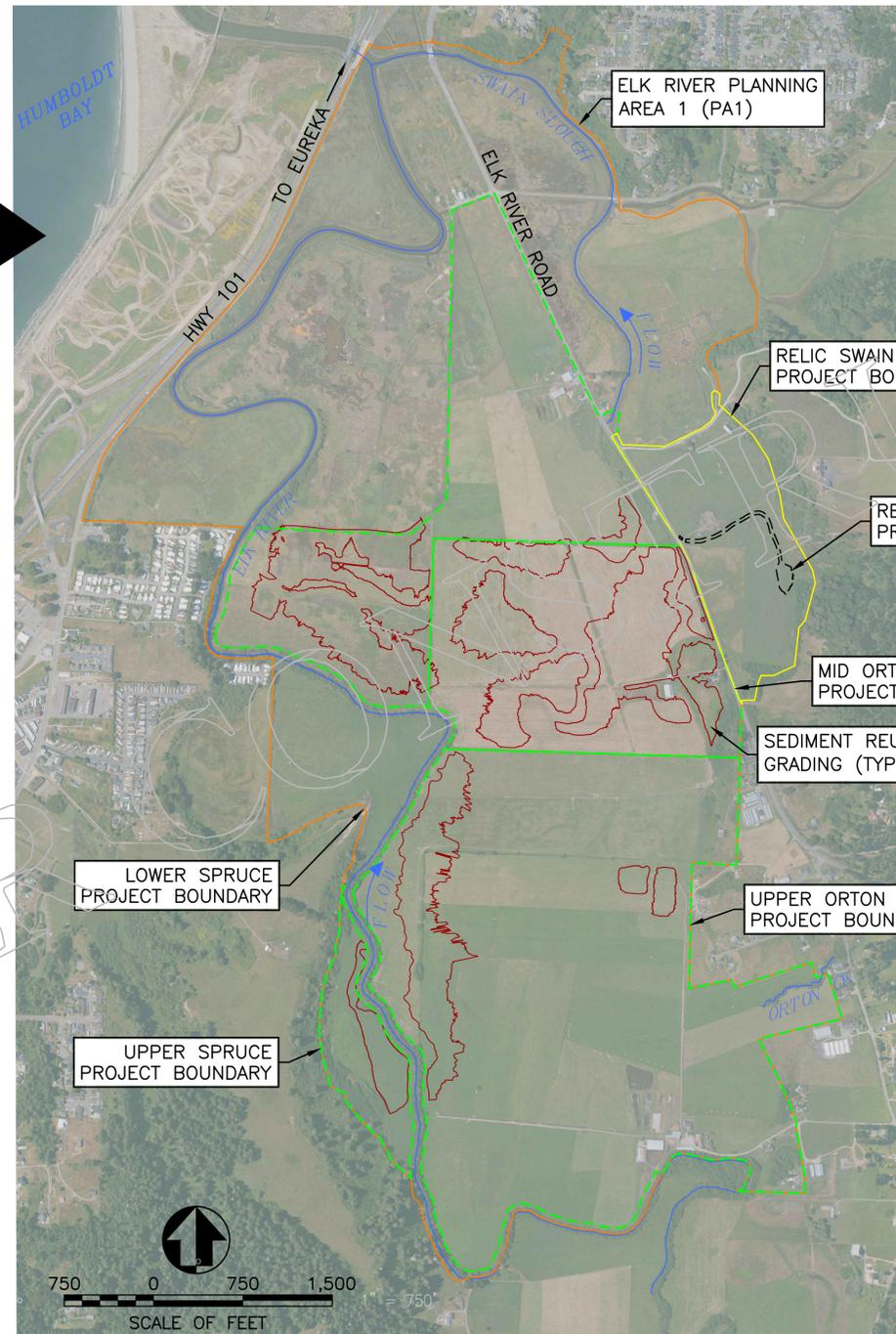
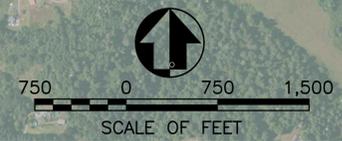


ELK RIVER PLANNING AREA 1 65% DESIGN: RELIC SWAIN SLOUGH PERMIT SET HUMBOLDT COUNTY, CALIFORNIA



SHEET INDEX

CIVIL SHEETS		
1	G1	COVER
2	G2	EXISTING CONDITIONS
3	G3	CONTRACTOR USE AREAS & ACCESS
4	C1C	COLOR SITE OVERVIEW
5	C2	PROFILE AND SECTIONS
6	C3	ISOPACH
7	C4C	COLOR SITE OVERVIEW: SEDIMENT REUSE
8	C5	SECTIONS: SEDIMENT REUSE
9	C6	ISOPACH: SEDIMENT REUSE
10	C7	DETAILS



Plotted: 10/13/2025 4:32 PM - By: LICENSED USER - R17.1 - File: G1-COVER-RELIC-SWAIN-65PER-DRAFT-PERMIT

THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF JEFFREY K. ANDERSON P.E. LICENSE # 50713

