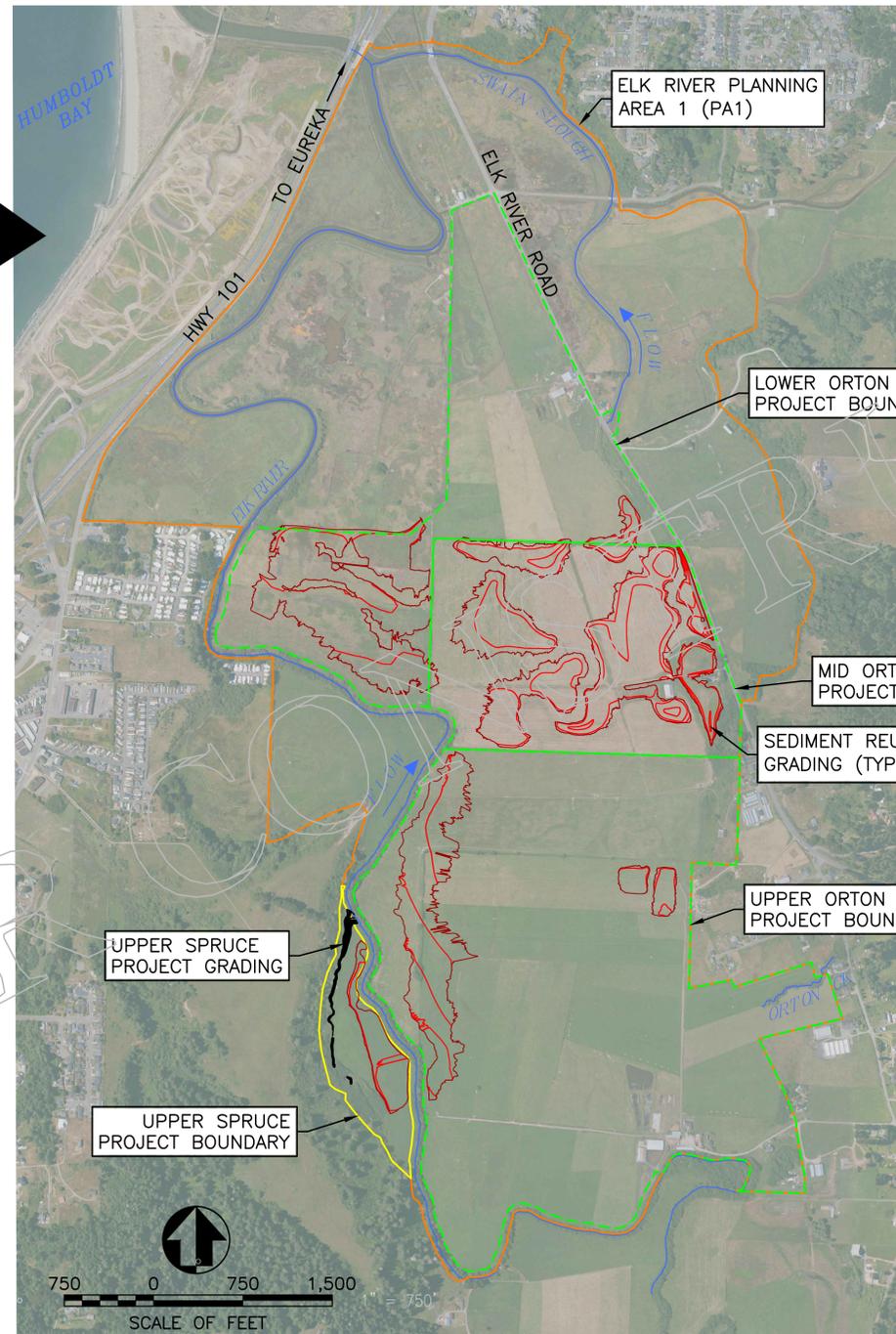


ELK RIVER PLANNING AREA 1 65% DESIGN: UPPER SPRUCE PERMIT SET HUMBOLDT COUNTY, CALIFORNIA



SHEET INDEX

| CIVIL SHEETS | | |
|--------------|-----|-------------------------------------|
| 1 | G1 | COVER |
| 2 | G2 | EXISTING CONDITIONS |
| 3 | G3 | CONTRACTOR USE AREA & ACCESS |
| 4 | C1C | COLOR SITE OVERVIEW |
| 5 | C2 | PROFILE |
| 6 | C3 | SECTIONS |
| 7 | C4 | ISOPACH |
| 8 | C5C | COLOR SITE OVERVIEW: SEDIMENT REUSE |
| 9 | C6 | SECTIONS: SEDIMENT REUSE |
| 10 | C7 | ISOPACH: SEDIMENT REUSE |
| 11 | C8 | DETAILS |

