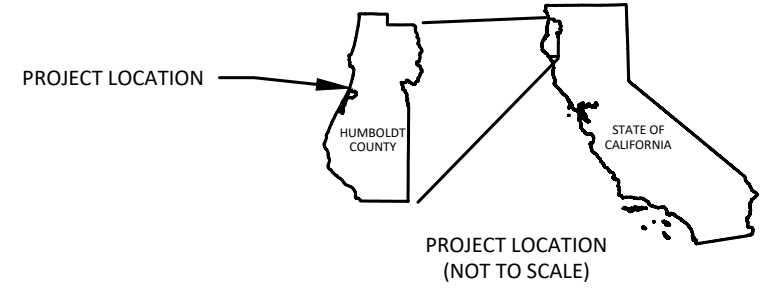


PROJECT LOCATION

PROJECT LOCATION  
HUMBOLDT BAY NATIONAL WILDLIFE REFUGE  
WADULH UNIT

TOPOGRAPHIC SOURCE: USGS 1:24,000 TOPOGRAPHIC MAPS:  
ARCATA NORTH, ARCATA SOUTH, EUREKA, AND TYEE CITY, CA

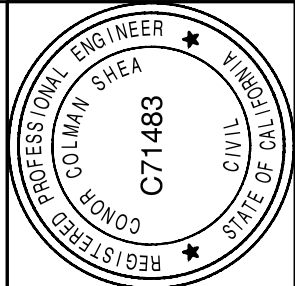


**WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
30% DESIGN PLANS (NOT FOR CONSTRUCTION)**

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PROJECT PARTNERS



U.S. FISH AND WILDLIFE SERVICE  
COASTAL PROGRAM  
1655 HEINDON ROAD  
ARCATA, CA 95521  
(707) 822-7201

PREPARED FOR:  
HUMBOLDT BAY NATIONAL  
WILDLIFE REFUGE  
1020 RANCH ROAD  
LOLETA, CA 95551



WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
30% DESIGN PLANS (NOT FOR CONSTRUCTION)

LOCATION AND TABLE OF CONTENTS

DATE:  
8/28/2023

SHEET NUMBER:  
**1**

SCALE:  
AS INDICATED

**DEFINITIONS**

1. USFWS IS THE UNITED STATES FISH AND WILDLIFE SERVICE.
2. REFUGE IS THE HUMBOLDT BAY NATIONAL WILDLIFE REFUGE AND IS THE PROJECT OWNER.
3. THE CONTRACT MANAGER IS THE DESIGNATED REPRESENTATIVE OF THE HUMBOLDT COUNTY RESOURCE CONSERVATION DISTRICT.
3. PROJECT ENGINEER IS PERSON DESIGNATED BY DESIGNATED BY USFWS TO ENSURE PROJECT IS CONSTRUCTED IN ACCORDANCE WITH PLANS, REVIEW CONTRACTORS SUBMITTALS, AND TO INTERPRET ENGINEERING PLANS AND SPECIFICATIONS. CONOR SHEA, P.E. IS THE USFWS PROJECT ENGINEER.
4. CONTRACTOR SHALL BE UNDERSTOOD TO BE ENTITY CONTRACTED BY THE CONTRACT MANAGER TO IMPLEMENT PROJECT CONSTRUCTION.

**ADMINISTRATIVE AND OPERATIONS**

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK AND REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER IN WRITING. SHOULD EXISTING CONDITIONS DIFFER FROM THOSE SHOWN OR INDICATED, OR IF IT APPEARS THAT THESE PLANS DO NOT ADEQUATELY DETAIL THE WORK TO BE DONE, CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER PRIOR TO CONTINUING WITH ANY RELATED WORK. NO ALLOWANCE SHALL BE MADE ON CONTRACTOR'S BEHALF FOR ANY EXTRA EXPENSE RESULTING FROM FAILURE OR NEGLIGENCE IN DETERMINING THE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALE.
2. A SET OF SIGNED CONTRACT DOCUMENTS (PLANS AND SPECIFICATIONS) SHALL BE KEPT AT ALL TIMES AT EACH JOB SITE ON WHICH ALL CHANGES OR VARIATIONS IN THE WORK ARE TO BE RECORDED AND/OR CORRECTED DAILY AND SUBMITTED TO THE PROJECT ENGINEER WHEN THE WORK TO BE DONE IS COMPLETED.
3. PROJECT ENGINEER SHALL PROVIDE THE CONTRACTOR WITH COPIES OF PERMIT AGREEMENTS, AND ALL RELATED NOTIFICATION MATERIALS.
4. CONTRACTOR SHALL COMPLY WITH ALL PROJECT PERMITS. THE PROJECT ENGINEER SHALL PROVIDE A COPY OF THE PERMITS TO THE AWARDED CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND UNDERSTAND THE CONDITIONS RELEVANT TO THE CONSTRUCTION ACTIVITIES.
5. CONTRACTOR SHALL HAVE PERMITS READILY AVAILABLE AT THE PROJECT SITE AT ALL TIMES AND SHALL BE PRESENTED TO PERSONNEL FROM STATE, FEDERAL, OR LOCAL AGENCIES UPON REQUEST.
6. QUANTITIES OF ITEMS, LENGTH OF PROJECT, AND SITE CONDITIONS SHOWN IN THE PLANS ARE APPROXIMATE. ALL MATERIALS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY AND ALL DAMAGES TO EXISTING STRUCTURES, PUBLIC AND PRIVATE ROADS, AND UTILITIES DURING CONSTRUCTION. ALL DAMAGE SHALL BE RESTORED TO EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE.
8. THE DESIGN FEATURES SHOWN ON THESE DESIGN PLANS SHALL NOT BE ALTERED OR MODIFIED IN ANY WAY DURING CONSTRUCTION WITHOUT THE EXPRESSED, WRITTEN DIRECTION AND APPROVAL OF THE PROJECT ENGINEER.
9. NO WORK SHALL BE PERFORMED OUTSIDE OF THE DESIGNATED AREAS WITHOUT THE APPROVAL OF THE PROJECT ENGINEER. ANY MODIFICATIONS FROM PLANS NEED TO BE COMPLETED AND/OR APPROVED BY THE PROJECT

**ENGINEER PRIOR TO IMPLEMENTATION.**

**GRADING NOTES**

1. RESTRICT NOISE FROM EARTHMOVING AND HAULING OF SOIL. HOURS OF CONSTRUCTION FOR OUTDOOR ACTIVITIES EXCEEDING 50 DBA SHALL BE LIMITED TO MONDAY THROUGH FRIDAY 7:00 A.M. TO 7:00 P.M. AND WEEKENDS AND HOLIDAYS FROM 9:00 A.M. TO 6:00 P.M. MOVEMENT AND HAULING OF MATERIAL, AND ASSOCIATED ACTIVITIES SUCH AS REFUELING OR MAINTENANCE, SHALL BE LIMITED TO NORMAL WORKING HOURS FOR THE AREA, AS SPECIFIED ABOVE. ALL EQUIPMENT SHALL OPERATE WITH FACTORY-EQUIPPED MUFFLERS. CONSTRUCTION PERSONNEL SHALL CONDUCT ALL WORK ACTIVITIES IN A MANNER THAT MINIMIZES NOISE GENERATION. CONTRACTOR SHALL MINIMIZE IDLING TIME TO 5 MINUTES FOR ALL EQUIPMENT.
2. GROUND DISTURBANCE SHALL NOT EXCEED THE MINIMUM NECESSARY TO COMPLETE CONSTRUCTION ACTIVITIES. VEGETATIVE DISTURBANCE SHALL BE CONTAINED WITHIN THE LIMITS OF GRADING AND ACCESS CORRIDORS DESIGNATED BY THE PROJECT ENGINEER AND KEPT TO A MINIMUM AREA.
3. SHOULD GRADING OPERATIONS ENCOUNTER HAZARDOUS MATERIALS, OR WHAT APPEAR TO BE HAZARDOUS MATERIALS, CONTRACTOR SHALL STOP WORK IN THE AFFECTED AREA IMMEDIATELY AND CONTACT THE PROJECT ENGINEER.
4. CONTRACTOR SHOULD EXPECT NATIVE SOILS TO COMPACT AND DISPLACE AND PLACED SOILS TO COMPACT UNDER EQUIPMENT TRAFFIC.
5. CONTRACTOR SHOULD ANTICIPATE SOFT, SATURATED SOILS AND/OR POOR PERFORMANCE OF SOILS UNDER VEHICLE TRAFFIC AND HEAVY LOADS. REPEATED VIBRATION AND/OR HIGH LOADS MAY LEAD TO PUMPING OF THE NATIVE SOILS RESULTING IN THE SATURATION OF SURFICIAL SOILS AND LOSS OF SOIL STABILITY. CONTRACTOR SHOULD EXPECT SOFT SATURATED SUBGRADES. EXCAVATION SHALL INCLUDE EXCAVATION AND HANDLING OF SATURATED SOILS.
6. CONTRACTOR SHALL BE PREPARED TO DEWATER AND /OR TRANSPORT SATURATED SOIL IN A MANNER THAT PREVENTS EXCESS DISCHARGE OR SPILLAGE OF SOILS OR WATER WITHIN THE CONSTRUCTION AREA OR ON ADJACENT PROPERTIES OR ROADWAYS. SHOULD ANY DISCHARGE OCCUR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATE AND COMPLETE CLEAN UP. MULTIPLE HANDLING OF MATERIAL MAY BE NECESSARY.

**VEGETATION PRESERVATION**

1. THE CONTRACTOR SHALL NOT REMOVE ANY TREES WITHOUT RECEIVING PRIOR PERMISSION FROM THE PROJECT ENGINEER.
2. THE CONTRACTOR SHALL NOT CLEAR ANY GROUND VEGETATION OTHER THAN GRADING AREAS OR ACCESS CORRIDORS.

**STORMWATER POLLUTION CONTROL**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH CALIFORNIA STORMWATER MANAGEMENT REGULATIONS AND IMPLEMENTING APPROPRIATE STORMWATER BMPs. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF BMPs, PERFORMING INSPECTIONS AND CORRECTING ANY DEFICIENCIES IDENTIFIED BY THE CONTRACT MANAGER OR PROJECT ENGINEER AT THE CONTRACTORS EXPENSE. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF BMPs, PERFORMING INSPECTIONS AND CORRECTING ANY DEFICIENCIES IDENTIFIED BY THE PROJECT ENGINEER AT THE CONTRACTORS EXPENSE.
2. THE CONTRACTOR SHALL EMPLOY THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPs) AS DESCRIBED IN CURRENT CALIFORNIA STORMWATER BMP HANDBOOK FOR

**CONSTRUCTION:**

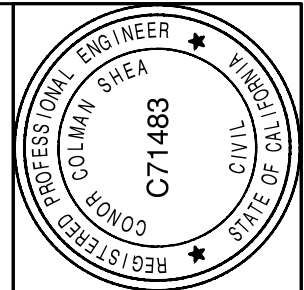
- EC-2 PRESERVATION OF EXISTING VEGETATION
- EC-6 STRAW MULCH
- EC-12 STREAMBANK STABILIZATION
- SE-1 SILT FENCE
- SE-3 SEDIMENT TRAP
- SE-9 STRAW BALE BARRIERS
- WE-1 WIND EROSION CONTROL
- NS-2 DEWATERING OPERATIONS
- NS-4 TEMPORARY STREAM CROSSING
- NS-5 CLEAR WATER DIVERSION
- NS-8 VEHICLE AND EQUIPMENT CLEANING
- NS-9 VEHICLE EQUIPMENT AND FUELING
- NS-10 VEHICLE AND EQUIPMENT MAINTENANCE
- WM-1 MATERIALS DELIVERY AND STORAGE
- WM-2 MATERIAL USE
- WM-3 STOCKPILE MANAGEMENT
- WM-4 SPILL PREVENTION AND CONTROL
- WM-9 SANITARY/SEPTIC WASTE MANAGEMENT

3. EROSION/SEDIMENT BMPs MAY BE REQUIRED TO COMPLY WITH PROJECT PERMITS AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT ADDITIONAL BMPs AS NEEDED AND AS DIRECTED BY THE PROJECT ENGINEER AT NO ADDITIONAL EXPENSE.
  4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIX ANY DEFICIENCIES INDICATED BY THE PROJECT ENGINEER TO PREVENT EROSION AND CONTROL SEDIMENT.
  5. SUFFICIENT EROSION CONTROL SUPPLIES SHALL BE AVAILABLE ON-SITE AT ALL TIMES TO DEAL WITH AREAS SUSCEPTIBLE TO EROSION DURING RAINFALL EVENTS.
  6. THE CONTRACTOR SHALL ADJUST BMPs TO MAINTAIN IN COMPLIANCE. THE CONTRACTOR SHALL BE LIABLE FOR ANY FINES FOR INADEQUATE BMP'S. THE CONTRACTOR SHALL HOLD THE PROJECT ENGINEER HARMLESS FOR ANY FINES OR SANCTIONS CAUSED BY THE CONTRACTOR'S ACTIONS OR INACTIONS REGARDING COMPLIANCE WITH THE PERMIT OR EROSION CONTROL PROVISIONS OF THIS PLAN.
  7. THE CONTRACTOR SHALL NOT ESTABLISH TEMPORARY STOCKPILES WITHOUT PRIOR APPROVAL OF THE PROJECT ENGINEER. CONTRACTOR SHALL EMPLOY BEST MANAGEMENT PRACTICE (WM-3) FOR STOCKPILE MANAGEMENT. CONTRACTOR SHALL REMOVE STOCKPILES PRIOR TO END OF CONSTRUCTION, REMOVE ANY STOCKPILE SEDIMENT CONTROLS AND RESTORE STOCKPILE AREA TO ORIGINAL CONDITIONS. ALL COSTS FOR STOCKPILE MAINTENANCE ARE INCIDENTAL TO COSTS FOR EXCAVATION.
  8. TEMPORARY STOCKPILES FOR TOPSOIL, SO, AND SEDIMENT SHALL NOT EXCEED TEN FEET IN HEIGHT.
  9. THE CONTRACTOR SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE, AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION THAT HAVE NOT BEEN FINALLY STABILIZED, STABILIZATION PRACTICES, STRUCTURAL PRACTICES, AND OTHER CONTROLS AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS, WITHIN TWO (2) CALENDAR DAYS OF FORECASTED RAINS, AND WITHIN 24 HOURS OF THE END OF ANY STORM THAT PRODUCES 0.5 INCHES OR MORE RAINFALL AT THE SITE.
- ENVIRONMENTAL PROTECTION AND POLLUTION CONTROL MEASURES**
1. HEAVY EQUIPMENT THAT SHALL BE USED IN THE PROJECT SHALL BE IN GOOD CONDITION AND SHALL BE INSPECTED FOR

LEAKAGE OF COOLANT AND PETROLEUM PRODUCTS AND REPAIRED, IF NECESSARY, BEFORE WORK IS STARTED. ALL MACHINERY OR HEAVY EQUIPMENT SHALL BE CLEANED OF MATERIALS DELETERIOUS TO AQUATIC LIFE INCLUDING OIL, LUBRICANTS, COOLANTS, HYDRAULIC FLUID, SOIL, AND OTHER DEBRIS. ALL CONSTRUCTION VEHICLES OR EQUIPMENT SHALL BE CHECKED DAILY TO PREVENT LEAKS OF FUELS AND/OR LUBRICANTS.

2. THE CONTRACTOR SHALL PREPARE A SPILL PREVENTION AND RESPONSE PLAN FOR THE CONSTRUCTION SITE. THE SPILL PREVENTION AND RESPONSE PLAN MUST INCLUDE DESCRIPTION OF SPILL CLEANUP PROCEDURES, DESCRIPTION OF WORKER TRAINING, DESIGNATION OF FUELING LOCATIONS, AND IMPACT AVOIDANCE MEASURES. THE PLAN MUST BE APPROVED BY THE PROJECT ENGINEER PRIOR TO STARTING WORK.
3. REFUELING OF EQUIPMENT SHALL TAKE PLACE IN DESIGNATED REFUELING AREA IDENTIFIED ON SPILL PREVENTION AND RESPONSE PLAN.
4. NO FUELING SHALL TAKE PLACE WITHIN 100 FEET OF SURFACE WATERS. STATIONARY EQUIPMENT SHALL BE POSITIONED OVER DRIP PANS.
5. EQUIPMENT MAINTENANCE AND CLEANING SHALL TAKE PLACE OFF-SITE.
6. ABSORBENT MATERIALS DESIGNED FOR SPILL CONTAINMENT AND CLEANUP SHALL BE KEPT IN ALL WORK AREAS DURING CONSTRUCTION FOR USE IN CASE OF AN ACCIDENTAL SPILL. ANY MATERIAL, WHICH COULD BE HAZARDOUS OR TOXIC TO AQUATIC LIFE AND ENTERS A STREAM (I.E. A PIECE OF EQUIPMENT TIPPING-OVER IN A STREAM AND DUMPING OIL, FUEL, OR HYDRAULIC FLUID), THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND THE CALIFORNIA EMERGENCY MANAGEMENT AGENCY STATE WARNING CENTER AT 1-800-852-7550, AND IMMEDIATELY INITIATE CLEAN-UP ACTIVITIES.
7. NO CONSTRUCTION MATERIALS, DEBRIS, OR WASTE, SHALL BE PLACED OR STORED WHERE IT MAY BE ALLOWED TO ENTER INTO OR BE PLACED WHERE IT MAY BE WASHED BY RAINFALL INTO WATERS OF THE U.S./STATE.
8. SOIL AND MATERIAL STOCKPILES SHALL BE PROPERLY PROTECTED TO MINIMIZE SEDIMENT AND POLLUTANT TRANSPORT FROM THE CONSTRUCTION SITE. NO DEBRIS, SOIL, SILT, SAND, BARK, SLASH, RUBBISH, CEMENT OR CONCRETE WASHINGS, OIL OR PETROLEUM PRODUCTS, OR OTHER DELETERIOUS MATERIAL FROM PROJECT ACTIVITIES SHALL BE ALLOWED TO ENTER INTO OR BE PLACED WHERE IT MAY BE WASHED BY RAINFALL OR RUNOFF INTO THE STREAM. EXCEPT INCIDENTAL SOIL, SILT, OR SAND RESULTING FROM NEW CHANNEL CONSTRUCTION. ALL PROJECT MATERIALS AND DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE AND PROPERLY DISPOSED OF OFF-SITE UPON PROJECT COMPLETION.
9. CONTRACTOR SHALL NOT OPERATE EQUIPMENT DIRECTLY WITHIN FLOODED DEPRESSIONS, SLOUGHS, OR FLOWING STREAMS.
10. CONTRACTOR SHALL CONDUCT OPERATIONS SO AS TO PREVENT WINDBLOWN DUST AND DIRT FROM INTERFERING WITH THE SURROUNDING NORMAL OPERATIONS. CONTRACTOR SHALL ASSUME LIABILITY FOR ALL CLAIMS RELATED TO WINDBLOWN DUST AND DIRT.