ELK PA-1 65% DESIGN: PERMIT SET



Northern Hydrology & Engineering

- Engineering
- Hydrology
- Geomorphology
- Water Resources

PO BOX 2515, MCKINLEYVILLE, CA 95519 (707) 839-2195

DESIGNED:
NHE
TC
TECH. REVIEW:
JRP, JKA
DATE:
10/13/2025

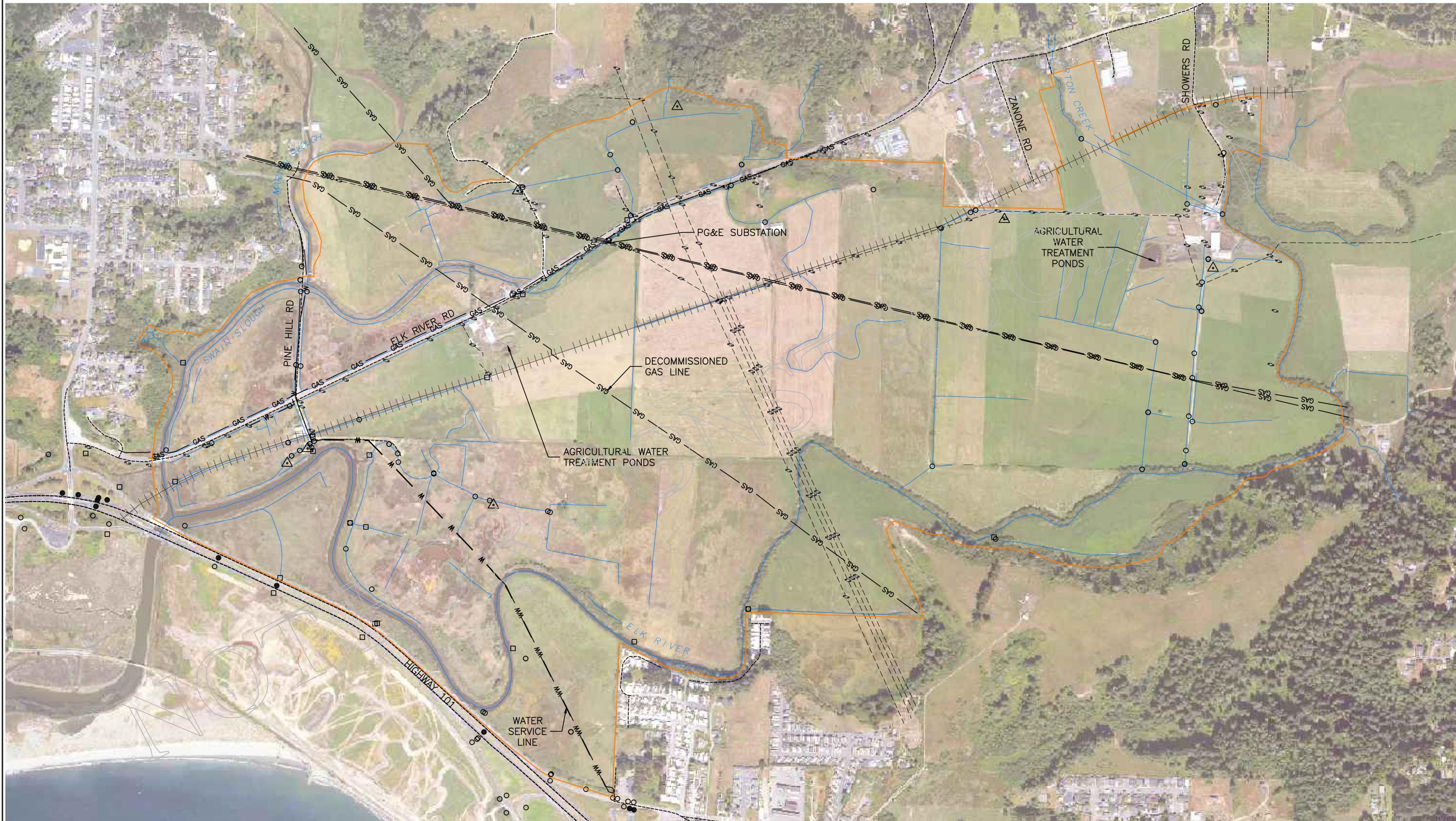
SUB SHEET NO.
G1

TITLE OF SHEET
**COVER
RELIC SWAIN SLOUGH
PROJECT**

HUMBOLDT COUNTY, CA

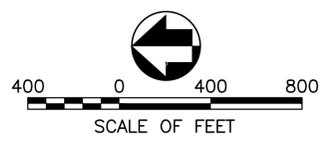
SHEET
1
OF
10

Plotted: 10/13/2025 4:31 PM - By: LICENSED USER - R17.1 - File: G2-EXISTING-CONDITIONS



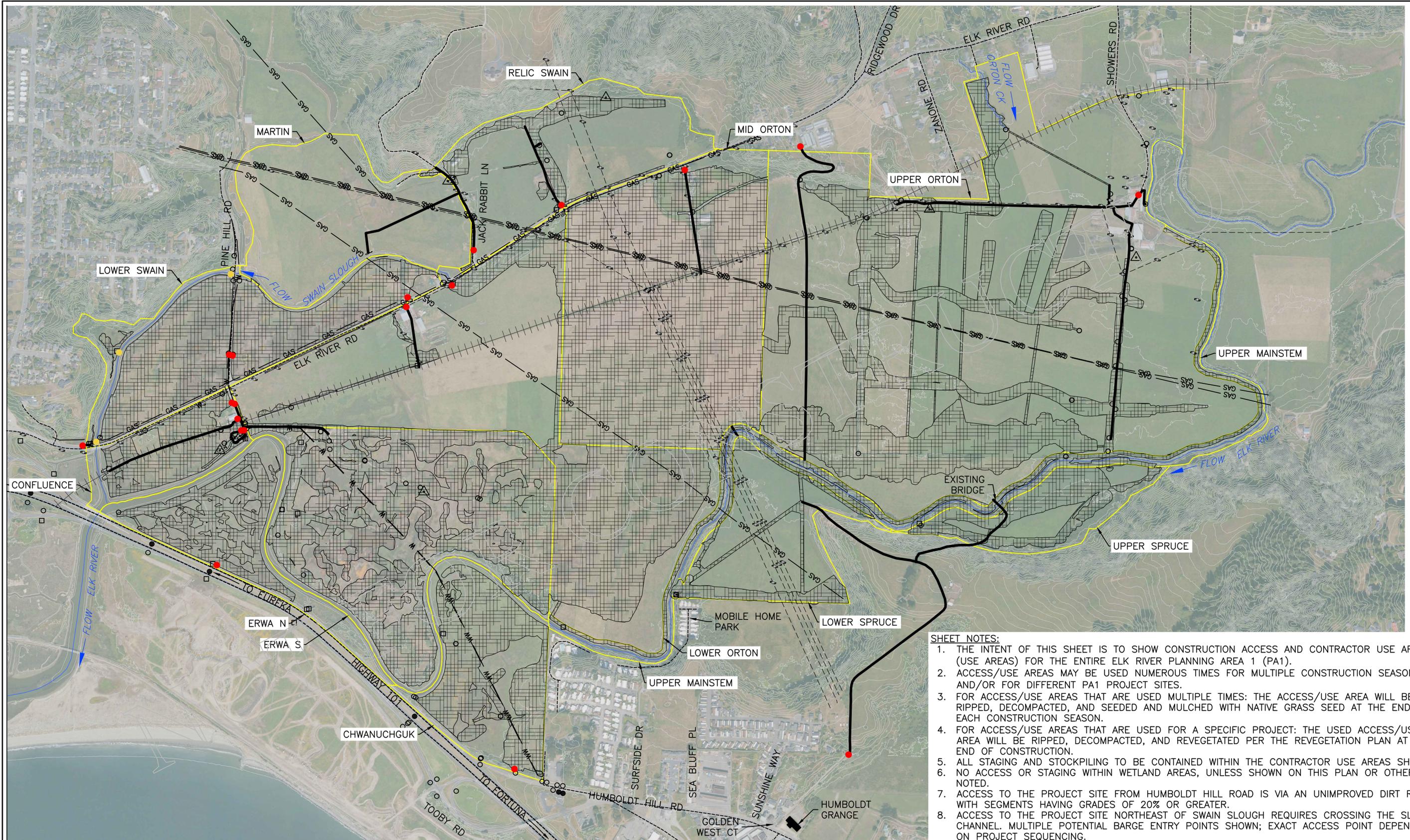
- | | | | | | |
|--|--------------------|--|-----------------------|--|---------------|
| | PLANNING AREA 1 | | OVERHEAD UTILITY LINE | | CULVERT |
| | HIGHWAY | | WATER LINE | | DROP INLET |
| | MAIN ROAD | | RIVER CENTERLINE | | TIDE GATE |
| | ABANDONED RAILROAD | | STREAMS | | ARTESIAN WELL |
| | GAS | | DRAINAGE CHANNEL | | UTILITY POLE |

SHEET NOTES:
 1) ALL INFRASTRUCTURE LOCATIONS ARE APPROXIMATE.