Plotted: 10/14/2025 4:30 PM - By: LICENSED USER - R17.1 - File: G1-COVER-UPPER-SPRUCE-65PER-PERMIT

NOT FOR CONSTRUCTION

10/15/2025
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

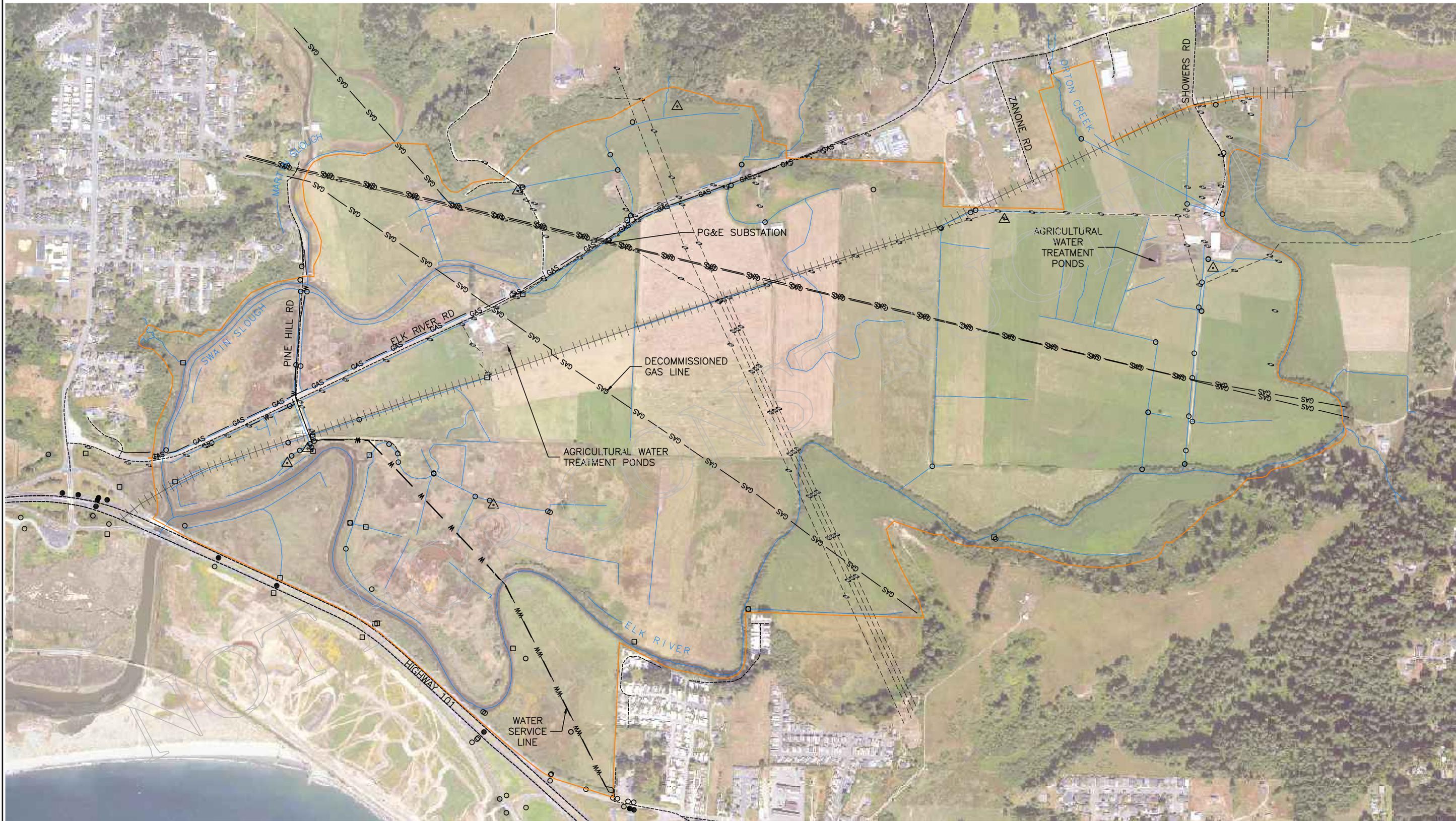
DESIGNED:
NHE
BD
TECH. REVIEW:
DATE:
10/15/2025

SUB SHEET NO.
G1

TITLE OF SHEET
**COVER
UPPER SPRUCE
PROJECT**
HUMBOLDT COUNTY, CA

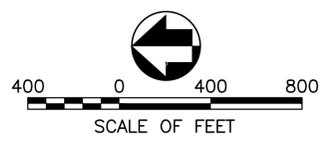
SHEET
1
OF
11

Plotted: 10/13/2025 2:20 PM - By: LICENSED USER - R17.1 - File: G2-EXISTING-CONDITIONS



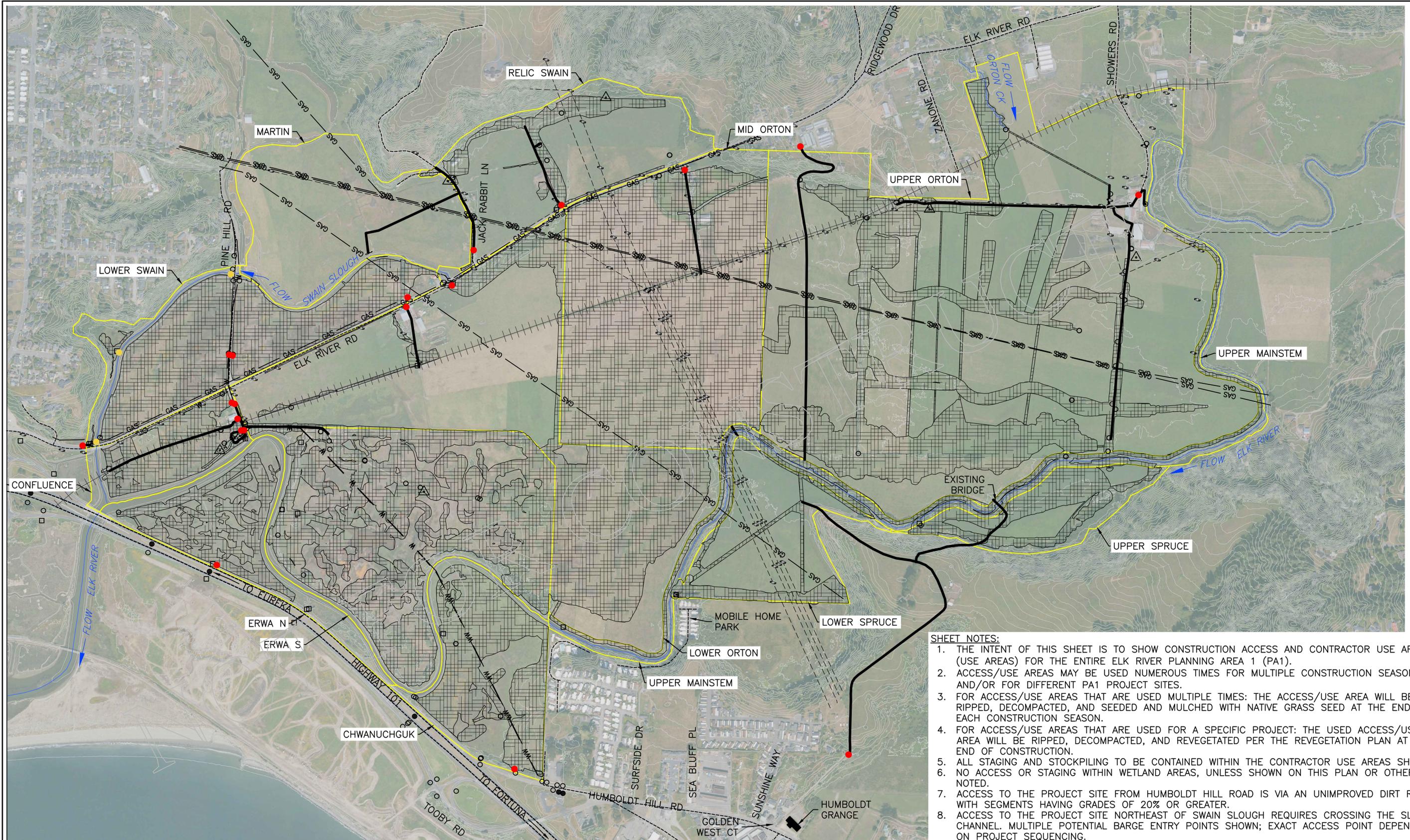
- | | | | | | |
|--|--------------------|--|-----------------------|--|---------------|
| | PLANNING AREA 1 | | OVERHEAD UTILITY LINE | | CULVERT |
| | HIGHWAY | | WATER LINE | | DROP INLET |
| | MAIN ROAD | | RIVER CENTERLINE | | TIDE GATE |
| | ABANDONED RAILROAD | | STREAMS | | ARTESIAN WELL |
| |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

SHEET NOTES:
 1) ALL INFRASTRUCTURE LOCATIONS ARE APPROXIMATE.



