

Appendix E. As-Built Plan Set

LEVEE EROSION ADAPTIVE MANAGEMENT PROJECT

Sears Point Tidal Marsh Restoration Project

Sonoma County, CA

Project Sponsor/Permittee:

Sonoma Land Trust
 Attn: Julian Meisler
 822 Fifth Street
 Santa Rosa, CA 95404
 (707) 331-8259

Property Owner:

US Fish and Wildlife Service
 Attn: Louis Terrazas
 7715 Lakeville Highway
 Petaluma, CA 94954
 (510) 377-1233

Owner's Representative:

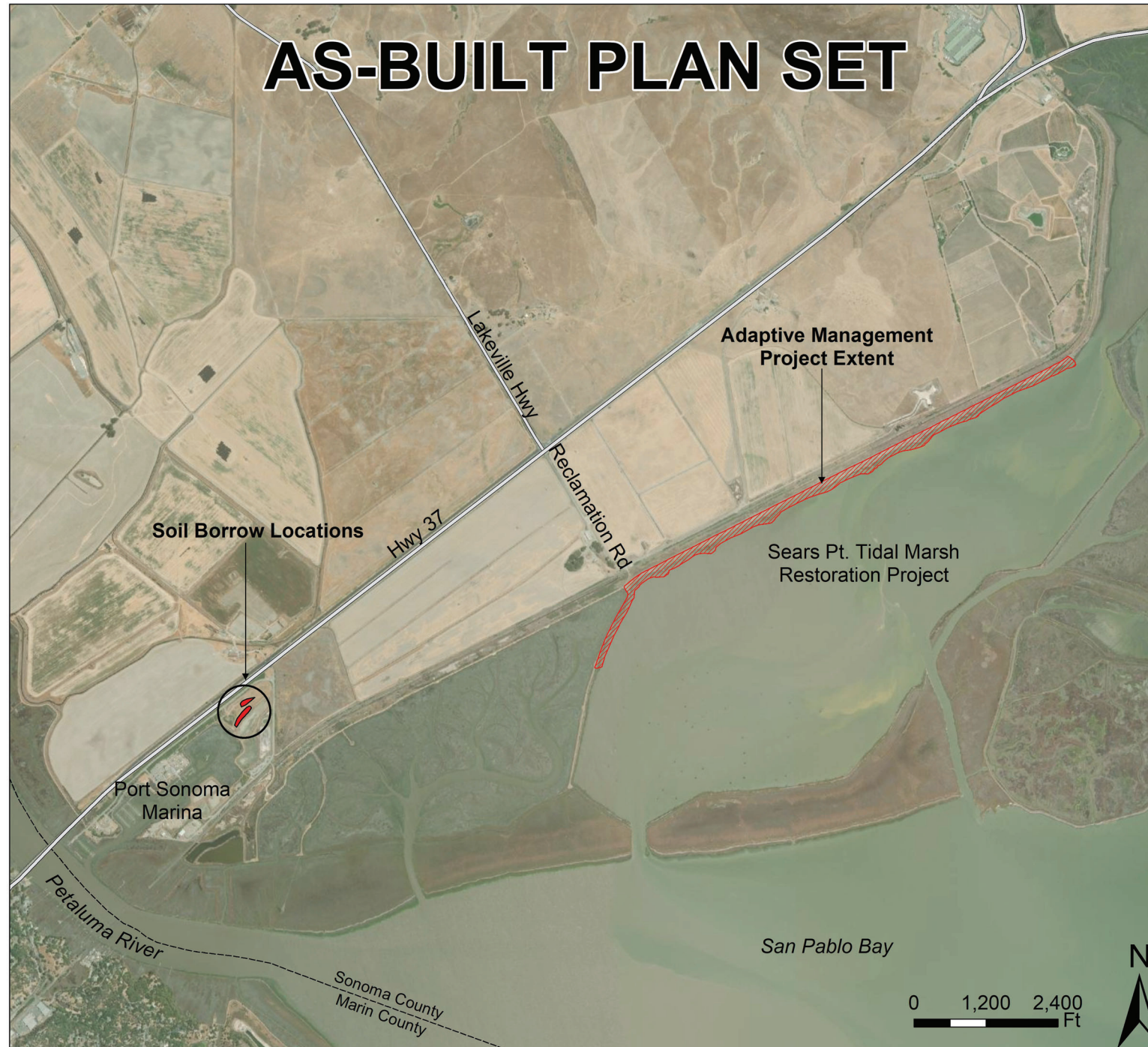
Stuart Siegel, Ph.D, P.W.S.
 Siegel Environmental
 2 Belle Avenue
 San Rafael, CA 94901
 (415) 823-3746

Engineer:

Roger Leventhal, P.E.
 FarWest Restoration Engineering
 594 Paula Lane
 Petaluma, CA 94952
 (510) 757-6848

Sheet List

- 1) Title Sheet
- 2) General Notes, Site Features, and Access
- 3) Adaptive Management Site Plan - Overview
- 4) Adaptive Management Site Plan - Details (1)
- 5) Adaptive Management Site Plan - Details (2)
- 6) Sections and Exhibits
- 7) Soil Borrow Detail
- 8) Cell 6 & 7 Additional Shoreline Treatments
- 9) As-Built Topographic Sections (1)
- 10) As-Built Topographic Sections (2)
- 11) As-Built Topographic Sections (3)



Project Design Team:

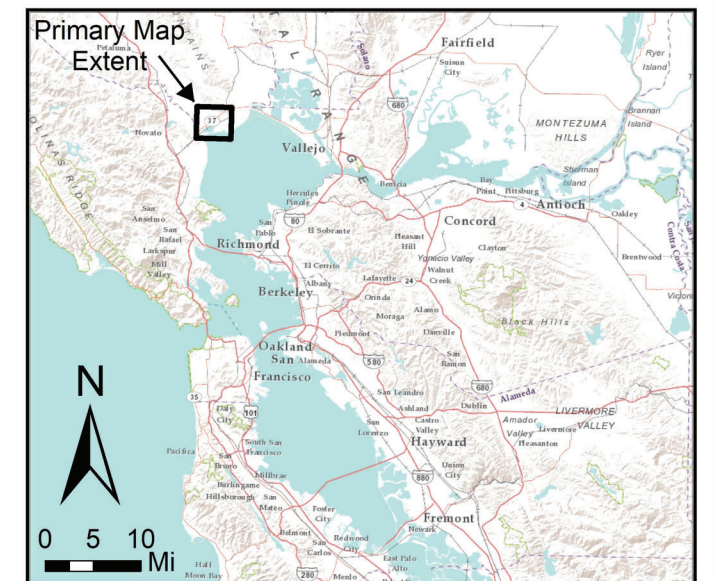
Peter Baye, Ph.D.
 Stuart Siegel, Ph.D., P.W.S., Siegel Environmental
 Roger Leventhal, P.E., FarWest Restoration Engineering
 Dan Gillenwater, P.W.S., Gillenwater Consulting

Acronyms and Abbreviations:

bayward: toward the open water (bay)
 BGS: below ground surface
 CY: cubic yards
 landward: toward the land (levee)
 LF: linear feet
 LWD: large woody debris
 PIP: protect in place
 R/R: Remove and replace
 SLT: Sonoma Land Trust
 typ: typical

Local Tidal Datums

Mean Higher High Water (MHHW): 6.4 ft NAVD88
 Mean High Water (MHW): 5.8 ft NAVD88
 Mean Tide Level (MTL): 3.3 ft NAVD88
 Mean Low Water (MLW): 1.3 ft NAVD88
 Mean Lower Low Water (MLLW): 0.3 ft NAVD88



NUMBER	DATE	DESCRIPTION	BY
1	1/26/2022	Updated for as-built set	DAG

DRAWN BY:	DAG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	1:14,400

**Levee Erosion
 Adaptive Management Project**
 Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

Submitted: _____
 Principal Civil Engineer
 APPROVED BY: _____
 PERMITTEE: _____ DATE: _____

FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

**TITLE SHEET
 (AS-BUILT)**

DATE: 1/26/2022
 SHEET: 1
 PROJECT NO. 3021

File name: Title-sheet_AsBuilt_DL_Sears-PT_2022-0126dag

CONSTRUCTION SCHEDULE

- All construction activities must be completed no later than November 30, 2021 unless an extension is granted by the permitting agencies.
- Construction hours are 7AM – 7PM, Monday through Friday. Work on weekends may be approved by Owner as needs arise. No work permitted on federal Holidays.

GENERAL CONDITIONS

- All equipment to be staged, serviced, and refueled in designated staging areas.
- Areas below the MHHW contour may be subject to regular tidal inundation. No work is to occur in inundated areas; work may proceed once waters have receded. The Petaluma River Entrance tidal monitoring station (Station 9415252) shall be used for tidal predictions at this site (<https://tidesandcurrents.noaa.gov/waterlevels.html?id=9415252>). Data at this station are presented relative to MLLW. Add 0.3 ft to MLLW measurements to convert to the NAVD88 datum.
- Contractor shall identify, locate, and protect all existing utilities within the limits of work. Call Underground Services Alert at 800-642-2444 for information at least 48 hours before beginning work.

SURVEYS AND ELEVATION CONTROL

- All elevations shown on the plans are in ft NAVD88. The local elevation control benchmarks are shown on Sheet 2. Horizontal coordinates are in CA State Plane Zone 2, NAD83 (ft).
- Existing topography at the project site is from a 2018 LiDAR survey of the Sears Pt. Restoration Project site. Existing topography at the soil borrow site (see Sheet 7) is from the Sonoma County 2013 LiDAR DEM. Contractor shall be responsible for verifying site topography and shall notify Representative and Owner immediately of any major discrepancies observed.
- The as-built survey to document successful project completion shall be performed by Contractor at the direction of Representative and shall consist of shore-normal cross sections surveys approximately every 200 ft within treatment areas, aligning with previous cross section locations where possible.

ENVIRONMENTAL PROTECTION

- Contractor shall prepare and implement a SWPPP prior to commencement of construction activities. Contractor shall assist SLT in registering on the SWRCB SMART system, as needed.
- Contractor shall install and maintain erosion and sediment control measures as needed to mitigate the potential for sediment migration away from equipment staging and stockpile areas.
- Contractor shall implement post-excavation erosion control measures at the soil borrow site, as described on Sheet 7. No post-construction erosion control measures are needed for the levee adaptive management elements.
- Contractor shall designate fueling and maintenance areas within designated staging areas. All fueling, maintenance, washing, and emergency repair of vehicles and equipment shall be performed within these designated areas or off site. The fueling and maintenance area shall be constructed to contain any spills according to the Contractor's approved SWPPP. All staging areas to be approved by Representative.
- Contractor shall employ conscientious and effective means of dust control. Contractor shall assume responsibility for all damages, delays, and government-imposed penalties or fines, and claim resulting from Contractor's dust control practices. Comply with all BAAQMD published guidelines.
- The Owner's Biological Monitor shall conduct education programs for all construction personnel prior to initiating construction. All construction personnel and subcontractors must complete the training before they are authorized to work in the project area.
- Prior to construction, Owner's Biological Monitor shall demarcate all sensitive habitat areas to be avoided/preserved. Contractor shall carefully accomplish its work to protect native vegetation and minimize disturbance areas.
- All work performed from soft/saturated soils shall be performed by low ground pressure equipment operating from mats or by hand laborers. Any incidental damage to these areas shall be repaired and restored to pre-construction conditions upon completion of work.

STAKING AND LAYOUT

- If prehistoric or historical structures, archaeological deposits, paleontological deposits (fossils), or human remains are encountered, Contractor shall (1) suspend all work within 50 ft of the discovery and (2) notify Owner and/or Representative immediately.
- Contractor is responsible for providing all staking and surveying needed to achieve all lines, grades, and dimensions shown on the Plans. Stakes and markers shall be installed as necessary to control the work and assure construction is in conformance with the contract documents and as otherwise directed by the Representative and Owner.
- Contractor shall use the established survey benchmark network shown on Sheet 2 to lay out the work.
- Staking/layout of project elements shall be approved by Owner's Representative before earthwork commences.

