
SITE 1 PLAN

3

SHEET 3 OF 6

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Jun 22, 2021 FINAL PLANS

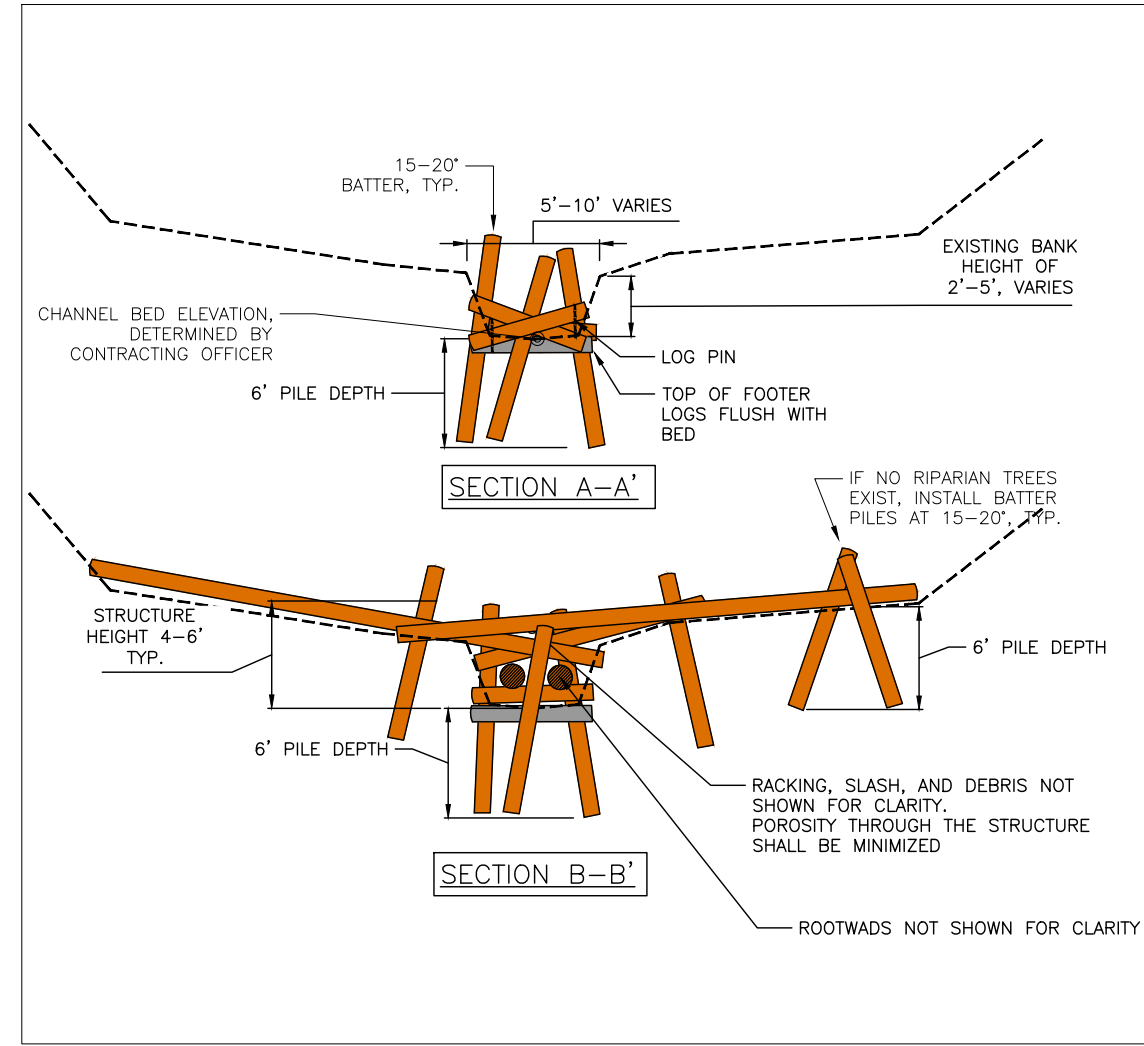


GENERAL NOTES

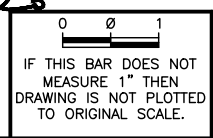
- ACTUAL LAYERING WILL VARY TO SUIT FIELD CONDITIONS. THE ENGINEER OR CONTRACTING OFFICER SHALL DIRECT THE LAYERING. SEQUENCE 1 AND 2 ARE CRITICAL.
- PILES SHALL BE 8" DIAMETER MIN. AT THE BUTT (7" MIN AT TIP) AND BE DRIVEN IN PLACE (NO EXCAVATION). PILES SHALL BATTER 15-20 DEG FROM VERTICAL AND "TRAP" SURROUNDING LOGS.
- CUT FOOTER LOGS IN PLACE SNUG TO CHANNEL TOES. LOG TOP TO BE FLUSH WITH CHANNEL BED.
- DEBRIS BUNDLES SHALL SURROUND PILES TO PROTECT FROM SCOUR. VOIDS SHALL BE PACKED WITH LOOSE DEBRIS AND SLASH.
- LOG LENGTHS WILL VARY AND BE CUT IN PLACE TO FIT CHANNEL DIMENSIONS PER CONTRACTING OFFICER OR ENGINEER. CUT ENDS SHALL BE INCORPORATED INTO STRUCTURE OR USED AS DIRECTED BY CONTRACTING OFFICER OR ENGINEER.
- HARVEST OR SALVAGE OF ON-SITE WOODY DEBRIS WILL BE DIRECTED BY THE CONTRACTING OFFICER. ANY VEGETATION CLEARED DURING ACCESS SHALL BE INCORPORATED INTO THE STRUCTURE.
