HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT

P.O. BOX 1030
Eureka, California 95502
phone (707) 443-0801
fax (707) 443-0800

PERMIT APPLICATION

Date Filed 4/22/2025

General Information	For District Use
1.) Name, Address, phone # and email of Developer, Project Sponsor and Legal Owner US Fish and Wildlife Service Humboldt Bay `National Wildlife Refuge Complex 1020 Ranch Road, Loleta, CA 95551 Jason Storlie (jason.storlie@fws.gov) ph. 707.733.5406 Ext. 4 Cashell Villa (cashell.villa@fws.gov) ph. 707.733.5406 Ext. 3 Agent for Owner: Water, Civil, and Environmental Inc. Ryan A Eldridge (reldridge@wce-inc.com) ph. 208.401.5800	A. Application No. 2025-03 Application Type: Franchise ☐ Permit ☒ Lease ☐
2.) Address of Project and Assessor's block, lot and Parcel Number Humboldt Bay National Wildlife Refuge Complex 1020 Ranch Road, Loleta, CA 95551 Parcel Number: 308-191-008-000	B. Date Received by Harbor District 04/22/2025
	C. Date Accepted for filing by Commission
3.) Contact person Name, Address, phone # Jason Storlie (jason.storlie@fws.gov) ph. 707.733.5406 Ext. 4 Cashell Villa (cashell.villa@fws.gov) ph. 707.733.5406 Ext. 3 Agent for Owner: Water, Civil, and Environmental Inc. Ryan A Eldridge (reldridge@wce-inc.com) ph. 208.401.5800	D. Date of Public Notice
	E. Date of Environmental Compliance
	F. Date of Public Notice
4.) Attach list of names and addresses of all adjoining property owners	G. Date of Public Hearings
5.) List and describe any other related Project Permits & Other Public Approvals required, including those required by City, Regional, State & Federal Agencies. Joint Permit Application - USACE Coastal Commission - Development Permit Water Quality Control Board NOAA and USFWS Consultation California Department of Fish and Game	H. Date of Commission Action Approval: _____ Conditional _____ Disapproval _____
	I. Expiration Date
6.) Existing City/County Zoning AE-60/ W,D,F,R,T;NR/W	Describe in detail the proposed project: See Attached Project Description
7.) Proposed Site Use (Project Title) Long Pond Tidal Enhancement Project	

PRE-PROJECT EELGRASS CHECKLIST

Please complete the Eelgrass Pre-project Checklist below. Note that the checklist questions relate to the Area of Potential Effect (APE) associated with your project, which incorporates a surrounding buffer inclusive of the limits of potential construction and/or maintenance-related activities that could affect eelgrass habitat. Provide a copy of the completed questionnaire along with your permit application and a map depicting the proposed project location, potential eelgrass depth range-10 to +4 feet, and benchmark eelgrass distribution in the vicinity of the proposed project. Maps should be of an appropriate scale to clearly depict the preliminary/proposed APE boundary in relation to both existing and potential eelgrass resources as provided in the Humboldt Bay Eelgrass Comprehensive Management Plan and associated webpage (humboldtbay.org/eelgrass-management-plan). Here you'll find information and links including eelgrass information for permit applicants, a baseline eelgrass distribution map, and the Humboldt Bay Eelgrass Comprehensive Management Plan. Contact the Harbor District office with questions (443-0801).

For New Projects:

		YES	NO
a)	Is the project located within 100 feet of previously mapped (known) eelgrass habitat?		
b)	Will any construction or new operational traffic occur within the vicinity of existing eelgrass?		
c)	Is any portion of the project located in an area with depths ranging from -10 to +4 feet?		
d)	Does the project result in new cover, shading or other form of light reduction of open water areas ranging in depth from -10 to +4 feet?		
e)	Is the project anticipated to affect wind or tidal circulation patterns within the bay?		
f)	Could the project affect ambient water temperature or clarity or result in new effluent (including stormwater) discharge point?		
g)	Does the project result in any placement of fill, including shoreline armor?		
h)	Is the project anticipated to lead to an increase in boat traffic that could affect nearby eelgrass habitat through grounding, prop scarring, wake, or shading impacts?		

For Maintenance/Repair Projects and Construction Activities:

		YES	NO
i)	Is project construction likely to increase turbidity? To what extent and for what duration?		X
j)	Will construction require the use of a barge or other vessel that may temporarily impact the bay floor (e.g. spud poles, anchoring, prop scarring, etc.) within known eelgrass habitat or within depths ranging from -10 to +4 feet?		X
k)	Will construction require the use of turbidity curtains in proximity to eelgrass habitat?		X
l)	Will project construction result in temporary shading from moored/anchored working vessel(s)?		X

If you responded yes to any of the questions above, your project may have the potential to affect eelgrass habitat and you'll need to conduct a preliminary eelgrass survey. Please refer to the District's Eelgrass Management Plan webpage for further guidance and a list of local agency contacts should you have additional questions.

See additional sheets for responses to Items 8 - 38

Answer all questions completely on a separate page. If the question does not apply to your project, so indicate by marking N.A. Contact Harbor District Office with questions.