| | | | | |
|--|---------------|-----------|---|---------------------|
| ELK PA1 65% DESIGN: PERMIT SET | | G2 | EXISTING CONDITIONS OVERVIEW PLANNING AREA 1 | HUMBOLDT COUNTY, CA |
| DESIGNED: NHE CV, JRP TECH. REVIEW: JRP, BSP, JKA DATE: 10/13/2025 | SUB SHEET NO. | | | |

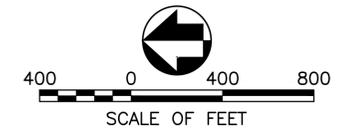
Plotted: 10/13/2025 2:29 PM - By: LICENSED USER - R17.1 - File: G3-CONTRACTOR USE-&-ACCESS-65PER-PERMIT



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) | | |

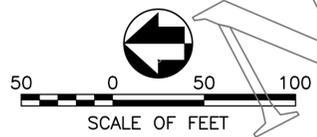
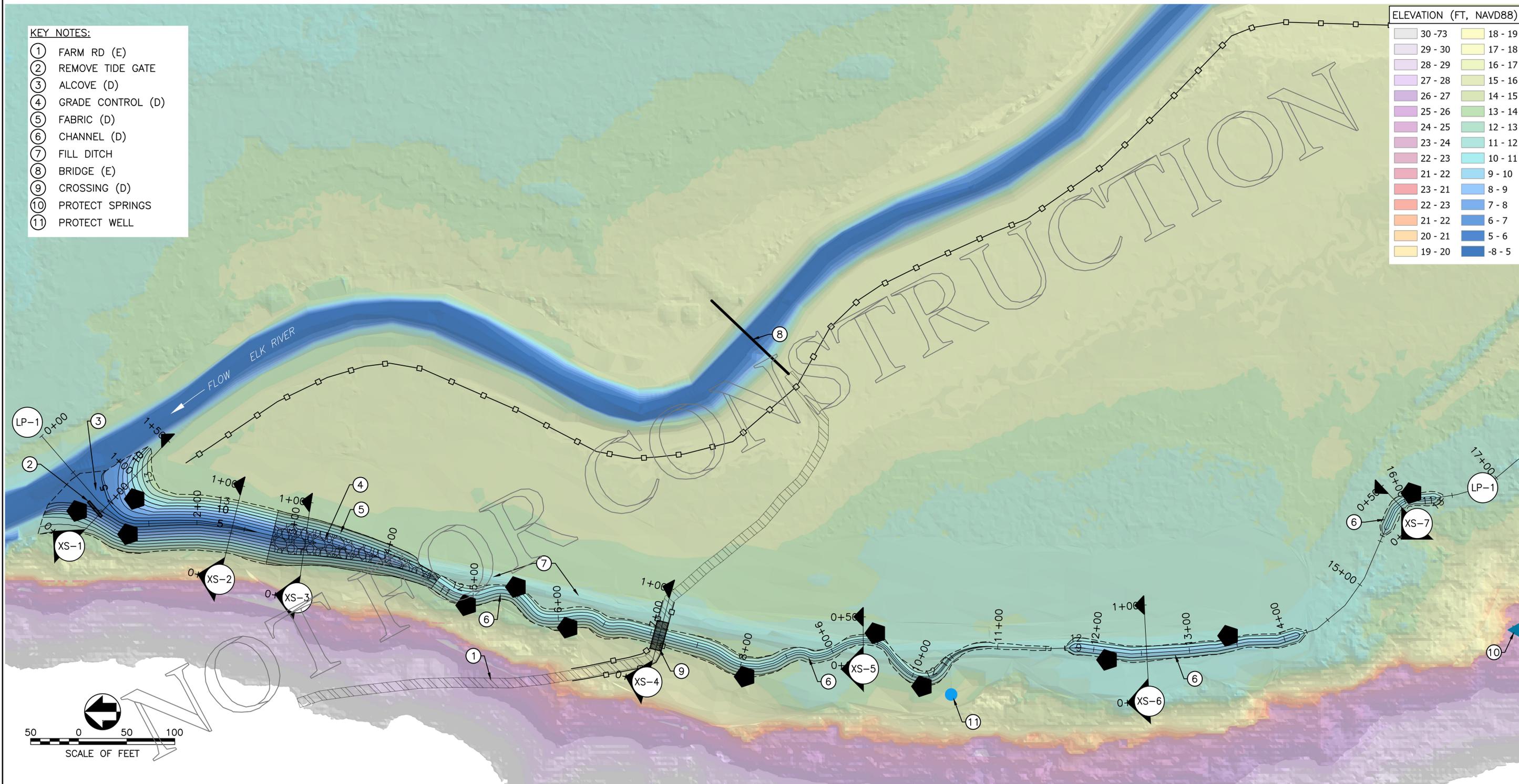


| | | | | |
|---|---------------------|-----------|--|---------------|
| ELK PA1 65% DESIGN: PERMIT SET | | G3 | CONTRACTOR USE AREAS & ACCESS PLANNING AREA 1 | SHEET |
| DESIGNED: NHE GADD BD TECH. REVIEW: | SUB SHEET NO. | | | 3 OF 11 |
| DATE: 10/13/2025 | HUMBOLDT COUNTY, CA | | | |

Plotted: 10/13/2025 2:01 PM - By: LICENSED USER - R17.1 - File: C-SHEETS-UPPER-SPRUCE-65PER-PERMIT

- KEY NOTES:**
- ① FARM RD (E)
 - ② REMOVE TIDE GATE
 - ③ ALCOVE (D)
 - ④ GRADE CONTROL (D)
 - ⑤ FABRIC (D)
 - ⑥ CHANNEL (D)
 - ⑦ FILL DITCH
 - ⑧ BRIDGE (E)
 - ⑨ CROSSING (D)
 - ⑩ PROTECT SPRINGS
 - ⑪ PROTECT WELL

| ELEVATION (FT, NAVD88) | |
|------------------------|---------|
| 30 - 73 | 18 - 19 |
| 29 - 30 | 17 - 18 |
| 28 - 29 | 16 - 17 |
| 27 - 28 | 15 - 16 |
| 26 - 27 | 14 - 15 |
| 25 - 26 | 13 - 14 |
| 24 - 25 | 12 - 13 |
| 23 - 24 | 11 - 12 |
| 22 - 23 | 10 - 11 |
| 23 - 21 | 9 - 10 |
| 22 - 23 | 8 - 9 |
| 21 - 22 | 7 - 8 |
| 20 - 21 | 6 - 7 |
| 19 - 20 | 5 - 6 |
| | -8 - 5 |