CONTINUES ON SHEET 3



U.S. FISH AND WILDLIFE SERVICE  
COASTAL PROGRAM  
1655 HEINDON ROAD  
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(707) 822-7201

PREPARED FOR:  
HUMBOLDT BAY NATIONAL  
WILDLIFE REFUGE  
1020 RANCH ROAD  
LOLETA, CA 95551



WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
30% DESIGN PLANS (NOT FOR CONSTRUCTION)

GENERAL NOTES (1/12)

DATE:  
8/28/2023

SHEET NUMBER:

2

SCALE:  
AS INDICATED

CONTINUED FROM SHEET 2

**WATER MANAGEMENT**


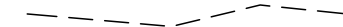















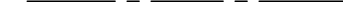
1. THE OBJECTIVE OF WATER MANAGEMENT IS TO ISOLATE GRADING AND OTHER OPERATIONS FROM ACTIVELY FLOWING OR FLOODED AREAS SO THAT WORK IS COMPLETED IN DRY CONDITIONS AND WATER QUALITY IS NOT IMPAIRED BY SEDIMENT.
  2. THE CONTRACTOR MAY NEED TO INSTALL TEMPORARY CROSSINGS, WATER DIVERSIONS, DEWATERING OPERATIONS, SEDIMENT TRAPS, AND OTHER PRACTICES TO ACCOMPLISH THE WORK, SATISFY PERMIT CONDITIONS, AND MAINTAIN WATER QUALITY.
  3. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A WATER MANAGEMENT PLAN. THE WATER MANAGEMENT PLAN SHALL IDENTIFY THE SEQUENCE OF GRADING OPERATIONS, LOCATIONS OF ANY FLOW BARRIERS AND MEANS OF INSTALLATION, TEMPORARY CROSSINGS, LOCATION OF CLEAR WATER DIVERSIONS WITHIN EACH WORK PHASE, DEWATERING FACILITIES, AND LOCATION OF PUMPS, WATER LINES, SUMP PITS, AND ANY OTHER EQUIPMENT REQUIRED TO IMPLEMENT THE WATER MANAGEMENT PLAN.
  4. THE PROJECT ENGINEER WILL REVIEW THE WATER MANAGEMENT PLAN. THE CONTRACTOR WILL WORK WITH THE PROJECT ENGINEER TO REMEDY ANY PLAN DEFICIENCIES IDENTIFIED BY THE PROJECT ENGINEER UNTIL THE PROJECT ENGINEER APPROVES THE WATER MANAGEMENT PLAN. NO WORK MAY PROCEED UNTIL THE PROJECT ENGINEER PROVIDES WRITTEN APPROVAL OF THE CONTRACTOR'S WATER MANAGEMENT PLAN TO THE CONTRACTOR.
  5. DEWATERING MAY BE REQUIRED TO REMOVE GROUNDWATER SEEPAGE IN EXCAVATION AREAS. CONTRACTOR SHALL EMPLOY BMP NS-2 DEWATERING OPERATIONS DESCRIBED IN THE CURRENT CALIFORNIA STORMWATER BMP HANDBOOK FOR CONSTRUCTION. WATER SHALL BE TREATED FOR SEDIMENT REMOVAL AND DISCHARGED ONTO AREAS THAT ARE NOT SUSCEPTIBLE TO DAMAGE FROM SALINE WATER. DISCHARGED WATER SHALL NOT BE ALLOWED TO FLOW INTO WATERS OF THE U.S. OR STATE, OR INTO DISTURBED AREAS.
  6. ANY PUMPS USED FOR DEWATERING SHALL BE PLACED ON TOP OF ABSORBENT PADS ON DRY STABLE GROUND.
  7. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, TOOLS, EQUIPMENT, FACILITIES AND SERVICES AS REQUIRED FOR IMPLEMENTING WATER MANAGEMENT AND SHALL PROVIDE BACKUP EQUIPMENT AS NECESSARY FOR REPLACEMENT AND FOR UNANTICIPATED EMERGENCIES.
  8. THE CONTRACTOR SHALL INSPECT ALL WATER MANAGEMENT INSTALLATIONS DAILY AND IMMEDIATELY REPAIR ANY DEFICIENCIES.
- AQUATIC SPECIES RELOCATION AND PROTECTION**
1. DEWATERED AREAS MAY REQUIRE REMOVAL OF FISH AND OTHER AQUATIC SPECIES PRIOR TO ANY IN-CHANNEL WORK, INCLUDING THE INSTALLATION OF FLOW BARRIERS, WATER MANAGEMENT SYSTEMS AND TEMPORARY CROSSINGS.
  2. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER ONE WEEK PRIOR TO ANY IMPLEMENTATION OF DIVERSION AND DEWATERING ACTIVITIES REQUIRING AQUATIC SPECIES RELOCATION.
  3. NO DIVERSION AND DEWATERING ACTIVITIES MAY TAKE PLACE UNTIL THE PROJECT ENGINEER HAS NOTIFIED THE CONTRACTOR THAT THEY MAY PROCEED.
  4. THE PROJECT ENGINEER WILL BE RESPONSIBLE FOR DAILY INSPECTION OF ANY TEMPORARY BARRIERS INSTALLED TO PREVENT MOVEMENT OF AQUATIC SPECIES INTO ACTIVE WORK AREAS. THE CONTRACTORS WILL IMMEDIATELY REPAIR ANY DEFICIENCIES IN THE TEMPORARY BARRIERS IDENTIFIED BY THE

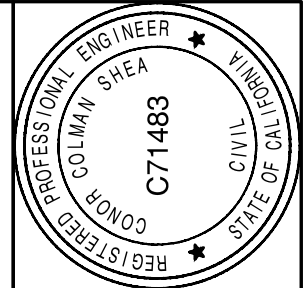
PROJECT ENGINEER, STOPPING WORK IN THE AREA IF NECESSARY.

**TIRE TRACKING CONTROL PLAN**

1. THE CONTRACTOR SHALL PROVIDE MEANS OF REMOVING SAND, MUD, VEGETATION, RHIZOMES/ROOTS, AND SEEDS FROM VEHICLE WHEELS AND UNDER CARRIAGE BEFORE ENTERING AND EXITING THE CONSTRUCTION SITE ONTO COUNTY ROADS.
  2. THE CONTRACTOR SHALL MONITOR ALL ROADS UTILIZED AS PART OF THE PROJECT ON A DAILY BASIS FOR SEDIMENT TRACKING AND OTHER MATERIALS DUE TO CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL VISUALLY INSPECT PROJECT AREA TWICE DAILY TO VERIFY NO HAZARDS ARE CREATED BY SEDIMENT TRACKING. CONTRACTOR SHALL REMOVE ANY TRACKING IN A TIMELY MANNER. ROADS SHALL BE LEFT CLEAN AT THE END OF EACH WORKING DAY; CLEANING OPERATIONS SHALL NOT CREATE WATER RUNOFF OR DUST.
- SAFETY**
1. EQUIPMENT OPERATORS SHALL BE TRAINED IN THE PROCEDURES TO BE TAKEN SHOULD AN ACCIDENT OCCUR.
  2. ALL INTERNAL COMBUSTION ENGINES SHALL BE FITTED WITH SPARK ARRESTORS.
  3. THE CONTRACTOR SHALL HAVE AN APPROPRIATE FIRE EXTINGUISHERS AND FIRE FIGHTING TOOLS PRESENT AT ALL TIMES WHEN THERE IS A RISK OF FIRE.
  4. VEHICLES SHALL NOT BE PARKED IN TALL GRASS OR ANY OTHER LOCATION WHERE HEAT FROM THE EXHAUST SYSTEM COULD IGNITE A FIRE.
  5. WORKERS SHALL BE REQUIRED TO WEAR HEARING PROTECTION WHEN IN THE VICINITY OF OR WHILE OPERATING EQUIPMENT PRODUCING NOISE LEVELS EQUAL TO OR GREATER THAN 85 DB.
  6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROJECT SAFETY AND SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE PROJECT OWNER, THE CONTRACT MANAGER, AND THE U.S. FISH AND WILDLIFE SERVICE AND THEIR AGENTS EXCEPT FOR THE SOLE ACTIVE NEGLIGENCE OF THE INDEMNIFIED PARTIES.
- UTILITIES AND INFRASTRUCTURE**
1. PUBLIC OVERHEAD UTILITIES ARE PRESENT IN AREA. THE LOCATIONS OF UNDERGROUND UTILITIES ARE NOT SHOWN ON PLAN. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL UTILITIES FROM CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) 48 HOURS BEFORE BEGINNING WORK AT 1-800-227-2600, TO IDENTIFY IF UTILITIES ARE PRESENT IN WORK AREA. CONTRACTOR SHALL INVESTIGATE BY TEST-PITS OR OTHER METHODS IF UTILITIES ARE WITHIN LIMITS OF GROUND DISTURBING ACTIVITIES AND TAKE MEASURES TO PROTECT UTILITIES FROM DAMAGE OR DISTURBANCE.
  2. THERE ARE NO UTILITY SERVICES AVAILABLE AT THE PROJECT AREA. CONTRACTOR IS RESPONSIBLE FOR SUPPLYING WATER AND SANITARY NEEDS.
  3. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO COUNTY ROADS, PRIVATE ROADS, AND ACCESS ROADS INCURRED DURING CONSTRUCTION, REMOVE CONSTRUCTION DEBRIS, CONSTRUCTION EQUIPMENT, AND TEMPORARY FACILITIES FROM PROJECT AREA.
  4. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS, ABANDONED PIPES, PILINGS, AND CONSTRUCTION-RELATED GARBAGE FROM CONSTRUCTION SITE. PROJECT TO SATISFACTION OF PROJECT ENGINEER. NO EQUIPMENT MAY BE LEFT ON SITE.

**LEGEND**

	REFUGE BOUNDARY
	UNIMPROVED ROAD
	IMPROVED ROAD
	PROJECT LIMIT
	LIMIT OF DISTURBANCE
	OVERHEAD POWERLINE
	PONDED WATER
	DITCH
	CULVERT
	TOPOGRAPHIC SURFACE BOUNDARY
	EXISTING INDEX CONTOUR
	EXISTING INTERMEDIATE CONTOUR
	PROPOSED INDEX CONTOUR
	PROPOSED INTERMEDIATE CONTOUR
	EXISTING GROUND - SECTION VIEW
	PROPOSED GROUND - SECTION VIEW
	EXISTING GROUND PROFILE
	PROPOSED GROUND PROFILE



U.S. FISH AND WILDLIFE SERVICE  
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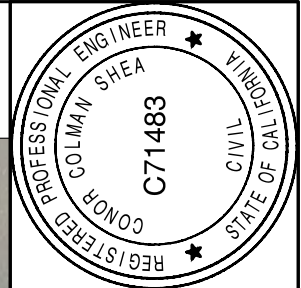
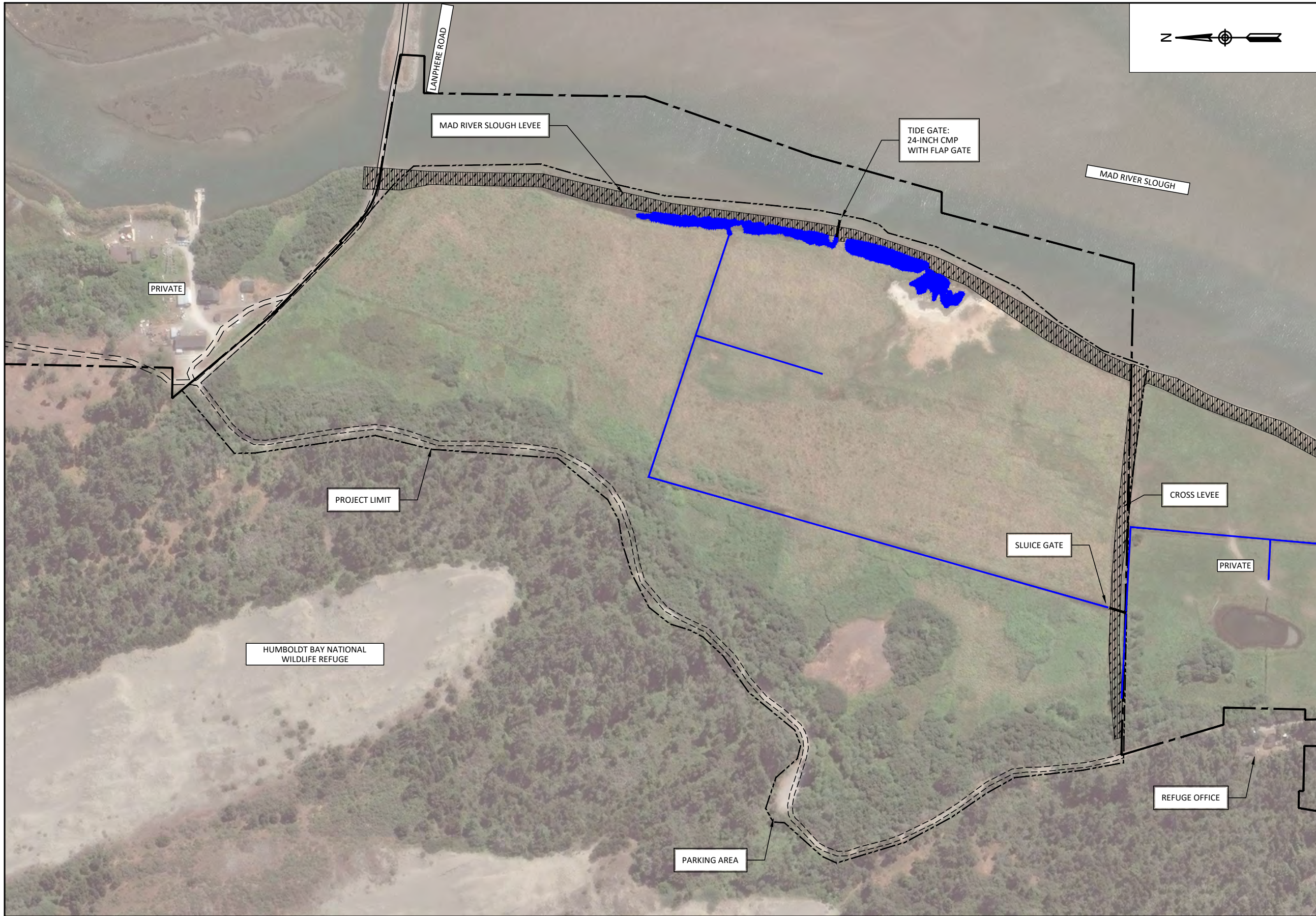
GENERAL NOTES (2/2) AND LEGEND

DATE:  
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SHEET NUMBER:

3

SCALE:



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EXISTING CONDITIONS

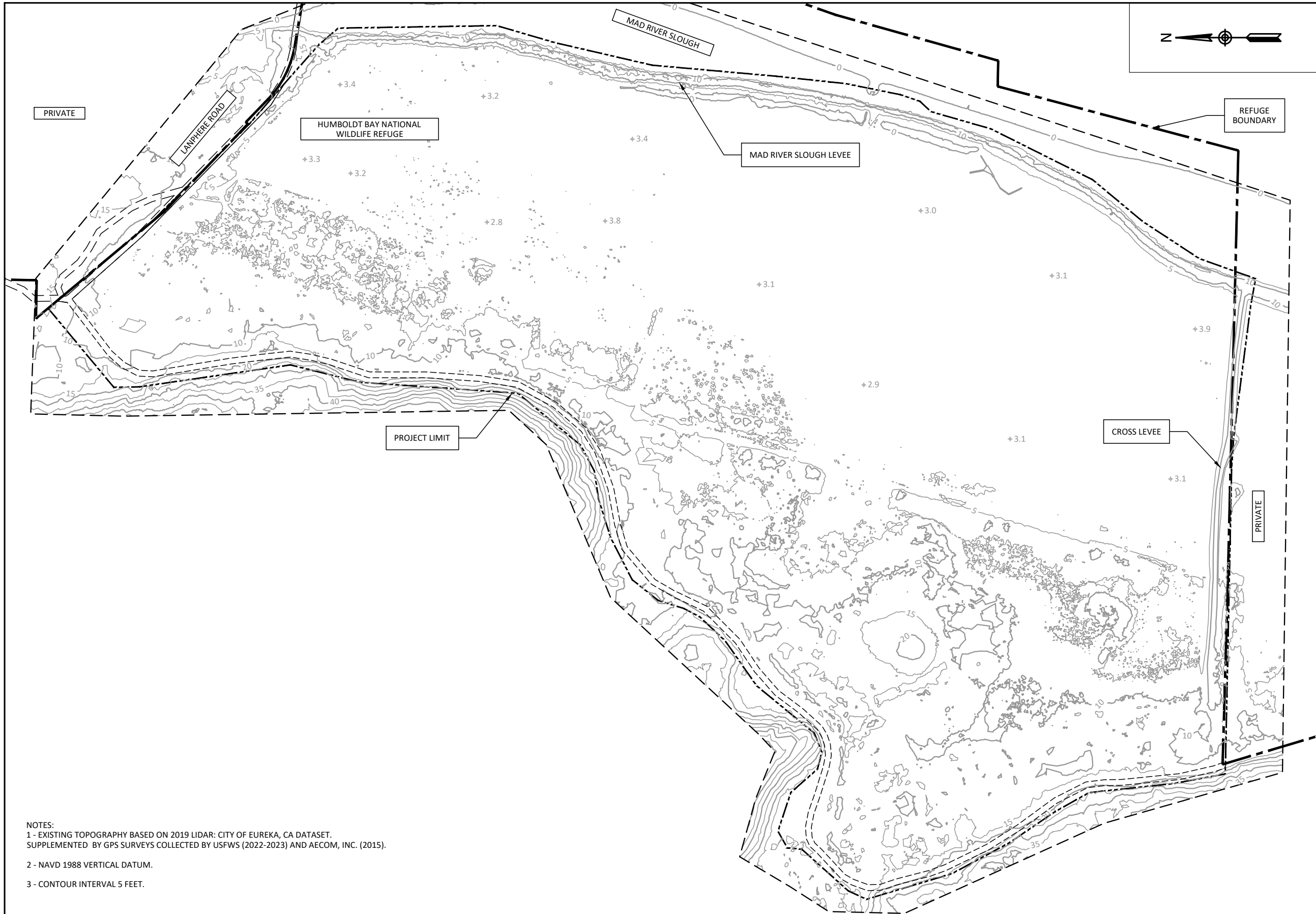
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DATE:  
8/28/2023

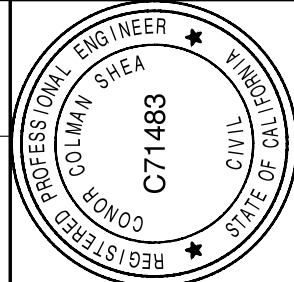
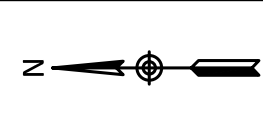
SHEET NUMBER:

4





NOTES:  
 1 - EXISTING TOPOGRAPHY BASED ON 2019 LIDAR: CITY OF EUREKA, CA DATASET.  
 SUPPLEMENTED BY GPS SURVEYS COLLECTED BY USFWS (2022-2023) AND AECOM, INC. (2015).  
 2 - NAVD 1988 VERTICAL DATUM.  
 3 - CONTOUR INTERVAL 5 FEET.



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 (707) 822-7201

PREPARED FOR:  
 HUMBOLDT BAY NATIONAL  
 WILDLIFE REFUGE  
 1020 RANCH ROAD  
 LOLETA, CA 95551

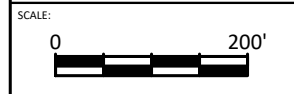


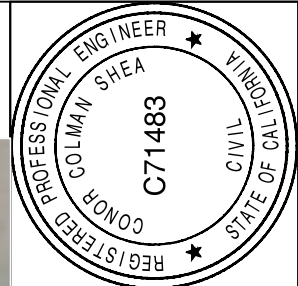
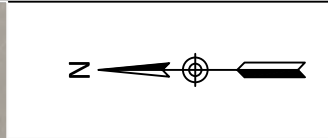
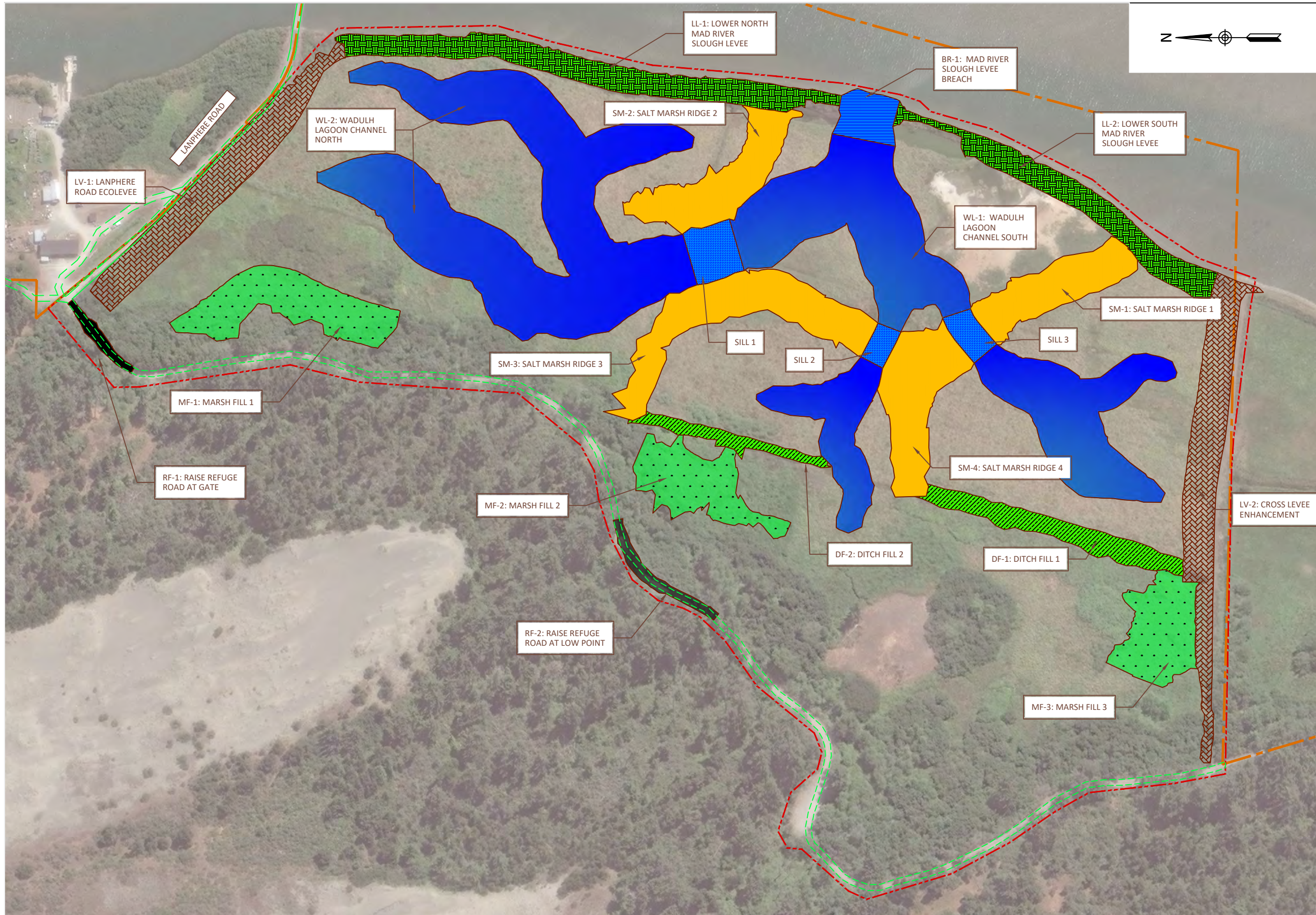
WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS (NOT FOR CONSTRUCTION)