- ENTANGLEMENT OF SEQUENCE 4 LOGS WITH RIPARIAN TREES IS PREFERRED TO BATTER PILE INSTALLATION. THE CONTRACTING OFFICER OR ENGINEER SHALL SPECIFY HOW TO ENTANGLE LOGS WITH RIPARIAN TREES.
- AT LEAST 1 ROOTWAD SHALL BE INSTALLED. DEPENDING ON CHANNEL SIZE, 2 MAY NOT BE NECESSARY. QUANTITY AT EACH STRUCTURE WILL BE DETERMINED BY CONTRACTING OFFICER

CHANNEL STRUCTURE QUANTITIES

LOG TYPE	STRUCTURE MEMBER	QUANTITY PER SEQUENCE				TOTAL QUANTITY PER STRUCTURE
		1	2	3	4	
BP	Batter Pile, 15' L x 8" DIA	2	4		0-6	6-12
A	Log, 5-10' L x 14-16" DBH	3	2			5
B	Log, 15-20' L x 14-16" DBH	2				2
C	Log, 20-40' L x 14-16" DBH				4	4
R	Rootwad, 20-40' L x 14-16" DBH			1-2		1-2
SB	Slash Bundle		6-8	2-4		8-12
S	Loose Slash (CY)		20		20	40
	Log Pin	3	1			4



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DRAWN ED	TN/SC/RG T25N/S19/R19E
CHECKED SDL	DATE MAY 2021

EAGLE CREEK ALLUVIAL WATER STORAGE PROJECT

CHANNEL STRUCTURE SCALE: 1"=6' (1/3,4)