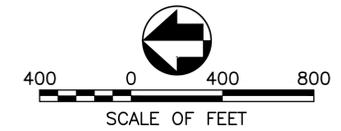
DESIGNED: NHE CV, JRP		SUB SHEET NO. G2		TITLE OF SHEET EXISTING CONDITIONS OVERVIEW PLANNING AREA 1		SHEET 2 OF 8	
TECH. REVIEW: JRP, BSP, JKA				HUMBOLDT COUNTY, CA			
DATE: 10/13/2025							

Plotted: 10/13/2025 4:29 PM - By: LICENSED USER - R17.1 - File: G3-CONTRACTOR USE-&-ACCESS-65PER-PERMIT



- SHEET NOTES:**
1. THE INTENT OF THIS SHEET IS TO SHOW CONSTRUCTION ACCESS AND CONTRACTOR USE AREAS (USE AREAS) FOR THE ENTIRE ELK RIVER PLANNING AREA 1 (PA1).
 2. ACCESS/USE AREAS MAY BE USED NUMEROUS TIMES FOR MULTIPLE CONSTRUCTION SEASONS AND/OR FOR DIFFERENT PA1 PROJECT SITES.
 3. FOR ACCESS/USE AREAS THAT ARE USED MULTIPLE TIMES: THE ACCESS/USE AREA WILL BE RIPPED, DECOMPACTED, AND SEEDED AND MULCHED WITH NATIVE GRASS SEED AT THE END OF EACH CONSTRUCTION SEASON.
 4. FOR ACCESS/USE AREAS THAT ARE USED FOR A SPECIFIC PROJECT: THE USED ACCESS/USE AREA WILL BE RIPPED, DECOMPACTED, AND REVEGETATED PER THE REVEGETATION PLAN AT THE END OF CONSTRUCTION.
 5. ALL STAGING AND STOCKPILING TO BE CONTAINED WITHIN THE CONTRACTOR USE AREAS SHOWN.
 6. NO ACCESS OR STAGING WITHIN WETLAND AREAS, UNLESS SHOWN ON THIS PLAN OR OTHERWISE NOTED.
 7. ACCESS TO THE PROJECT SITE FROM HUMBOLDT HILL ROAD IS VIA AN UNIMPROVED DIRT ROAD WITH SEGMENTS HAVING GRADES OF 20% OR GREATER.
 8. ACCESS TO THE PROJECT SITE NORTHEAST OF SWAIN SLOUGH REQUIRES CROSSING THE SLOUGH CHANNEL. MULTIPLE POTENTIAL BARGE ENTRY POINTS SHOWN; EXACT ACCESS POINT DEPENDENT ON PROJECT SEQUENCING.

— — — — —	EXISTING CONTOUR (5-FT INTERVAL)	○	CULVERT (E)
— GAS —	GASLINE (E)	⊕	DROP INLET
— — — — —	OVERHEAD UTILITY LINE (E)	△	ARTESIAN WELL
— + + + —	ABANDONED RAILROAD	●	ACCESS POINT (E)
— w —	WATER LINE	●	ACCESS POINT: POTENTIAL BARGE ENTRY LOCATION (SEE NOTE #8)
— — — — —	HIGHWAY	—	ACCESS ROAD (E)
— — — — —	MAIN ROAD	▨	CONTRACTOR USE AREA
○	UTILITY POLE (E)		
□	TIDE GATE (E)		



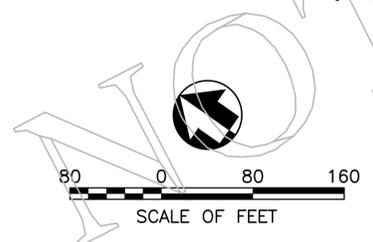
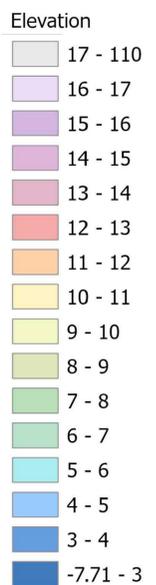
ELK PA1 65% DESIGN: PERMIT SET		G3	CONTRACTOR USE AREAS & ACCESS PLANNING AREA 1	SHEET
DESIGNED: NHE GADD BD TECH. REVIEW:	SUB SHEET NO.			TITLE OF SHEET
DATE: 10/13/2025		HUMBOLDT COUNTY, CA		

Plotted: 10/15/2025 9:30 AM - By: LICENSED USER - R17.1 - File: 06_RELIC-SWAIN-PRELIM-65%-DRAFT-PERMIT-SET



KEY NOTES:

- ① CHANNEL (D)
- ② POND (D)
- ③ REPLACE TIDE GATE DOOR (D)
- ④ REPLACE CULVERT AND UPGRADE CROSSING (D)
- ⑤ TIDE GATE (D)
- ⑥ REMOVE STRUCTURE
- ⑦ PROTECT WELL



SHEET NOTES:

- 1. (XS-1) REFERS TO CROSS-SECTION LOCATION; SEE CROSS SECTION SHEET.
- 2. (LP-1) REFERS TO LONG-PROFILE LOCATION; SEE LONG PROFILE SHEET.
- 3. TIE FENCE (D) INTO FENCE (E). FENCE (E) NOT SHOWN. GATES (D) NOT SHOWN; LOCATIONS TO BE COORDINATED WITH LANDOWNER BEFORE CONSTRUCTION.
- 4. NOT ALL OVERHEAD UTILITY LINES SHOWN.
- 5. SEDIMENT REUSE LOCATIONS NOT SHOWN ON THIS SHEET; REFER TO SEDIMENT REUSE OVERVIEW SHEETS C4C-C6.