EXISTING TOPOGRAPHY

DATE:  
 8/28/2023

SHEET NUMBER:  
 5





U.S. FISH AND WILDLIFE SERVICE  
 COASTAL PROGRAM  
 1655 HEINDON ROAD  
 ARCATA, CA 95521  
 (707) 822-7201

PREPARED FOR:  
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 WILDLIFE REFUGE  
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 LOLETA, CA 95551



WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
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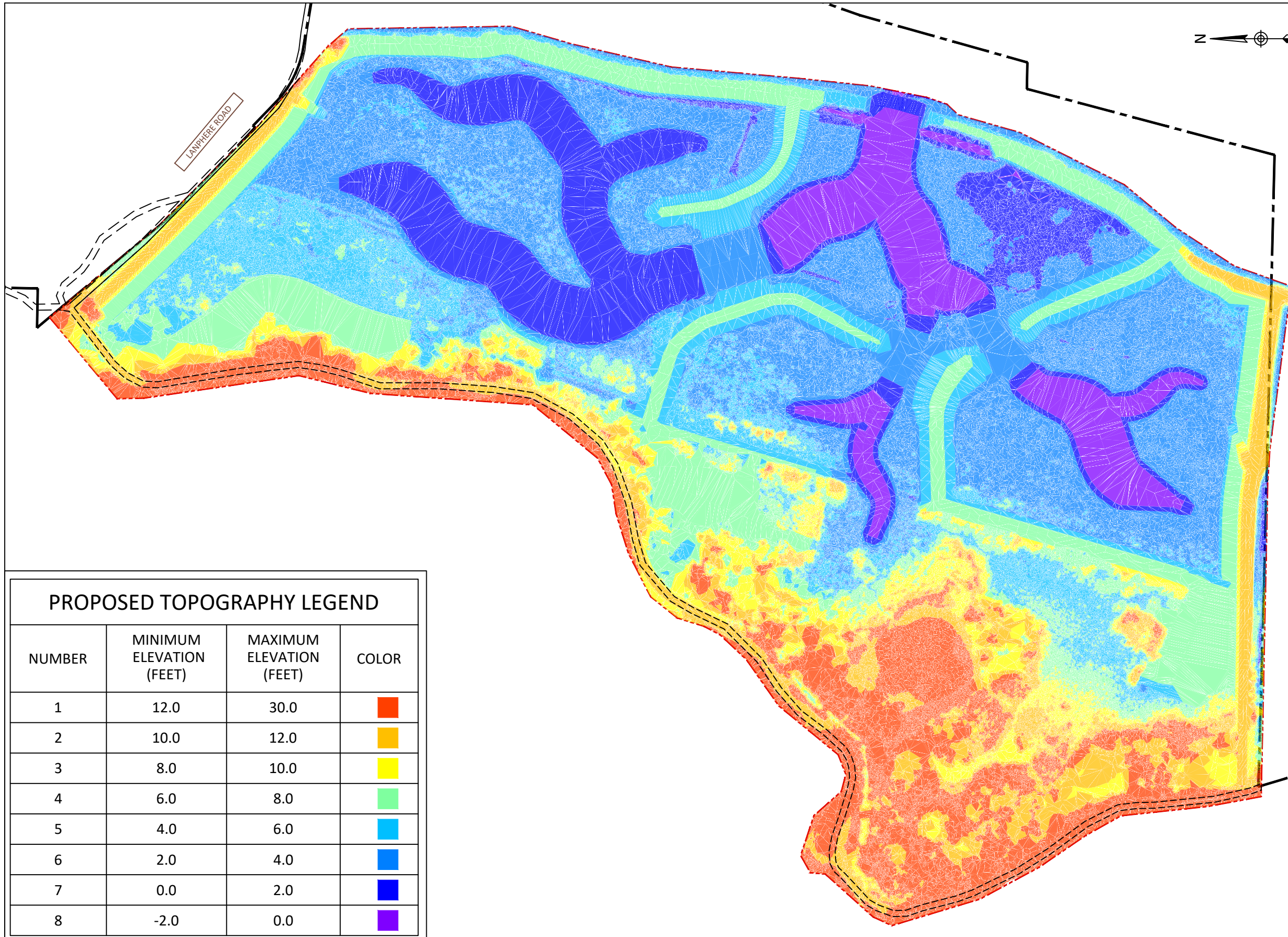
PROJECT GRADING ELEMENTS

DATE:  
 8/28/2023

SHEET NUMBER:

6

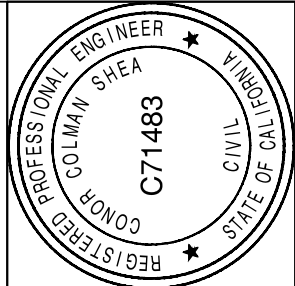




LANPHERE ROAD



PROPOSED TOPOGRAPHY LEGEND			
NUMBER	MINIMUM ELEVATION (FEET)	MAXIMUM ELEVATION (FEET)	COLOR
1	12.0	30.0	
2	10.0	12.0	
3	8.0	10.0	
4	6.0	8.0	
5	4.0	6.0	
6	2.0	4.0	
7	0.0	2.0	
8	-2.0	0.0	



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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
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PROPOSED TOPOGRAPHY

(1) ELEVATION DATUM NAVD 1988.


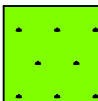
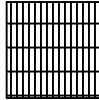
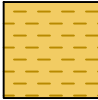
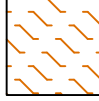



DATE:  
8/28/2023

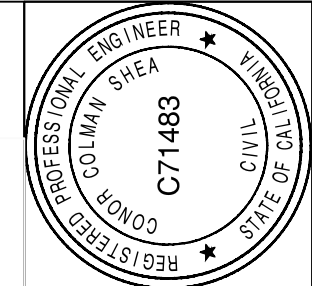
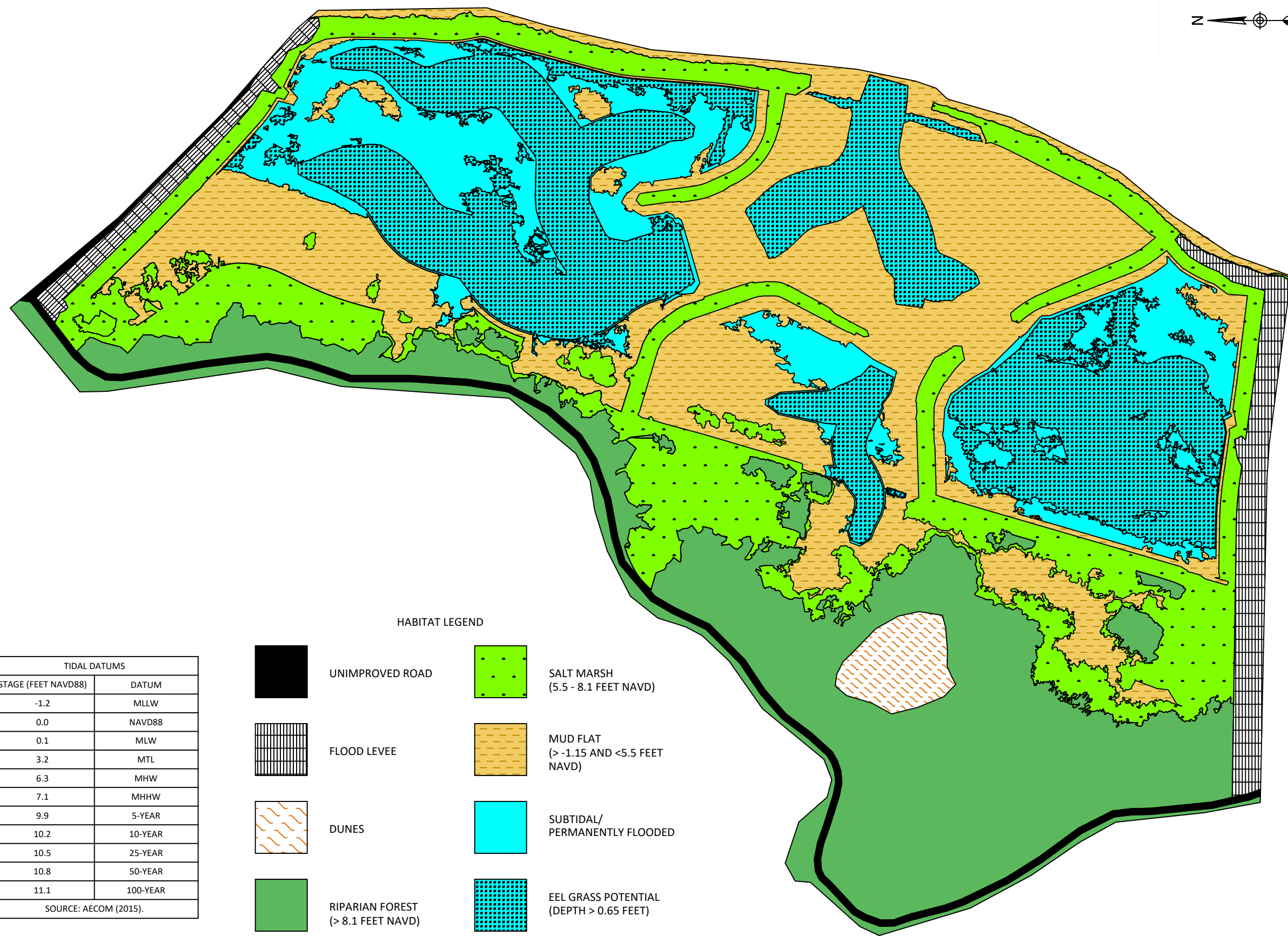
SHEET NUMBER:  
**7**



TIDAL DATUMS	
STAGE (FEET NAVD88)	DATUM
-1.2	MLLW
0.0	NAVD88
0.1	MLW
3.2	MTL
6.3	MHW
7.1	MHHW
9.9	5-YEAR
10.2	10-YEAR
10.5	25-YEAR
10.8	50-YEAR
11.1	100-YEAR

SOURCE: AECOM (2015).

HABITAT LEGEND			
	UNIMPROVED ROAD		SALT MARSH (5.5 - 8.1 FEET NAVD)
	FLOOD LEVEE		MUD FLAT (> -1.15 AND <5.5 FEET NAVD)
	DUNES		SUBTIDAL/ PERMANENTLY FLOODED
	RIPARIAN FOREST (> 8.1 FEET NAVD)		EEL GRASS POTENTIAL (DEPTH > 0.65 FEET)



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 WILDLIFE REFUGE  
 1020 RANCH ROAD  
 LOLETA, CA 95551



WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS (NOT FOR CONSTRUCTION)

PROJECTED TIDAL WETLAND TYPES AND TIDAL DATUMS

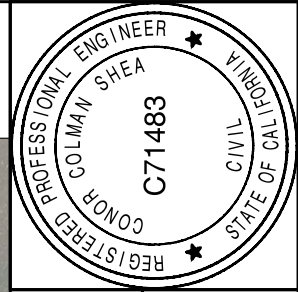
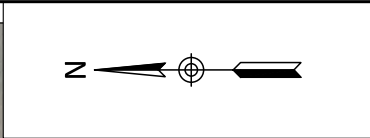
DATE:  
8/28/2023

SHEET NUMBER:

8

SCALE:  



U.S. FISH AND WILDLIFE SERVICE  
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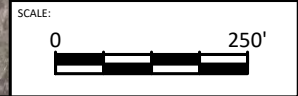


WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
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SITE OVERVIEW AND SHEET INDEX

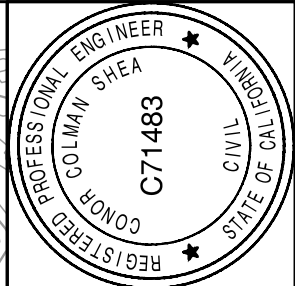
DATE:  
 8/28/2023

SHEET NUMBER:  
 9





INSTALL 60-FEET  
18-INCH DIAMETER  
HDPE CULVERT  
WITH TOP-HINGED  
FLAP GATE UNDER LEVEE  
- INVERT - 7.0'



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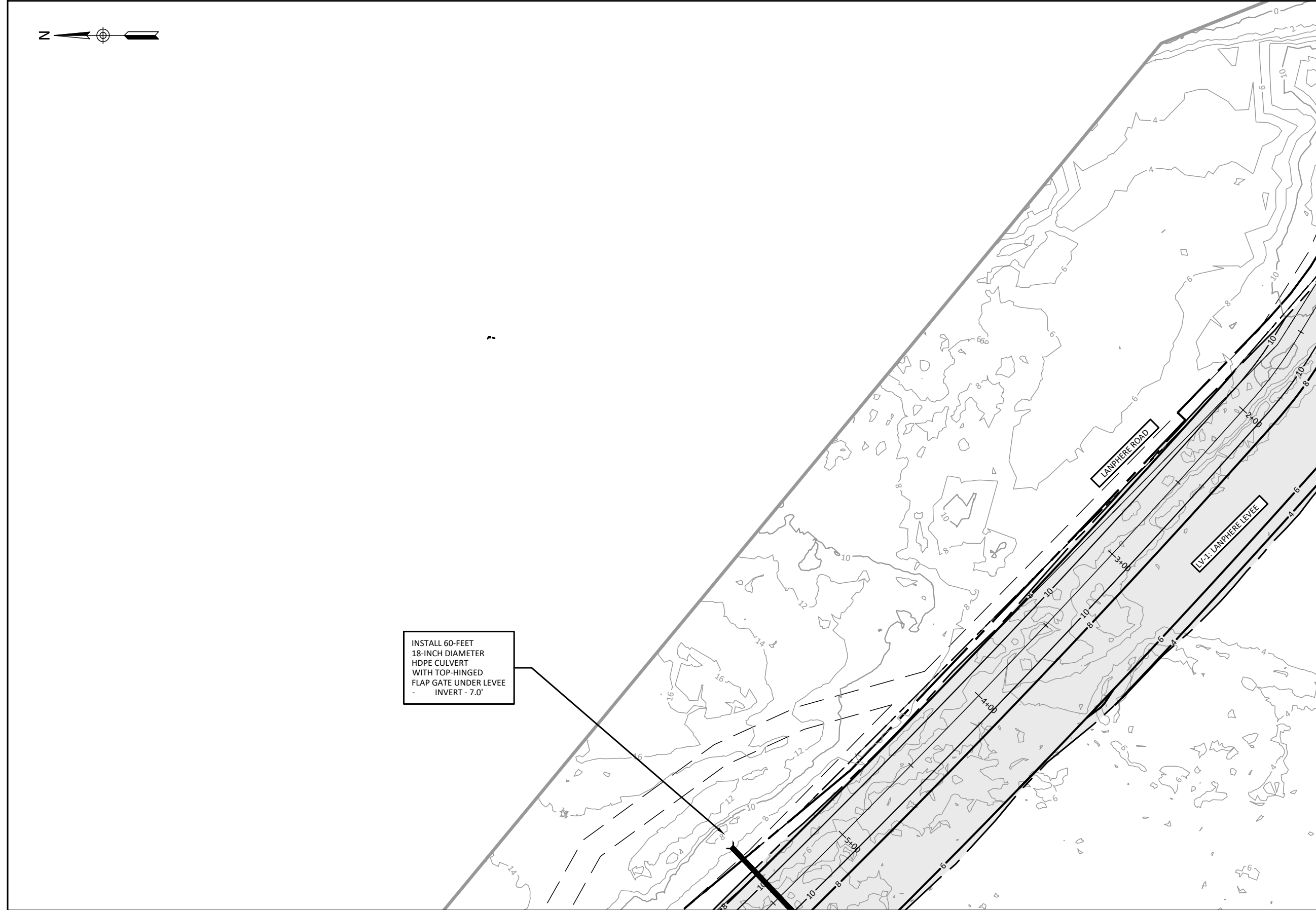
WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
30% DESIGN PLANS (NOT FOR CONSTRUCTION)

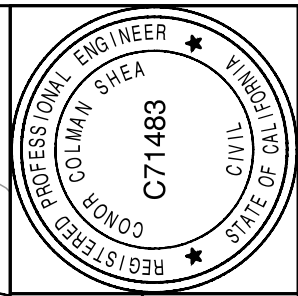
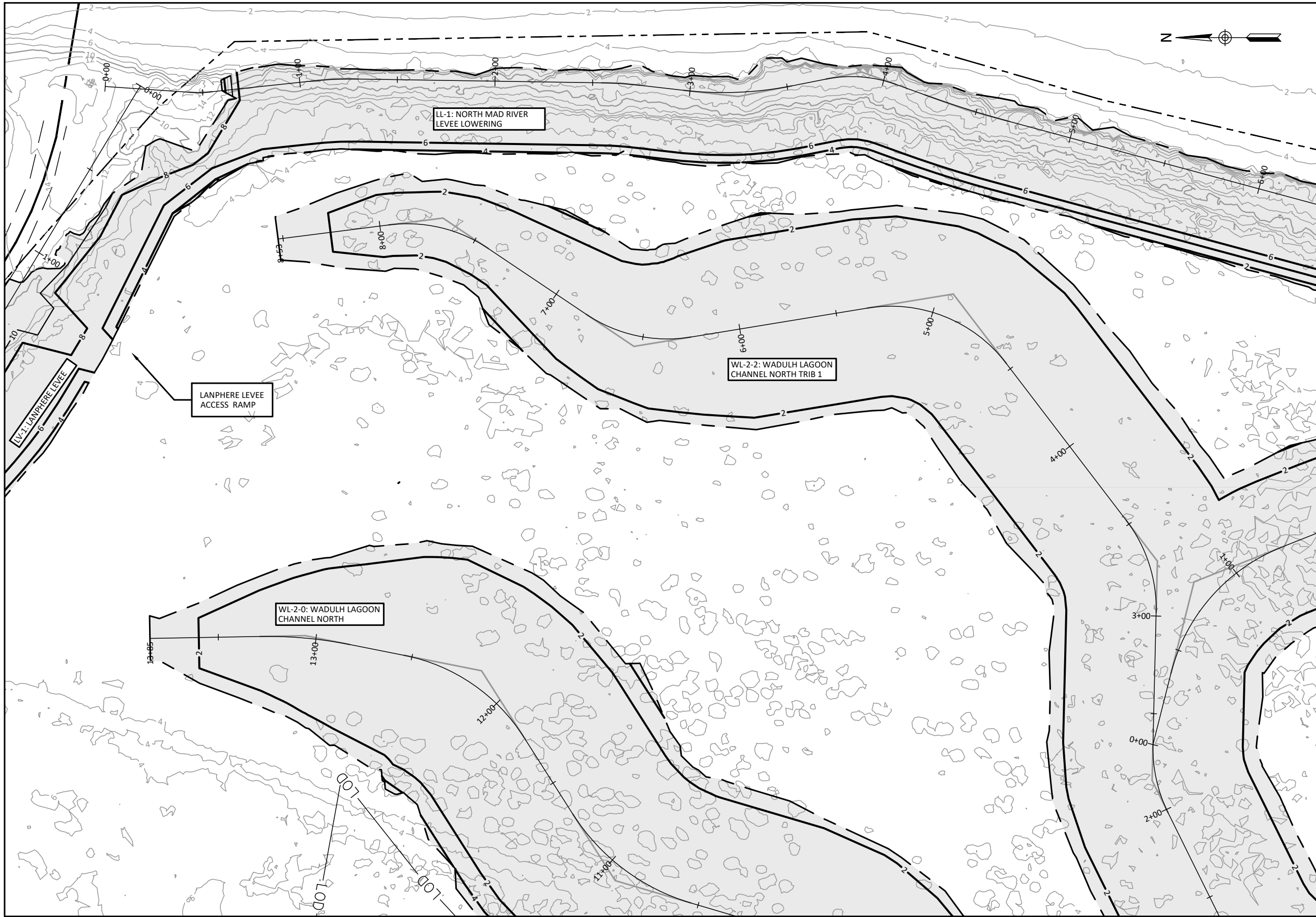
GRADING PLAN 1/10

CONTOUR INTERVAL - 2 FEET

DATE:  
8/28/2023

SHEET NUMBER:  
**10**





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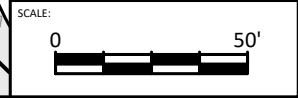
WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS (NOT FOR CONSTRUCTION)