CLEARING AND GRUBBING

- Clearing and grubbing shall occur as needed in areas where excavation is proposed (soil borrow and scarp grading areas).
- Remove identified surface debris on Sheet 3 from work area and transport to an appropriate waste disposal facility.
- Clear areas to be excavated of all trees, shrubs, and woody vegetation >1 ft in height, including root systems. Cleared vegetation may be placed on the newly graded levee slope, or between the new levee toe and installed LWD features (see Sections A and C on Sheet 6). Burning of trees, stumps, or brush is not permitted.
- Salvage coyote brush from levee grading areas and/or priority salvage areas (see Sheet 2), as needed, to provide brushwood necessary for LWD design element (see note 16 on Sheet 3). Coyote brush taken from the priority salvage area shall be cut at base by hand or chainsaw.
- Salvage delineated stands of creeping wild rye (*Elymus triticoides*) in scarp grading areas as described in notes 23-24 on Sheet 3.

PUBLIC ACCESS

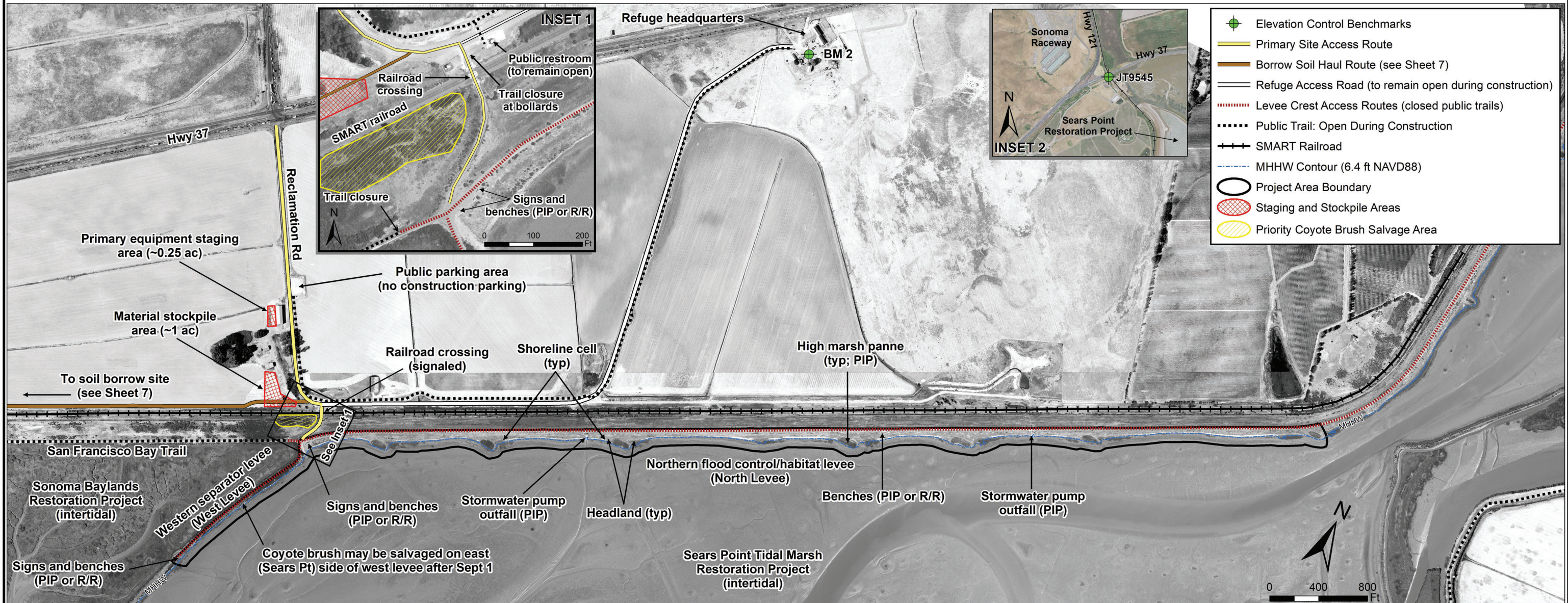
- Owner will close existing public access trails within the work area prior to construction, as shown on Sheet 2, by installing temporary barriers and signs. Contractor shall protect in place all temporary signs and barriers during execution of the work.
- Contractor shall not obstruct public access to any road or trail that is to remain open during construction, as shown on Sheet 2.

SITE RESTORATION

- Contractor shall be responsible for all damage to existing roads, trails, benches, signs, utilities, and other property and shall repair all damage resulting from construction activities at no additional cost to owner. Contractor shall video the trail roadway prior to starting. Trail surfaces atop the north and west levees will be returned to pre-project conditions, as described in the Technical Specifications.
- To prevent colonization by invasive vegetation, Contractor shall apply wood/bark mulch to areas of the bayward levee slopes that are incidentally disturbed by construction activities.

Benchmark Coordinates				
BM ID	Northing (ft)	Easting (ft)	Elevation (ft NAVD88)	Description
2	1813355.38	6428340.69	21.69	Center of scribed box on parking pad
JT9545*	1817256.38	6432961.46	13.98	Refusal rod in ground vault

*Located near the intersection of Hwy 121 and 37 (see Inset 2); see NGS benchmark sheet for location details



NUMBER	DATE	DESCRIPTION	BY
1	3/10/2021	Updated sheet notes for 2021 construction	DAG
2	7/22/2021	Revise benchmark network and coyote brush salvage areas	DAG

DRAWN BY:	DAG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	1:4,800

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

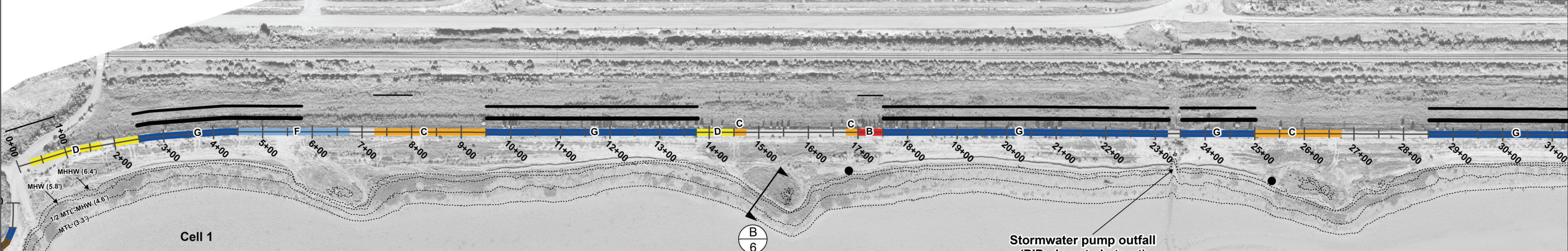
Submitted: _____
 Principal Civil Engineer
 APPROVED BY: _____
 PERMITTEE: _____ DATE: _____

FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

GENERAL NOTES, SITE FEATURES, AND ACCESS (AS-BUILT)

DATE: 7/22/2021
 SHEET: 2
 PROJECT NO.: 3021

FRAME 1: NORTH LEVEL



Design Treatments

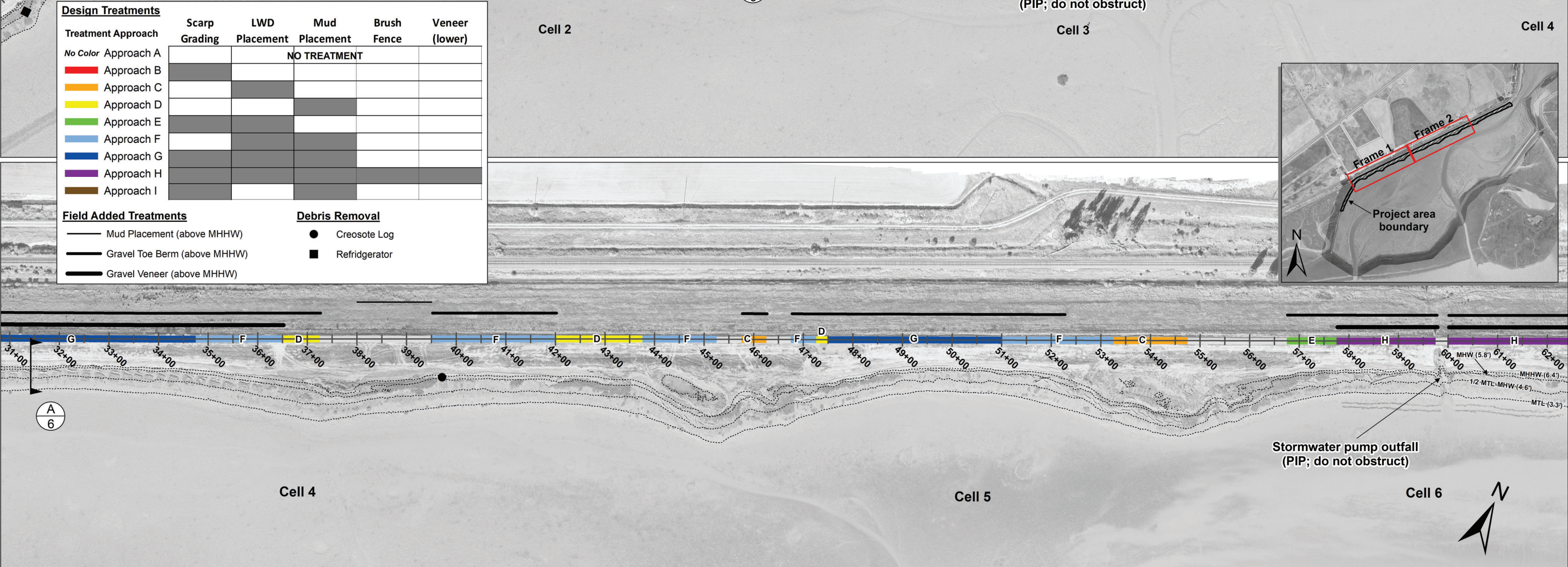
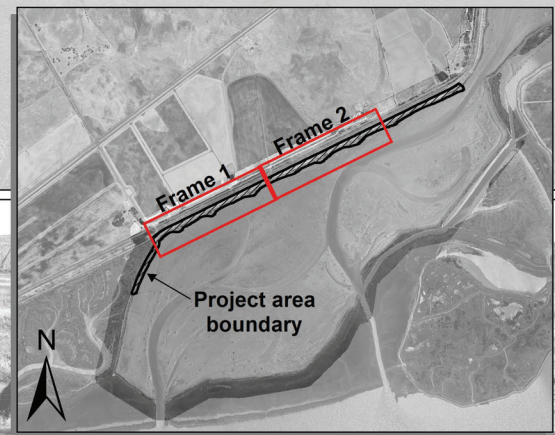
Treatment Approach	Scarp Grading	LWD Placement	Mud Placement	Brush Fence	Veneer (lower)
No Color Approach A			NO TREATMENT		
Approach B					
Approach C					
Approach D					
Approach E					
Approach F					
Approach G					
Approach H					
Approach I					

Field Added Treatments

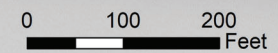
- Mud Placement (above MHHW)
- Gravel Toe Berm (above MHHW)
- Gravel Veneer (above MHHW)

Debris Removal

- Creosote Log
- Refridgerator



FRAME 2: NORTH LEVEL



NUMBER	DATE	DESCRIPTION	BY
1	7/27/2021	Update treatment extents in Cells 1, 5, and West Levee	DAG
2	1/24/2022	Update per as-built conditions; use 12/2021 as-built air photo	DAG