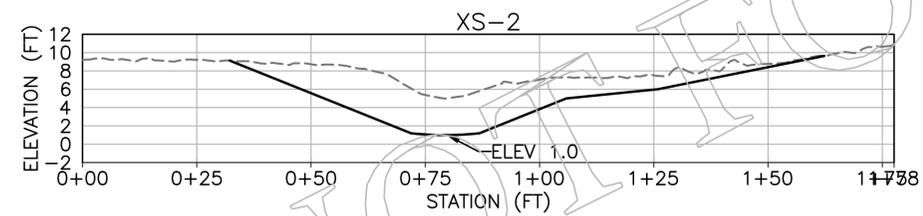
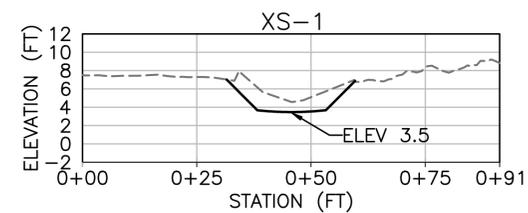
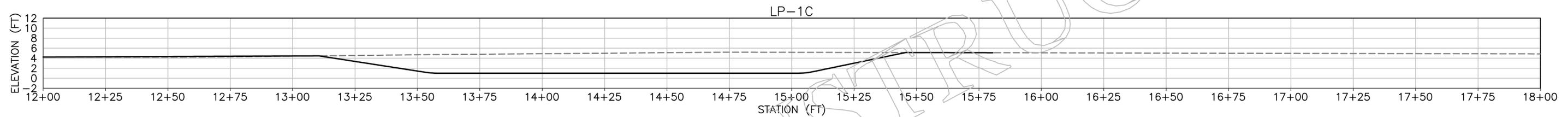
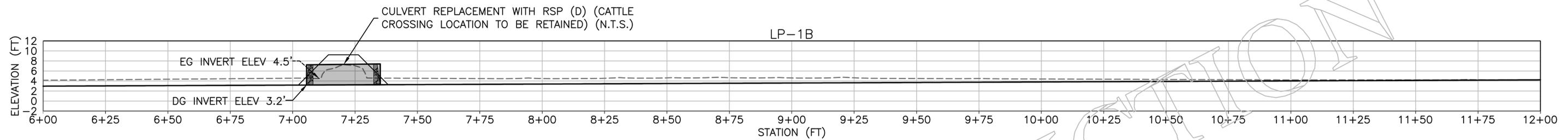
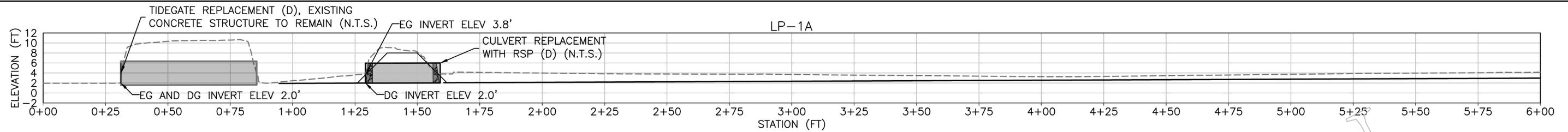
- DESIGN CONTOUR (1-FT INTERVAL)
- DESIGN CONTOUR (5-FT INTERVAL)
- GRADING BOUNDARY
- - - - OVERHEAD UTILITY LINE
- GAS — GAS LINE
- FENCE LINE (D)
- UTILITY POLE
- ▲ ARTESIAN WELL
- WOOD STRUCTURE (D)
- CULVERT (E)
- TIDE GATE (E)



ELK PA1 65% DESIGN: PERMIT SET		C1C	COLOR SITE OVERVIEW RELIC SWAIN SLOUGH PROJECT	HUMBOLDT COUNTY, CA
DESIGNED: NHE TC	SUB SHEET NO.			
TECH. REVIEW: JKA, JRP, BSP				
DATE: 10/13/2025				

SHEET
4
OF
10

Plotted: 10/13/2025 4:42 PM - By: LICENSED USER - R17.1 - File: 06_RELIC-SWAIN-PRELIM-65%-DRAFT-PERMIT-SET



SHEET NOTES:

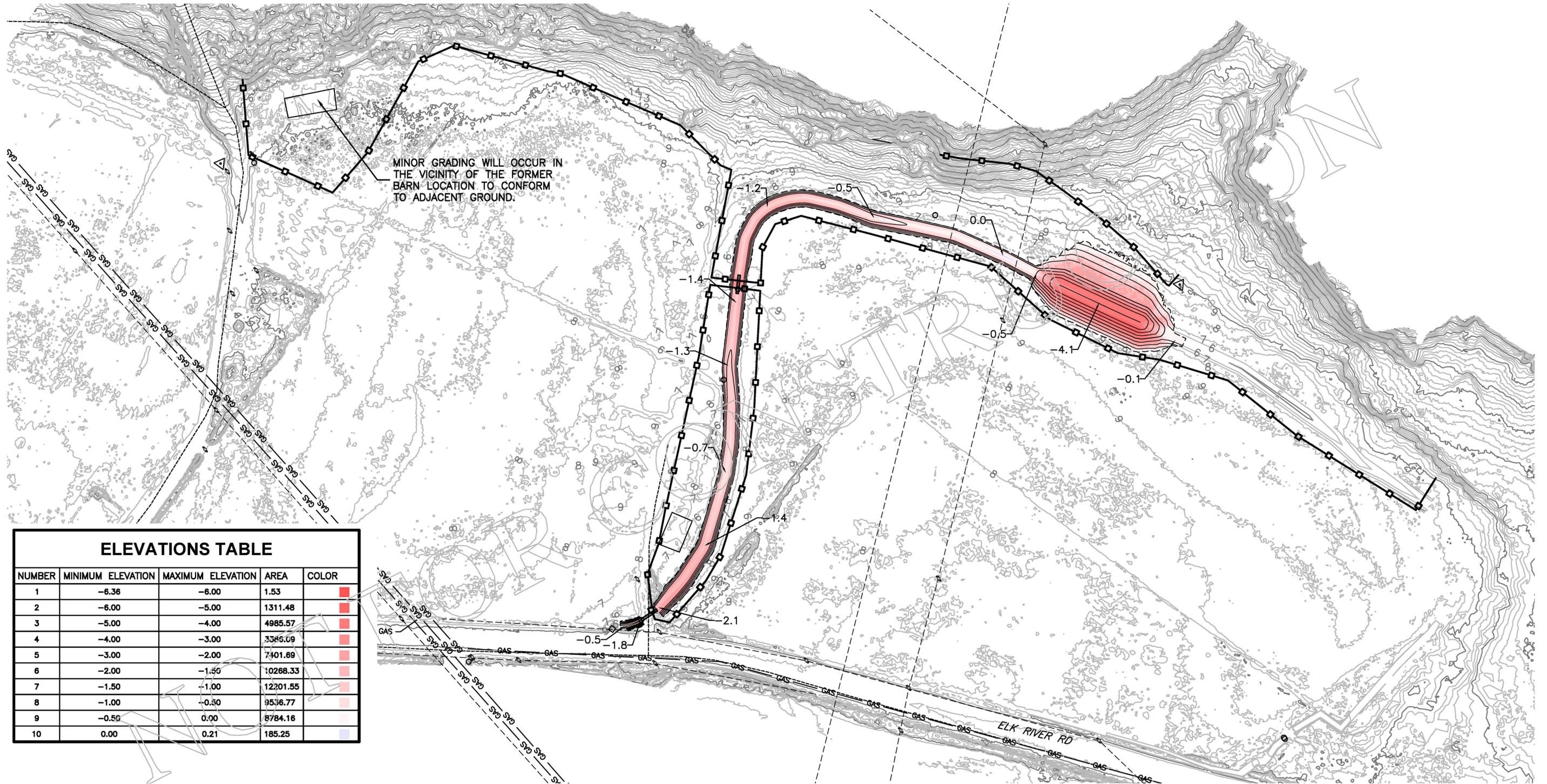
1. SEE SITE OVERVIEW SHEET FOR PROFILE AND SECTION ALIGNMENT LOCATION.
2. VERTICAL EXAGGERATION OF 2 FOR ALL PROFILE AND SECTION VIEWS ON THIS SHEET.
3. THIS SHEET SHOWS EXISTING AND DESIGN GRADES, AND APPROXIMATE LOCATION OF DESIGN ELEMENTS.
4. DESIGN MHHW = ~7 FT