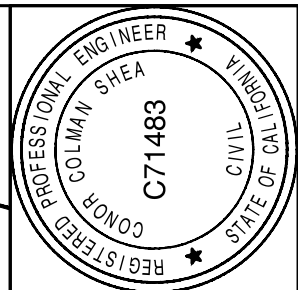
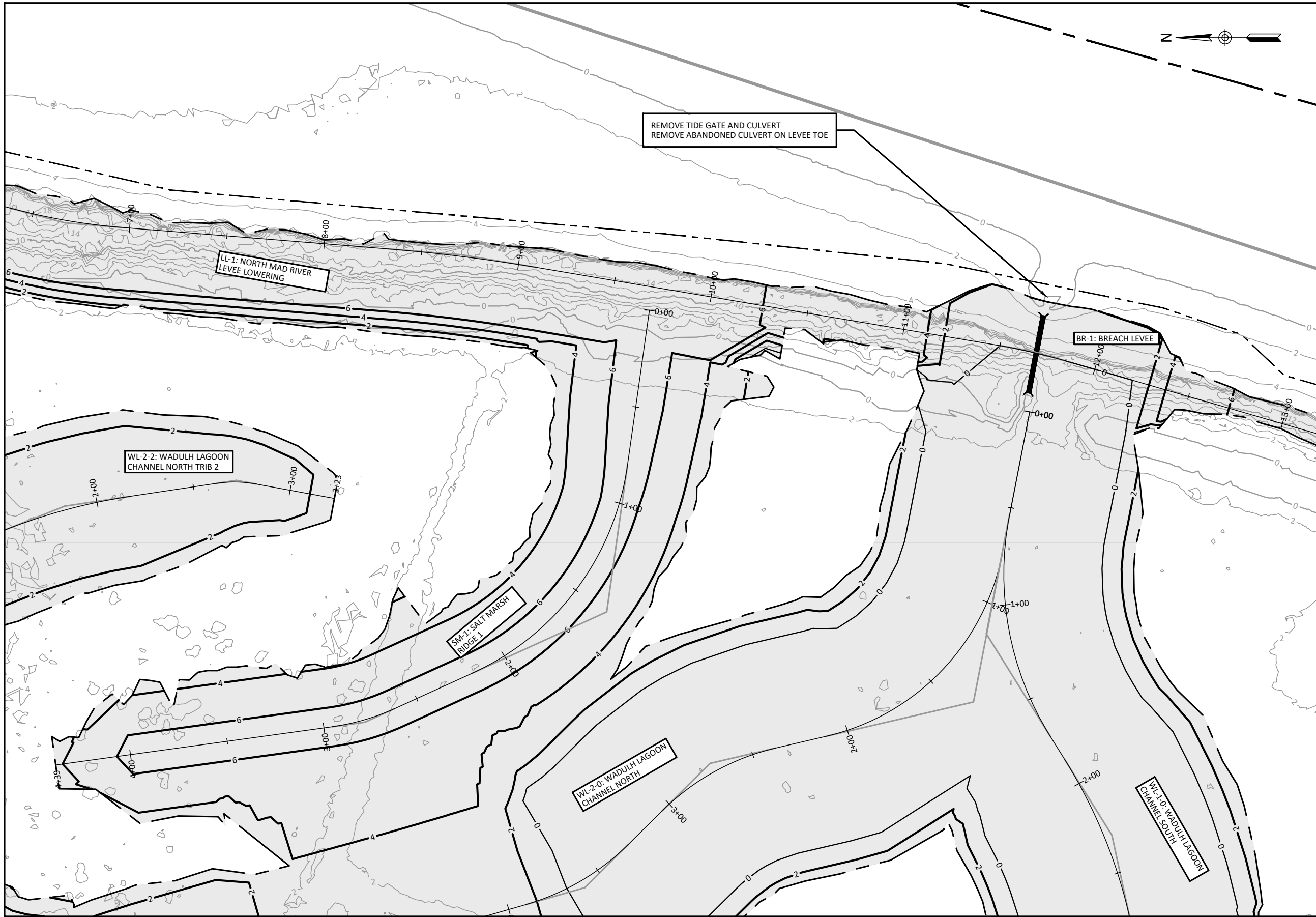
GRADING PLAN 2/10

CONTOUR INTERVAL - 2 FEET

DATE:  
 8/28/2023

SHEET NUMBER:  
 11





U.S. FISH AND WILDLIFE SERVICE  
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PREPARED FOR:  
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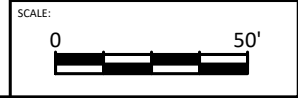
WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS (NOT FOR CONSTRUCTION)

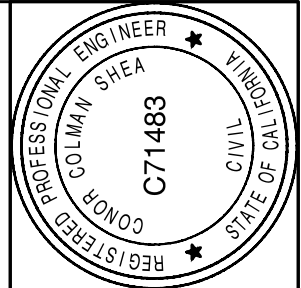
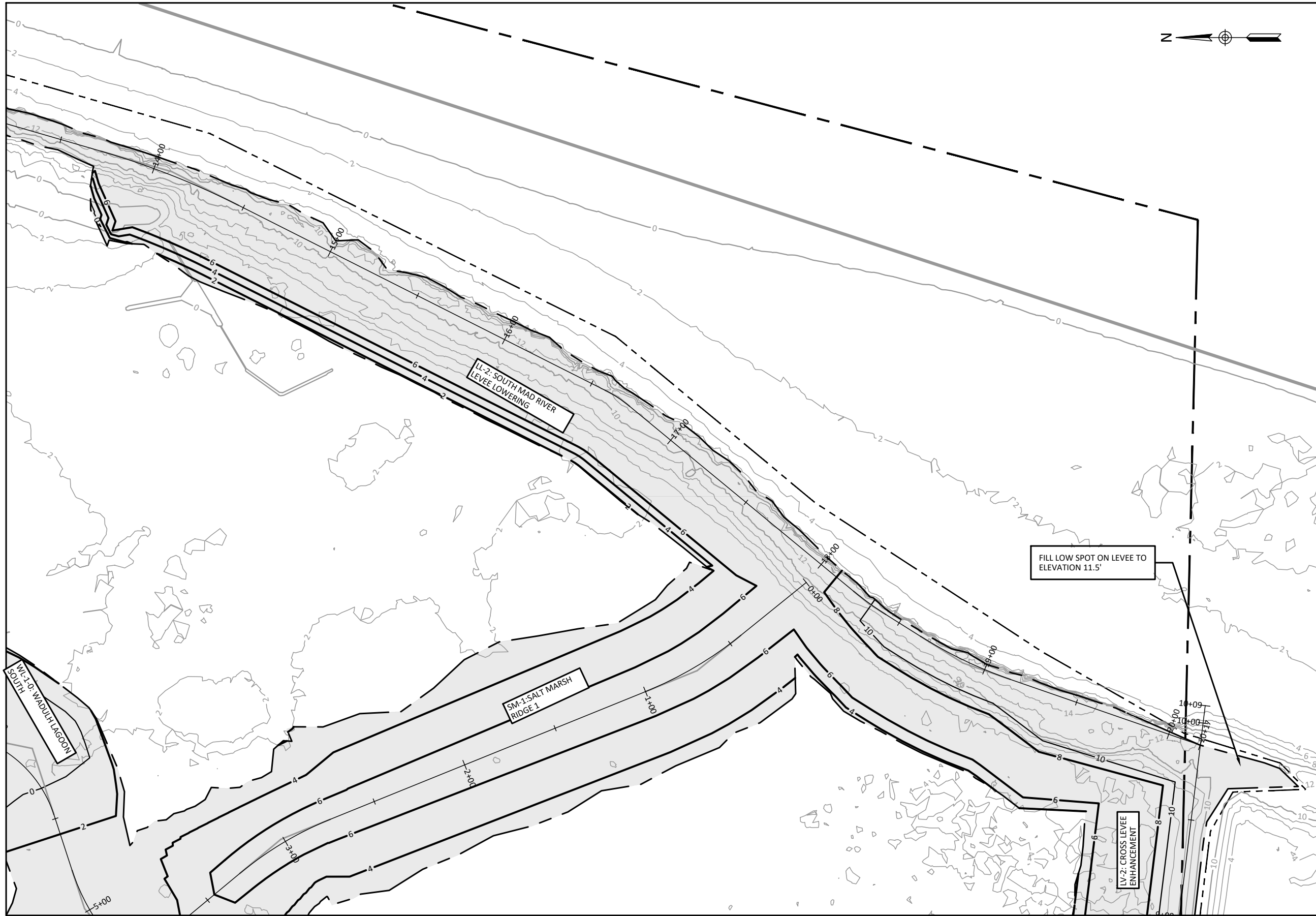
GRADING PLAN 3/10

CONTOUR INTERVAL - 2 FEET

DATE:  
 8/28/2023

SHEET NUMBER:  
 12





U.S. FISH AND WILDLIFE SERVICE  
 COASTAL PROGRAM  
 1655 HEINDON ROAD  
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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS (NOT FOR CONSTRUCTION)

GRADING PLAN 4/10

CONTOUR INTERVAL - 2 FEET

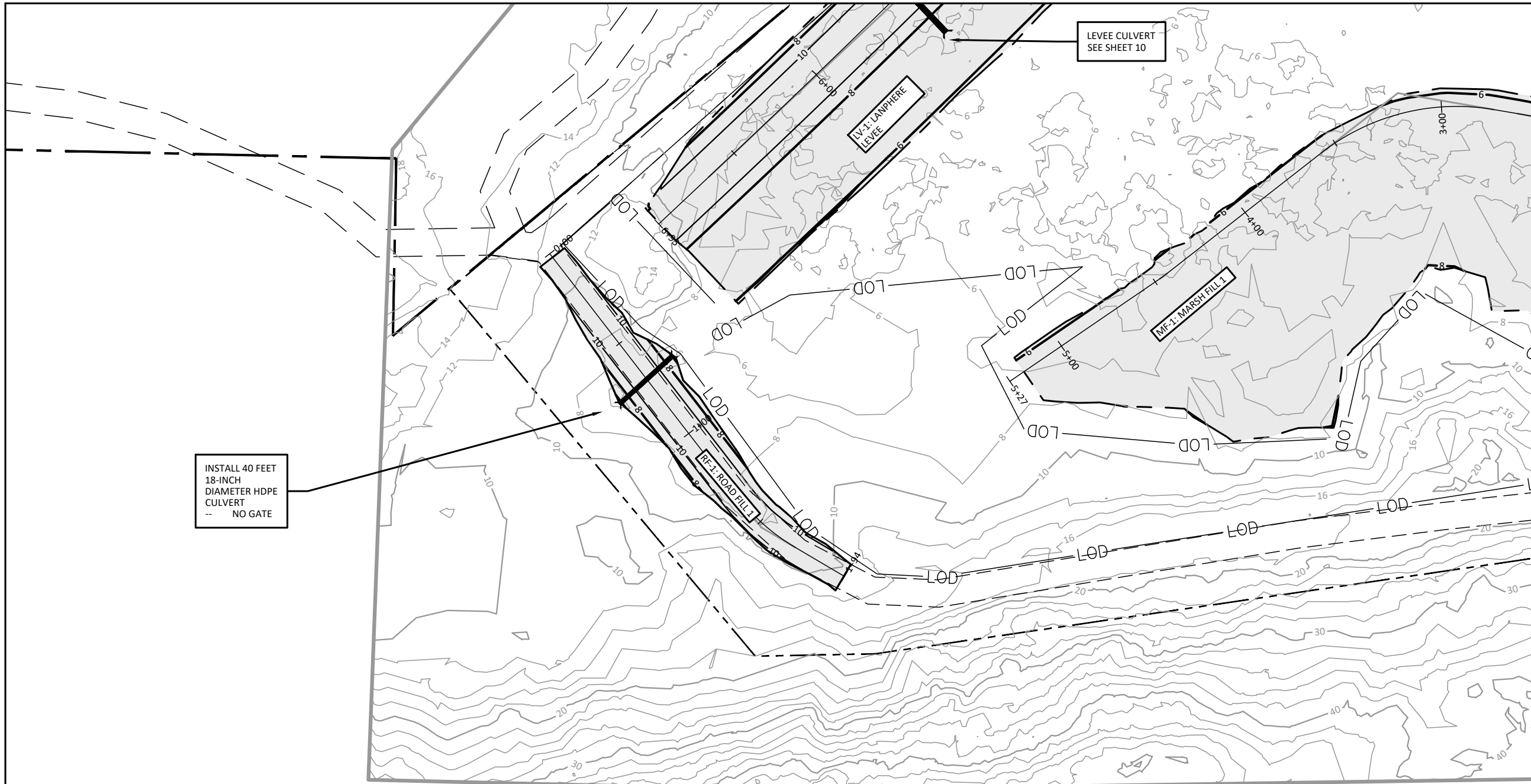
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 8/28/2023

SHEET NUMBER:

13

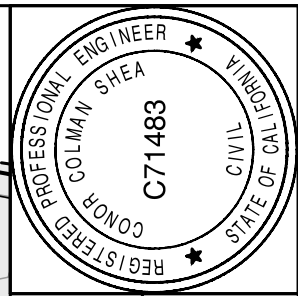
SCALE:





INSTALL 40 FEET  
18-INCH  
DIAMETER HDPE  
CULVERT  
-- NO GATE

LEVEE CULVERT  
SEE SHEET 10



U.S. FISH AND WILDLIFE SERVICE  
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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
30% DESIGN PLANS (NOT FOR CONSTRUCTION)

GRADING PLAN 5/10

CONTOUR INTERVAL - 2 FEET

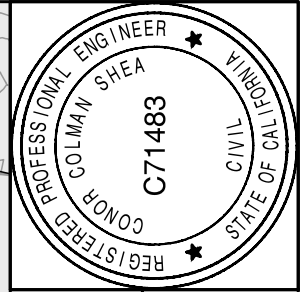
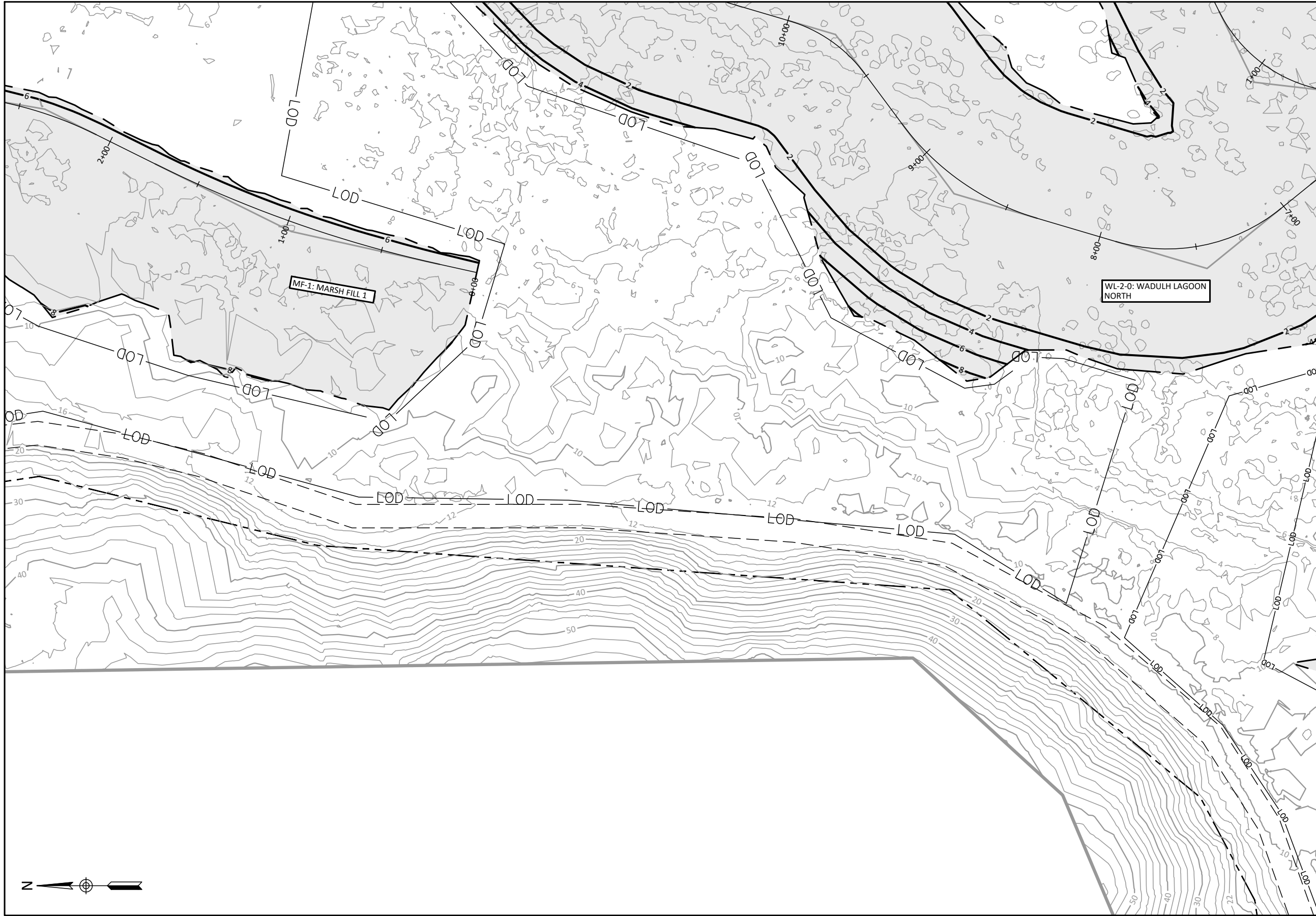
DATE:  
8/28/2023

SHEET NUMBER:

14

SCALE:





U.S. FISH AND WILDLIFE SERVICE  
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 1655 HEINDON ROAD  
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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS (NOT FOR CONSTRUCTION)

GRADING PLAN 6/10

CONTOUR INTERVAL - 2 FEET

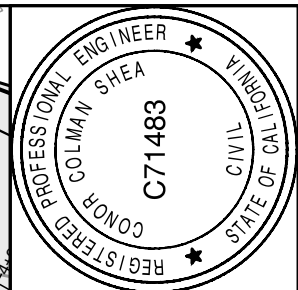
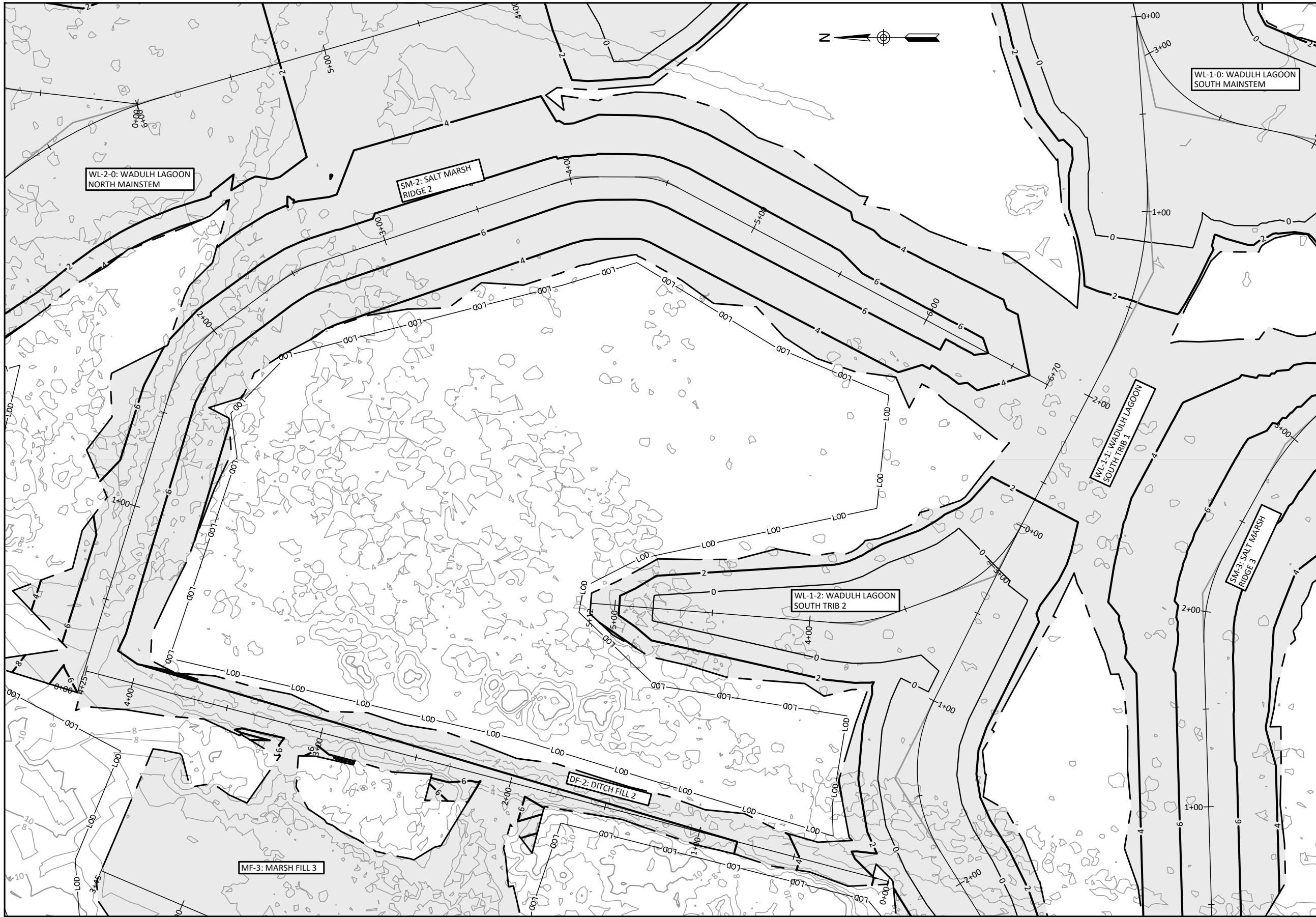
DATE:  
8/28/2023

SHEET NUMBER:

15

SCALE:





U.S. FISH AND WILDLIFE SERVICE  
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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
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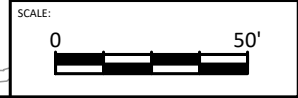
GRADING PLAN 7/10