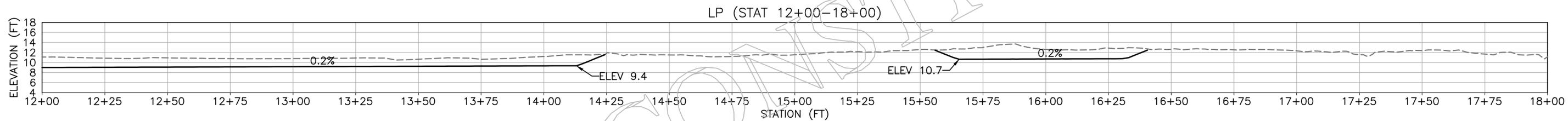
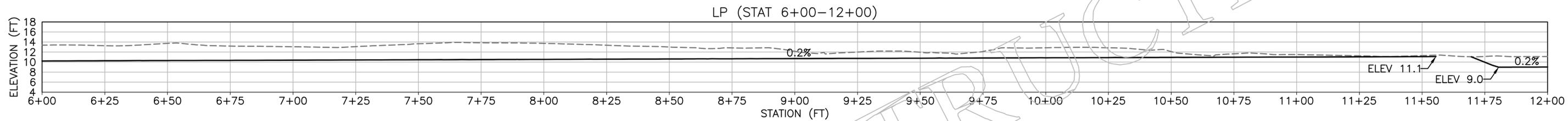
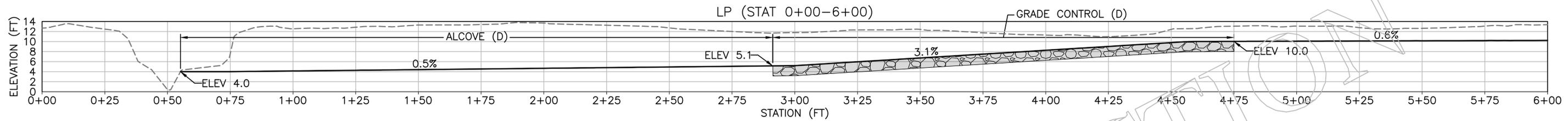
SHEET NOTES:

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. SEDIMENT REUSE LOCATIONS NOT SHOWN ON THIS SHEET; REFER TO SEDIMENT REUSE OVERVIEW SHEETS C5C-C7.
4. FENCE (E) NOT SHOWN; PROTECT DURING CONSTRUCTION.
5. GATES (D) NOT SHOWN; LOCATIONS TO BE COORDINATED WITH LANDOWNER BEFORE CONSTRUCTION.

- DESIGN CONTOUR (1-FEET INTERVAL)
- DESIGN CONTOUR (5-FEET INTERVAL)
- - - GRADING BOUNDARY
- ▲ SPRING (E) (APPROXIMATE LOCATION)
- GROUNDWATER MONITORING SITE (E)
- WOOD STRUCTURE (D)



| | | |
|--------------------------------|-----------------------------|---|
| ELK PA1 65% DESIGN: PERMIT SET | | |
| DESIGNED: NHE BD | SUB SHEET NO. C1C | TITLE OF SHEET COLOR SITE OVERVIEW UPPER SPRUCE PROJECT |
| TECH. REVIEW: | | SHEET 4 OF 11 |
| DATE: 10/13/2025 | | HUMBOLDT COUNTY, CA |



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

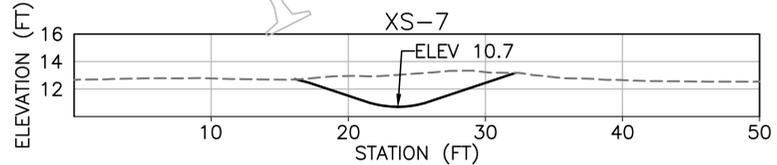
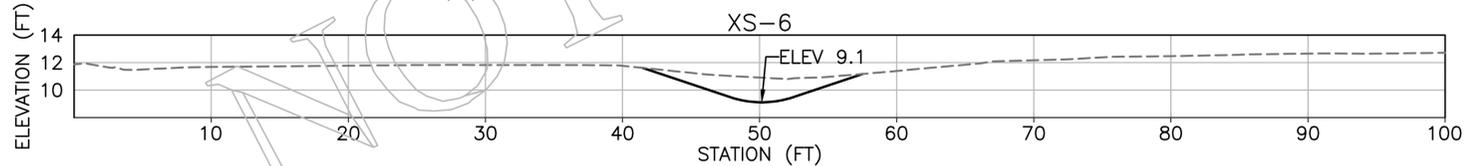
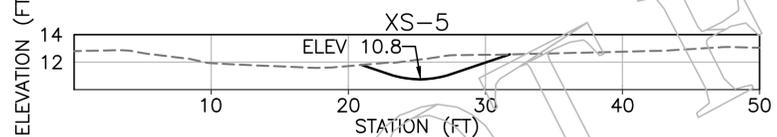
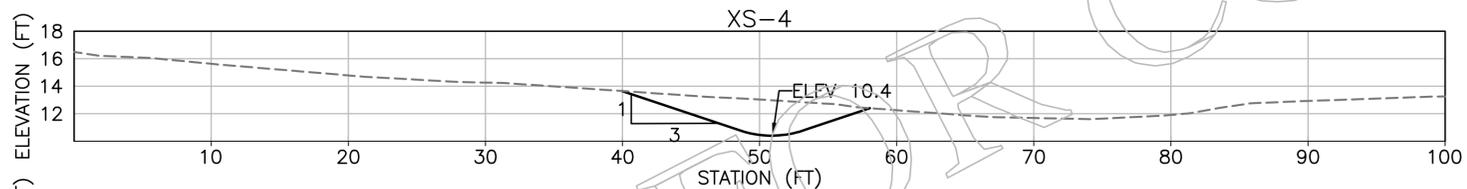
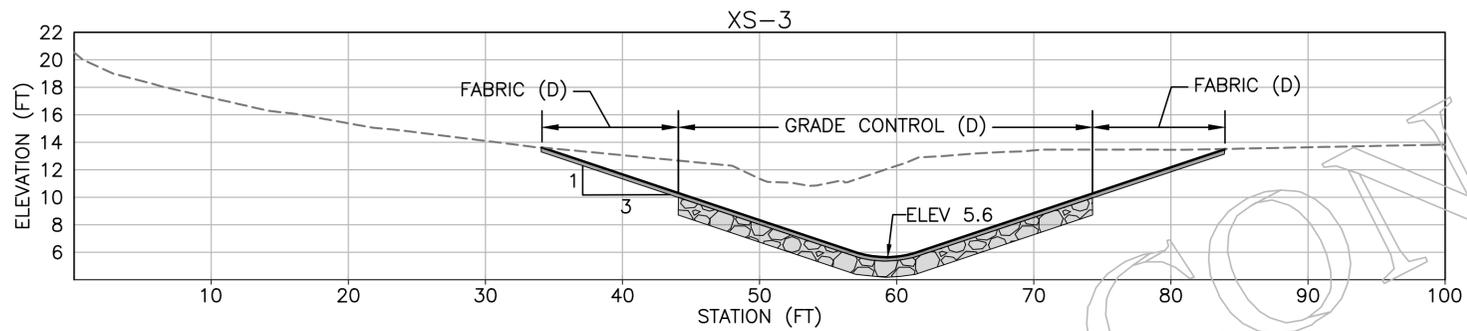
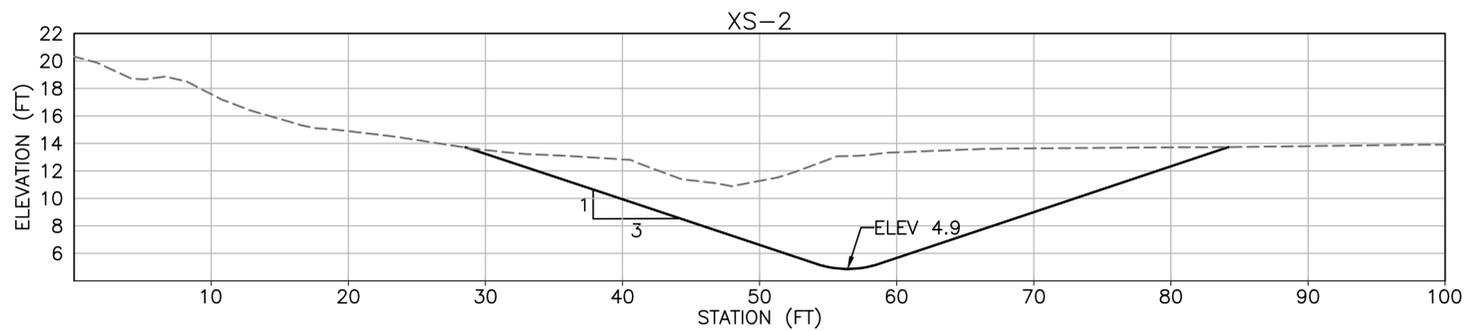
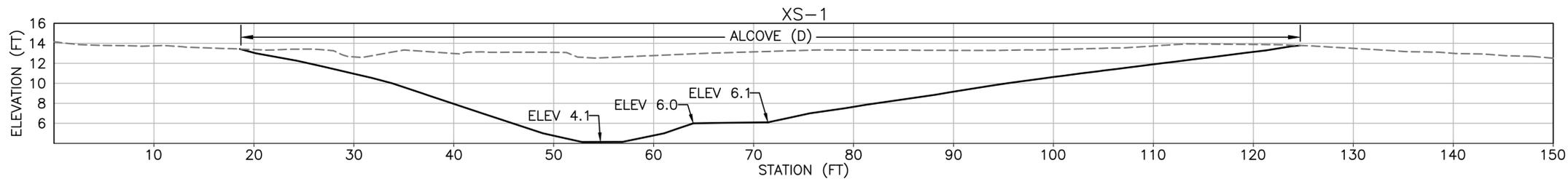
NOT FOR CONSTRUCTION