REVISION BLOCK

DRAWN BY: DAG

DESIGNED BY: PRB, RDL, SWS, DAG

CHECKED BY: RDL

SCALE: 1:1,200

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

Submitted: _____
 Principal Civil Engineer

APPROVED BY: _____
 PERMITTEE: _____ DATE: _____

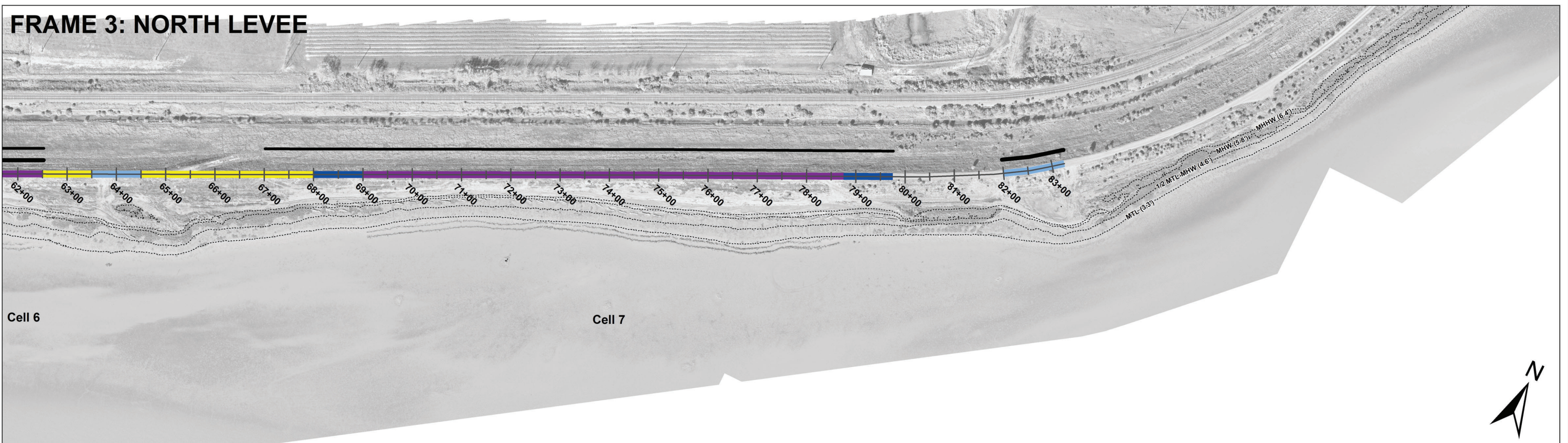
FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

ADAPTIVE MANAGEMENT SITE PLAN - DETAILS (1) (AS-BUILT)

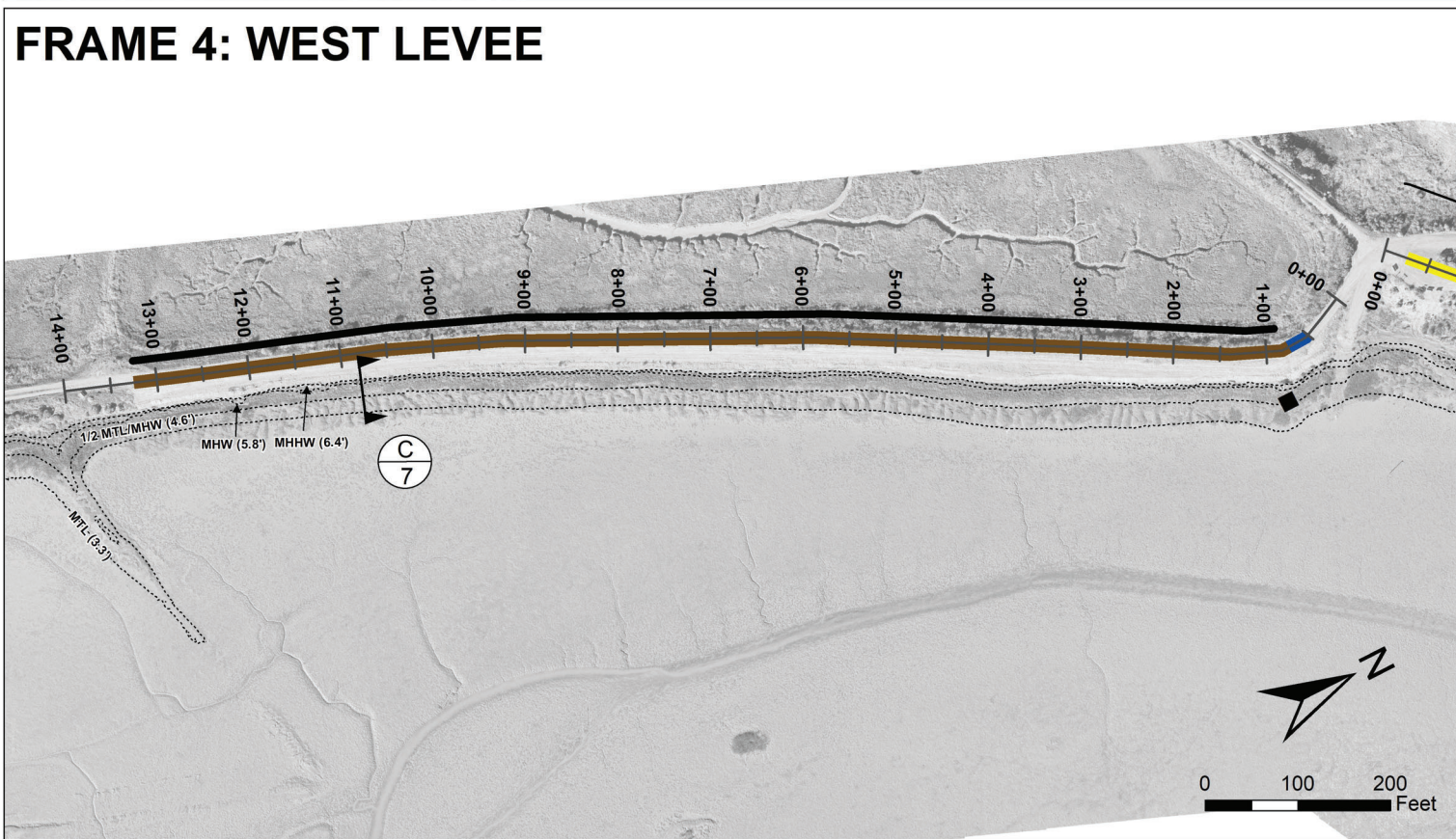
DATE: 1/24/2022
 SHEET: 4
 PROJECT NO. 3021

File name: site-plan-detail_1_AsBuilt_DL_Sears-PT_2022-0124dag

FRAME 3: NORTH LEVEE



FRAME 4: WEST LEVEE



Design Treatments

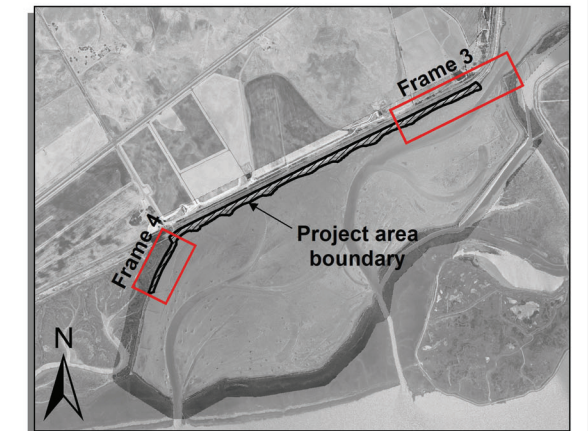
Treatment Approach	Scarp Grading	LWD Placement	Mud Placement	Brush Fence	Veneer (lower)
No Color Approach A			NO TREATMENT		
Approach B					
Approach C					
Approach D					
Approach E					
Approach F					
Approach G					
Approach H					
Approach I					

Field Added Treatments

- Mud Placement (above MHHW)
- Gravel Toe Berm (above MHHW)
- Gravel Veneer (above MHHW)

Debris Removal

- Creosote Log
- Refridgerator



NUMBER	DATE	DESCRIPTION	BY
1	7/27/2021	Update treatment extents in Cells 1, 5, and West Levee	DAG
2	1/24/2022	Update per as-built conditions; use 12/2021 as-built air photo	DAG

DRAWN BY:	DAG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	1:1,200

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

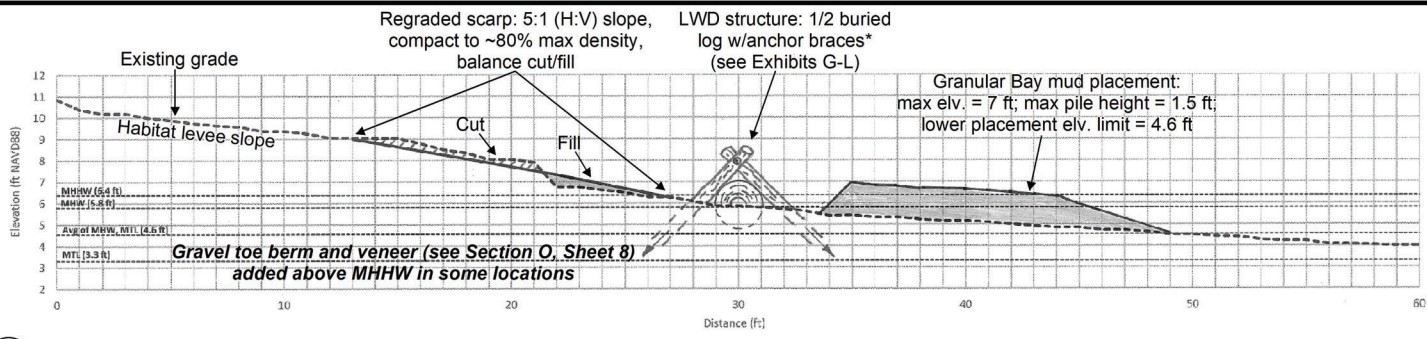
Submitted: _____
 Principal Civil Engineer
 APPROVED BY: _____
 PERMITTEE: _____ DATE: _____

FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

ADAPTIVE MANAGEMENT SITE PLAN - DETAILS (2) (AS-BUILT)

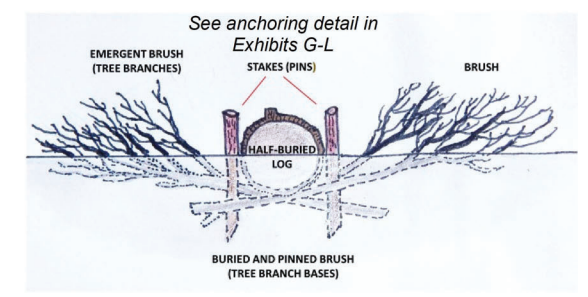
DATE: 1/24/2022
 SHEET: 5
 PROJECT NO. 3021

File name: site-plan-detail_2_AsBuilt_DL_Sears-PT_2022-0124dag

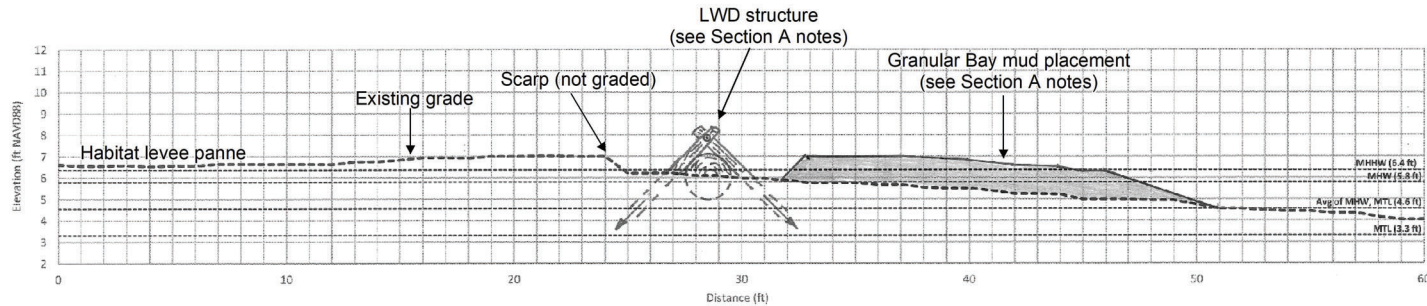


A Section A
3 North Levee Shoreline Design Layout - Typical (all elements shown)