--- EXISTING GRADE PROFILE
 ——— DESIGN GRADE PROFILE



ELK PA1 65% DESIGN: PERMIT SET		
DESIGNED: NHE TC	SUB SHEET NO. C2	TITLE OF SHEET PROFILE AND SECTION RELIC SWAIN SLOUGH PROJECT
TECH. REVIEW: JRP, JKA, BSP	DATE: 10/13/2025	SHEET 5 OF 10
HUMBOLDT COUNTY, CA		

Plotted: 10/15/2025 9:29 AM - By: LICENSED USER - R17.1 - File: 06_RELIC-SWAIN-PRELIM-65%-DRAFT-ISOPACH



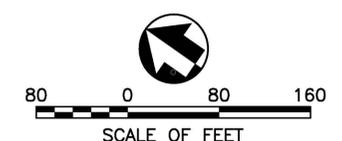
ELEVATIONS TABLE

NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	AREA	COLOR
1	-6.36	-6.00	1.53	Red
2	-6.00	-5.00	1311.48	Red
3	-5.00	-4.00	4985.57	Red
4	-4.00	-3.00	3386.09	Red
5	-3.00	-2.00	7401.69	Red
6	-2.00	-1.50	10268.33	Red
7	-1.50	-1.00	12201.55	Red
8	-1.00	-0.50	9536.77	Red
9	-0.50	0.00	8784.16	Red
10	0.00	0.21	185.25	Blue

- EXISTING CONTOUR (1-FEET INTERVAL)
- EXISTING CONTOUR (5-FEET INTERVAL)
- DESIGN CONTOUR (1-FEET INTERVAL)
- DESIGN CONTOUR (5-FEET INTERVAL)
- - - GRADING BOUNDARY
- - - OVERHEAD UTILITY LINE
- GAS - GAS LINE
- FENCE LINE (D)
- △ UTILITY POLE
- ARTESIAN WELL
- CULVERT (E)
- TIDE GATE (E)

SHEET NOTES:

- 1) THE INTENT OF THIS DRAWING IS TO SHOW FINISHED GRADE CUT/FILL DEPTHS RELATIVE TO EXISTING GRADE (EG).
- 2) ISOPACH LABELS REPRESENT CUT/FILL DEPTHS IN FEET (RELATIVE TO EG).
- 3) SEE SHEETS C1C-C4 FOR ADDITIONAL GRADING DETAILS.
- 4) GRADING ASSOCIATED WITH INVASIVE VEGETATION REMOVAL IS NOT SHOWN. SEE VEGETATION DESIGNS.

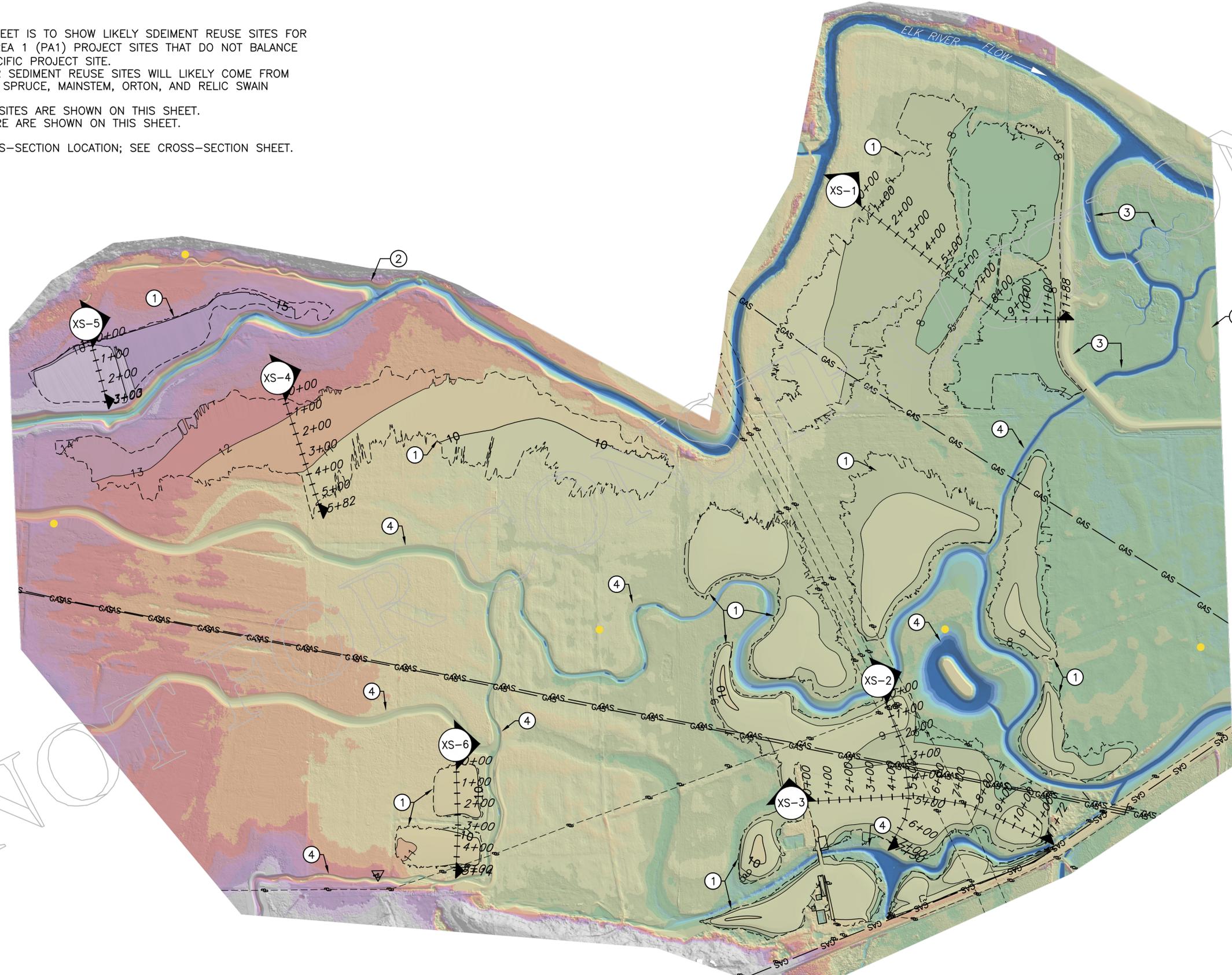
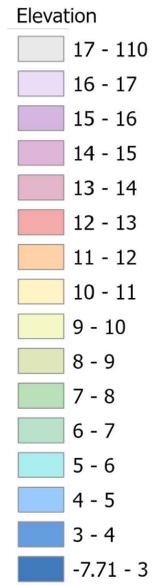