CONTOUR INTERVAL - 2 FEET

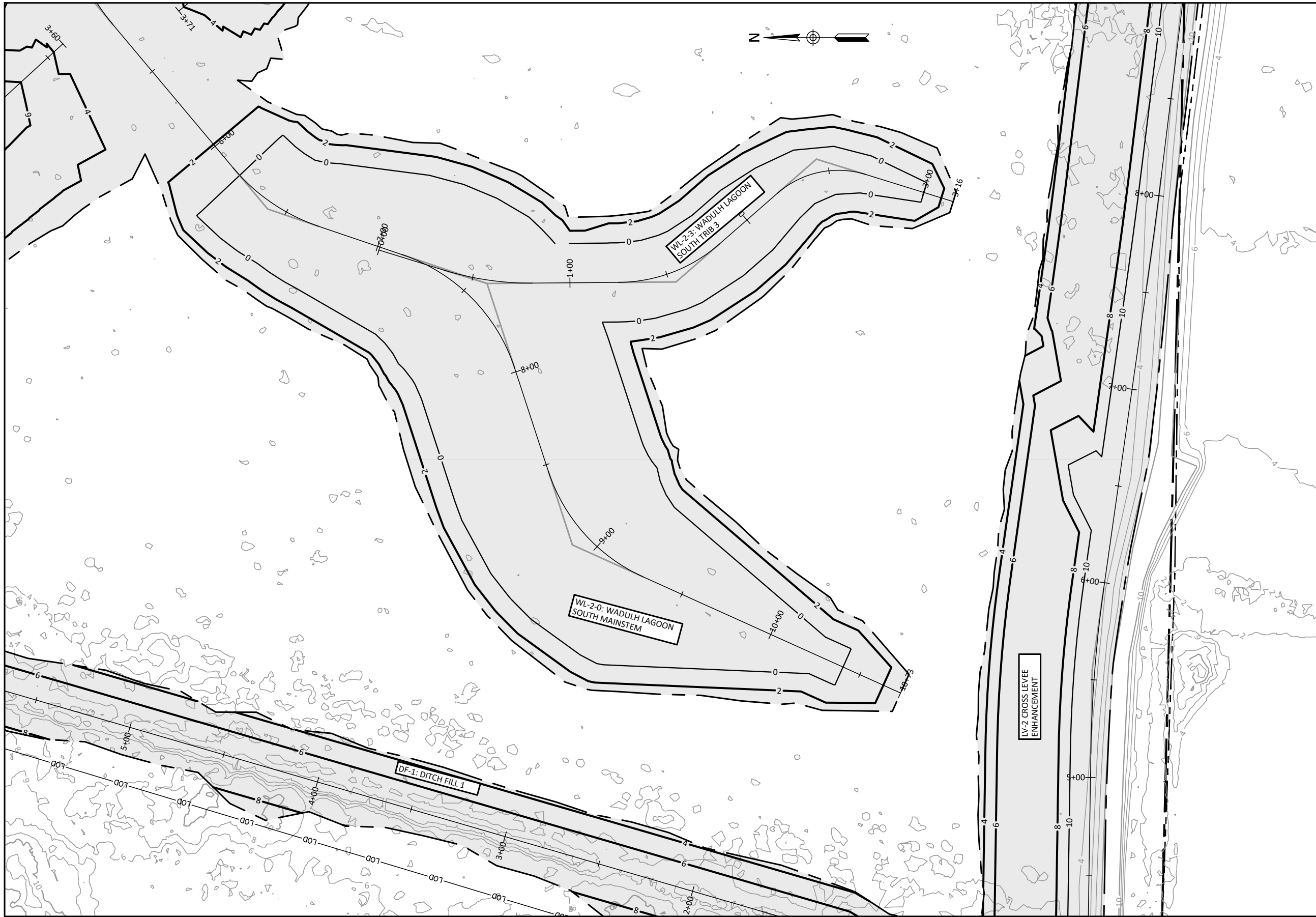
DATE: 8/28/2023

SHEET NUMBER:

16







SCALE:  
0 50'

DATE:  
8/28/2023

SHEET NUMBER:  
17

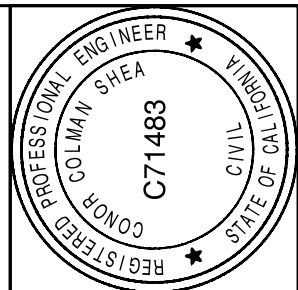
WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
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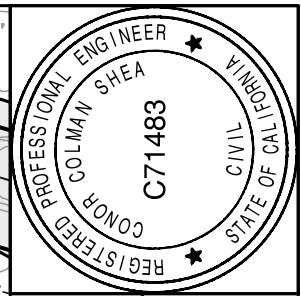
GRADING PLAN 8/10  
CONTOUR INTERVAL - 2 FEET



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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
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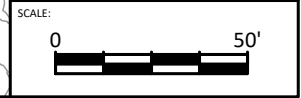
GRADING PLAN 9/10

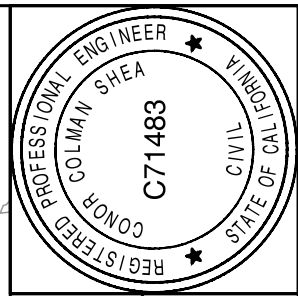
CONTOUR INTERVAL - 2 FEET

DATE:  
 8/28/2023

SHEET NUMBER:

18





U.S. FISH AND WILDLIFE SERVICE  
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 1655 HEINDON ROAD  
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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
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GRADING PLAN 10/10

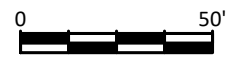
CONTOUR INTERVAL - 2 FEET

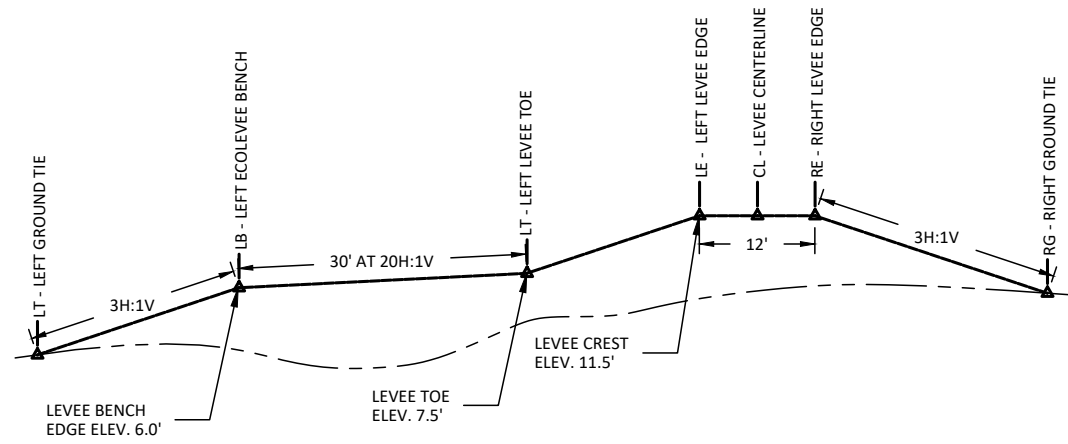
DATE:  
 8/28/2023

SHEET NUMBER:

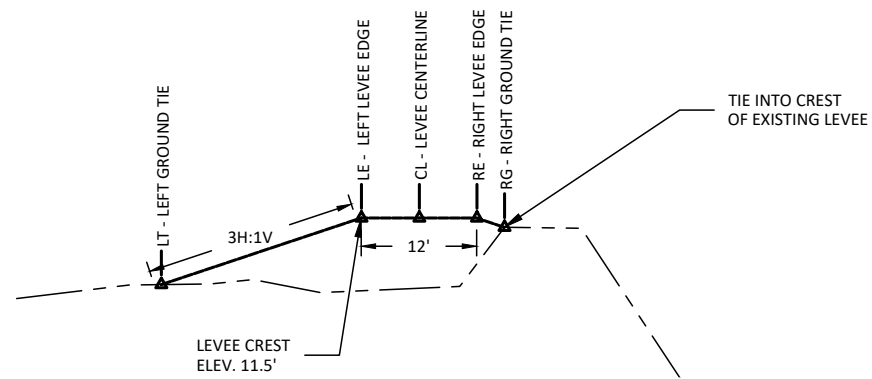
19

SCALE:

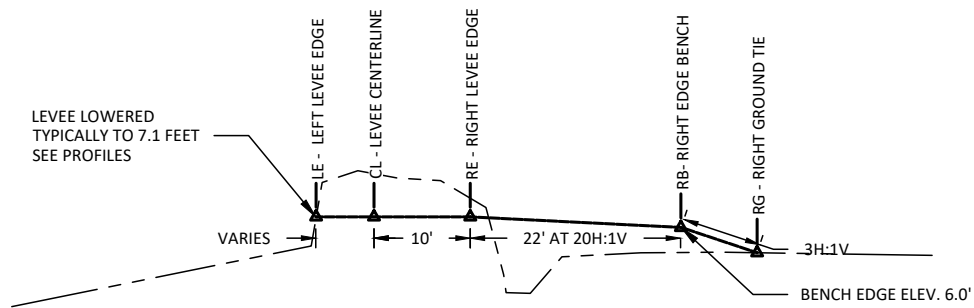




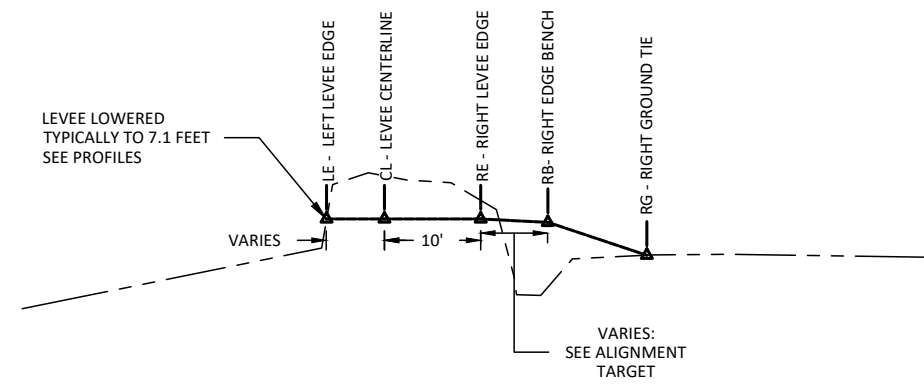
**TYPICAL SECTION (A):  
FLOOD PROTECTION LEVEE WITH MARSH BENCH**  
LV-1: LANPHERE ROAD LEVEE  
LV-2: CROSS LEVEE ENHANCEMENT STATIONS 3+70 TO 9+50



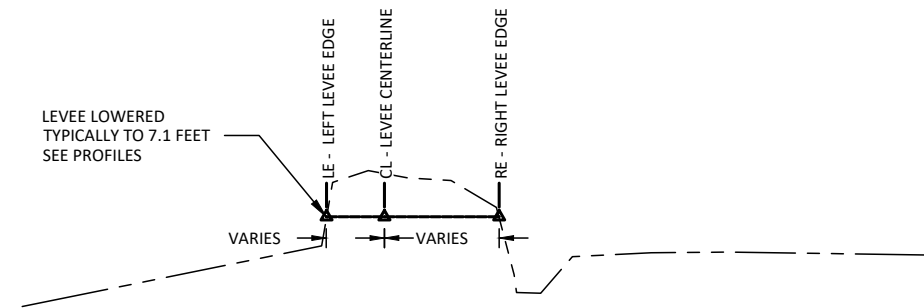
**TYPICAL SECTION (B):  
FLOOD PROTECTION LEVEE - NO BENCH**  
LV-2: CROSS LEVEE ENHANCEMENT STATIONS 0+00 TO 3+70



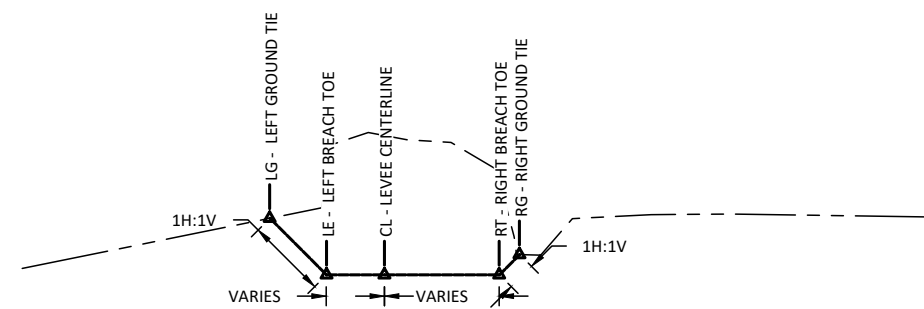
**TYPICAL SECTION (C):  
MAD RIVER SLOUGH LEVEE LOWERING WITH MARSH BENCH**  
LL-1: NORTH STATIONS 0+70 TO 10+10  
LL-2: SOUTH STATIONS 13+90 TO 19+40



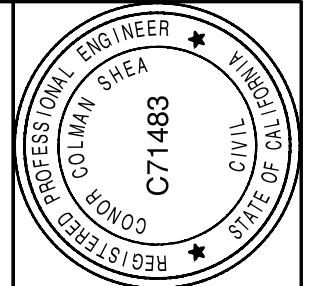
**TYPICAL SECTION (D):  
MAD RIVER SLOUGH LEVEE LOWERING WITH MARSH BENCH TARGET**  
LL-1: NORTH STATIONS 10+10 TO 10+40  
LL-2: SOUTH STATIONS 13+70 TO 13+90



**TYPICAL SECTION (E):  
MAD RIVER SLOUGH LEVEE LOWERING WITH NO BENCH**  
LL-1: NORTH STATIONS 0+60 (START) TO 0+70, 10+40 TO 11+15  
LL-2: SOUTH STATIONS 12+45 TO 13+70, 19+40 TO 20+70 (END)



**TYPICAL SECTION (F):  
MAD RIVER SLOUGH LEVEE BREACH**  
LL-1: NORTH STATIONS 11+15 TO 11+80  
LL-2: SOUTH STATIONS 11+80 TO 12+40



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WADULU LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
30% DESIGN PLANS  
TYPICAL SECTIONS 1/3  
PROTECTION LEVELS AND  
MAD RIVER SLOUGH LEVEE LOWERING

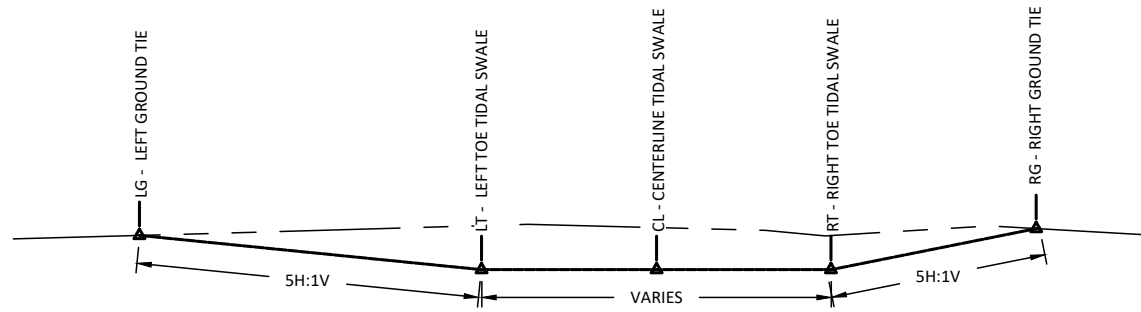
DATE:  
8/28/2023

SHEET NUMBER:

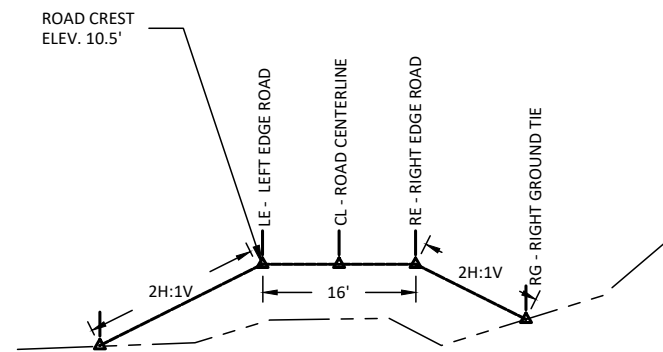
20

SCALE:

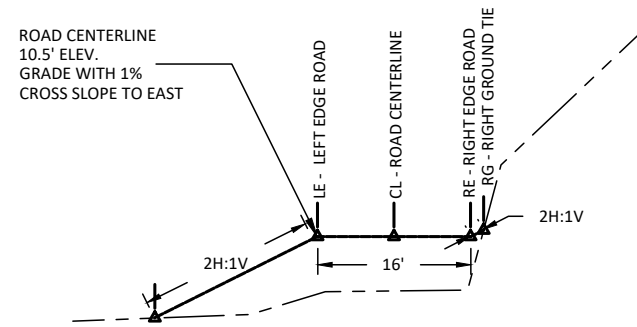




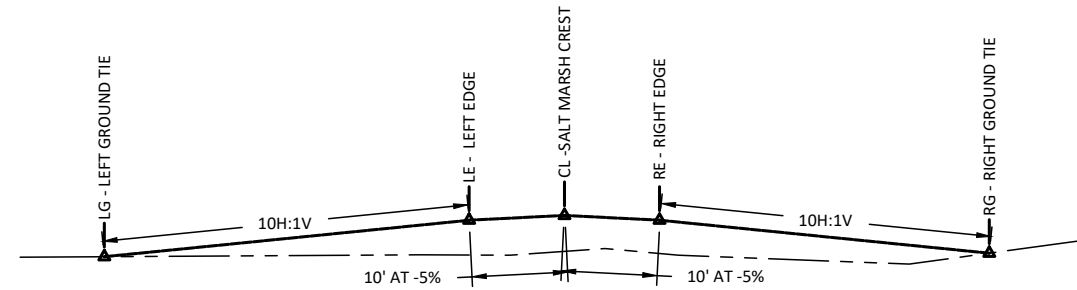
TYPICAL SECTION (G):  
TIDAL SWALE  
WADULH LAGOON NORTH AND SOUTH



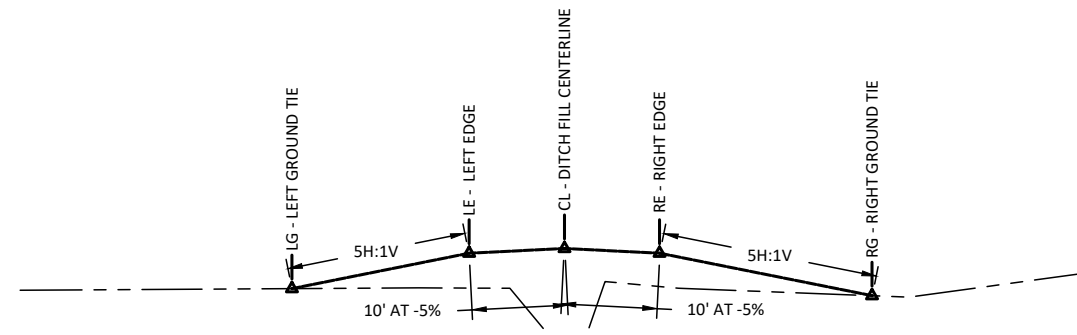
TYPICAL SECTION (H):  
RF-1: ROAD FILL AT ENTRANCE GATE



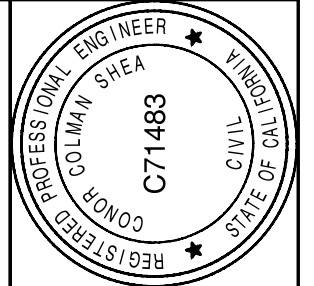
TYPICAL SECTION (I):  
RF-2: ROAD FILL NEAR PARKING AREA



TYPICAL SECTION (J):  
SALT MARSH RIDGE (SM-1, SM-2, SM-3, SM-4)



TYPICAL SECTION (K):  
DITCH FILL (DF-1, DF-2)



U.S. FISH AND WILDLIFE SERVICE  
COASTAL PROGRAM  
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ARCATA, CA 95521  
(707) 822-7201

PREPARED FOR:  
HUMBOLDT BAY NATIONAL  
WILDLIFE REFUGE  
1020 RANCH ROAD  
LOLETA, CA 95551



WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
30% DESIGN PLANS

TYPICAL SECTIONS 2/3  
LAGOON CHANNELS, ROAD FILLS, DITCH FILLS,  
AND SALT MARSH RIDGES

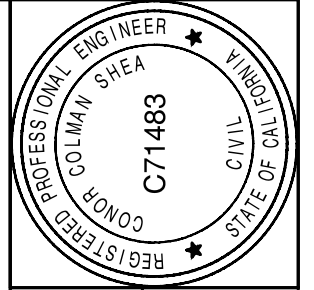
DATE:  
8/28/2023

SHEET NUMBER:

21

SCALE:





U.S. FISH AND WILDLIFE SERVICE  
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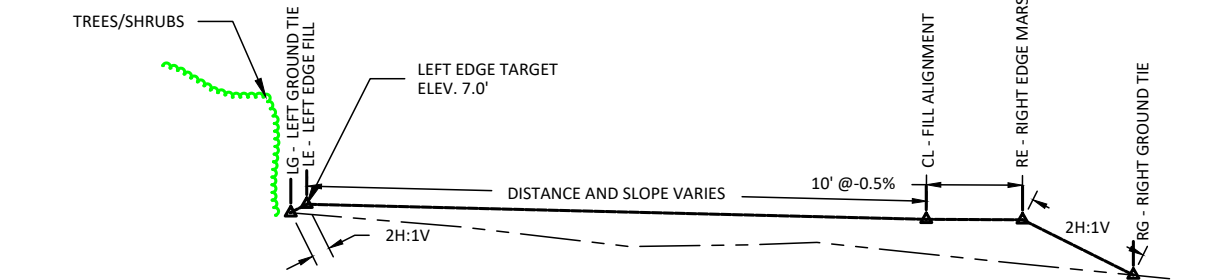
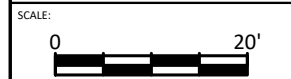
WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