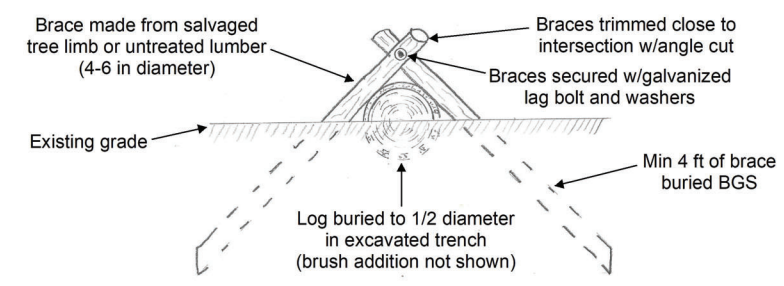
*Partially buried brush element not shown. See Exhibit F



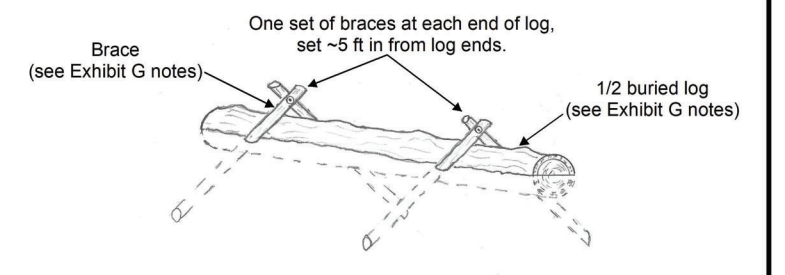
F Exhibit F
 Cross Section View of LWD Configuration - Typical *Not to Scale*



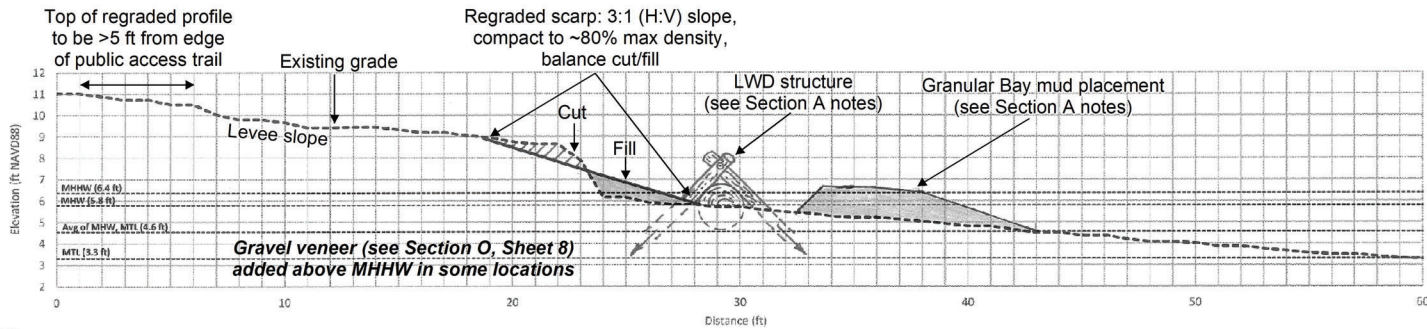
B Section B
3 North Levee Headland Design Layout - Typical (all elements shown)



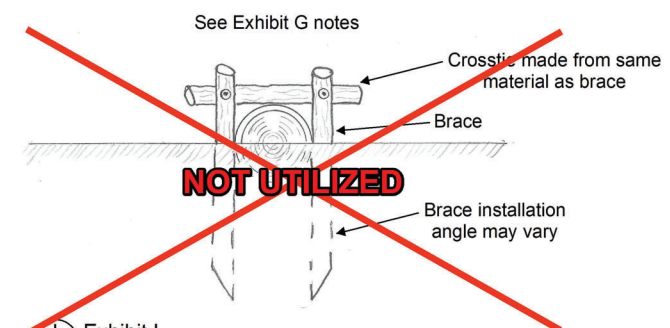
G Exhibit G
 Cross Section View of LWD Anchoring - Cross Braces



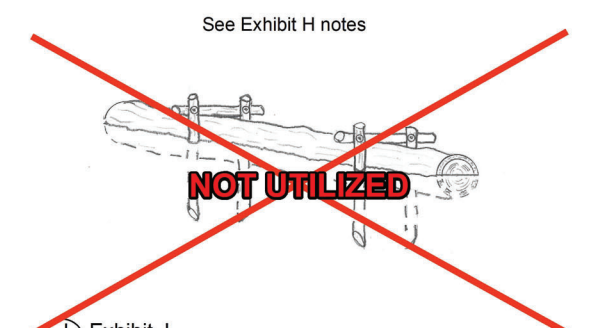
H Exhibit H
 Oblique View of LWD Anchoring - Cross Braces



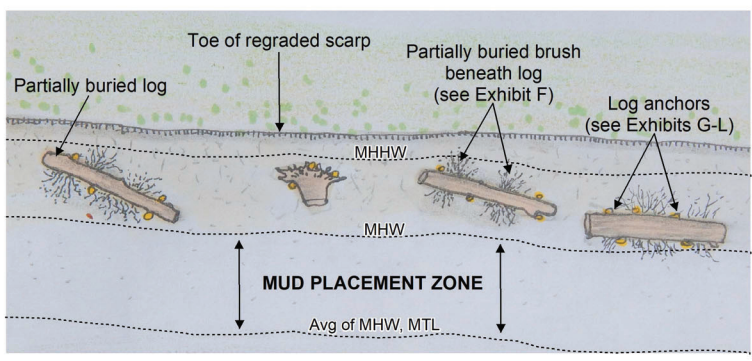
C Section C
3 West Levee Shoreline Design Layout - Typical (all elements shown)



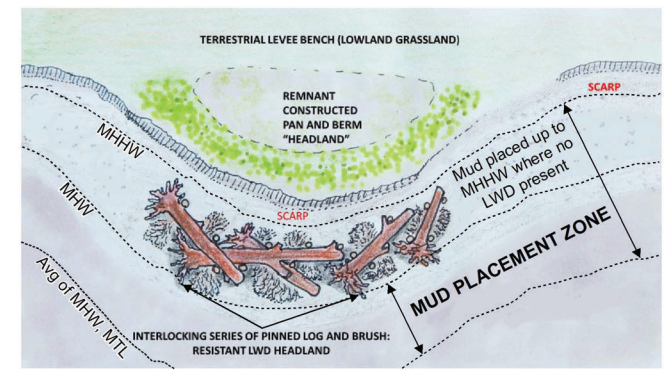
I Exhibit I
 Cross Section View of LWD Anchoring - Braces with Crosstie



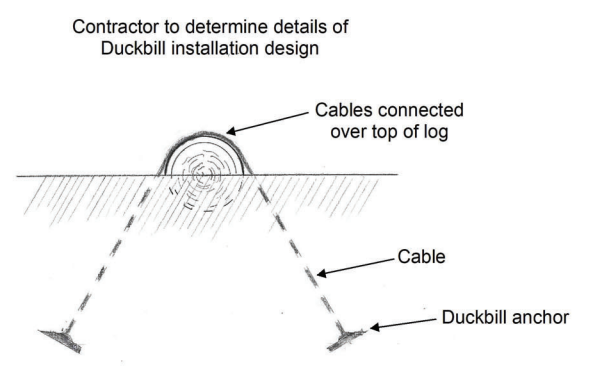
J Exhibit J
 Oblique View of LWD Anchoring - Braces with Crosstie



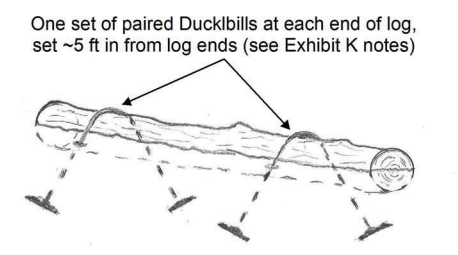
D Exhibit D
 Plan View of Proposed Shoreline LWD Configuration - Typical *Not to Scale*



E Exhibit E
 Plan View of Proposed Headland LWD Configuration - Typical *Not to Scale*



K Exhibit K
 Cross Section View of LWD Anchoring - Duckbill Anchors



L Exhibit L
 Oblique View of LWD Anchoring - Duckbill Anchors

NUMBER	DATE	DESCRIPTION	BY
1	3/10/2021	Added drawings of Duckbill anchor configuration	DAG
2	1/25/2022	Updated per as-built conditions	DAG

DRAWN BY:	DAG, PRB, RJG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	Varies

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

Submitted: _____
 Principal Civil Engineer
 APPROVED BY: _____
 PERMITTEE: _____ DATE: _____

FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

SECTIONS AND EXHIBITS (AS-BUILT)

DATE: 1/25/2022
 SHEET: **6**
 PROJECT NO. 3021

SITE ACCESS AND MATERIAL TRANSPORT

- Borrow site may be accessed off Highway 37. Owner will provide access details, including gate combinations, from Marina owner.
- Soil excavated from borrow areas shall be transported to the project site via the haul route shown on Sheet 7. Highway 37 may not be used for material transport.
- The final ~4,850 ft of the haul route passes through agricultural fields. The alignment of the haul road, including the location and number of turnouts, must be negotiated with the landowner. Owner will provide contact information for landowner and coordinate discussions between landowner and Contractor to determine road alignment details.
- The haul route through the agricultural fields will be returned to pre-project conditions by the landowner upon completion of construction.

EXCAVATION

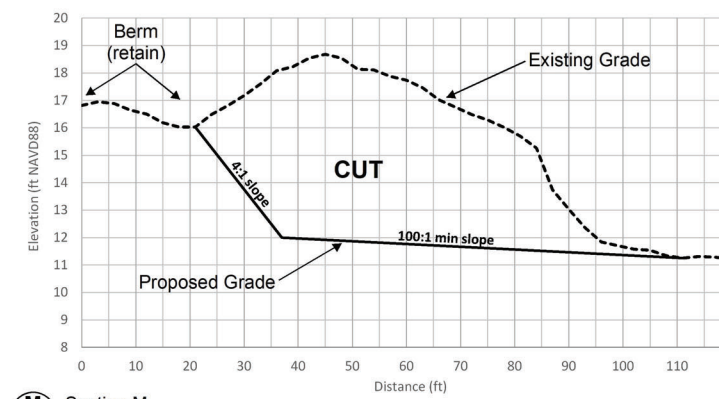
- The north mound is the primary borrow area and shall be excavated first. The south mound, if utilized, shall be excavated from south to north.
- Clearing and grubbing: Clear excavation area of all trees, shrubs, and woody vegetation > 1 ft in height, including root systems. Dispose of cleared vegetation at appropriate facility for clean, organic waste.
- Do not excavate below the existing grade at the perimeter of the mounds (see Sections M and N, this sheet)
- A 4:1 (H:V) slope shall be maintained along the berm to the southwest of the south mound (see Section M, this sheet).
- The bottom of excavated areas shall be finished with a minimum slope of 100:1 (1%) and maintain existing drainage patterns (see Sections M and N, this sheet).

10. If mounds are only partially excavated, the excavation headcut shall be finished with a slope no steeper than 4:1.

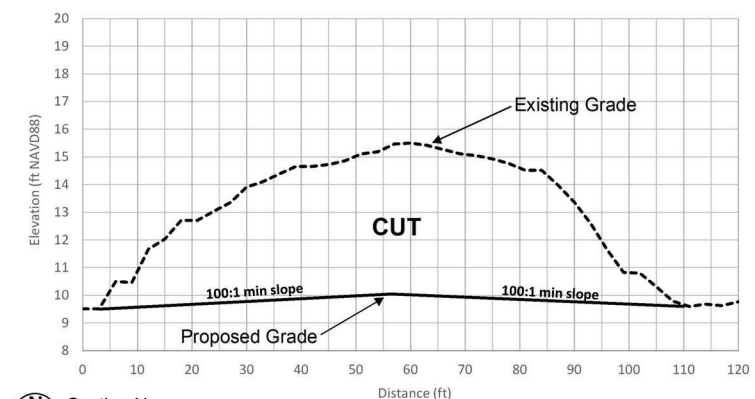
EROSION AND DUST CONTROL

- Work soil as needed to break up large clods and produce a ~2" minus aggregate texture.
- Employ conscientious and effective means of dust control at excavation locations and along soil transport routes. Comply with all BAAQMD published guidelines.
- Implement post-excavation erosion control measures at borrow locations, including installing straw wattle lines along all 4:1 graded slopes and applying seed-free rice straw across all excavated borrow areas. Plastic or other artificial erosion control fabric may not be used.