ELK PA1 65% DESIGN: PERMIT SET		TITLE OF SHEET		SHEET
DESIGNED: NHE	SUB SHEET NO.	ISOPACH: CUT-FILL RELIC SWAIN SLOUGH PROJECT		6 OF 10
TECH. REVIEW: GADD	C3			
DATE: 10/13/2025		HUMBOLDT COUNTY, CA		

SHEET NOTES:

1. THE INTENT OF THIS SHEET IS TO SHOW LIKELY SDEIMENT REUSE SITES FOR ELK RIVER PLANNING AREA 1 (PA1) PROJECT SITES THAT DO NOT BALANCE CUT/FILL WITHIN A SPECIFIC PROJECT SITE.
2. SEDIMENT SOURCES FOR SEDIMENT REUSE SITES WILL LIKELY COME FROM LOWER SPRUCE, UPPER SPRUCE, MAINSTEM, ORTON, AND RELIC SWAIN PROJECT SITES.
3. NOT ALL PA1 PROJECT SITES ARE SHOWN ON THIS SHEET.
4. NOT ALL INFRASTRUCTURE ARE SHOWN ON THIS SHEET.
5. (XS-1) REFERS TO CROSS-SECTION LOCATION; SEE CROSS-SECTION SHEET.

Plotted: 10/8/2025 4:10 PM - By: LICENSED USER - R17.1 - File: 11-SEDIMENT-REUSE-PRELIM-65%-DRAFT-PERMIT-C-SHEETS

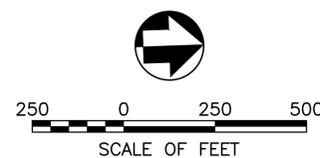


KEY NOTES:

- ① SEDIMENT REUSE (D)
- ② UPPER SPRUCE PROJECT (D)
- ③ ERWA-S PROJECT (D)
- ④ ORTON CREEK PROJECT (D)

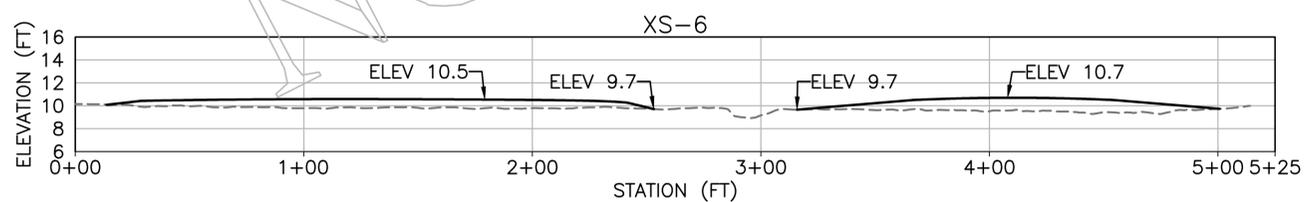
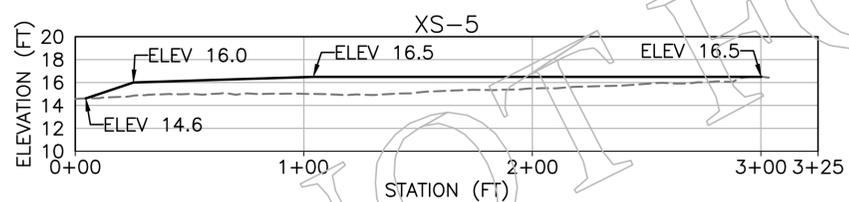
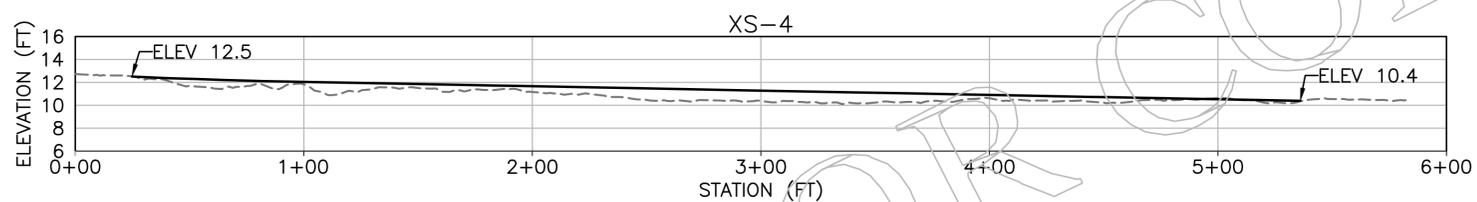
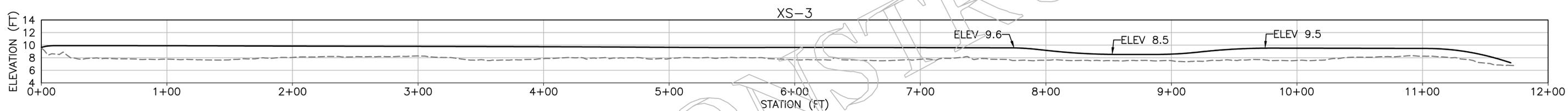
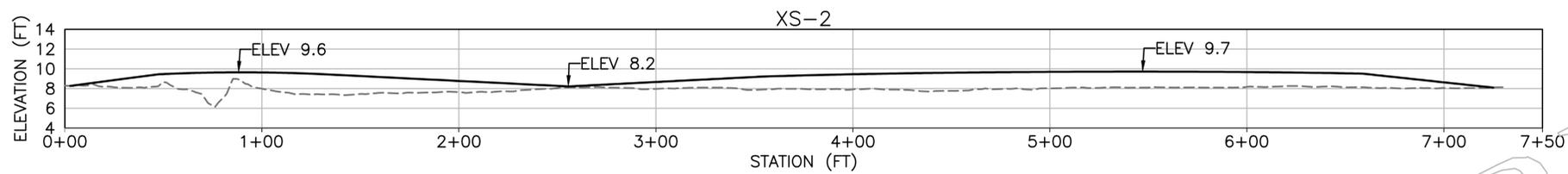
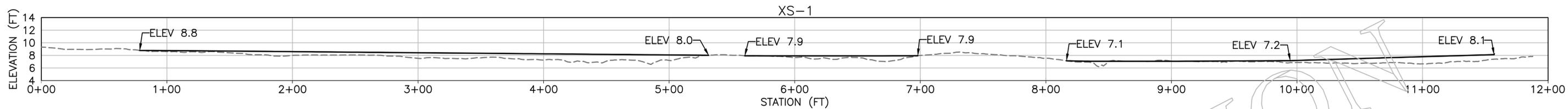
- DESIGN CONTOUR (1-FT INTERVAL)
- DESIGN CONTOUR (5-FT INTERVAL)
- GRADING BOUNDARY
- GAS — GAS LINE
- UTILITY LINE