PROJECT DESCRIPTION

8. Site Size
9. Square Footage
10. Number of floors of construction
11. Amount of off-street parking provided
12. Attach plans
13. Proposed scheduling
14. Associated projects
15. Anticipated incremental development
16. If residential, include the number of units, schedule of unit sizes, range of sale prices or rents, and type of household size expected.
17. If commercial, indicate the type, whether neighborhood, city or regionally oriented, square footage of sales area, and loading facilities
18. If industrial, indicate type, estimated per shift employment & loading facilities.
19. If institutional, indicate the major function, estimated per shift employment, occupancy, loading facilities, and community benefits derived from the project.
20. If the project involves a variance, conditional use or recognizing application, state this and indicate clearly why the application is required.

Are the following items applicable to the project or its effects? Answer yes or no. Discuss all items answered yes.

21. Change in existing features of any bays, tidelands, beaches, lakes or hills, or substantial alteration of ground contours.

22. Change in scenic views or vistas from existing residential areas or public lands or roads.

23. Change in pattern, scale or character of general area of project.

24. Significant amounts of solid waste or litter.

25. Change in dust, ash, smoke, fumes or odors in vicinity.

26. Change in ocean, bay, lake, stream or ground water quality or quantity, or alteration of existing drainage patterns.

27. Substantial change in existing noise or vibration levels in the vicinity.
    A. During Construction
    B. During Project Utilization

28. Site on filled land or on slope of 10% or more.

See additional sheets for responses to Items 8 - 38

29. Use of disposal or potentially hazardous materials, such as toxic substances, flammable or explosives.

30. Substantial change in municipal services demand (police, fire, water, sewage, etc.)

31. Substantially increase fossil fuel consumption (electricity, oil, natural gas, etc.).

32. Relationship to larger project or series of projects

ENVIRONMENTAL SETTING:

33. Describe the project site as it exists before the project including information on topography, soil stability, plants and animals, and any cultural, historical, or scenic aspects. Describe any existing structures on the site and the use of the structures. Attach photographs of the site. Photos will be accepted.

34. Describe the surrounding properties, including information on plants and animals and any cultural, historical, or scenic aspects. Indicate the type of land use (residential, commercial, etc.) intensity of land use (one-family, apartment houses, shops, department stores, etc.) and the scale of development (height, frontage, set-back, rear yard, etc.) Attach photographs of the vicinity. Photos accepted.

---------- Questions 35; and 36 MUST BE ANSWERED! ----------

35. How will the proposed use or activity promote the public health, safety, comfort, and convenience?

36. How is the requested grant, permit, franchise, lease, right, or privilege required by the public convenience and necessity?

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37. Financial statement:
    A. Estimated project cost.
    B. How will the project be financed?

38. Describe fully directions necessary to arrive at project site.

39. The Applicant agrees to as a condition of the permit being issued, to indemnify and hold harmless the Humboldt Bay, Harbor Recreation and Conservation District from any and all claims, demands, or liabilities for attorneys' fees obtained from or against demands for attorney's fees, costs of suit, and costs of administrative records made against District by any and all third parties as a result of third party environmental actions against District arising out of the subject matter of this application and permit, including, but not limited to, attorney's fees, costs of suit, and costs of administrative records obtained by or awarded to third parties pursuant to the California Code of Civil Procedure Section 1021.5 or any other applicable local, state, or federal laws, whether such attorneys' fees, costs of suit, and costs of administrative records are direct or indirect, or incurred in the compromise, attempted compromise, trial, appeal, or arbitration of claims for attorneys' fees and costs of administrative records in connection with the subject matter of this application and permit

NOTE

The District hereby advises the Applicant that, under California Public Resources Code (PRC) Section 21089, the District when a lead agency under the California Environmental Quality Act (CEQA) of 1970, as amended, pertaining to an Environmental Impact Report (EIR) or a Negative Declaration (MND/ND) may charge and collect from the Applicant a reasonable fee in order to recover the estimated costs incurred by the District in preparing an EIR or MND/ND for the project and the procedures necessary for PRC compliance on the Applicants project.

In the event your project contains an analysis of issues pertaining to CEQA, for which District staff is not competent to independently review, or District requires the same in preparation of an EIR or MND/ND for the project, the District may retain a reviewing consultant to evaluate the content of the Administrative-Draft EIR and Final EIR or MND/ND with respect to these issues. The cost of such reviewing consultant services shall be borne by the Applicant.

CERTIFICATION: I hereby certify that the statements furnished above and in the attached exhibits present the information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. And I agree to indemnify the District as described in part 39 of this application.

Dated: 4/22/2025

Ryan A. Eldridge

For Water, Civil, and Environmental Inc.

Agent for USFWS

PROJECT DESCRIPTION

Please see the attached Detailed Project Description for additional information, drawings, and photos.

Please note that the project will be conducted in two phases.

Phase 1 will involve the replacement and upgrade of the existing tide gate structure at the mouth of Long Pond which is failing due to subsurface erosion.

Phase 2 will encompass habitat improvements to Long Pond including returning upland areas to wetland habitat, restoring tidal hydrology, and the placement of large woody debris around the pond to provide structure and security for aquatic species.

The completed project will restore intertidal salt and brackish marsh to benefit tidewater goby and other aquatic species.

8. Site Size

- Phase 1:
    i. Including lay down and staging area during construction the site size is 0.25 acres. The existing structure is approximately 1,500 square feet in size and the replacement structure will be dimensionally equivalent to the existing structure.
- Phase 2
    i. Habitat improvements will involve the restoration of 6.5 acres of upland habitat adjacent to Long Pond. Ground disruption activities will total 8 acres.