SEE SURVEYORS REPORT OF AS-BUILT BORROW AREA TOPOGRAPHY, 10/12/2021 (APPENDIX H OF AS-BUILT REPORT)

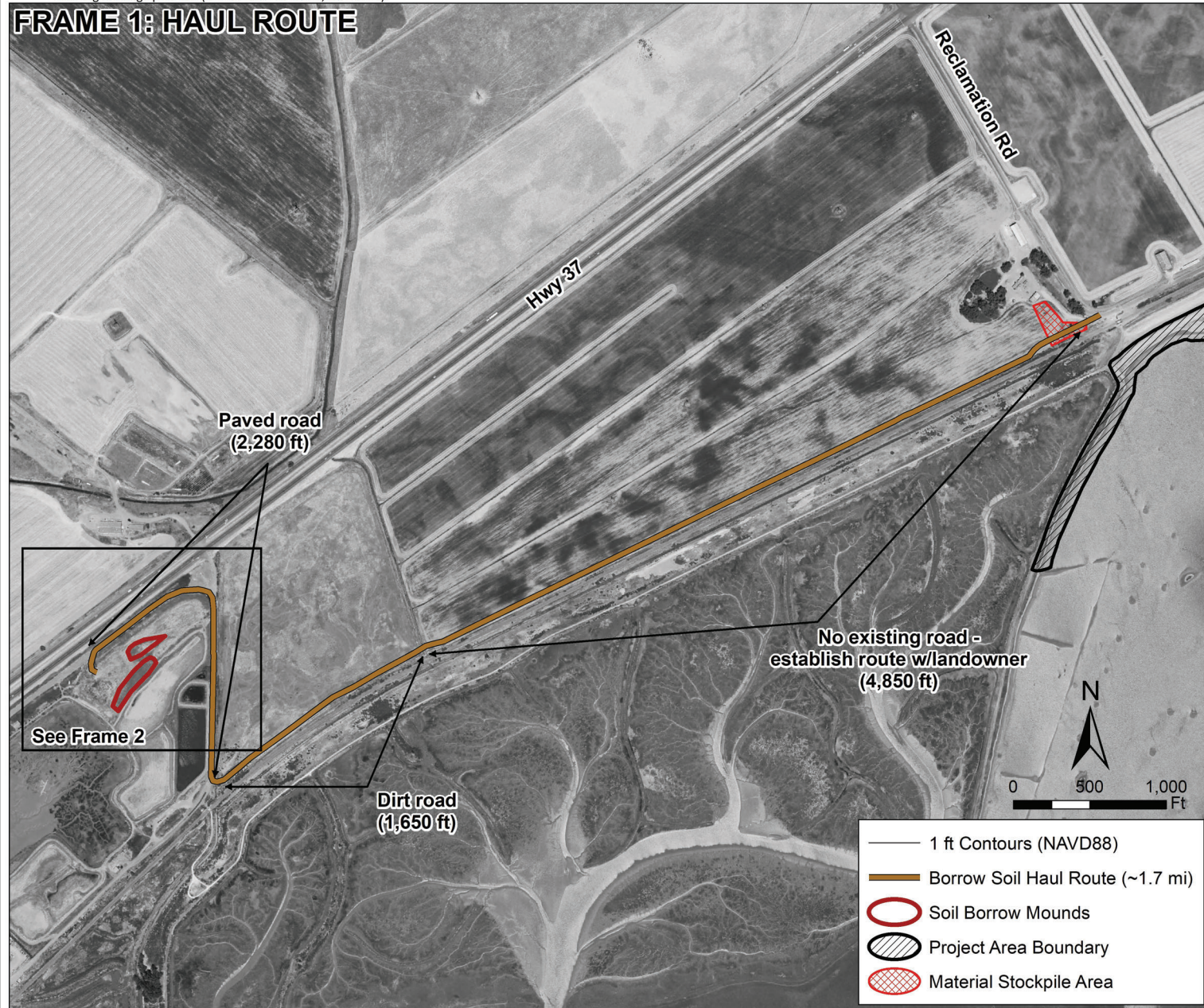


M Section M
South Mound Excavation - Typical

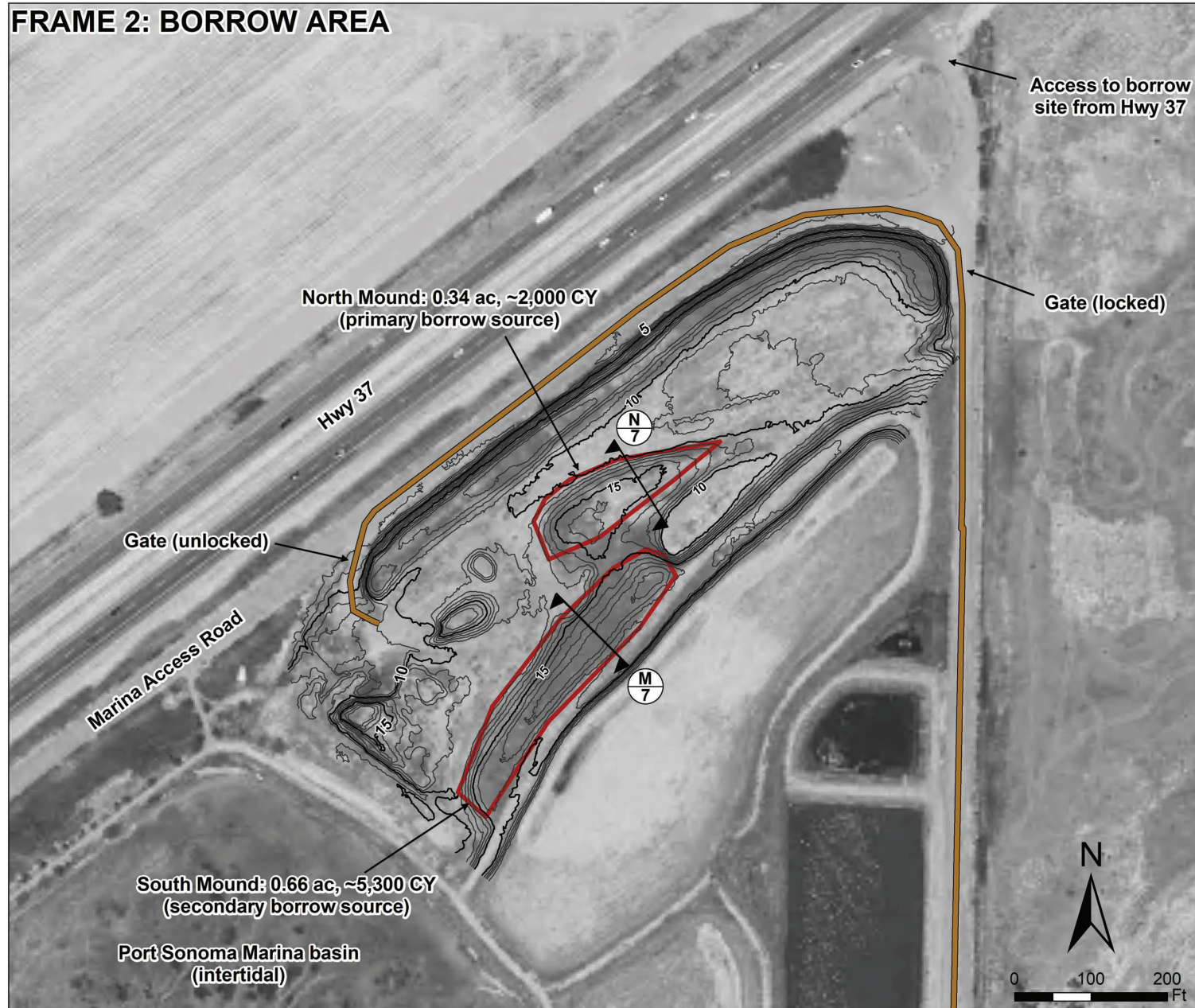


N Section N
North Mound Excavation - Typical

FRAME 1: HAUL ROUTE



FRAME 2: BORROW AREA



NUMBER	DATE	DESCRIPTION	BY
1	1/25/2022	Added note regarding as-built topography of borrow area	DAG

DRAWN BY:	DAG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	Frame 1: 1:6,000; Frame 2: 1:1,200

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

Submitted: _____
 Principal Civil Engineer
 APPROVED BY: _____
 PERMITTEE: _____ DATE: _____

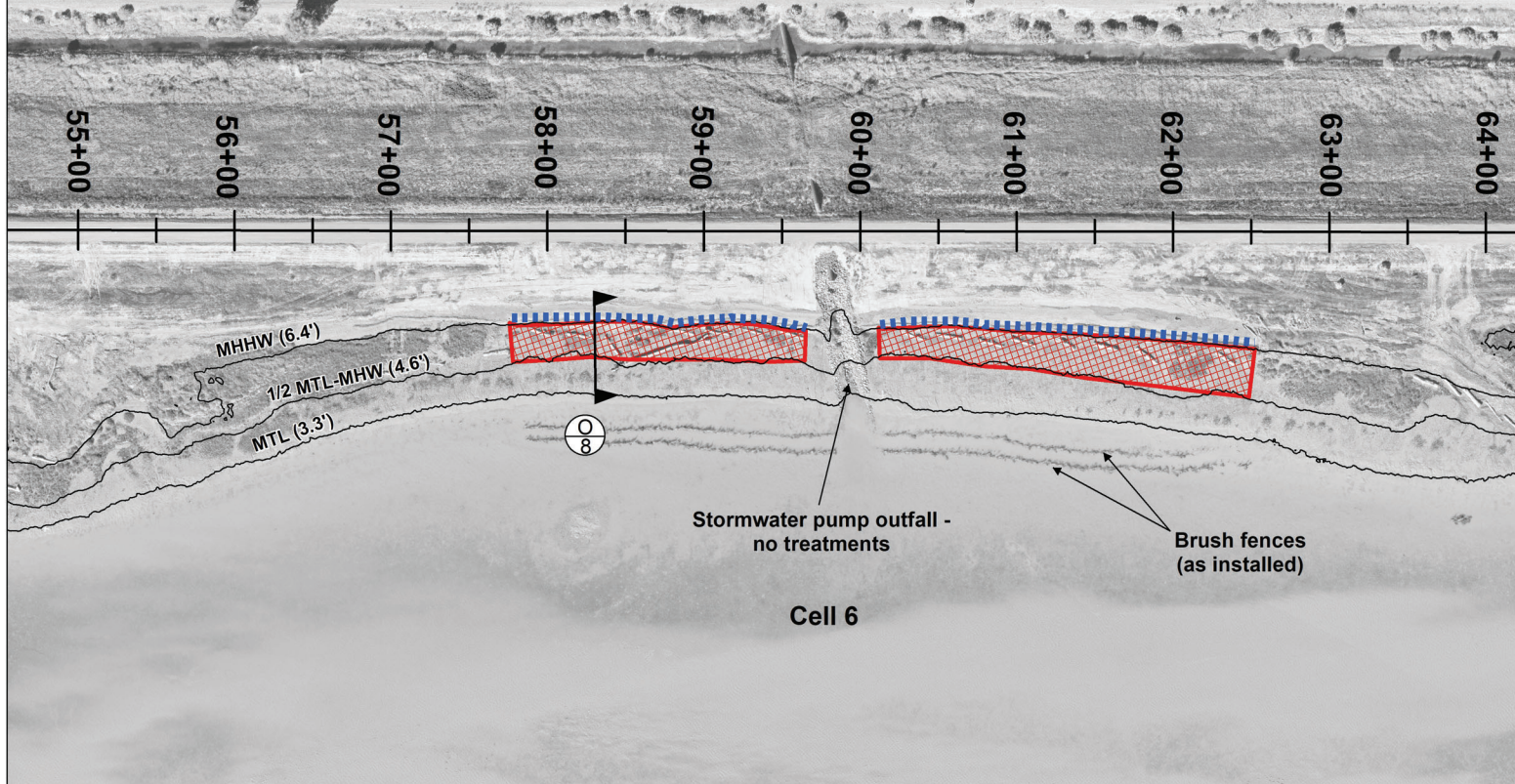
FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