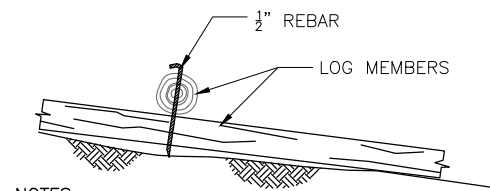
CHANNEL STRUCTURE DETAILS

5 SHEET 5 OF 6

Jun 22, 2021 FINAL PLANS

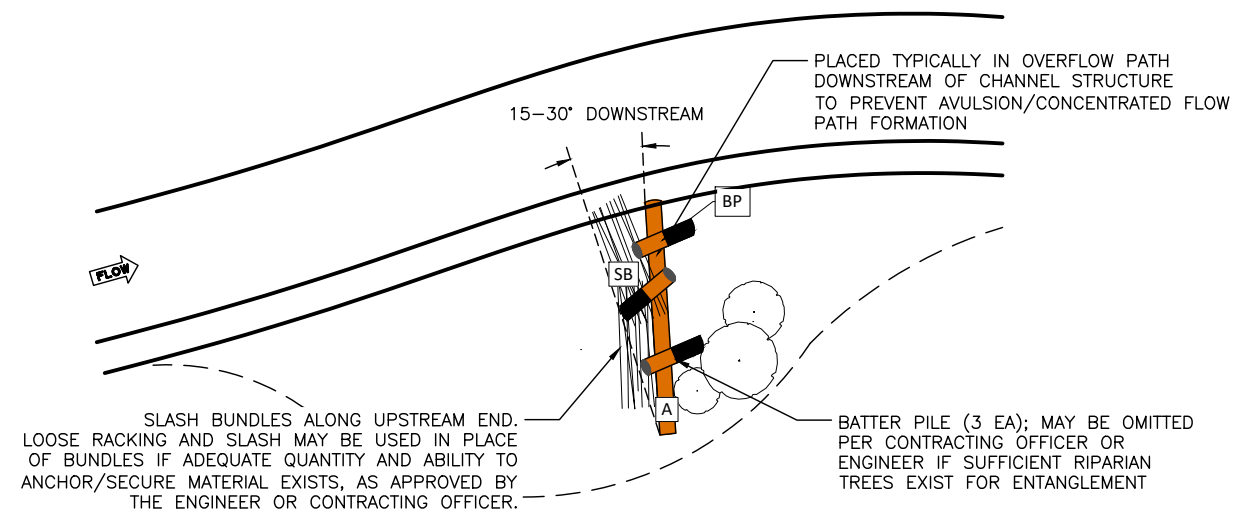
SITE 1 STRUCTURE SCHEDULE

STRUCTURE #	TYPE	NORTHING (USF)	EASTING (USF)	BASE OR ALT BID ITEM	LOCATION NOTES
C-01	Channel	239405	1719799	BASE	Build on existing woody debris blockage
C-02	Channel	239400	1719763	BASE	Tie into LB inset floodplain tree
C-03	Channel	239377	1719721	BASE	Floodplain constriction, tie into ex. floodplain trees
C-04	Channel	239364	1719689	BASE	D.S. of constriction, span floodplain, 40-50'
F-05	Floodplain Roughness	239366	1719674	BASE	Roughen overflow on RB
C-06	Channel	239347	1719670	BASE	Located on outside meander, inset fp to right
C-07	Channel	239349	1719648	BASE	Floodplain constiction, tie into ex. floodplain trees and bed log
F-08	Floodplain Roughness	239338	1719643	BASE	Roughen overflow on LB
C-09	Channel	239344	1719619	BASE	Tie into ex. trees
C-10	Channel	239339	1719579	BASE	Place 40' d.s. of C-09
C-11	Channel	239345	1719546	BASE	Place 40' d.s. of C-10
C-12	Channel	239354	1719500	BASE	Place 40' d.s. of C-11
C-13	Channel	239340	1719462	BASE	Place 40' d.s. of C-12
C-14	Channel	239317	1719430	BASE	Place 40' d.s. of C-13
C-15	Channel	239323	1719374	BASE	DS of constriction,fp to right, tie into ex. trees on LB
C-16	Channel	239332	1719332	BASE	At constriction before narrow corridor, tie into ex. trees on LB
C-17	Channel	239314	1719296	BASE	Place 40' d.s. of C-16
C-18	Channel	239292	1719263	BASE	Place 40' d.s. of C-17
C-19	Channel	239264	1719213	ALT	Place 40' d.s. of C-18
C-20	Channel	239270	1719163	ALT	Place 40' d.s. of C-19
C-21	Channel	239251	1719127	ALT	Place 40' d.s. of C-20
C-22	Channel	239229	1719094	ALT	Place 40' d.s. of C-21
C-23	Channel	239213	1719060	ALT	Place 40' d.s. of C-22
C-24	Channel	239201	1719031	ALT	Place 40' d.s. of C-23
C-25	Channel	239204	1718990	ALT	Place 40' d.s. of C-24