9. Square Footage

- Phase 1
    i. 2,332 square feet
- Phase 2
    i. 77,207 square feet of Long Pond will experience direct channelization and pond restoration efforts.

10. Number of floors of construction

- N.A.

11. Amount of off-street parking provided

- N.A.

12. Attach plans

- The plans have been attached.

13. *Proposed scheduling*
    - Phase 1
        i. June 15, 2025, to October 15, 2025, no work below the mean high water mark will occur before July 1, 2025.
    - Phase 2
        i. June 15, 2026, to October 31, 2026
        ii. June 15, 2027, to October 31, 2027

14. *Associated projects*
    - N.A.

15. *Anticipated incremental development*
    - No

16. *If residential, include the number of units, schedule of unit sizes, range of sale prices or rents, and type of household size expected.*
    - N.A.

17. *If commercial, indicate the type, whether neighborhood, city or regionally oriented, square footage of sales area, and loading facilities*
    - N.A.

18. *If industrial, indicate type, estimated per shift employment & loading facilities.*
    - N.A.

19. *If institutional, indicate the major function, estimated per shift employment, occupancy, loading facilities, and community benefits derived from the project.*
    - N.A.

20. *If the project involves a variance, conditional use or recognizing application, state this and indicate clearly why the application is required.*
    - N.A.

21. *Change in existing features of any bays, tidelands, beaches, lakes or hills, or substantial alteration of ground contours.*
    - Phase 1
        i. This phase will not alter existing features. The existing structure will be replaced with a dimensionally equivalent structure.
    - Phase 2
        i. Upland areas within Long Pond will be channelized to re-establish tidal hydrology and promote a healthy ecosystem. See attached Detailed Project Description for more information.

22. *Change in scenic views or vistas from existing residential areas or public lands or roads.*
    - No

23. *Change in pattern, scale or character of general area of project.*
    - No

24. *Significant amounts of solid waste or litter.*
    - No.

25. *Change in dust, ash, smoke, fumes or odors in vicinity.*
    - No

26. *Change in ocean, bay, lake, stream or ground water quality or quantity, or alteration of existing drainage patterns.*
    - No

27. *Substantial change in existing noise or vibration levels in the vicinity.*
    27.a During Construction
    - During construction noise and vibration will increase during work hours while construction equipment is being utilized.

    27.b During Project Utilization
    - No

28. *Site on filled land or on slope of 10% or more.*
    - No

29. *Use of disposal or potentially hazardous materials, such as toxic substances, flammable or explosives.*
    - No

30. *Substantial change in municipal services demand (police, fire, water, sewage, etc.)*
    - No

31. *Substantially increase fossil fuel consumption (electricity, oil, natural gas, etc.).*
    - No

32. *Relationship to larger project or series of projects*
    - No

33. *Describe the project site as it exists before the project including information on topography, soil stability, plants and animals, and any cultural, historical, or scenic aspects. Describe any existing structures on the site and the use of the structures. Attach photographs of the site. Photos will be accepted.*
    - The project site is part of the Humboldt Bay National Wildlife Refuge and is known as the Long Pond. The existing tide gate structure at the mouth of Long Pond is a critical water control mechanism for the refuge,

equipped with one-way gates to prevent seawater from flowing upstream during high tide. Originally constructed in 1942 and rehabilitated in 2014, the Long Pond tide gate consists of three spans of simply supported reinforced concrete slab superstructure, supported on concrete pier walls and abutments. On both sides, flared 45-degree wingwalls extend between 20 feet and 39 feet.

- Overall the site is flat with elevations that vary between -1.4 feet to 10 feet. Soils at the site consist of clayey silts that were deposited over time and plants range from saltmarsh on the bay side of the structure to brackish marsh and seasonally flooded freshwater wetlands on the Long Pond side of the structure.
- Scenic aspects of the site include the hills surrounding the site along with the views of the bay.

34. *Describe the surrounding properties, including information on plants and animals and any cultural, historical, or scenic aspects. Indicate the type of land use (residential, commercial, etc.) intensity of land use (one-family, apartment houses, shops, department stores, etc.) and the scale of development (height, frontage, set-back, rear yard, etc.) Attach photographs of the vicinity. Photos accepted.*
    - The site is located at the mouth of Long Pond which discharges in the south portion of Humboldt Bay and is located approximately 1 mile west of Highway 101. The site is located within the Humboldt Bay National Wildlife Refuge Salmon Creek Unit and is surrounded by former grazing lands to the east north and south of the site. The nearest buildings to the site are the existing FWS buildings that are located approximately 0.75 miles to the east.

35. *How will the proposed use or activity promote the public health, safety, comfort, and convenience?*
    - Phase 1
        i. The proposed project will replace a failing tide gate structure which is a critical water control mechanism for the refuge to prevent seawater from flowing upstream during high tide and which could inundate infrastructure and alter the existing site habitat.
    - Phase 2
        i. The proposed project will improve aquatic habitat within Long Pond, leading to a healthier ecosystem and enriched public experience.

36. How is the requested grant, permit, franchise, lease, right, or privilege required by the public convenience and necessity?

- The tide gate structure is a critical water control mechanism that protects the infrastructure at the refuge. Additionally, the structure is part of the extensive trail system at the refuge which allows the public to hike and interact with the various flora and fauna at the site.

37. Financial statement:

37.a. Estimated project cost.

- The project cost is approximately $2.5 million.