SOIL BORROW DETAIL (AS-BUILT)

DATE: 1/25/2022
 SHEET: 7
 PROJECT NO. 3021

File name: soil-borrow-detail_AsBuilt_DL_Sears-PT_2022-0125dag

FRAME 1: CELL 6



GENERAL

- Additional shoreline treatments are proposed for areas of Cells 6 & 7 that are experiencing progressively worsening levee scarp erosion and new erosion on the accreting mudflats. These treatments are additive to those prescribed on Sheet 3.
 - Installation sequencing is at Contractor discretion to maximize efficiency while achieving design specifications.
 - Engineer or Representative will supervise initial installation of additional treatments and field-adjust methodology/specifications as necessary.
- ### BRUSH FENCES (ADDITIONAL TREATMENT #1)
- Brush fences consist of two, shore-parallel lines of tree branches (provided by others) and/or brush (locally salvaged) embedded in the shoreline and extending ~2' above the mud surface; installed between the elevations of MTL (3.3') and the midpoint between MTL and MHW (4.6'). See Section O.
 - Branches/brush to be installed in ~2' wide x 2' deep trenches excavated on the shoreline, with the excavated Bay mud used to backfill the trench, and compacted (hand-tamped or boot-packed) to ensure adequate cohesion. Engineer or Representative will approve of compaction method and cohesion specs in the field.
 - Brush fences to be installed bayward of granular mud placement element (see Section A Sheet 6) and aligned to avoid existing marsh vegetation plantings to the extent practical. Representative will identify and mark existing plantings in the field.
- ### GRAVEL VENEER (LAG ARMOR) (ADDITIONAL TREATMENT #2)
- Gravel veneer consists of a single layer of 1.5" to 3" minus, angular to sub-angular gravel spread across the shoreline surface between the approximate elevations of MHHW (6.4') and the midpoint between MTL and MHW (4.6'). No compaction.

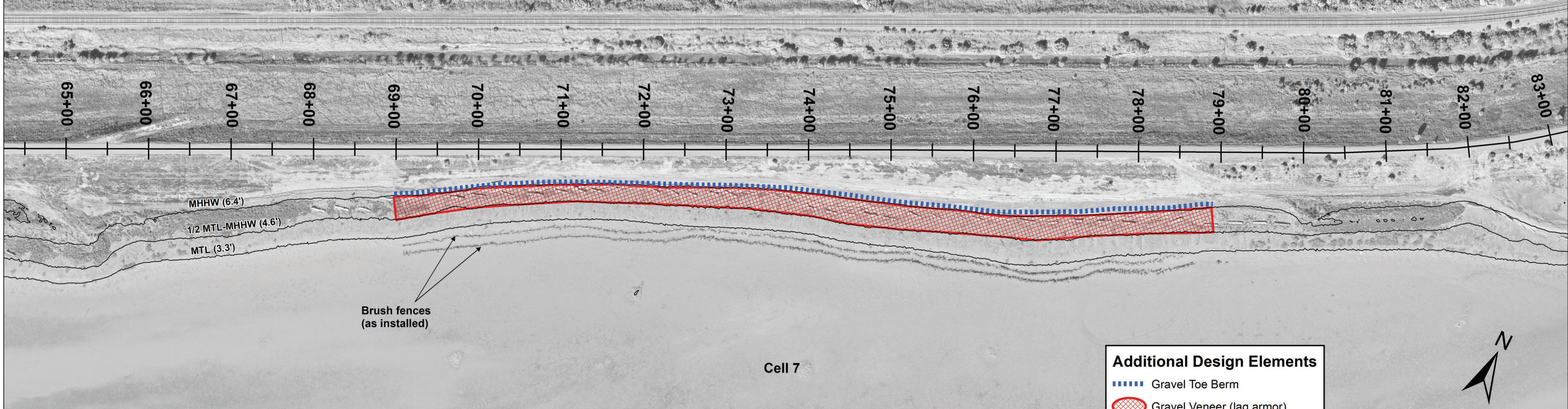
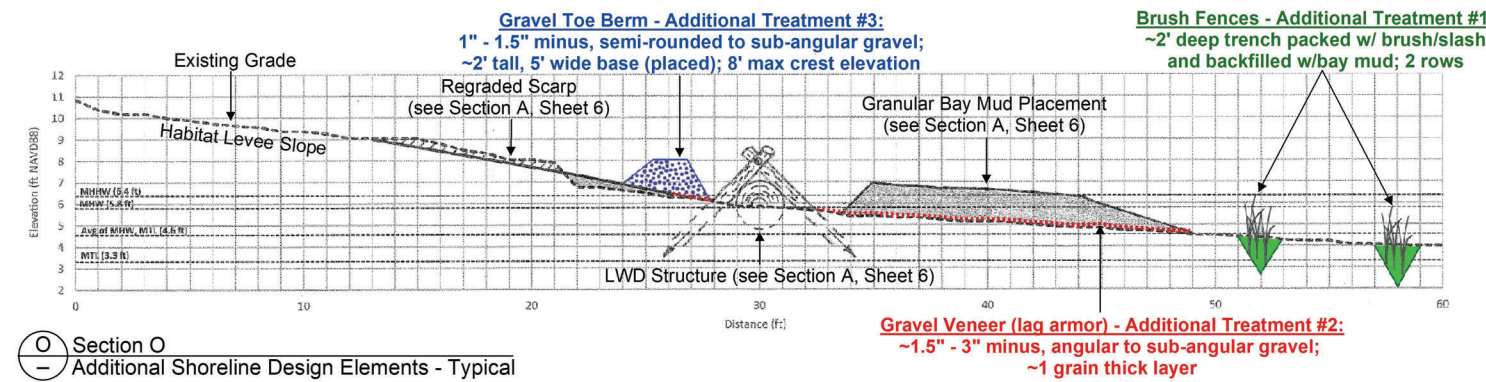
- Gravel veneer underlies the granular mud placement and gravel toe berm elements and is placed on top of the regraded scarp element (see Section A Sheet 6); no veneer is needed beneath the LWD structures.
- ### GRAVEL TOE BERM (ADDITIONAL TREATMENT #3)
- Gravel toe berm is constructed of 1" to 1.5" minus, semi-rounded to subangular gravel, placed landward of installed LWD structures at the toe of the regraded scarp profile.
 - Gravel placed and roughly graded to dimensions shown in Section O. Pile height not to exceed 2' above existing grade; maximum pile crest elevation not to exceed 8'. Placement specifications may be adjusted by Engineer or Representative in the field based on conditions at the time of installation.

QUANTITY ESTIMATES - CONTRACTOR TO VERIFY

Design Element	Elevation Range	Length (ft)	Area (ft ²)	Excavation Vol (CY)	New Fill Vol (CY)	Replaced Fill Vol (CY)
Gravel Toe Berm	MHHW - HTL ¹	1450	7975	0	295	0
Gravel Veneer ²	1/2 MTL-MHW ³ - MHHW	1450	28216		180	0
Brush Fences (2 rows)	MTL - 1/2 MTL-MHW	2900	5800	860	0	860

SEE FINAL QUANTITIES IN TABLE 2, SHEET 3

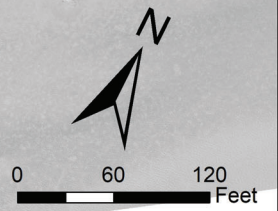
¹ High tide line: ~8' NAVD88
² Volume estimate assumes 2" minus drain rack used
³ Mid point between the elevation of MTL and MHW (4.6' NAVD88)



FRAME 2: CELL 7

Additional Design Elements

- Gravel Toe Berm
- Gravel Veneer (lag armor)



1	1/25/2022	Updated per as-built conditions	DAG
---	-----------	---------------------------------	-----

REVISION BLOCK	NUMBER	DATE	DESCRIPTION	BY

DRAWN BY:	DAG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	1:720

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

Submitted: _____
 Principal Civil Engineer
 APPROVED BY: _____
 PERMITTEE: _____ DATE: _____

FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

CELL 6 & 7 ADDITIONAL SHORELINE TREATMENTS (AS-BUILT)

DATE: 1/25/2022
 SHEET: 8
 PROJECT NO. 3021

Map Legend

Design Treatments

Treatment Approach	Scarp Grading	LWD Placement	Mud Placement	Brush Fence	Veneer (lower)
No Color Approach A			NO TREATMENT		
Approach B					
Approach C					
Approach D					
Approach E					
Approach F					
Approach G					
Approach H					
Approach I					