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



| | | | |
|--------------------------------|----|---|---------------|
| ELK PA1 65% DESIGN: PERMIT SET | | | |
| DESIGNED: NHE | C2 | TITLE OF SHEET | |
| BD | | PROFILE UPPER SPRUCE PROJECT | |
| TECH. REVIEW: | | HUMBOLDT COUNTY, CA | |
| DATE: 10/08/2025 | | | |
| | | SUB SHEET NO. | SHEET |
| | | | 5 OF 11 |

Plotted: 10/9/2025 10:08 AM - By: LICENSED USER - R17.1 - File: C-SHEETS-UPPER-SPRUCE-65PER-PERMIT



--- EXISTING GRADE PROFILE
 — DESIGN GRADE PROFILE

SHEET NOTES:

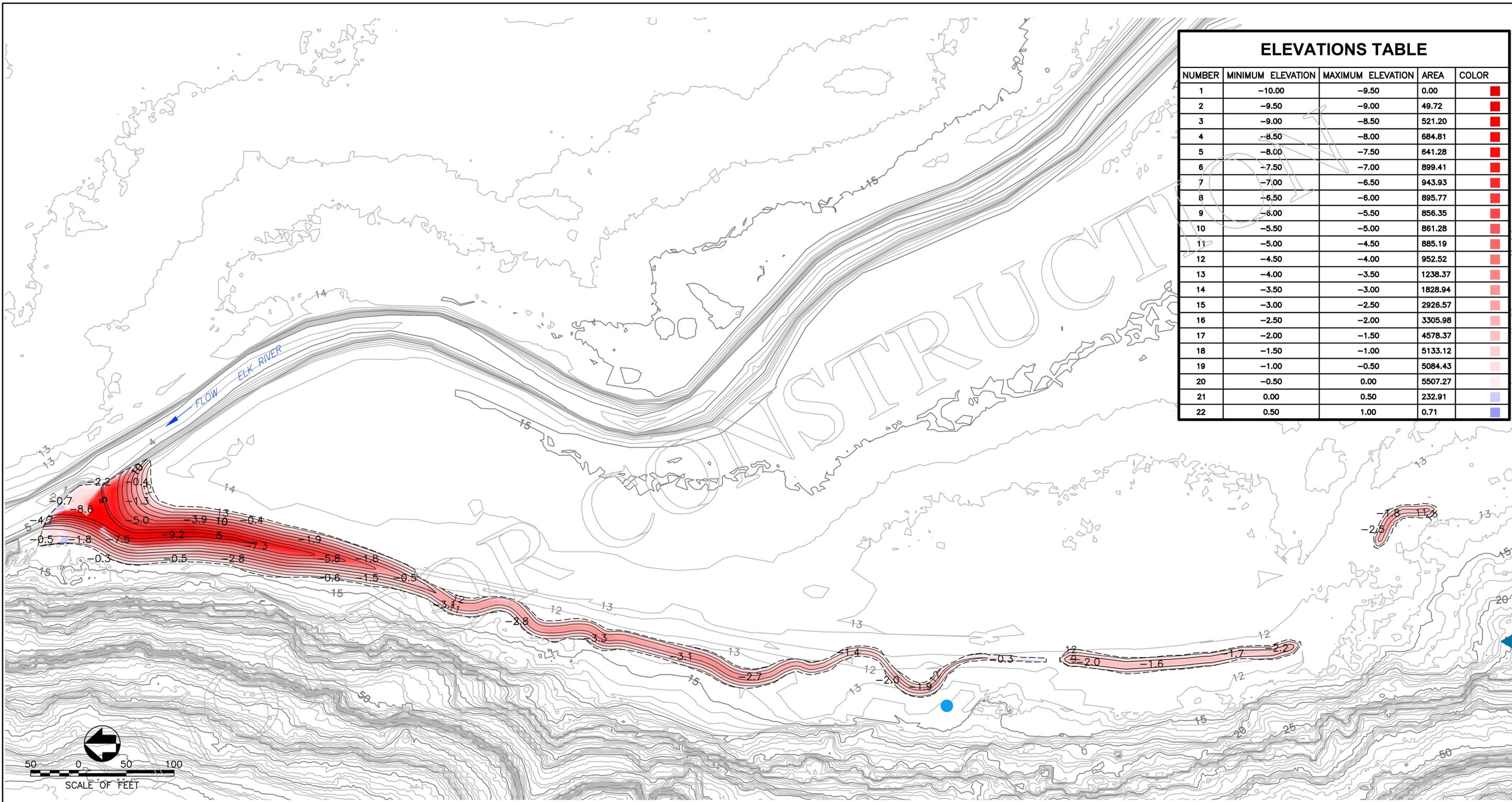
1. SEE SITE OVERVIEW SHEET FOR CROSS-SECTION LOCATIONS.
2. NO VERTICAL EXAGGERATION FOR ALL SECTION VIEWS ON THIS SHEET.
3. THIS SHEET SHOWS EXISTING AND DESIGN GRADES, AND APPROXIMATE LOCATION OF DESIGN ELEMENTS.
4. DESIGN MHHW ~7 FT.