- NOTES
1. REBAR MUST BE CLEAN AND FREE OF FORM RELEASE OIL OR ANY OTHER CONTAMINANTS.
 2. REBAR MAY BE SUBSTITUTED FOR A 1" WOODEN DOWEL OR MANILLA ROPE LASHING. LOCATIONS AND QUANTITY OF DOWELS OR LASHING WOULD BE SPECIFIED BY THE CONTRACTING OFFICER.
 3. LOG PINS MAY ALSO BE OMITTED BY THE ENGINEER IF BATTER PILE INSTALLATION IS SUFFICIENT TO PROVIDE EQUALLY SOUND CONTACT BETWEEN LOG MEMBERS.
 4. REBAR SHALL BE GRADE 60 PER ASTM A615.

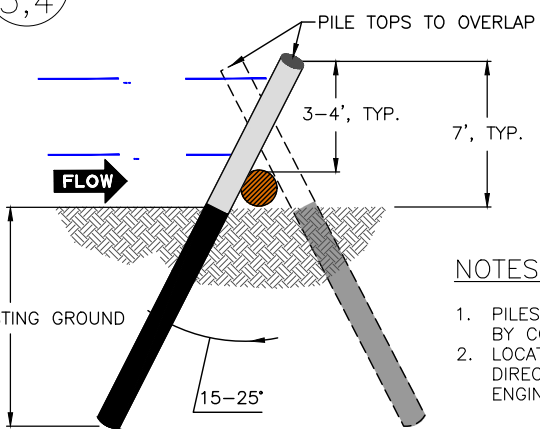
LOG PIN $\frac{2}{5}$
SCALE: NOT TO SCALE



FLOODPLAIN ROUGHNESS $\frac{1}{3,4}$
SCALE: NOT TO SCALE

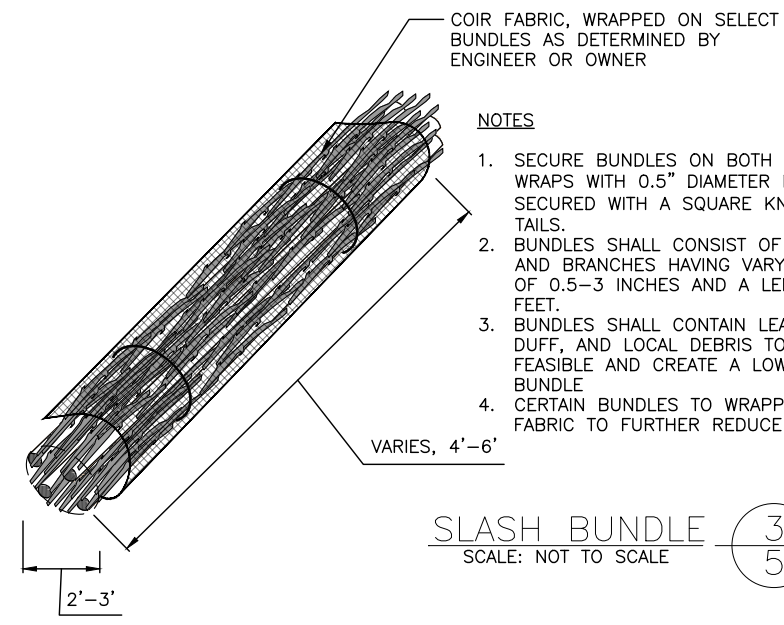
FLOODPLAIN ROUGHNESS STRUCTURE QUANTITIES

LOG TYPE	STRUCTURE MEMBER	TOTAL QUANTITY
BP	Batter Pile, 15' L x 8" DIA	3
B	Log, 15-20' L x 14-16" DBH	1
SB	Slash Bundle	2-3