Field Added Treatments

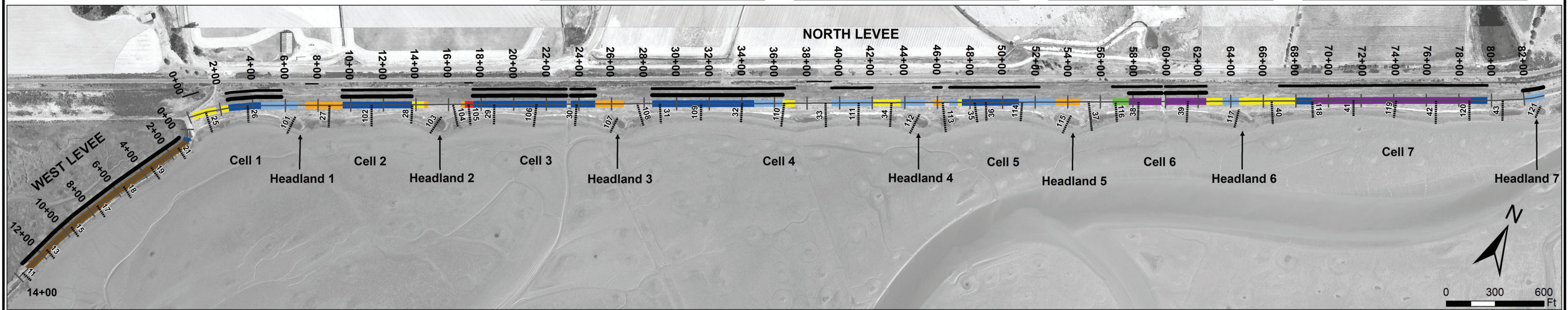
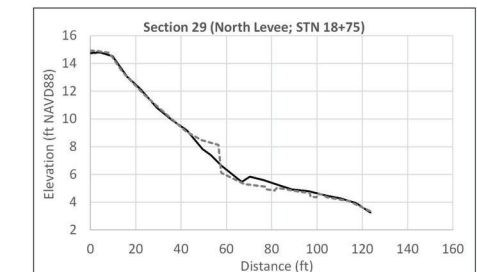
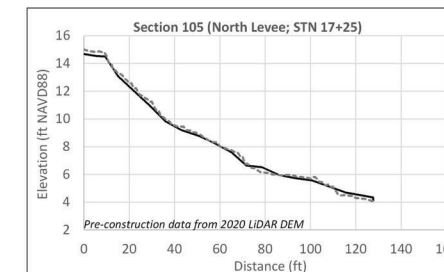
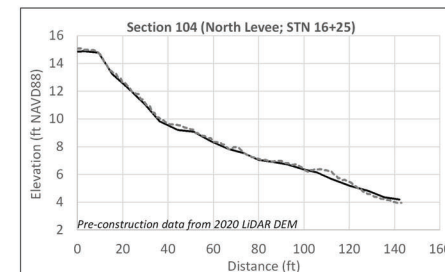
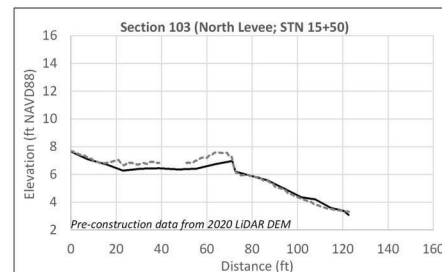
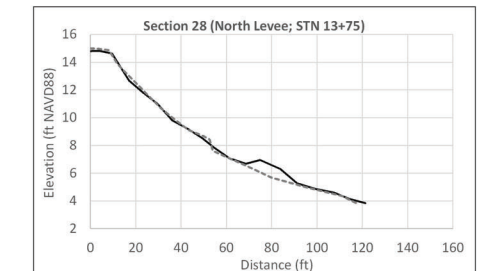
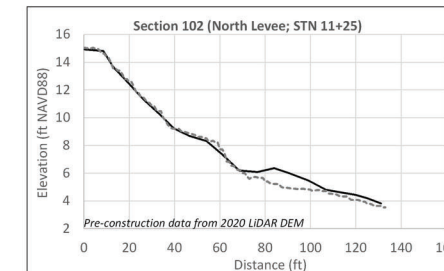
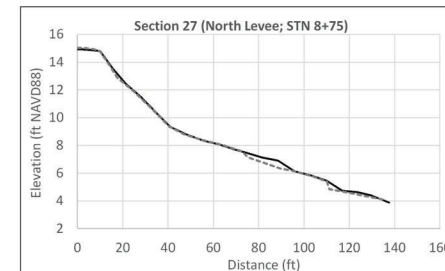
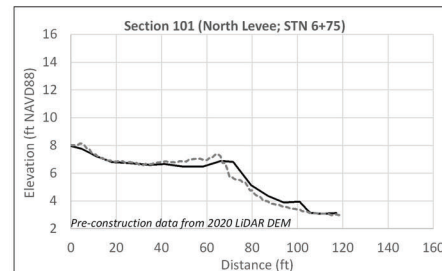
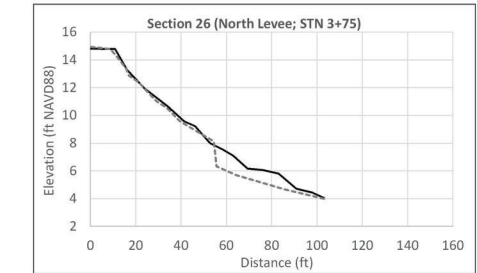
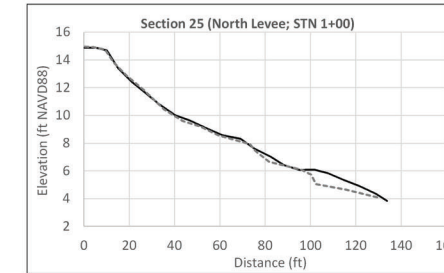
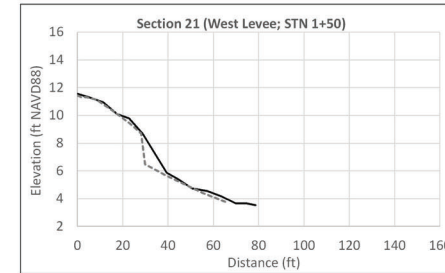
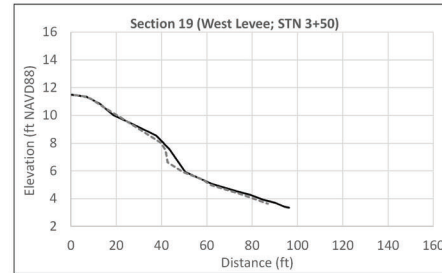
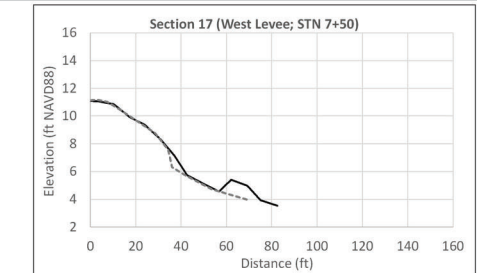
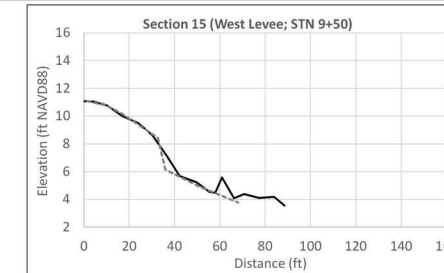
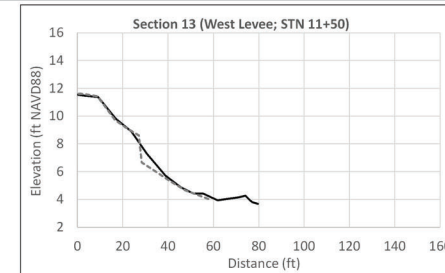
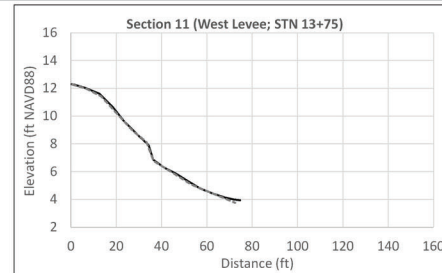
- Mud Placement (above MHHW)
- Gravel Toe Berm (above MHHW)
- Gravel Veneer (above MHHW)
- Topographic Sections

Topographic Section Plot Legend

- Pre-Construction Topography
- Post-Construction Topography

Notes

- Post-construction (as-built) topography surveyed by Dixon Marine Services between November 5 and 26, 2021 using RTK GPS.
- Pre-construction topography is from the following sources:
 - Sections 11 - 47: May 6, 2021 topographic survey performed by Daniel Harris of SFSU using RTK GPS.
 - Sections 101 - 121: June 2020 LiDAR digital elevation model (DEM) of Sears Pt Restoration Project site by Quantum Spatial.
- Topographic survey data are held to the benchmark network shown on Sheet 2
- Considerations for 2020 LiDAR data:
 - Data gaps along sections are due to the presence of standing water at the time of LiDAR acquisition.
 - Vegetation interference may be present in some locations, resulting in artificially high elevations.



NUMBER	DATE	DESCRIPTION	BY

DRAWN BY:	DAG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	1:3,600

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

Submitted: _____
 Principal Civil Engineer
 APPROVED BY: _____
 PERMITTEE: _____ DATE: _____

FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

AS-BUILT TOPOGRAPHIC SECTIONS (1)

DATE: 1/25/2022
 SHEET: 9
 PROJECT NO. 3021

Map Legend

Design Treatments

Treatment Approach	Scarp Grading	LWD Placement	Mud Placement	Brush Fence	Veneer (lower)
No Color Approach A			NO TREATMENT		
Approach B					
Approach C					
Approach D					
Approach E					
Approach F					
Approach G					
Approach H					
Approach I					

Field Added Treatments

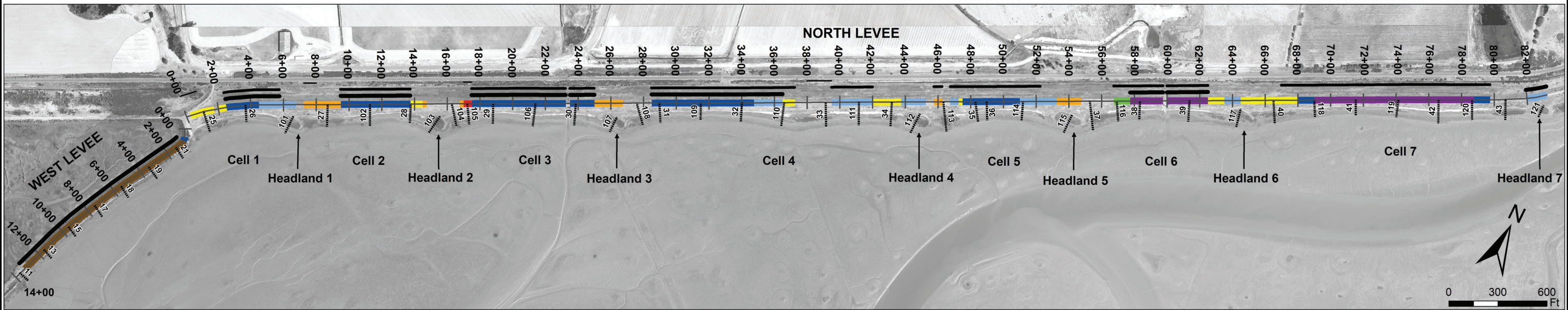
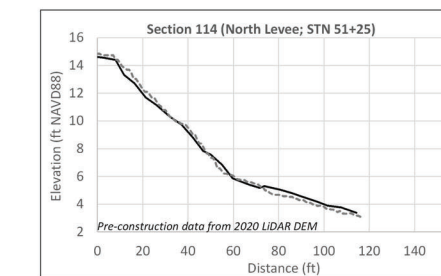
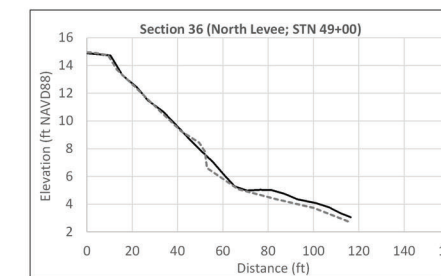
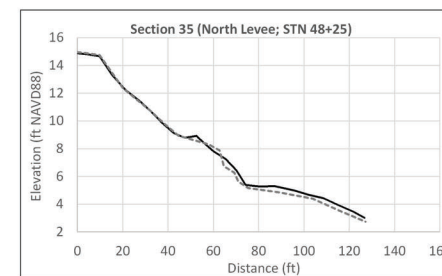
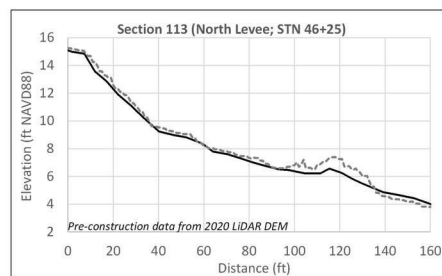
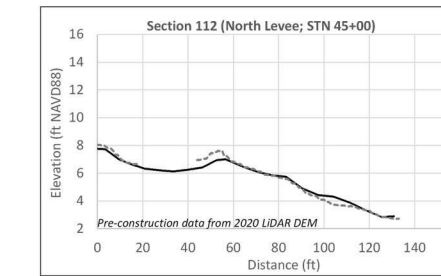
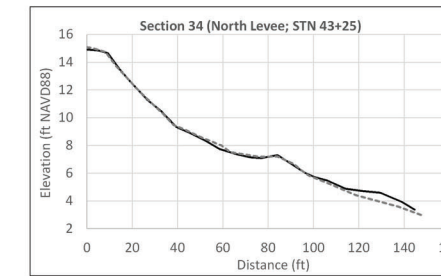
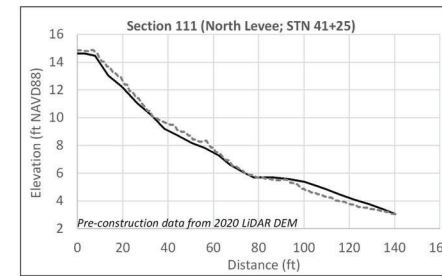
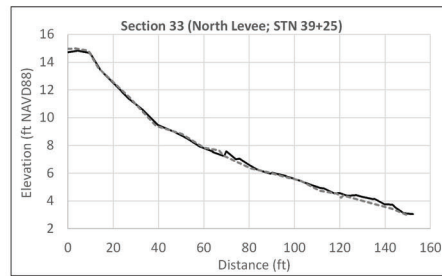
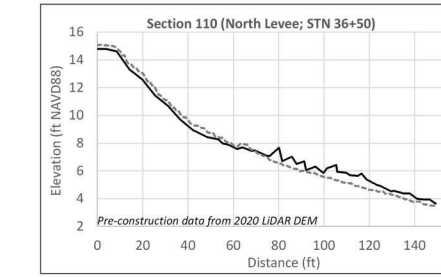
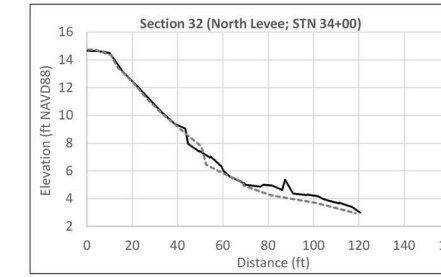
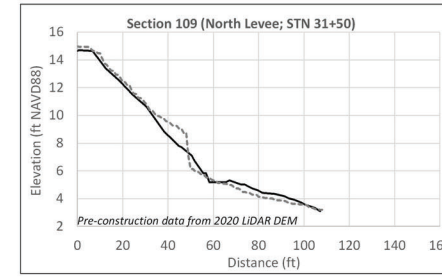
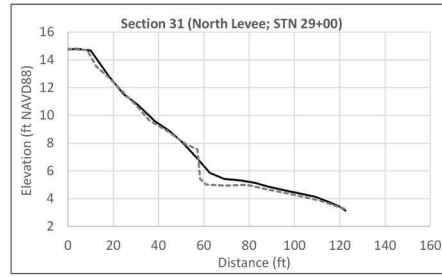
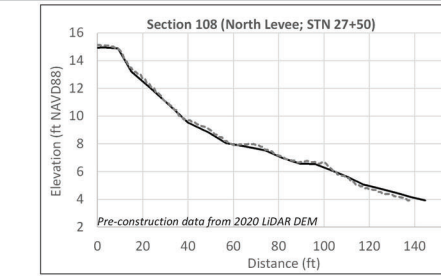
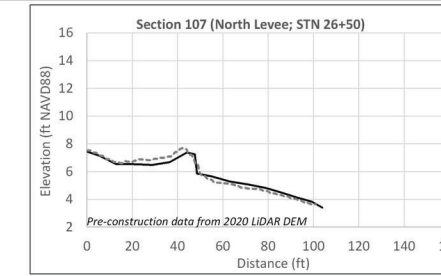
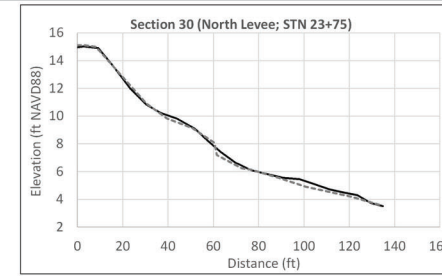
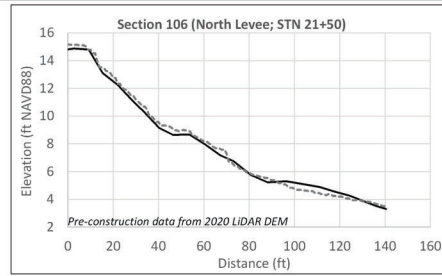
- Mud Placement (above MHHW)
- Gravel Toe Berm (above MHHW)
- Gravel Veneer (above MHHW)
- Topographic Sections