| | | | |
|--------------------------------|----------------------------|--|--------------------------------------|
| ELK PA1 65% DESIGN: PERMIT SET | | | |
| DESIGNED: NHE | SUB SHEET NO. C3 | TITLE OF SHEET SECTIONS UPPER SPRUCE PROJECT | SHEET 6 OF 11 |
| TECH. REVIEW: BD | | | |
| DATE: 10/08/2025 | | | |
| HUMBOLDT COUNTY, CA | | | |

Plotted: 10/9/2025 10:12 AM - By: LICENSED USER - R17.1 - File: ISOPACH-UPPER-SPRUCE-65PER-PERMIT

| ELEVATIONS TABLE | | | | |
|------------------|-------------------|-------------------|---------|-------|
| NUMBER | MINIMUM ELEVATION | MAXIMUM ELEVATION | AREA | COLOR |
| 1 | -10.00 | -9.50 | 0.00 | ■ |
| 2 | -9.50 | -9.00 | 49.72 | ■ |
| 3 | -9.00 | -8.50 | 521.20 | ■ |
| 4 | -8.50 | -8.00 | 684.81 | ■ |
| 5 | -8.00 | -7.50 | 641.28 | ■ |
| 6 | -7.50 | -7.00 | 899.41 | ■ |
| 7 | -7.00 | -6.50 | 943.93 | ■ |
| 8 | -6.50 | -6.00 | 895.77 | ■ |
| 9 | -6.00 | -5.50 | 856.35 | ■ |
| 10 | -5.50 | -5.00 | 861.28 | ■ |
| 11 | -5.00 | -4.50 | 885.19 | ■ |
| 12 | -4.50 | -4.00 | 952.52 | ■ |
| 13 | -4.00 | -3.50 | 1238.37 | ■ |
| 14 | -3.50 | -3.00 | 1828.94 | ■ |
| 15 | -3.00 | -2.50 | 2926.57 | ■ |
| 16 | -2.50 | -2.00 | 3305.98 | ■ |
| 17 | -2.00 | -1.50 | 4578.37 | ■ |
| 18 | -1.50 | -1.00 | 5133.12 | ■ |
| 19 | -1.00 | -0.50 | 5084.43 | ■ |
| 20 | -0.50 | 0.00 | 5507.27 | ■ |
| 21 | 0.00 | 0.50 | 232.91 | ■ |
| 22 | 0.50 | 1.00 | 0.71 | ■ |



- EXISTING CONTOUR (1-FT INTERVAL)
- EXISTING CONTOUR (5-FT INTERVAL)
- DESIGN CONTOUR (1-FT INTERVAL)
- DESIGN CONTOUR (5-FT INTERVAL)
- - - GRADING BOUNDARY
- ▲ EXISTING SPRING GROUNDWATER MONITORING SITE

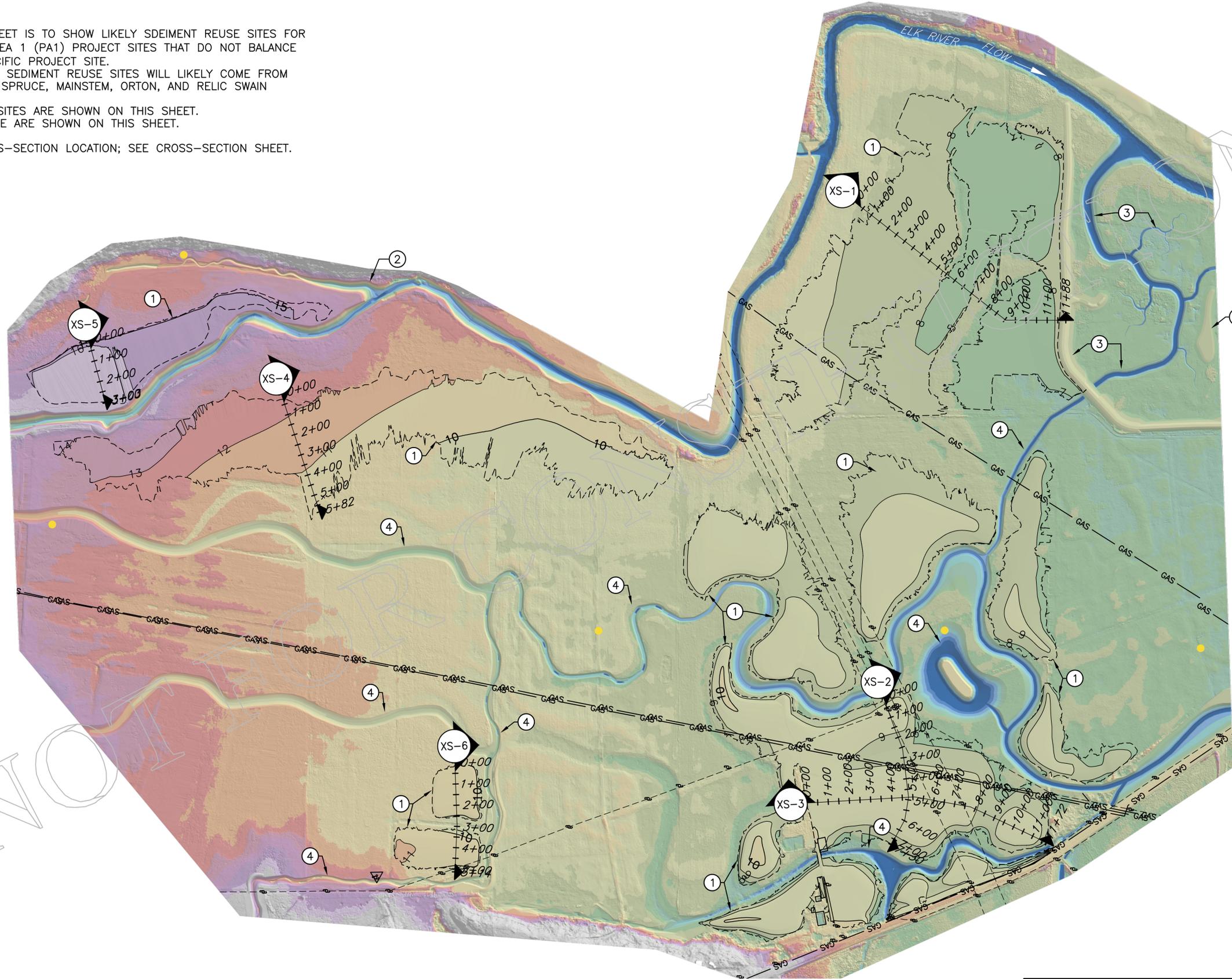
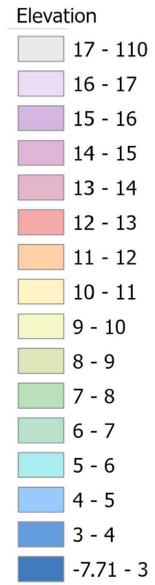
- SHEET NOTES:**
1. THE INTENT OF THIS DRAWING IS TO SHOW FINISHED GRADE CUT/FILL DEPTHS RELATIVE TO EXISTING GRADE (EG).
 2. ISOPACH LABELS REPRESENT CUT/FILL DEPTHS IN FEET (RELATIVE TO EG).
 3. SEE SHEETS C1C-C3 FOR ADDITIONAL GRADING DETAILS.