37.b. How will the project be financed?

- The project is Federally Funded under the FWS's budget.

38. Describe fully directions necessary to arrive at project site.

- Drive south on US Highway 101 to Exit 696 for Hookton Road towards Loleta.
- Turn right onto Eel River Drive and then turn left on Visitor Center Access Road at the entrance to Humboldt Bay National Wildlife Refuge.
- Drive to the visitor center at the Refuge. Once at the visitor center, you can request a Refuge employee to guide you to the Site or you can walk east along the Shorebird Loop Trail until you arrive at the site.

DETAILED PROJECT DESCRIPTION
DESIGN DRAWINGS AND PHOTOS

WATER, CIVIL, AND ENVIRONMENTAL INC.

To:	Agency Staff	Project:	Humboldt Bay National Wildlife Refuge Long Pond Tidal Wetland Enhancement Project
Prepared By: Reviewed By:	Gibson de Jode Ryan Eldridge, P.E.	Cc:	File
Date:	April 15, 2025	Task:	Detailed Project Description - Final

INTRODUCTION

This memorandum describes the proposed actions for the United States Fish and Wildlife Service (USFWS) Long Pond Tidal Wetland Enhancement Project ("the Project"). The Project is located within the Humboldt Bay National Wildlife Refuge, south of the city of Eureka, California (Figure 1).

This memorandum intends to introduce the Project to each jurisdictional agency and gain feedback on permitting requirements before formally submitting applications for approval. Through this introductory process, we are looking to gain constructive feedback which will reduce/shorten reviews during future correspondence.

1.1 Background

The Humboldt Bay National Wildlife Refuge is renowned for its diverse ecosystems and serves as a vital sanctuary for a wide array of migratory birds, fish, and other wildlife. The refuge's unique combination of wetlands, riparian areas, and upland habitats makes it a cornerstone in regional conservation efforts.

Long Pond, situated within the Humboldt Bay National Wildlife Refuge, has experienced ecological degradation due to its altered hydrology and siltation caused by levees built over a century ago. To address these issues and enhance wildlife habitat, the Project will reestablish channels within the pond to restore full tidal hydrology, expand hydrologic connectivity, and improve habitat for fish and wildlife. Ultimately, this will promote long-term sustainability of the salt march habitat.

Within the refuge, tide gates serve to regulate water levels on the upland side of the dikes. The existing tide gate at the mouth of Long Pond (Figure 2) is a critical water control mechanism for the refuge, equipped with one-way gates to prevent seawater from flowing upstream during high tide. Originally constructed in 1942 and rehabilitated in 2014, the Long Pond tide gate consists of three spans of simply supported reinforced concrete slab superstructure, supported on concrete pier walls and abutments. On both sides, flared 45-degree wingwalls extend between 20 feet and 39 feet.

In July of 2024, FWS staff noticed indications that the tide gate and adjacent levee needed immediate repair, as water boils could be seen along the southern portion of the structure while the gates were closed, indicating hydraulic movement behind and under the structure. On August 6, 2024, representatives from USFWS met with Ryan Eldrige from Water, Civil, and Environmental Inc., and Stephen Ryan from the United States Army Corps of Engineers, to observe the on-site conditions. On August 7, 2024, USFWS

issued a release indicating closures to portions of the refuge, including the Richard Guadagno Visitor Center, to facilitate immediate repairs of the structure.

1.2 Previous Actions

As noted above, the USFWS undertook emergency repairs at the tide gate structure to secure it while a more permanent design could be completed. These repairs include the following actions:

- July 20, 2024:
  - USFWS personnel observed that the southern concrete wingwall collapsed into Long Pond overnight.
  - A large hollow area was also identified behind the wooden retaining wall.
- July 21, 2024: An emergency repair was conducted to address the issue.
  - The inside of the levee was dug out and repacked.
  - The lower wooden retaining wall and fill behind the upper wooden retaining wall were removed.
  - A USFWS equipment operator dug out the interior portion of the embankment adjacent to the interior wingwall down to the water, where it was noted that significant portions of the fill from the lower section of the embankment were completely saturated.
  - The saturated material was removed, and the hole was refilled with clean, packable fill.
  - Additional material was added to the internal levee prism to compensate for what was used during the repair.
  - During the repair, the operator did not dig into the top of the Humboldt Bay side of the levee during the emergency repair.
- August 21, 2024
  - The section of levee that had undergone emergency repairs on July 21, 2024, was re-dug and repacked.
  - Material was added to support the north side of the wing wall due to signs of failure.
  - Operators dug halfway into the interior portion of the levee and repacked where necessary due to portions of the road collapsing.
- Week of October 14 – Emergency Repairs: Temporary Cofferdam
  - Emergency repairs began with the construction of an earthen cofferdam within Long Pond. The cofferdam was equipped with three HDPE pipes outfitted with flap gates and constructed using local fill sourced from within the refuge.
  - Culvert and flap gate installation was initiated, during which significant challenges were encountered such as leakage and soil removal issues.
  - Culvert installation was completed with approximately 1,500 cubic yards of the stockpiled soil placed within the cofferdam.
  - After the completion of the cofferdam, concerns arose regarding soil slumping and piping of water in and around the emergency repair.
- Week of November 13
  - FWS mobilized a team to address issues from the October repairs.
  - The crew removed eco blocks that were obstructing the flap gates and discovered significant issues with the pipes under the temporary levee.
  - Initial attempts to reinstall eco blocks were halted when a further inspection revealed severe damage to the disconnected pipes.