- ▲ ARTESIAN WELL (E)
- ⊕ UTILITY POLE (E)
- GROUNDWATER MONITORING SITE (E)



ELK PA1 65% DESIGN: PERMIT SET		C4C	COLOR SITE OVERVIEW SEDIMENT REUSE PLANNING AREA 1	SHEET
DESIGNED: NHE CADD TC	SUB SHEET NO.			7
TECH. REVIEW:	DATE: 10/08/2025	HUMBOLDT COUNTY, CA		OF 10

Plotted: 10/8/2025 4:12 PM - By: LICENSED USER - R17.1 - File: 11-SEDIMENT-REUSE-PRELIM-65%-DRAFT-PERMIT-C-SHEETS



SHEET NOTES:

1. SEE SITE OVERVIEW SHEET FOR CROSS-SECTION ALIGNMENT LOCATION.
2. VERTICAL EXAGGERATION OF 5 FOR ALL CROSS-SECTION VIEWS ON THIS SHEET.
3. THIS SHEET SHOWS EXISTING AND DESIGN GRADES.

--- EXISTING GRADE PROFILE
 ——— DESIGN GRADE PROFILE



ELK PA1 65% DESIGN: PERMIT SET			
DESIGNED: NHE	SUB SHEET NO. C5	TITLE OF SHEET SECTIONS SEDIMENT REUSE PLANNING AREA 1	SHEET 8 OF 10
TECH. REVIEW: TC		HUMBOLDT COUNTY, CA	
DATE: 10/08/2025			

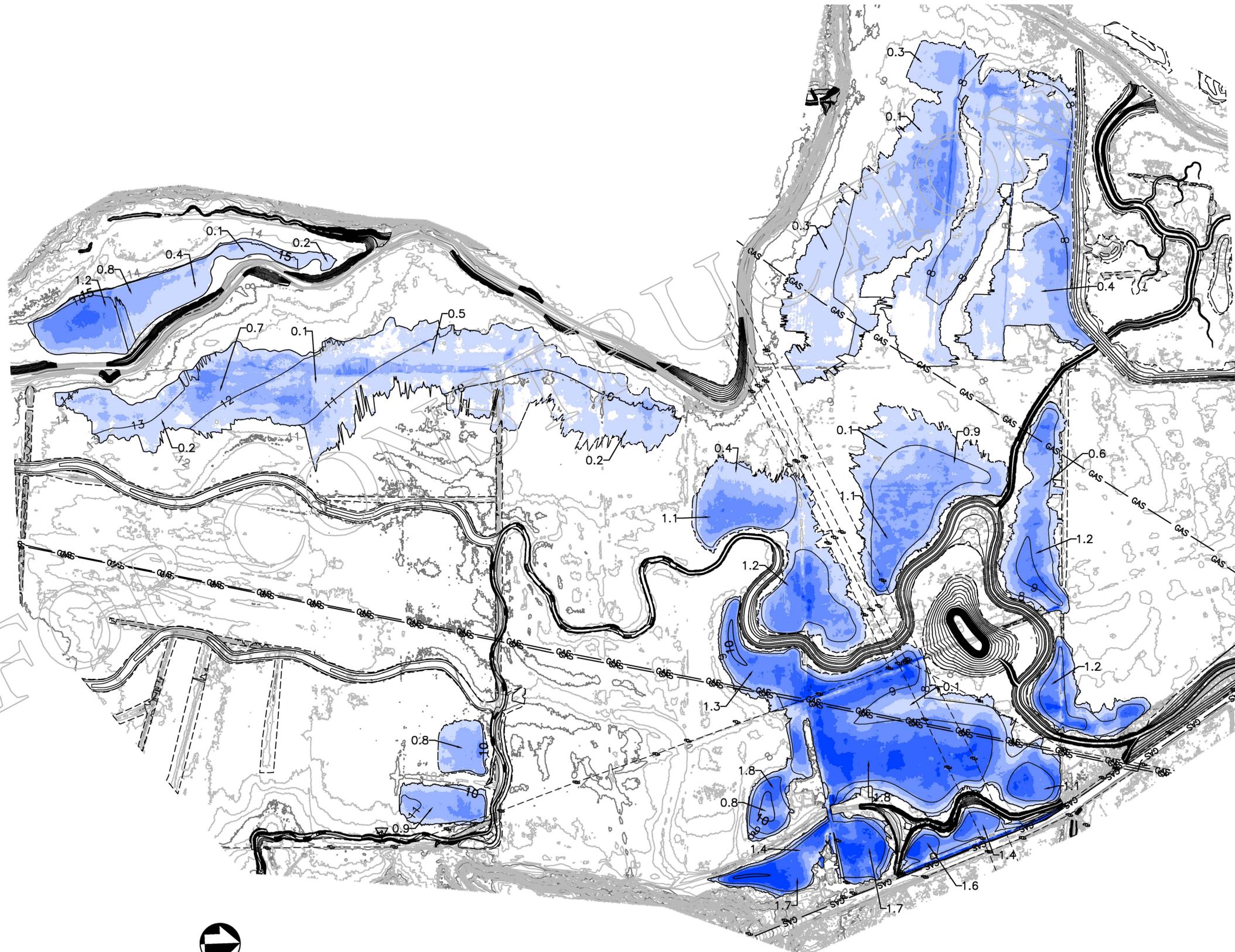
Plotted: 10/16/2025 11:50 AM - By: LICENSED USER - R17.1 - File: 11-SEDIMENT-REUSE-PRELIM-65%-DRAFT-PERMIT-ISOPACH