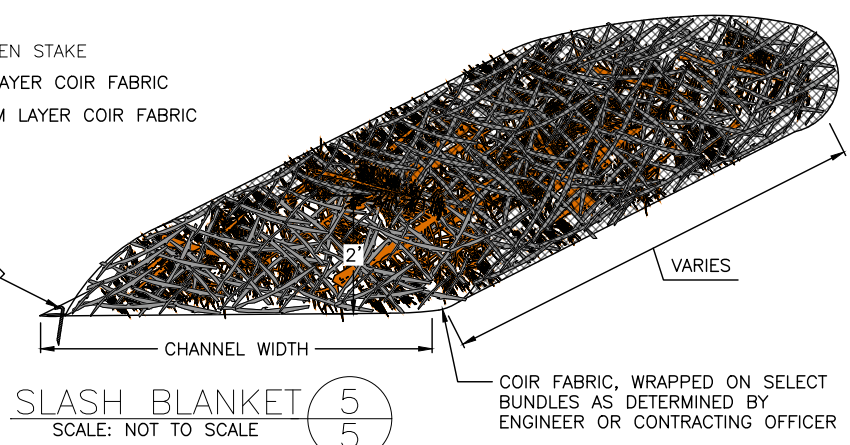
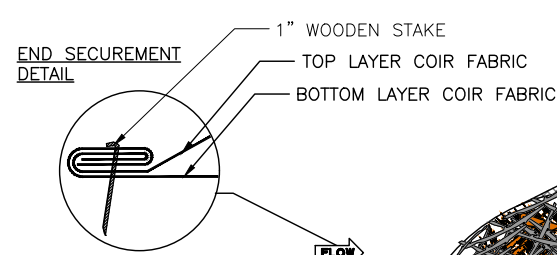


- NOTES:
1. PILES TO BE ANGLED BY AS DIRECTED BY CONTRACTING OFFICER OR ENGINEER.
 2. LOCATIONS AND ORIENTATION TO BE DIRECTED BY CONTRACTING OFFICER OR ENGINEER.

BATTER PILE $\frac{4}{5}$
SCALE: NOT TO SCALE



SLASH BUNDLE $\frac{3}{5}$
SCALE: NOT TO SCALE



SLASH BLANKET $\frac{5}{5}$
SCALE: NOT TO SCALE

- NOTES
1. LAY A LAYER OF COIR FABRIC ACROSS THE CHANNEL BED, PARALLEL TO THE DIRECTION OF FLOW.
 2. LAYER SLASH OVER THE UPSTREAM HALF OF THE FABRIC, LEAVING A 3' LONG TAIL AT THE UPSTREAM END FOR SECURING THE BUNDLE.
 3. WRAP THE REMAINING FABRIC OVER THE TOP OF THE LAYERED SLASH AND PULL TAUT.
 4. SECURE THE ENDS OF THE BUNDLE AS SHOWN, WITH A MINIMUM OF TWO FOLDS OF THE DOUBLE LAYERED COIR FABRIC. SECURE THE FOLDED END TO THE CHANNEL BED WITH WOODEN STAKES EVERY 24" MAX.

SITE 2 STRUCTURE SCHEDULE

STRUCTURE #	TYPE	NORTHING (USF)	EASTING (USF)	BASE OR ALT BID ITEM	LOCATION NOTES
C-26	Channel	238631	1717452	NOT IN CONTRACT	Just DS of confluence of multiple channels
F-27	Floodplain Roughness	238612	1717463	NOT IN CONTRACT	Roughen floodplain
F-28	Floodplain Roughness	238644	1717463	NOT IN CONTRACT	Roughen floodplain
C-29	Channel	238633	1717410	NOT IN CONTRACT	Place 40' d.s. of C-17
C-30	Channel	238646	1717372	NOT IN CONTRACT	DS of construction, infp to left
C-31	Channel	238662	1717348	NOT IN CONTRACT	Mid meander
C-32	Channel	238650	1717326	NOT IN CONTRACT	US of floodplain constriction, tie into large cottonwood

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.



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CHECKED TA	DRAWN ED	LATITUDE 47.654 N
CHECKED SDL	DATE MAY 2021	LONGITUDE -120.517W
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EAGLE CREEK ALLUVIAL WATER STORAGE PROJECT

TYPICAL DETAILS AND STRUCTURE SCHEDULE

Jun 22, 2021 FINAL PLANS