TYPICAL SECTIONS 3/3  
 MARSH FILL

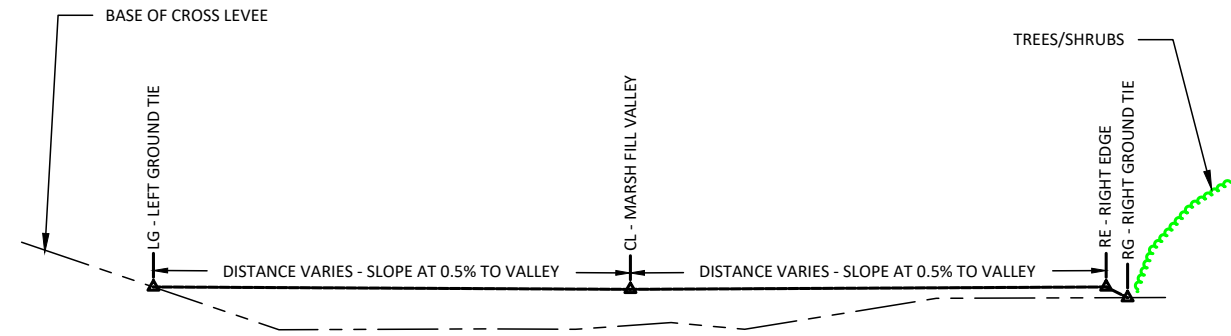
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 8/28/2023

SHEET NUMBER:

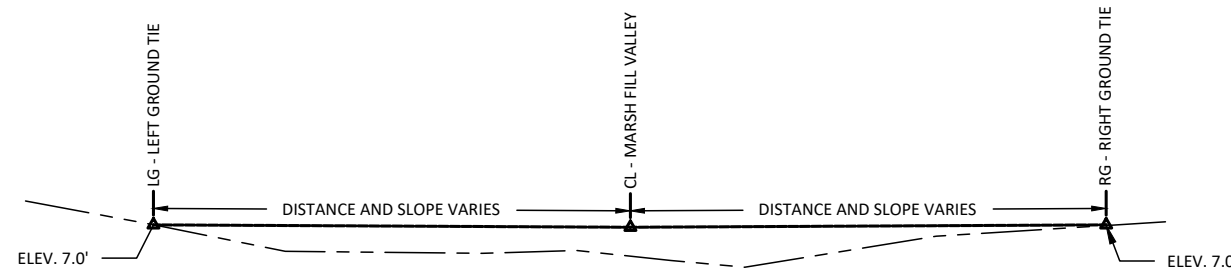
22



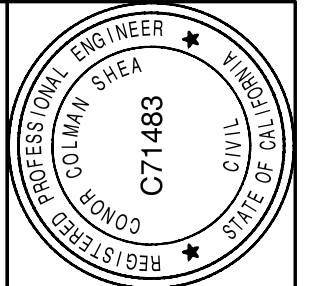
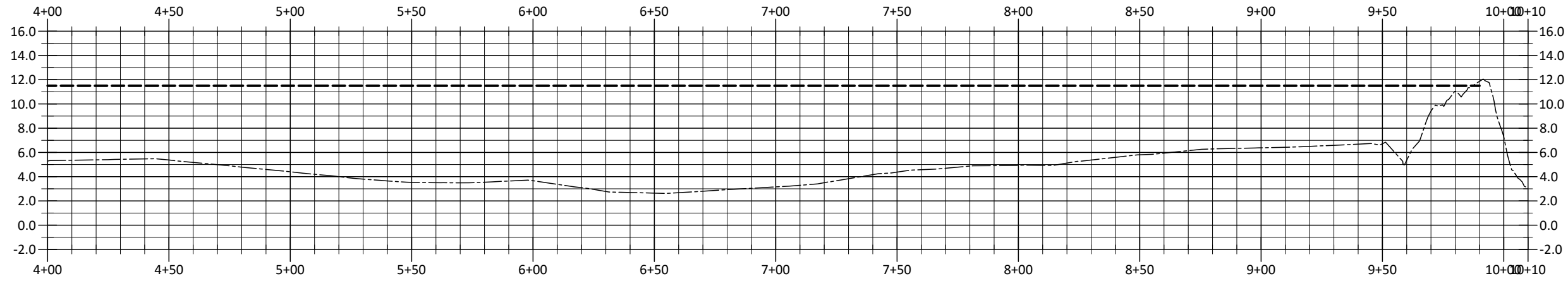
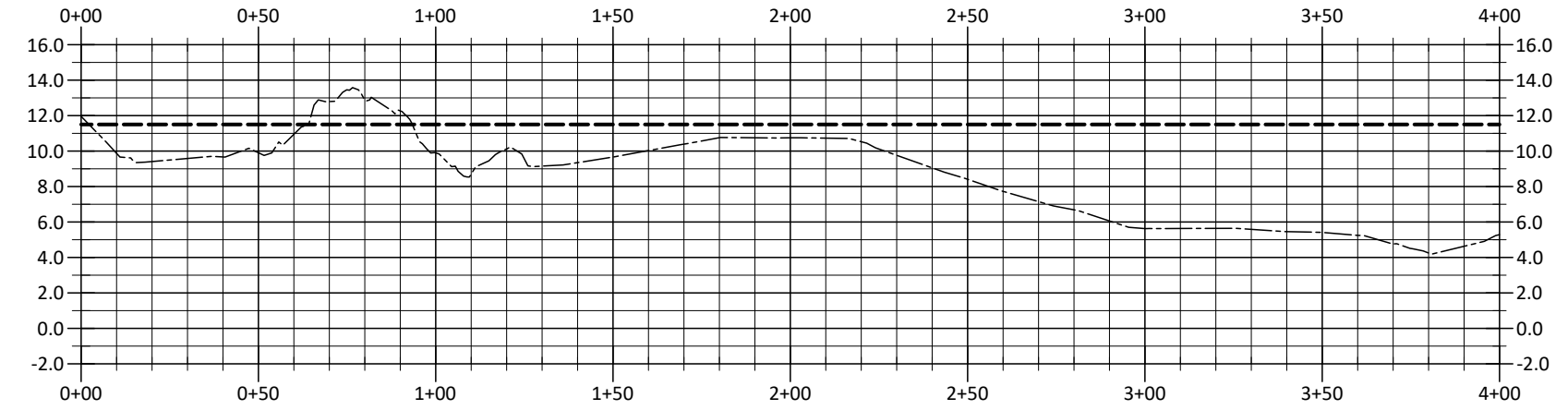
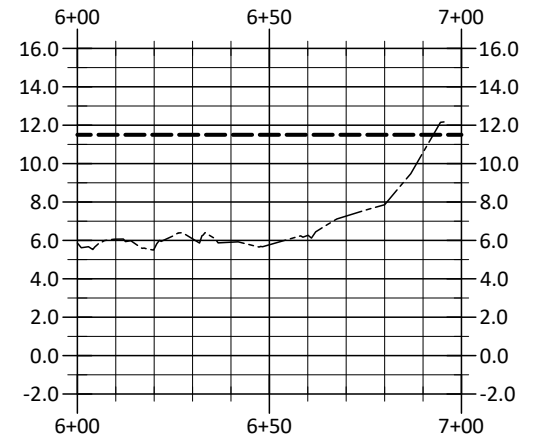
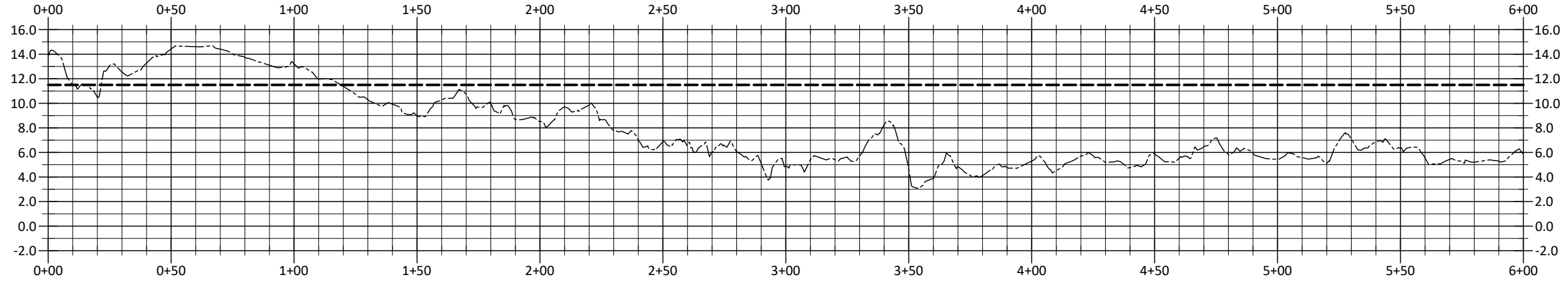
TYPICAL SECTION (L):  
 MF-1: MARSH FILL 1



TYPICAL SECTION (M):  
 MF-2: MARSH FILL 2



TYPICAL SECTION (N):  
 MF-3: MARSH FILL 3



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 LOLETA, CA 95551



WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

PROFILES: LV-1 AND LV-2

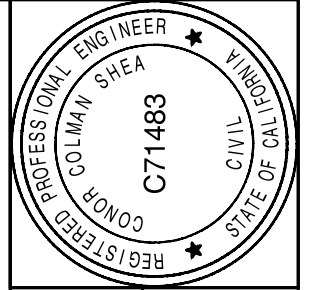
DATE:  
8/28/2023

SHEET NUMBER:

23

SCALE:





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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

PROFILES: LV-1 AND LV-2

DATE:  
 8/28/2023

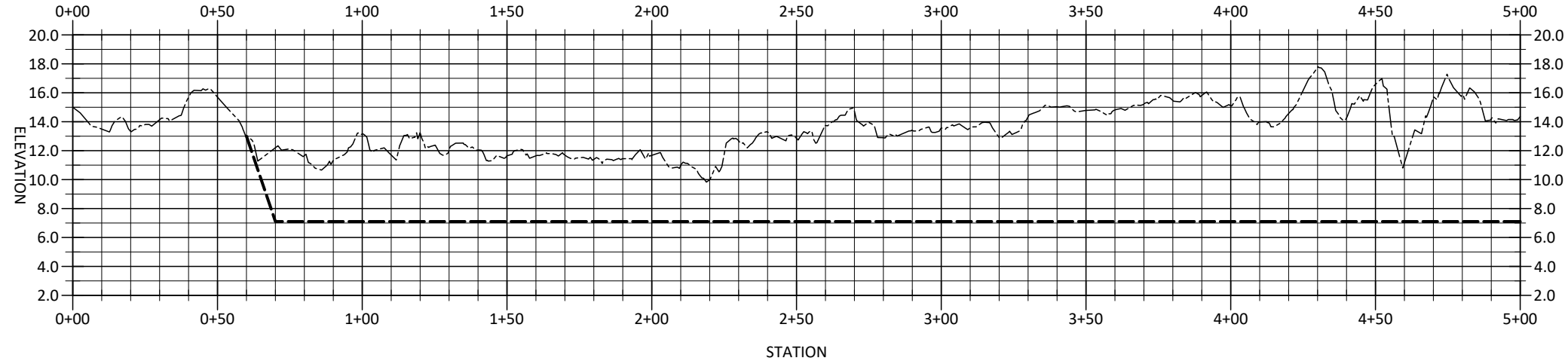
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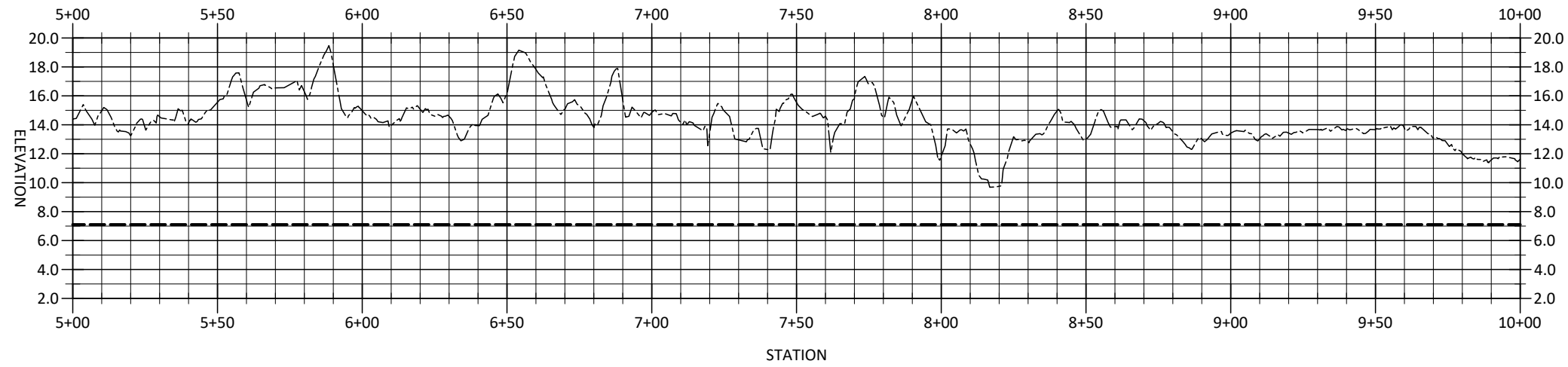
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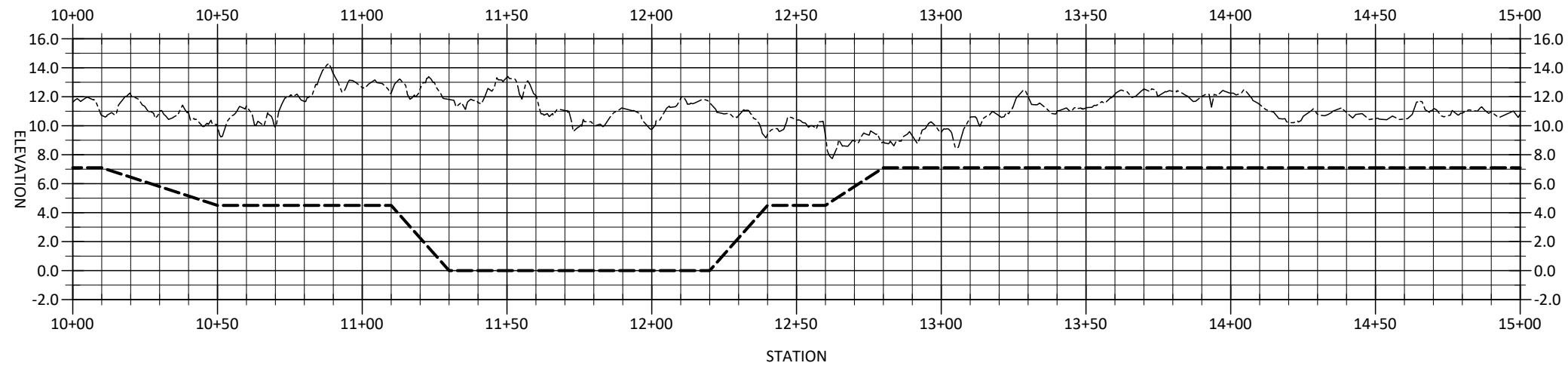
MAD RIVER SLOUGH LEVEE STATION 0+00 TO 5+00



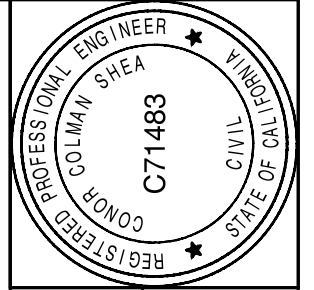
MAD RIVER SLOUGH LEVEE STATION 5+00 TO 10+00



MAD RIVER SLOUGH LEVEE STATION 10+00 TO 15+00







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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

PROFILES:  
 MAD RIVER SLOUGH LEVEE STATION 0+00 TO 15+00  
 WADULH LAGOON SOUTH MAINSTEM

DATE:  
 8/28/2023

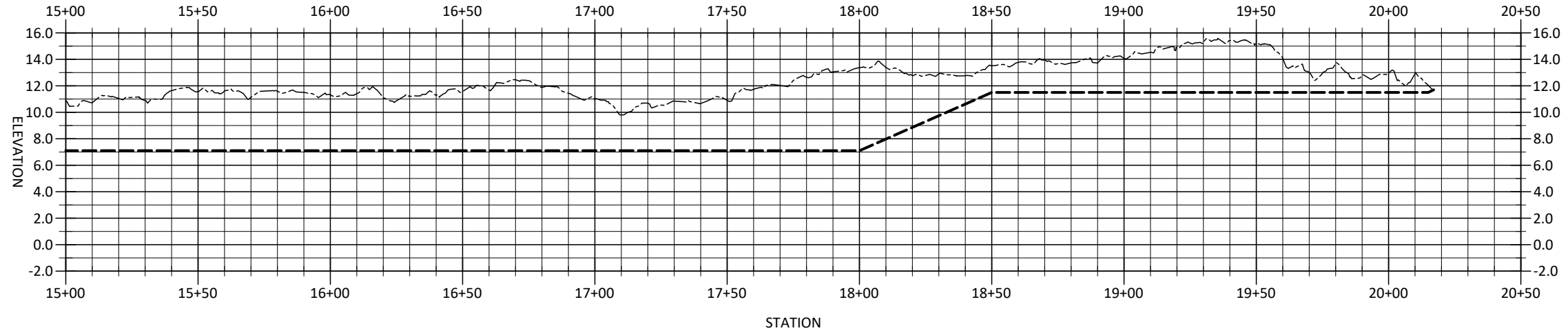
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25

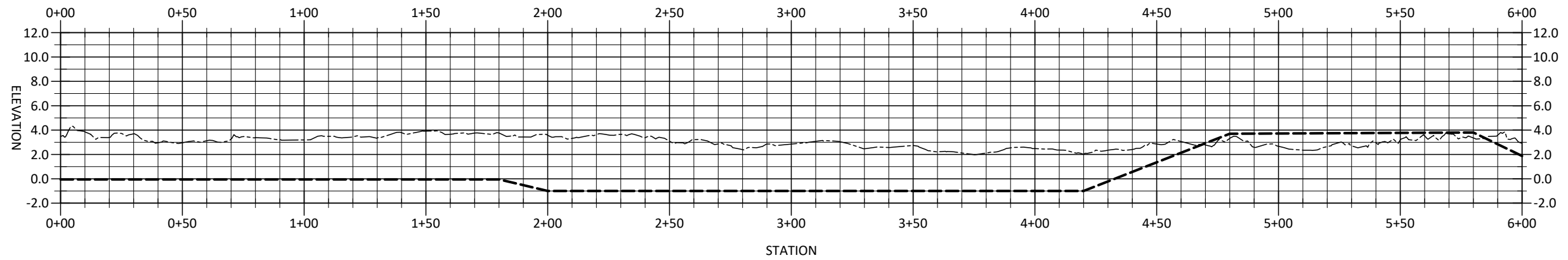
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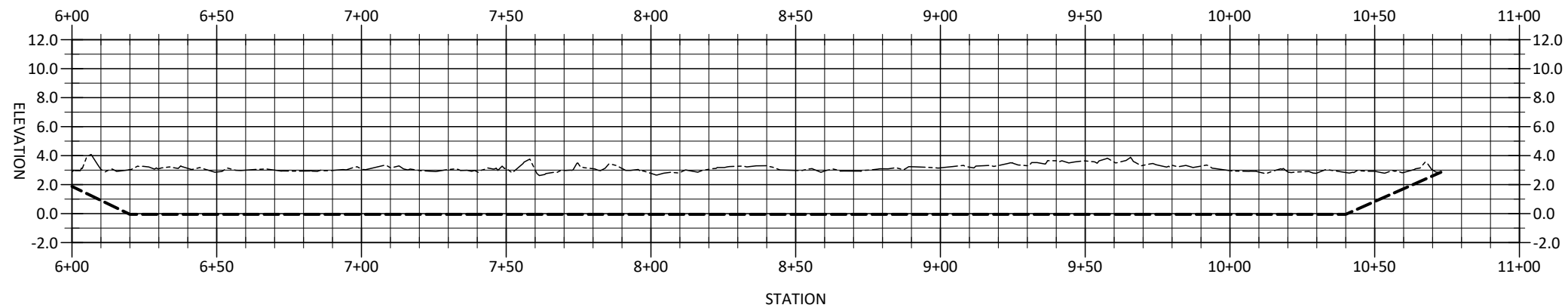
MAD RIVER SLOUGH LEVEE STATION 15+00 TO 20+50

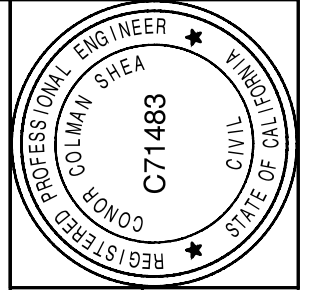


WL-1-0: WADULH LAGOON SOUTH MAIN STATION 0+00 TO 6+00



WL-1-0: WADULH LAGOON SOUTH MAIN STATION 6+00 TO 11+00





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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