ELEVATIONS TABLE

NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	AREA	COLOR
1	0.00	0.50	1925095.51	Lightest Blue
2	0.50	1.00	1099749.27	Light Blue
3	1.00	1.50	643635.49	Medium Light Blue
4	1.50	2.00	315314.04	Medium Blue
5	2.00	3.00	83904.31	Dark Blue
6	3.00	6.00	3716.82	Very Dark Blue

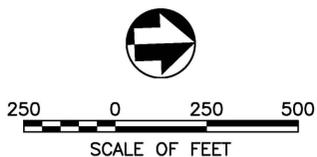
SHEET NOTES:

- 1) THE INTENT OF THIS DRAWING IS TO SHOW FINISHED GRADE SEDIMENT REUSE DEPTHS RELATIVE TO EXISTING GRADE (EG).
- 2) ISOPACH LABELS REPRESENT DEPTHS IN FEET (RELATIVE TO EG).
- 3) SEE SHEET C4C-C5 FOR ADDITIONAL SEDIMENT REUSE GRADING DETAILS.



NOT FOR CONSTRUCTION

- EXISTING CONTOUR (1-FEET INTERVAL)
- EXISTING CONTOUR (5-FEET INTERVAL)
- DESIGN CONTOUR (1-FEET INTERVAL)
- DESIGN CONTOUR (5-FEET INTERVAL)
- - - GRADING BOUNDARY
- GAS — GAS LINE
- - - UTILITY LINE
- ▲ ARTESIAN WELL (E)
- ⊕ UTILITY POLE (E)



ELK PA1 65% DESIGN: PERMIT SET			
DESIGNED: NHE	SUB SHEET NO. C6	TITLE OF SHEET ISOPACH SEDIMENT REUSE PLANNING AREA 1	SHEET 9 OF 10
TECH. REVIEW: TC		HUMBOLDT COUNTY, CA	
DATE: 10/15/2025			



DETAIL 1: LWS INSTALLATION AND INTEGRATION ALONG STREAM BANK. PHOTO OF LWS INSTALLED AT PRAIRIE CREEK, HUMBOLDT COUNTY.



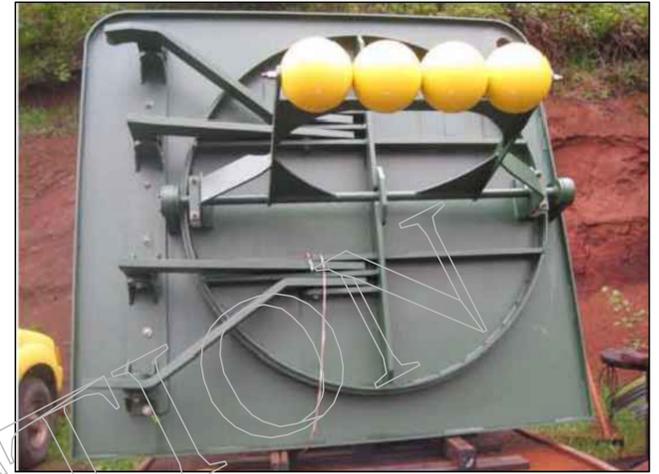
DETAIL 3: LWS INSTALLATION WITHIN FLOODPLAIN. PHOTO OF LWS INSTALLED AT PRAIRIE CREEK, HUMBOLDT COUNTY.



DETAIL 2: LWS INSTALLATION AND INTEGRATION ALONG STREAM BANK. PHOTO OF LWS INSTALLED AT PRAIRIE CREEK, HUMBOLDT COUNTY.



DETAIL 4: DUCK BILL TIDE GATE TO BE USED FOR INTERNAL DRAINAGE STRUCTURE THROUGH FARM ROAD TO RESTRICT SALTWATER ONTO PASTURE. PHOTO OF DUCK BILL TIDE GATE INSTALLED AT COCHRAN CREEK, HUMBOLDT COUNTY.



DETAIL 5: SIDE HINGED TIDE GATE CONTROLLED BY MITIGATOR FLOAT MECHANISM (TOP PHOTO). SIDE HINGED TIDE GATE WITH MITIGATOR STAYS PARTIALLY OPEN ON FLOOD TIDE (MIDDLE PHOTO) UNTIL DOWNSTREAM WATER LEVEL REACHES PREDETERMINED ELEVATION, THEN FLOAT MECHANISM CLOSES TIDE GATE. SIDE HINGED TIDE GATE DURING OUTFLOW CONDITIONS ON EBB TIDE (BOTTOM PHOTO). THIS TIDE GATE STRUCTURE IS TO REPLACE EXISTING TOP HINGED TIDE GATE DRAINING THROUGH ELK RIVER ROAD. TOP PHOTO FROM NEHALAM MARINE MANUFACTURING. MIDDLE PHOTO OF SIDE HINGED TIDE GATE WITH MITIGATOR INSTALLED AT SOUTH JACOBY PASTURE DRAINAGE THROUGH HIGHWAY 101, HUMBOLDT COUNTY. BOTTOM PHOTO OF SIDE HINGED TIDE GATE INSTALLED AT GANNON SLOUGH, HUMBOLDT COUNTY.

SHEET NOTES:

1. THE INTENT OF THIS SHEET IS TO SHOW GENERAL EXAMPLES OF THE TYPES OF LARGE WOOD STRUCTURES TO BE INSTALLED.
2. THIS SHEET SHOWS APPROXIMATE LARGE WOOD STRUCTURE CONFIGURATIONS AND INSTALLATION TECHNIQUES USING LOG PILES AS PINNING LOG ANCHORS. ACTUAL LOG STRUCTURES WILL VARY DEPENDING ON VARIABLE FIELD CONDITIONS, LOG VARIABILITY, AND OTHER UNFORESEEN CONDITIONS.
3. THIS SHEET SHOWS GENERAL TIDE GATE STRUCTURE TYPES AND FUNCTIONALITY. ACTUAL TIDE GATE SHAPE, SUCH AS ROUND OR RECTANGULAR, MAY VARY.



ELK PA1 65% DESIGN: PERMIT SET			
DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	SHEET
NHE	C7	DETAILS RELIC SWAIN SLOUGH PROJECT	10 OF 10
BD			
TECH. REVIEW:			
DATE:		HUMBOLDT COUNTY, CA	
10/14/2025			