| | | | |
|--------------------------------|----------------------------|---|--------------------------------------|
| ELK PA1 65% DESIGN: PERMIT SET | | | |
| DESIGNED: NHE BD | SUB SHEET NO. C4 | TITLE OF SHEET ISOPACH UPPER SPRUCE PROJECT | SHEET 7 OF 11 |
| TECH. REVIEW: | DATE: 10/08/2025 | 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.

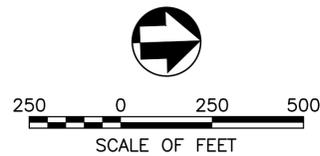


KEY NOTES:

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

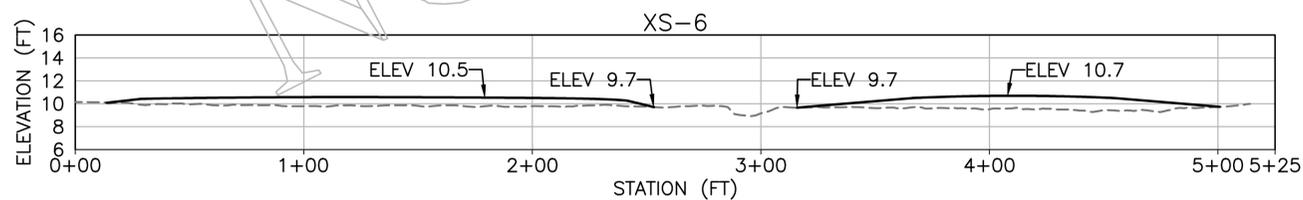
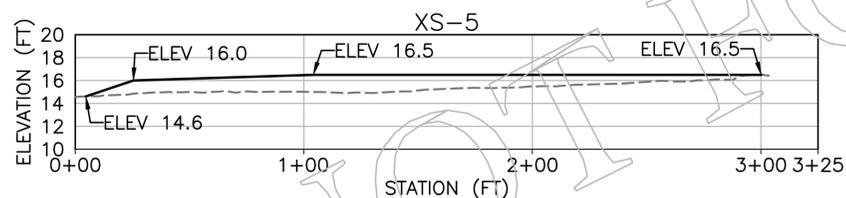
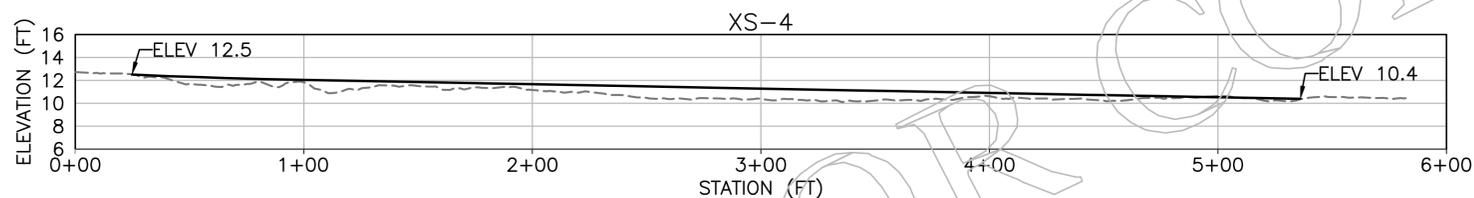
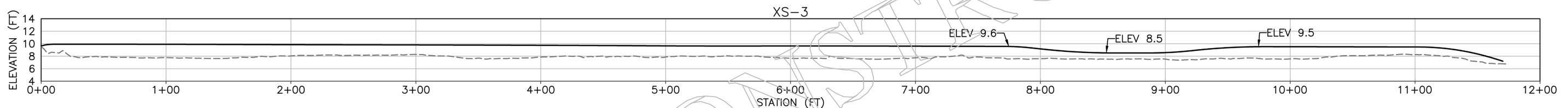
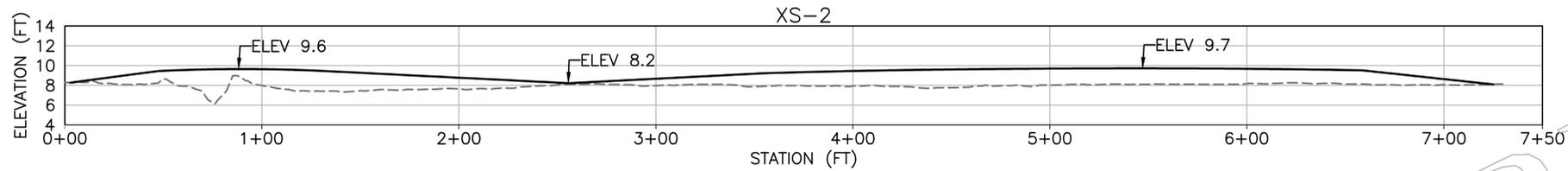
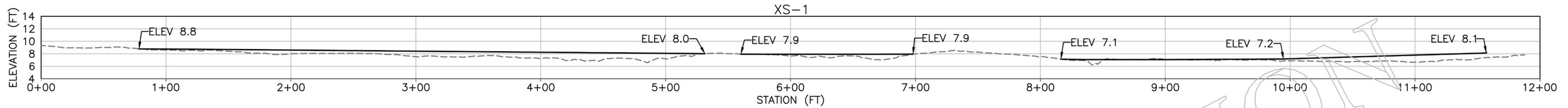
- DESIGN CONTOUR (1-FEET INTERVAL)
- - - - DESIGN CONTOUR (5-FEET INTERVAL)
- - - - GRADING BOUNDARY
- - - - GAS LINE
- - - - UTILITY LINE