    - Emergency measures were taken to prevent catastrophic failure, including removing damaged pipes, chaining the main tide gates shut, and backfilling the area with approximately 3,500 tons of dirt to stabilize the levee (Figure 4, Figure 5).
- February 4, 2025
    - A geotechnical investigation was conducted to accurately profile the levee and subsurface material for the construction of the permanent tide gate structure. Two borings, one on each side of the existing structure, were drilled to 50 feet by a local geotechnical engineering firm, SHN Consulting.
    - The results of the geotechnical report are pending and are expected near the end of March.

1.3 Project Actions

The tidal enhancement project will be completed in two phases. The first phase, scheduled for the summer of 2025, will involve demolition and replacement of the tide gate and water control structure at the mouth of Long Pond. The second phase, conducted during the summers of 2026 and 2027, will consist of a number of habitat improvements focused on restoring the landscape adjacent to Long Pond by converting upland areas into muted-tidal wetlands through the addition of ponds, channels, and large woody debris.

During the first phase of the Project, construction activities will require staged in-water work across the width of Long Pond. The construction area will be temporarily dewatered using a 68-foot diameter sheet pile cofferdam and the existing tide gate structure will be replaced with a new sheet pile system (Figure 6). Once the modifications are completed all temporary fill will be removed from below the ordinary high-water mark (OHWM).

1.3.1 Permanent Actions

1.3.1.1 Upgraded Tide Gate System - Driven Sheet Pile with Controlled Low Strength Media Infill

Phase 1 of the Project will focus encompass the demolition and replacement of the tide gate at Long Pond. To reduce impacts on the refuge the replacement tide gate structure will be contained within the footprint of the existing structure. Statically driven sheet piles will be utilized to create a barrier with a top elevation of +12 feet NAVD88 and a maximum bottom elevation of -30 feet NAVD88, preventing channeling underneath the structure and reducing hydraulic connectivity between Humboldt Bay and Long Pond. Integrated into the sheet pile wall will be three 6-foot diameter HDPE circular pipe culverts equipped with tide gates to regulate tidal flows (Figure 7). The tide gates will be custom manufactured from marine grade aluminum and fitted with coupling sleeves to interface with the circular pipes. Angular material and/or controlled low-strength material (CLSM) will be installed within the sheet pile cavity to support the culverts and provide a mechanism to reduce settlement. The fill will be topped with a minimum of ¾ inch minus material to match the existing trail.

1.3.1.2 Driven Sheet Pile Wingwall Support

To provide support and reduce hydraulic connectivity around the structure, sheet pile wing walls will be driven at approximately 45 degrees from the sheet pile structure and connected to the newly installed tide gate sheet piles (Figure 6). The wingwalls will be driven to the same depth as the tide gate structure and the tops will be tapered down to meet the existing grade.

1.3.1.3 Scour Protection

To minimize scour and erosion on both sides of the structure, a 3-foot layer of riprap will be firmly embedded into the existing ground. On top of the riprap, a 1-foot layer of CLSM will be poured to bind the riprap together, providing additional stability and protection against erosion.

1.3.1.4 Construction Related Activities

The following describes the construction activities associated with the WCS rehabilitation and upgrade:

- Phase 1 is to commence in late spring when rains have subsided.
- Install a 68-foot diameter sheet pile cofferdam around the existing structure.
- Install dewatering equipment and erosion and sediment control measures. Complete dewatering of construction area.
- Demolish and remove all aspects of the existing tide gate structure.
- Install tide gate sheet piles following construction drawings at the desired alignment and to the desired depth.
- Install I-beam windows and trough closures. Cut and remove sheet pile material to accommodate culverts.
- Install culverts and tide gates per design specifications.
- Fill the void within the tide gate structure with CLSM and angular material to the desired depth. Top with a minimum of 4 inches deep of ¾ inch minus rock to match the existing trail.
- Install handrails and tide gate work platform.
- Remove all dewatering equipment and temporary cofferdam once construction is complete.

1.3.1.5 Habitat Improvements

During Phase 2, refuge operators will strategically implement measures to improve the pond's ecological function. The Project will create new channels (Figure 3) within silted areas to restore the full tidal hydrology that has been disrupted over time. This channelization will improve water circulation, which is crucial for distributing nutrients and oxygen throughout the pond, preventing stagnant zones, and creating suitable hydrologic conditions to support wetland species. In addition to improved water flow, restoring channels within Long Pond increases the diversity of aquatic habitats whose varied depths and flow rates provide refuge and breeding grounds for different species. The channels will also allow for additional water depth within Long Pond. During the summer dry season, the inflow of fresh water is limited due small amounts of runoff from the upstream basin. The additional channels will provide cooler water habitat for the various species within Long Pond. To enhance the changeover of water during these dryer months, the manually operated top-hinged tide gate will be opened allowing tidal water into Long Pond. This will also allow the average water depth within Long Pond to increase and remain around the mean tidal water depth each day.

To provide additional habitat, shade, and support for the local ecosystem, large woody debris will be placed throughout the pond. These structures will include both large stumps and logs that are sourced from the refuge and will enhance habitat complexity by providing cover for fish, offering perching locations for birds, and contributing to nutrient cycling and sediment stabilization. These actions, in conjunction with other restoration efforts, will enhance the pond's overall ecological functions and create a more resilient ecosystem.