Topographic Section Plot Legend

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NUMBER	DATE	DESCRIPTION	BY

DRAWN BY:	DAG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	1:3,600

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

Submitted: _____
 Principal Civil Engineer

APPROVED BY: _____
 DATE: _____

FarWest RESTORATION ENGINEERING
 Peter Baye, Ph.D.

AS-BUILT TOPOGRAPHIC SECTIONS (2)

DATE: 1/26/2022
 SHEET: 10
 PROJECT NO. 3021

Map Legend

Design Treatments

Treatment Approach	Scarp Grading	LWD Placement	Mud Placement	Brush Fence	Veneer (lower)
No Color Approach A			NO TREATMENT		
Approach B	█				
Approach C	█				
Approach D	█				
Approach E	█				
Approach F	█				
Approach G	█				
Approach H	█				
Approach I	█				

Field Added Treatments

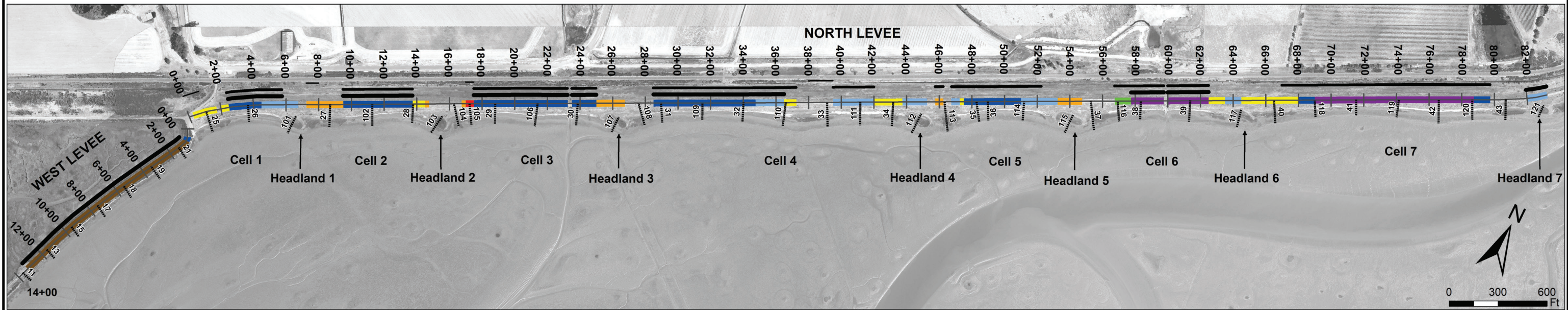
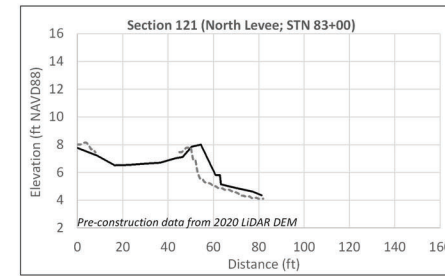
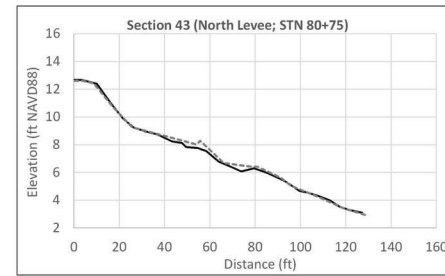
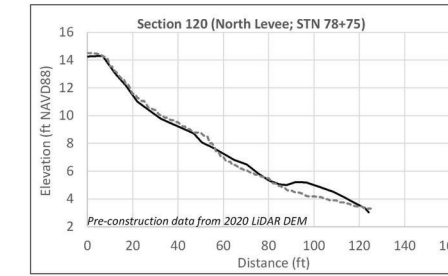
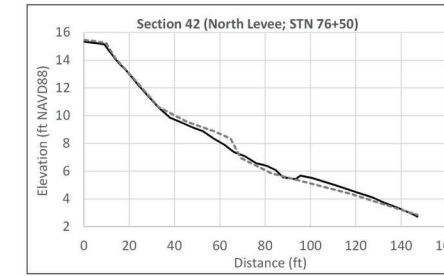
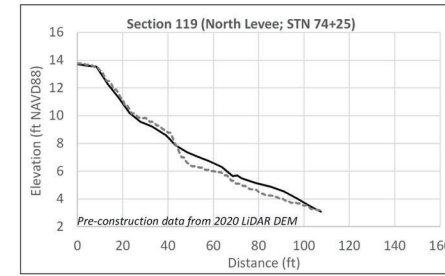
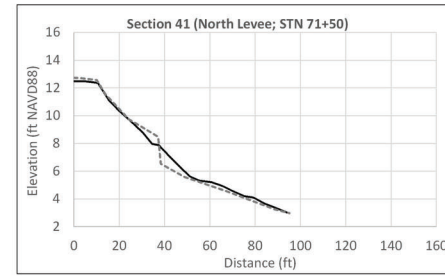
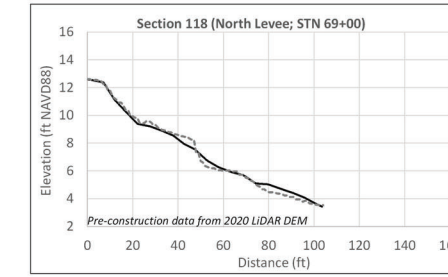
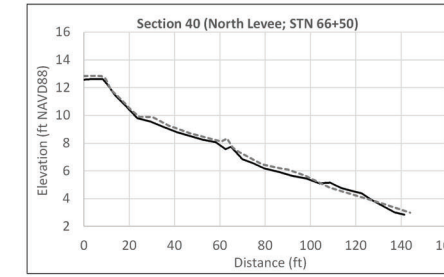
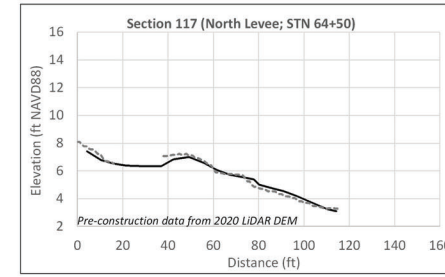
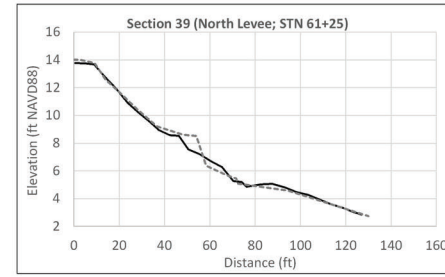
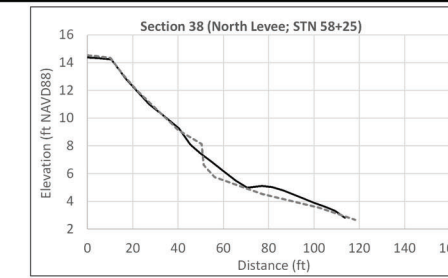
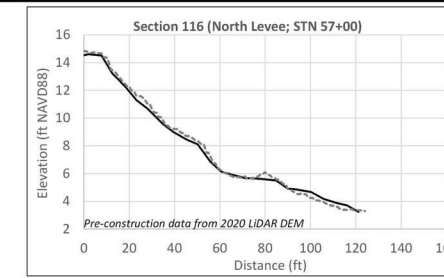
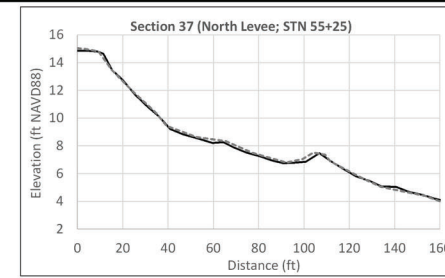
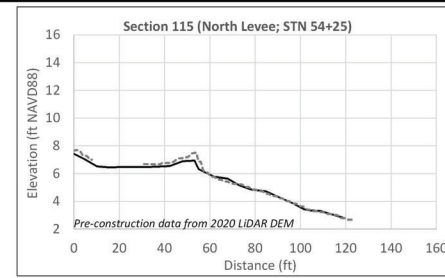
- Mud Placement (above MHHW)
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NUMBER	DATE	DESCRIPTION	BY

DRAWN BY:	DAG
DESIGNED BY:	PRB, RDL, SWS, DAG
CHECKED BY:	RDL
SCALE:	1:3,600

Levee Erosion Adaptive Management Project
Sears Point Tidal Marsh Restoration Project
 Sonoma County, CA

Submitted: _____
 Principal Civil Engineer

APPROVED BY: _____
 DATE: _____

SONOMA LAND TRUST

SIEGEL ENVIRONMENTAL

FarWest RESTORATION ENGINEERING

Peter Baye, Ph.D.

AS-BUILT TOPOGRAPHIC SECTIONS (3)

DATE: 1/26/2022
 SHEET: 11
 PROJECT NO. 3021