PROFILES:  
 WADULH LAGOON SOUTH TRIBUTARIES

DATE:  
 8/28/2023

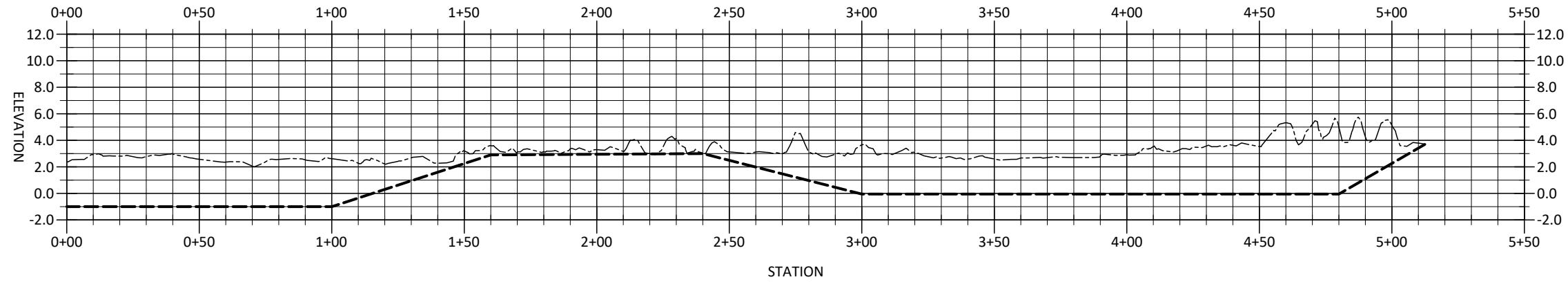
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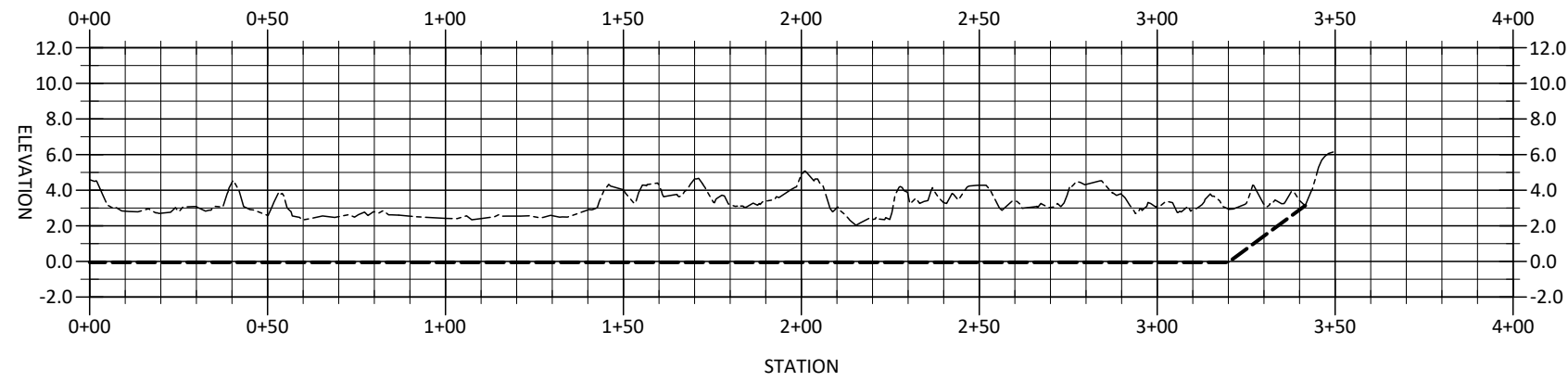
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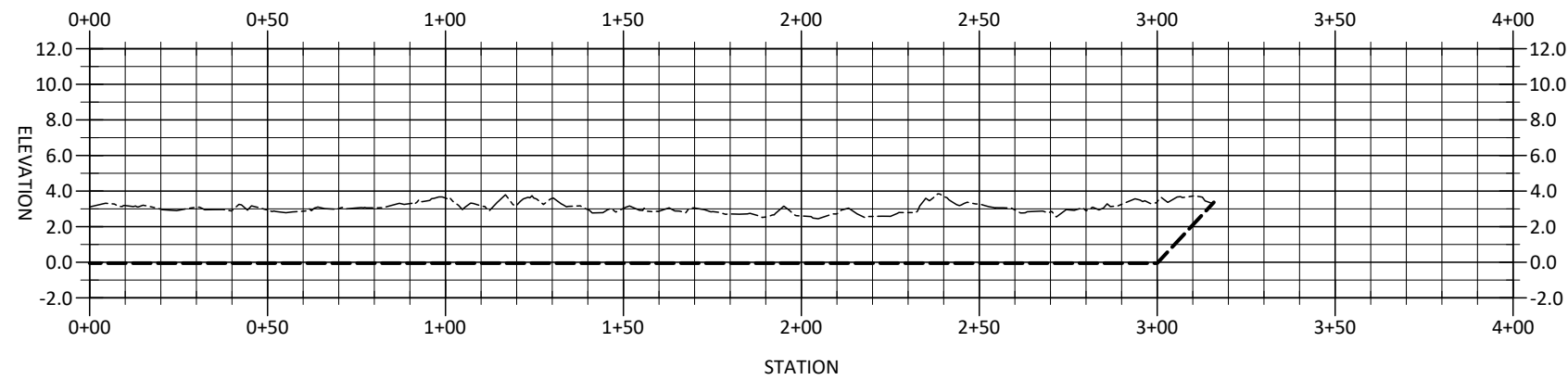
WL-1-1: WADULH LAGOON SOUTH TRIBUTARY 1

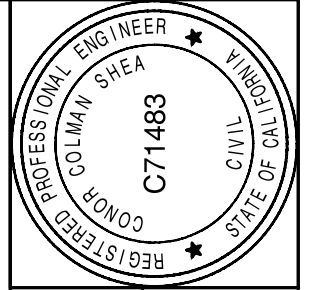


WL-1-2: WADULH LAGOON SOUTH TRIBUTARY 2



WL-1-3: WADULH LAGOON SOUTH TRIBUTARY 3





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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

PROFILES:  
 WADULH LAGOON NORTH MAINSTEM  
 AND TRIBUTARY 2

DATE:  
 8/28/2023

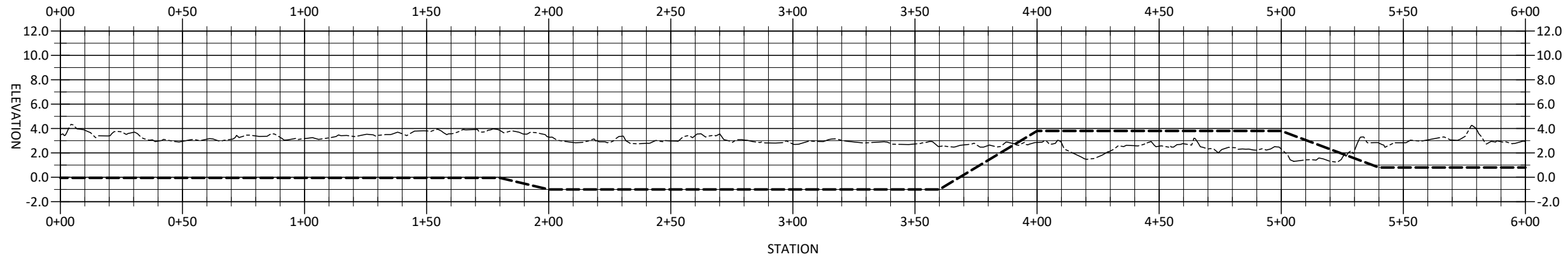
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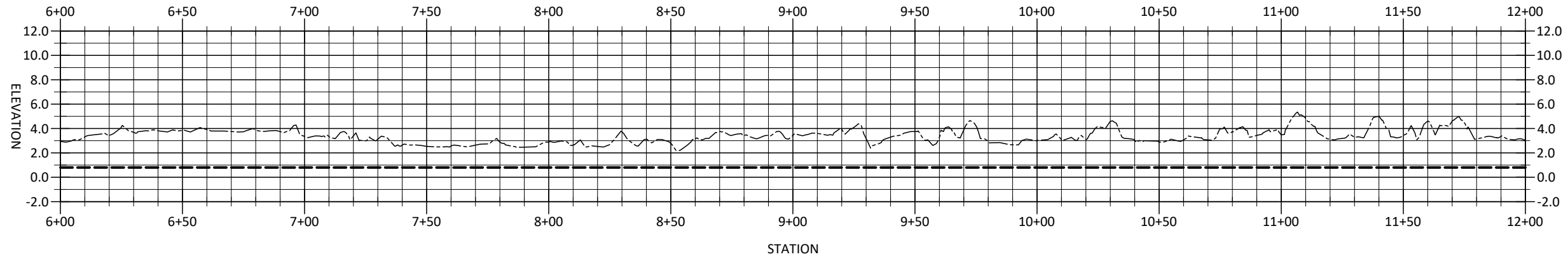
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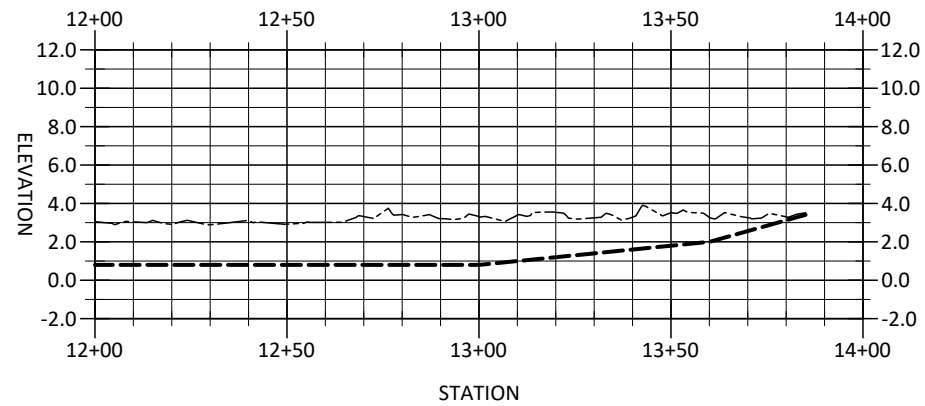
WL-2-0: WADULH LAGOON MAIN 0+00 TO 6+00



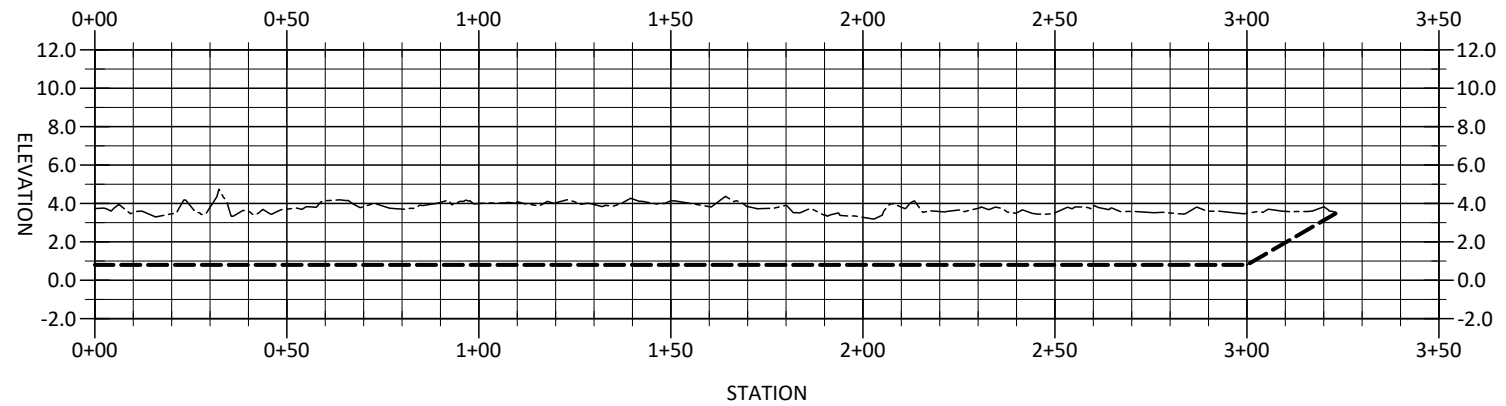
WL-2-0: WADULH LAGOON MAIN 6+00 TO 12+00

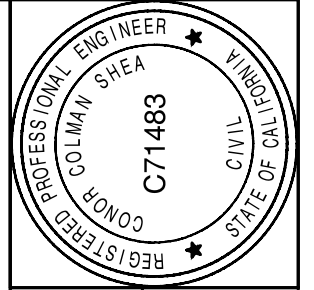


WL-2-0: WADULH LAGOON MAIN 12+00 TO 14+00



WL-2-1: WADULH LAGOON TRIBUTARY 2





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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

PROFILES:  
 WADULH LAGOON NORTH AND TRIBUTARY 1 AND  
 ROAD FILL 1 AND 2

DATE:  
 8/28/2023

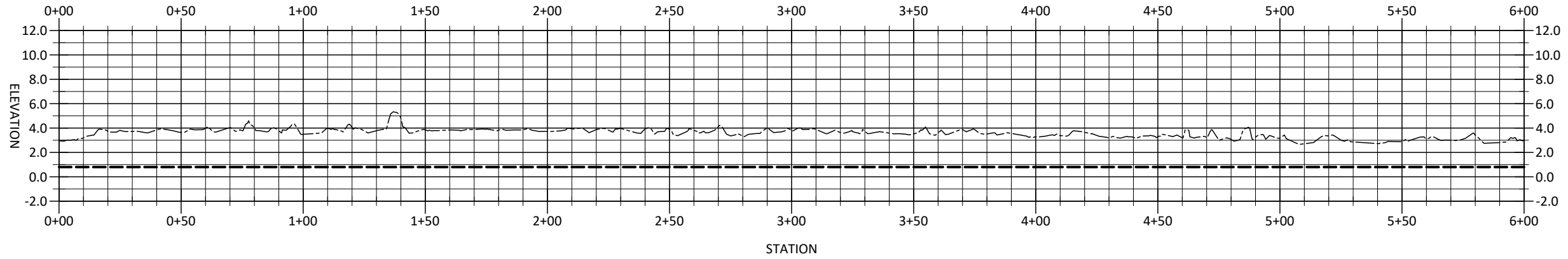
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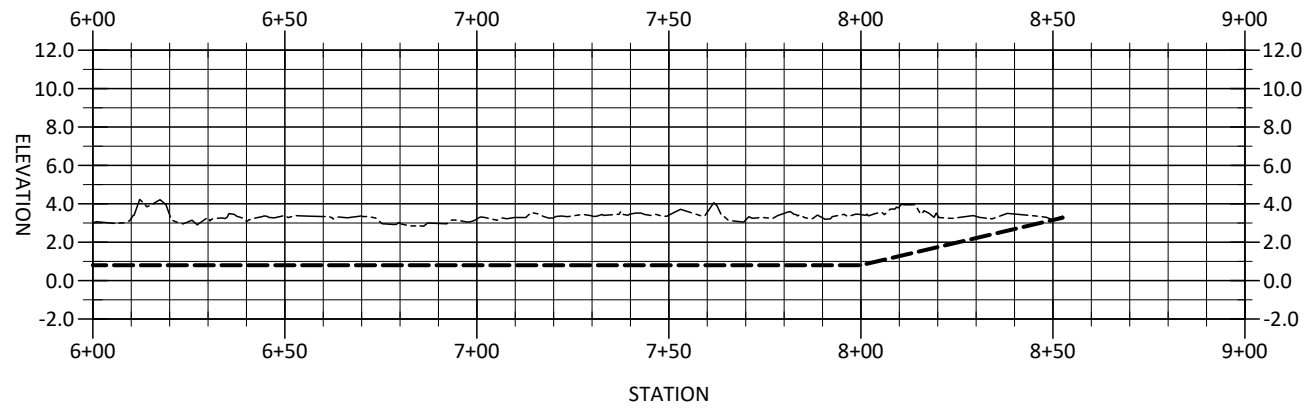
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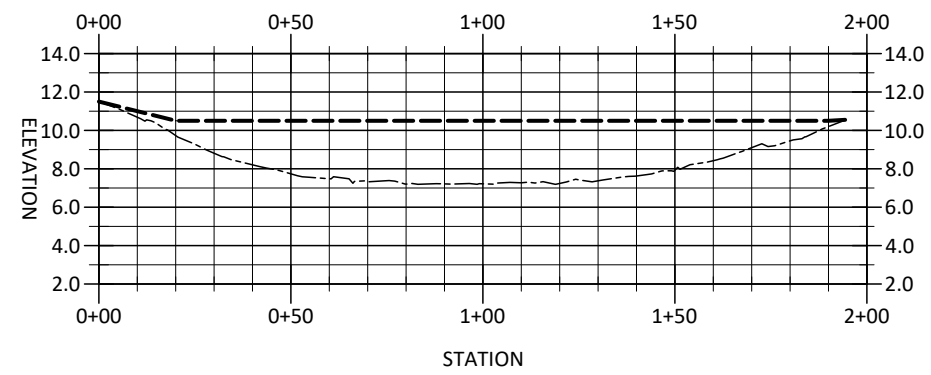
WL-2-1: WADULH LAGOON TRIBUTARY 1 0+00 TO 6+00



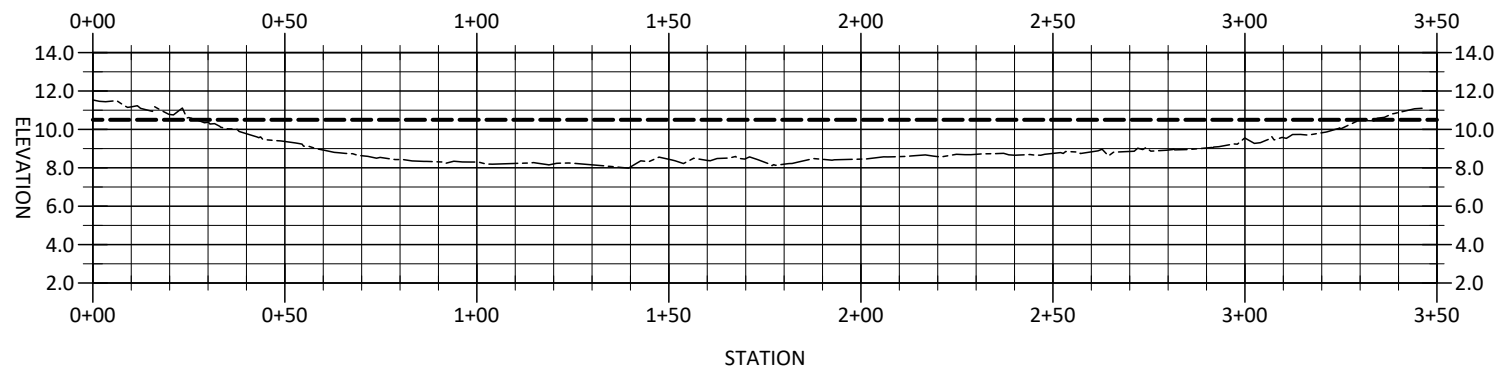
WL-2-1: WADULH LAGOON TRIBUTARY 6+00 TO 9+00

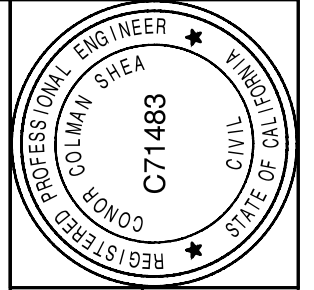


RF-1: ROAD FILL 1 (ENTRANCE GATE)



RF-2: ROAD FILL 2





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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

PROFILES:  
 SALT MARSH RIDGES 1, 2, AND 3

DATE:  
 8/28/2023

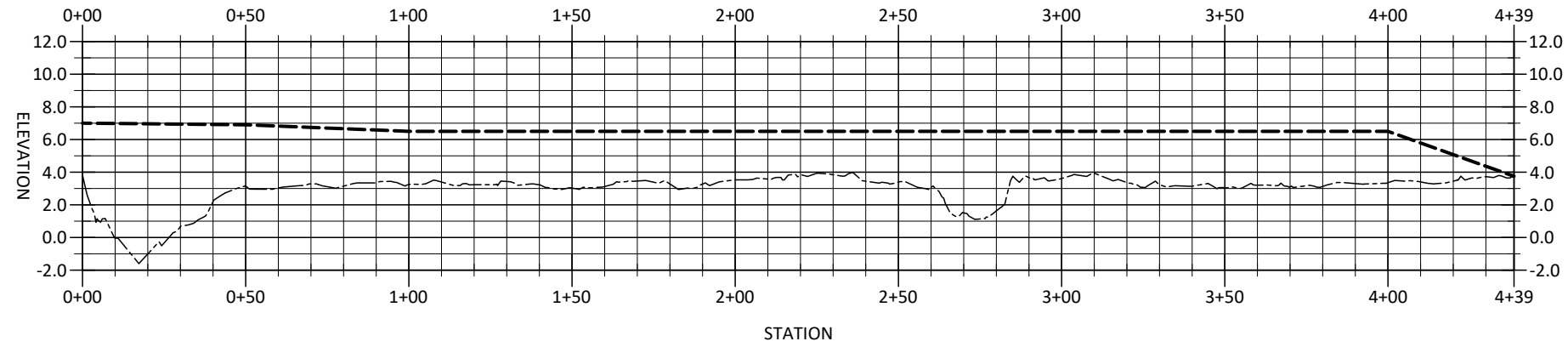
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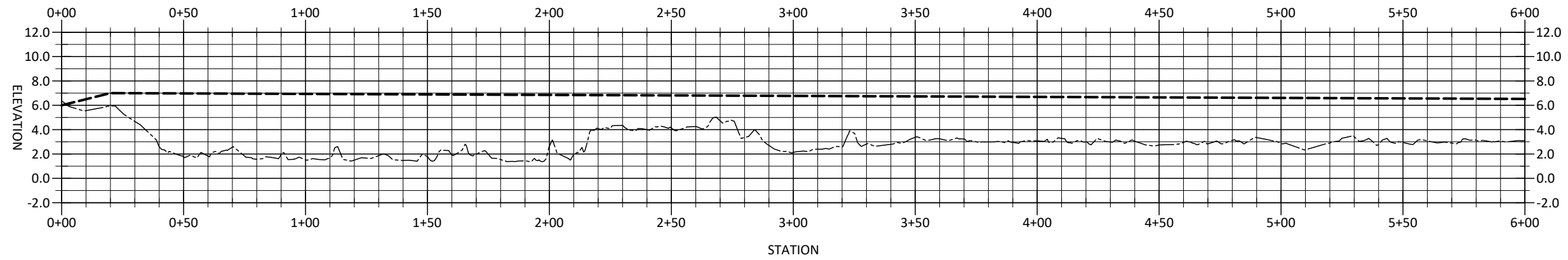
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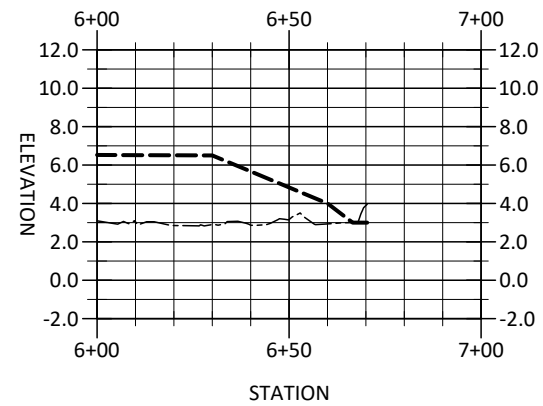
SM-1: SALT MARSH RIDGE 1