1.3.3 Temporary Dredge and Fill

1.3.3.1 Sheet Pile Cofferdam

To perform work on the Long Pond tide gate, a temporary cofferdam will need to be constructed using interlocking sheet piles. The 68-foot diameter cofferdam will be constructed around the existing structure. This will result in approximately 72 cubic yards of fill within Long Pond.

1.3.3.2 Construction Access and Staging Area

Construction access for the Project will be along Shorebird Loop Trail. There will be no new construction access roads required for the Project. Possible construction staging areas exist in previously disturbed areas on the southeast and northwest sides of the tide gate. No vegetation clearing is proposed for the construction access and staging areas. The possible staging areas have a combined area of approximately 8000 square feet. Neither are located within the Waters of the United States or wetlands. Where appropriate, Best Management Practices will be utilized in construction access and staging areas to reduce erosion and capture surface runoff.

1.3.4 Waters of the U.S. and Wetlands Impact Summary

The tables below summarize the permanent and temporary impacts of the Project to Waters of the U.S.

Table 1
Waters of the U.S. Temporary Impacts

Feature	Area (Square feet)	Dredge (Cubic yards)	Fill (Cubic yards)	Fill Type
Temporary Impacts				
Phase 1 - Cofferdam				
Cofferdam	322	-	72	Sheet Pile Cofferdam
TOTAL	322	-	72	-

Table 2
Waters of the U.S. Permanent Impacts

Feature	Area (Square feet)	Dredge (Cubic yards)	Fill (Cubic yards)	Fill Type
Permanent Impacts				
Phase 1				
Concrete Tide Gate Structure	250	60	-	
Concrete Wing Walls	60	15	-	
Concrete Slabs	1000	28	-	
Sheet Pile Tide Gate Structure	322	-	60	Parallel Sheet Piles Filled With Concrete
Sheet Pile Wing Walls	83	-	16	Sheet Pile
Riprap Apron	617	-	69	Riprap and CLSM
Phase 1 Subtotal	2332	103	145	
Phase 2				
Channel Improvements	77207	4500	-	
Phase 2 Subtotal	77207	4500	-	
TOTAL	79539	4603	145	-

The tables above show a total of 79,539square feet and 4603 cubic yards of permanent impacts. However, the significant majority of these impacts are related to the new channelization and the removal of the existing structure.

1.4 Anticipated Construction Schedule

Phase 1 construction will occur during the summer and early fall of 2025 with mobilization occurring on approximately June 15, 2025, and completion of the Project on or about October 15, 2025. Phase 2 operations will be conducted between July and October of 2026 and 2027.

1.5 Work Windows

Currently, the tide gate structure is filled with soil and hydraulically cut off from Humboldt Bay. The Fish and Wildlife Service has minimized freshwater flowing into Long Pond by using the various water control structures throughout the Refuge.

As described above it is anticipated that mobilization will occur around June 15, 2025. No work below the mean high-water mark on the bay side of the structure will occur before July 1, 2025 with any work below the mean high-water mark being completed by October 15, 2025.

1.6 Permitting Contacts

USFWS (Applicant)

- Primary Contact:: Jason Storlie (Deputy Refuge Manager): (707) 733-5406 ext. 4 / Jason_storlie@fws.gov
- Secondary Contact: Cashell Villa (Project Manager): (707) 733-5406 ext. 3 / cashell_villa@fws.gov