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



| | | | | |
|--------------------------------|---------------|---|--|-------|
| ELK PA1 65% DESIGN: PERMIT SET | | TITLE OF SHEET | | SHEET |
| DESIGNED: | SUB SHEET NO. | C5C | | 8 |
| NHE | | | | |
| TC | | COLOR SITE OVERVIEW SEDIMENT REUSE PLANNING AREA 1 | | OF |
| TECH. REVIEW: | | | | |
| DATE: | | HUMBOLDT COUNTY, CA | | 11 |
| 10/08/2025 | | | | |

Plotted: 10/9/2025 9:06 AM - 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. C6 | TITLE OF SHEET SECTIONS SEDIMENT REUSE PLANNING AREA 1 | SHEET 9 |
| TECH. REVIEW: TC | | | OF 11 |
| DATE: 10/08/2025 | | HUMBOLDT COUNTY, CA | |

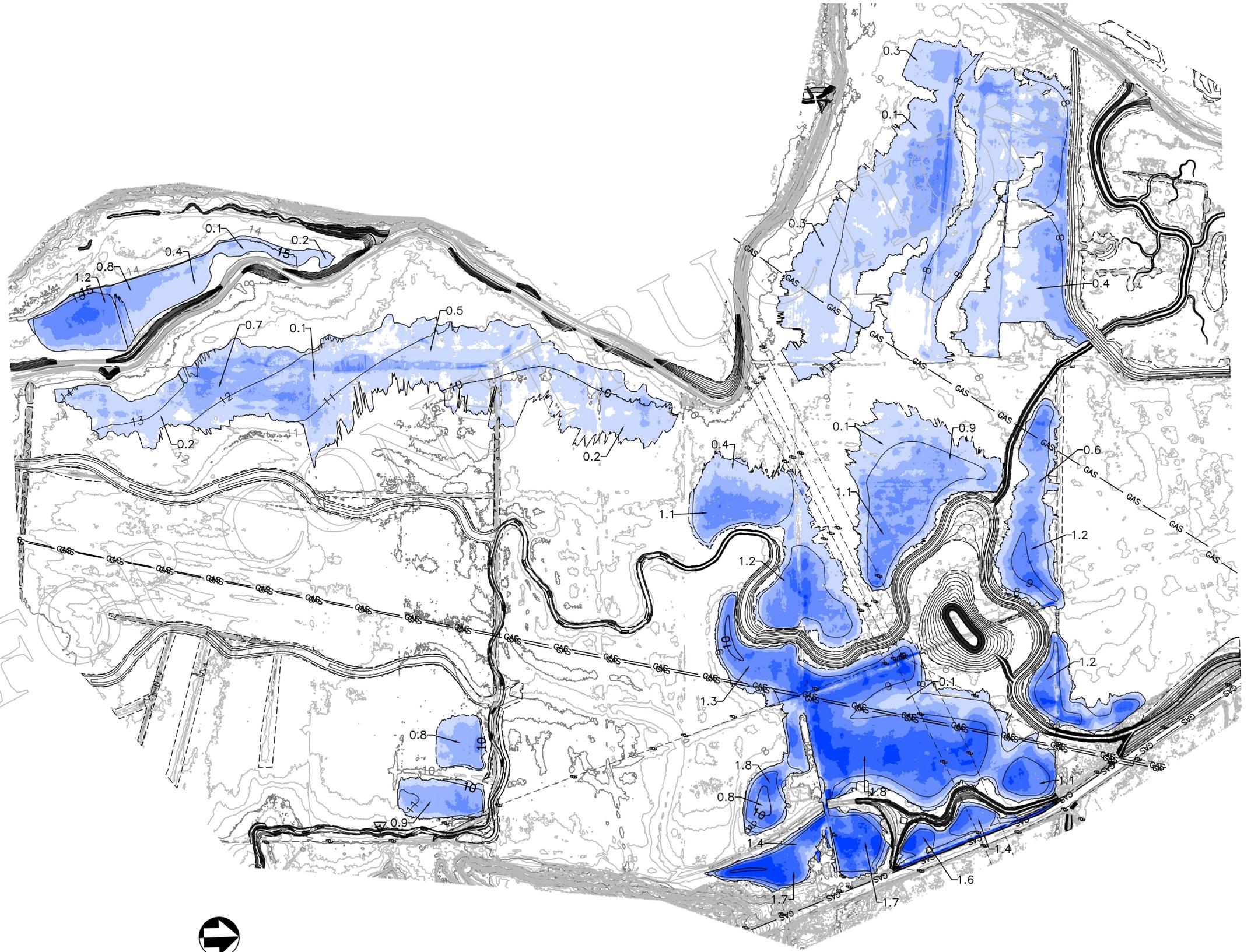
Plotted: 10/16/2025 10:19 AM - By: LICENSED USER - R17.1 - File: 11-SEDIMENT-REUSE-PRELIM-65%-DRAFT-PERMIT-ISOPACH

ELEVATIONS TABLE

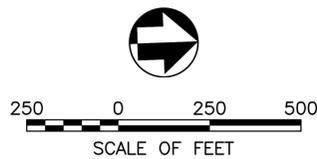
| NUMBER | MINIMUM ELEVATION | MAXIMUM ELEVATION | AREA | COLOR |
|--------|-------------------|-------------------|------------|-------------------|
| 1 | 0.00 | 0.50 | 1925095.51 | Lightest Blue |
| 2 | 0.50 | 1.00 | 1099749.27 | Light Blue |
| 3 | 1.00 | 1.50 | 643635.49 | Medium Light Blue |
| 4 | 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 C5C-C6 FOR ADDITIONAL SEDIMENT REUSE GRADING DETAILS.



- 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. C7 | TITLE OF SHEET ISOPACH SEDIMENT REUSE PLANNING AREA 1 | SHEET 10 |
| TC | | | OF |
| TECH. REVIEW: | | | 11 |
| DATE: 10/15/2025 | | HUMBOLDT COUNTY, CA | |



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 5: LWS INSTALLATION ALONG STREAM BANK HIGHLIGHTING ANCHORING WITH PINNING LOGS. 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: LWS INSTALLATION WITHIN FLOODPLAIN. PHOTO OF LWS INSTALLED AT PRAIRIE CREEK, 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.

Plotted: 10/14/2025 9:05 PM - By: LICENSED USER - R17.1 - File: CX-DETAILS-65PER-PERMIT



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|--------------------------------|-------------------------|----------------------------------|-------------|
| ELK PA1 65% DESIGN: PERMIT SET | | | |
| DESIGNED: NHE ADD | SUB SHEET NO. C8 | TITLE OF SHEET DETAILS | SHEET 11 |
| TECH. REVIEW: BD | | | OF 11 |
| DATE: 10/15/2025 | | HUMBOLDT COUNTY, CA | |