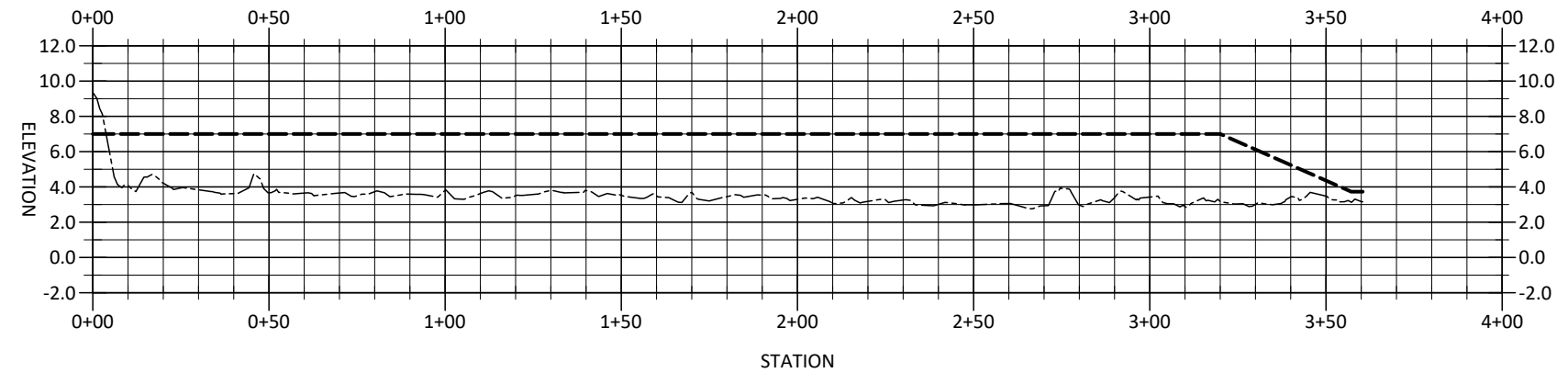
SM-2: SALT MARSH RIDGE 2 0+00 TO 6+00

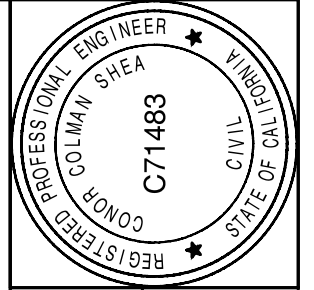


SM-2: SALT MARSH RIDGE 2 6+00 TO 7+00



SM-3: SALT MARSH RIDGE 3





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WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS

PROFILES:  
 SALT MARSH RIDGE 4 AND  
 DITCH FILLS 1 AND 2

DATE:  
 8/28/2023

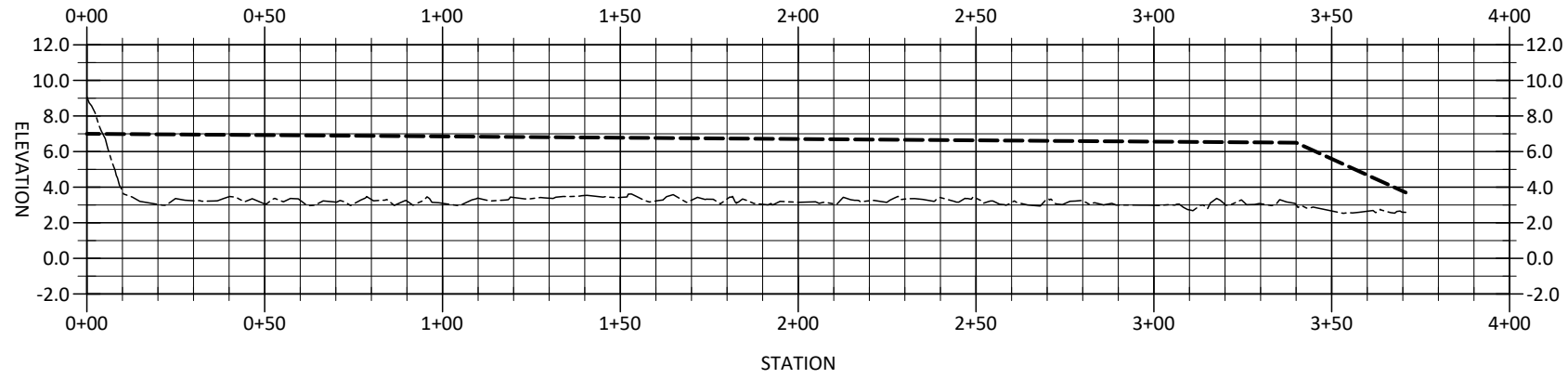
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30

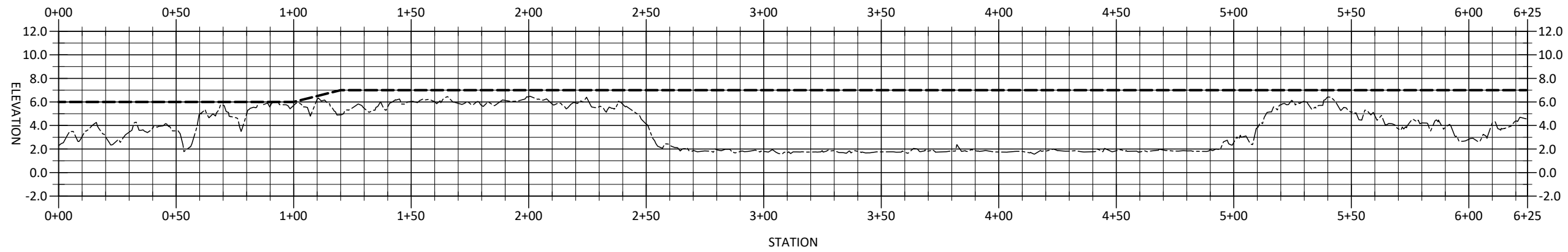
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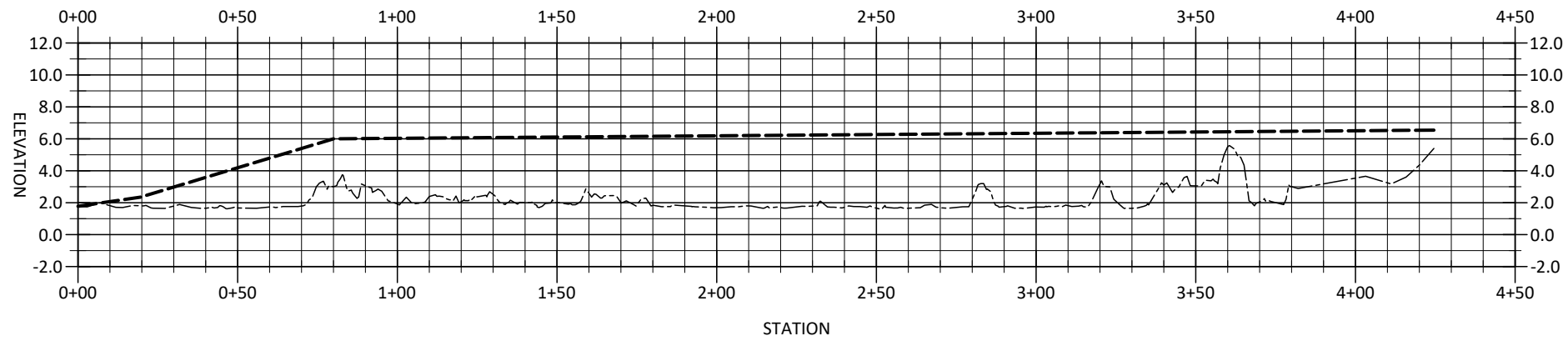
SM-4: SALT MARSH RIDGE 4

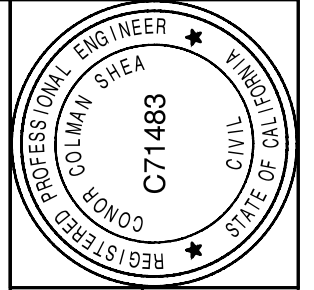


DF-1: DITCH FILL 1



DF-2: DITCH FILL 2





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 30% DESIGN PLANS

PROFILES:  
 SALT MARSH RIDGE 4 AND  
 MARSH FILLS 1, 2, AND 3

DATE:  
 8/28/2023

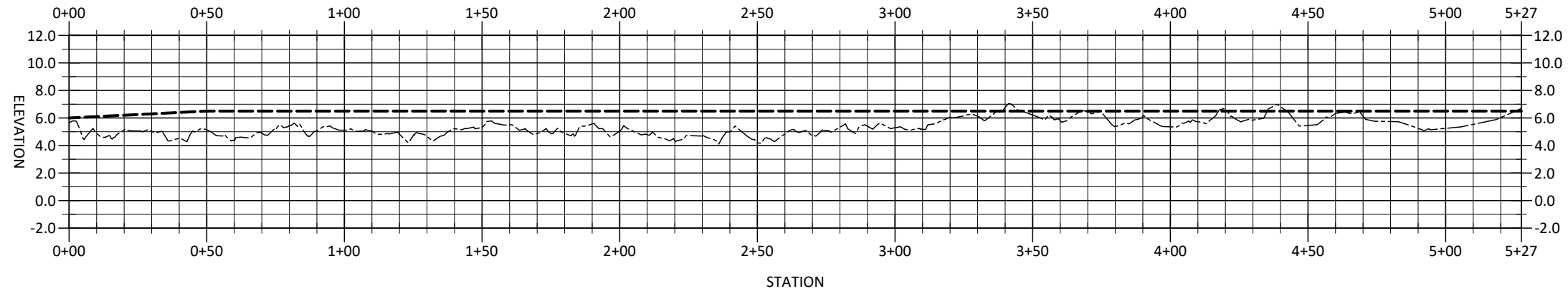
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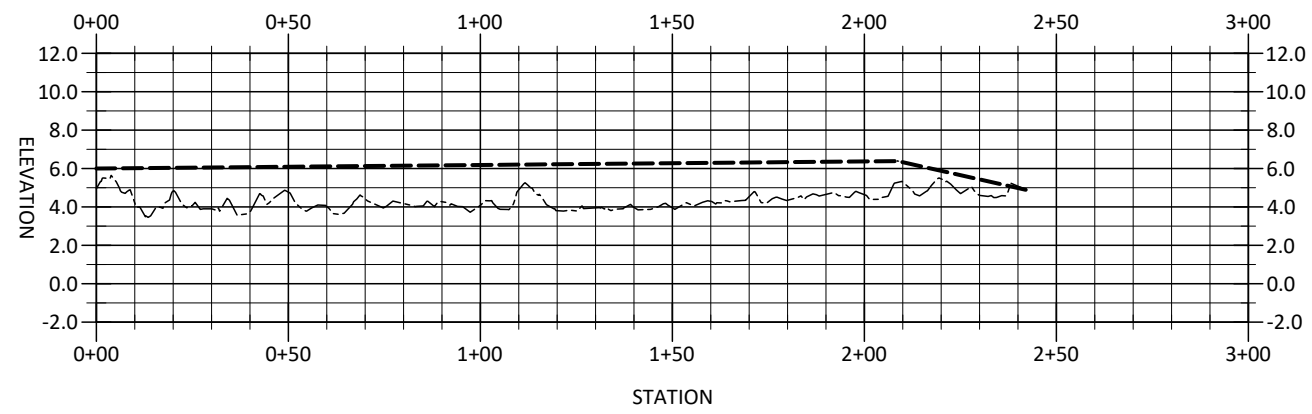
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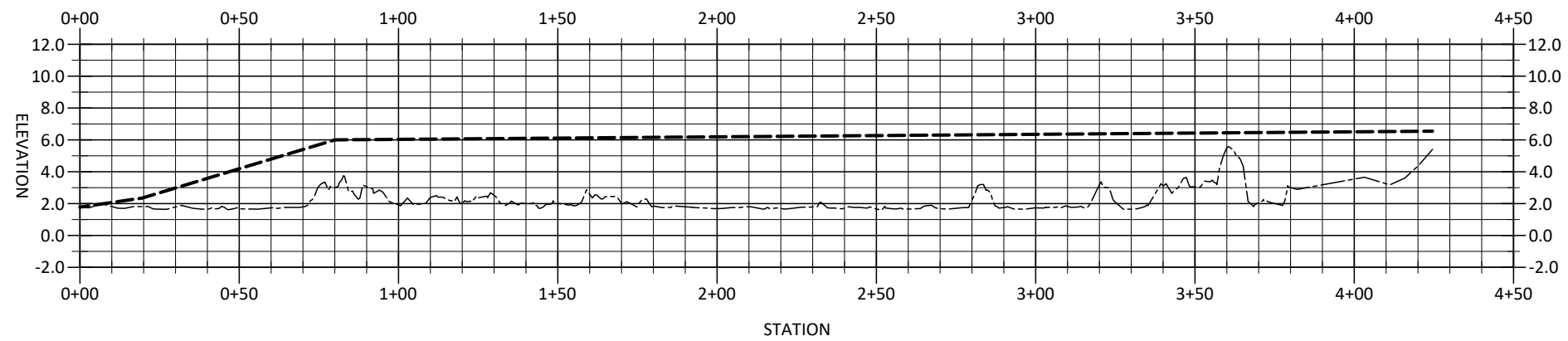
MF-1: MARSH FILL 1

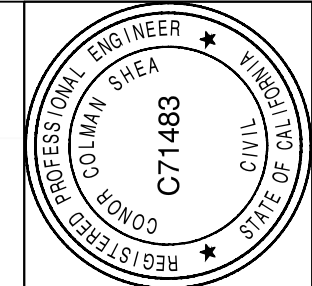
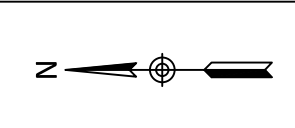


MF-2: MARSH FILL 2



MF-3: MARSH FILL 3





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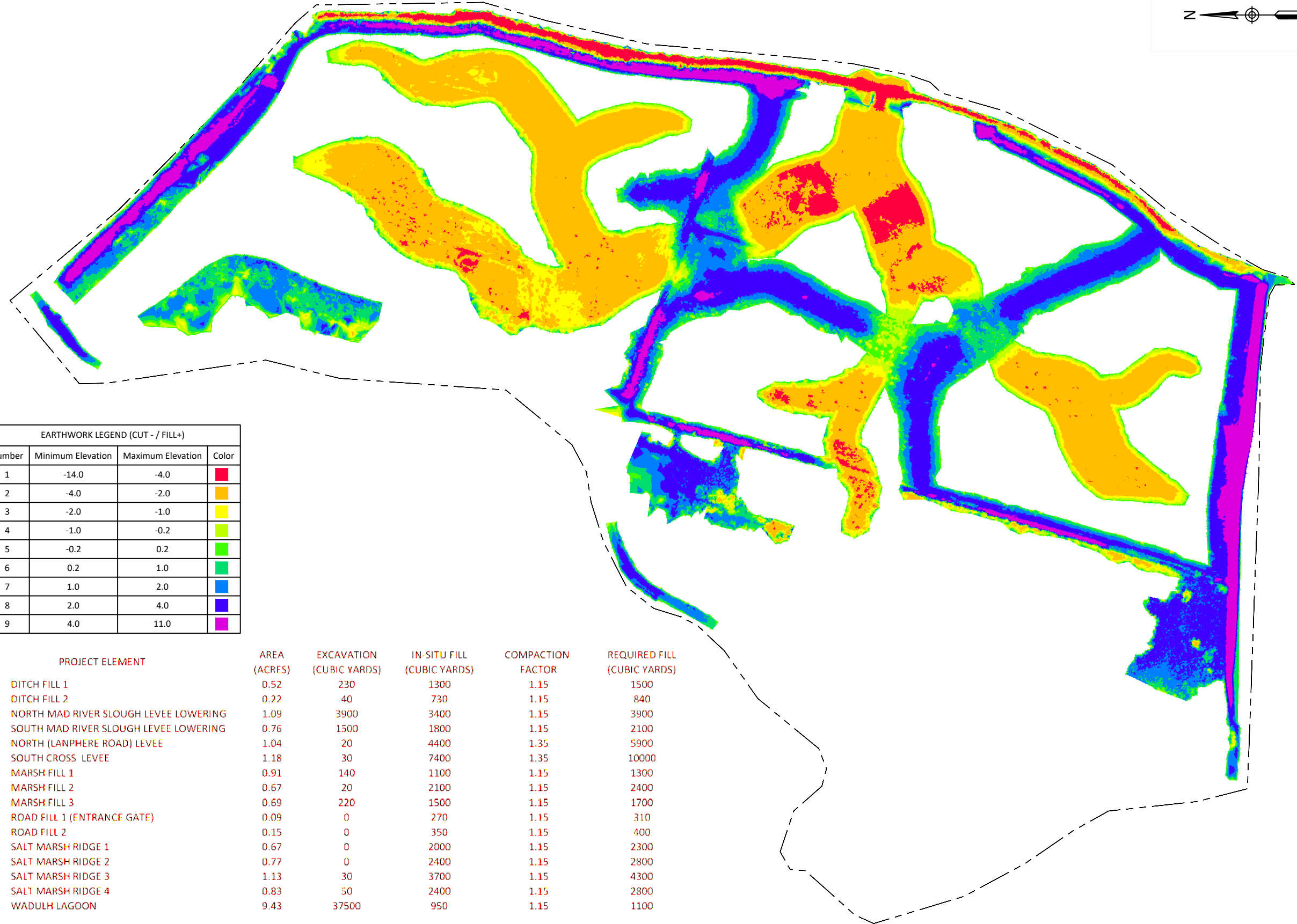


WADULH LAGOON TIDAL WETLAND ENHANCEMENT PROJECT  
 30% DESIGN PLANS  
 EARTHWORK SUMMARY

DATE:  
8/28/2023

SHEET NUMBER:  
32

SCALE:  
0 200'



EARTHWORK LEGEND (CUT - / FILL+)			
Number	Minimum Elevation	Maximum Elevation	Color
1	-14.0	-4.0	Red
2	-4.0	-2.0	Orange
3	-2.0	-1.0	Yellow
4	-1.0	-0.2	Light Green
5	-0.2	0.2	Green
6	0.2	1.0	Dark Green
7	1.0	2.0	Blue
8	2.0	4.0	Purple
9	4.0	11.0	Magenta

PROJECT ELEMENT	AREA (ACRES)	EXCAVATION (CUBIC YARDS)	IN-SITU FILL (CUBIC YARDS)	COMPACTION FACTOR	REQUIRED FILL (CUBIC YARDS)
DF-1 DITCH FILL 1	0.52	230	1300	1.15	1500
DF-2 DITCH FILL 2	0.22	40	730	1.15	840
LL-1 NORTH MAD RIVER SLOUGH LEVEE LOWERING	1.09	3900	3400	1.15	3900
LL-2 SOUTH MAD RIVER SLOUGH LEVEE LOWERING	0.76	1500	1800	1.15	2100
LV-1 NORTH (LANPHERE ROAD) LEVEE	1.04	20	4400	1.35	5900
LV-2 SOUTH CROSS LEVEE	1.18	30	7400	1.35	10000
MF-1 MARSH FILL 1	0.91	140	1100	1.15	1300
MF-2 MARSH FILL 2	0.67	20	2100	1.15	2400
MF-3 MARSH FILL 3	0.69	220	1500	1.15	1700
RF-1 ROAD FILL 1 (ENTRANCE GATE)	0.09	0	270	1.15	310
RF-2 ROAD FILL 2	0.15	0	350	1.15	400
SM-1 SALT MARSH RIDGE 1	0.67	0	2000	1.15	2300
SM-2 SALT MARSH RIDGE 2	0.77	0	2400	1.15	2800
SM-3 SALT MARSH RIDGE 3	1.13	30	3700	1.15	4300
SM-4 SALT MARSH RIDGE 4	0.83	50	2400	1.15	2800
WL WADULH LAGOON	9.43	37500	950	1.15	1100
<b>TOTAL</b>	<b>20.15</b>	<b>43680</b>	<b>35800</b>		<b>43650</b>