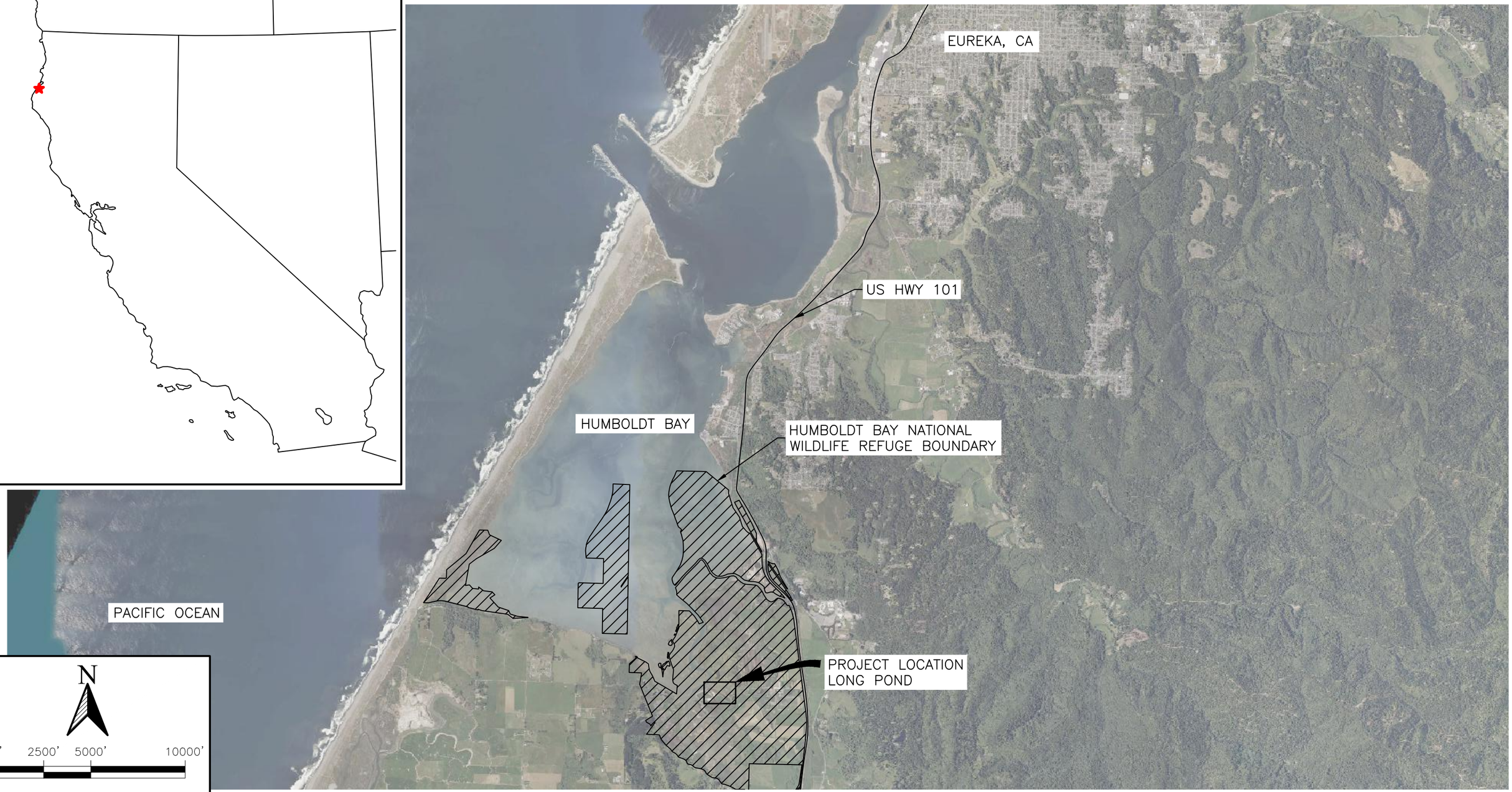
Authorized Agent

- Ryan Eldridge (Project Engineer): (208) 319-9744 ext. 201 / reldridge@wce-inc.com

2.0 CONCLUSION

We are requesting a review of your agency permitting process required in order for USFWS to obtain approval for this Project once permits and applications are completed.

FIGURES



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BOISE, IDAHO 83703
(208) 319-9744

PREPARED FOR:

U.S. FISH AND WILDLIFE SERVICE
HUMBOLDT BAY NATIONAL WILDLIFE REFUGE

FIGURE 1
REGIONAL MAP
LONG POND TIDAL WETLAND ENHANCEMENT PROJECT

PRELIMINARY NOT FOR CONSTRUCTION

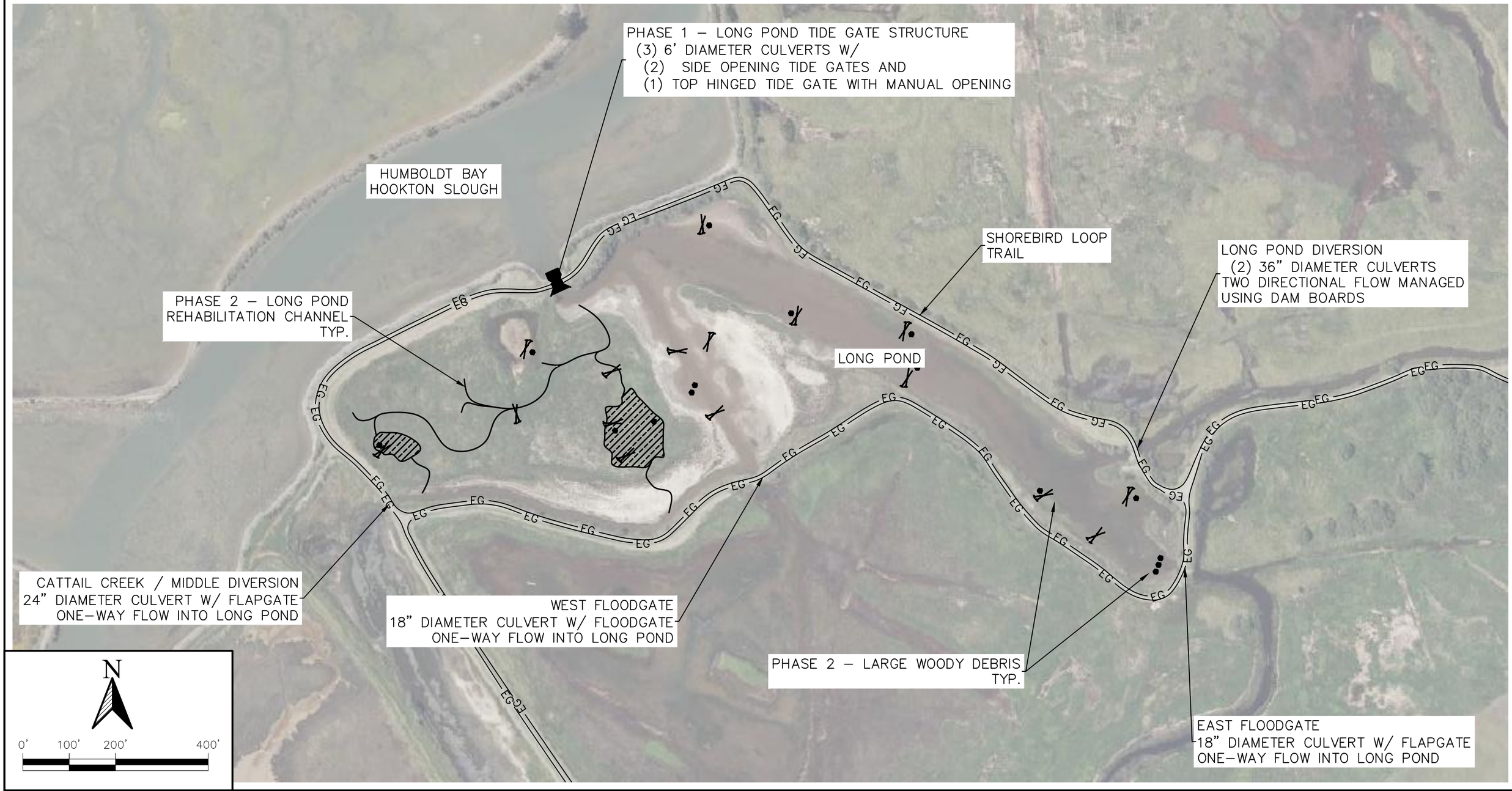

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FIGURE 2
SITE MAP
LONG POND TIDAL WETLAND ENHANCEMENT PROJECT

PRELIMINARY NOT FOR CONSTRUCTION

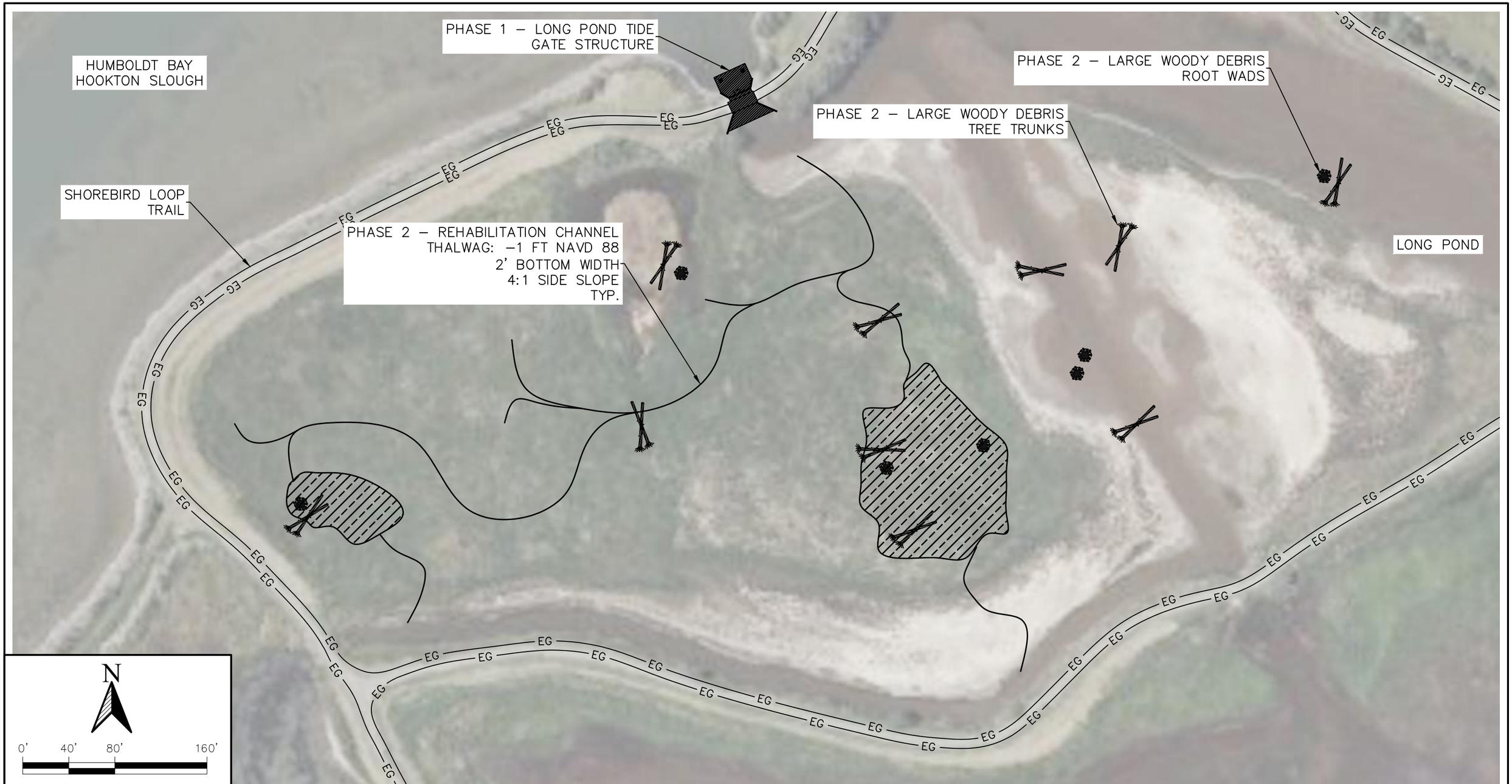

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FIGURE 3
SITE MAP ENLARGED PLAN VIEW
LONG POND TIDAL WETLAND ENHANCEMENT PROJECT

PRELIMINARY NOT FOR CONSTRUCTION

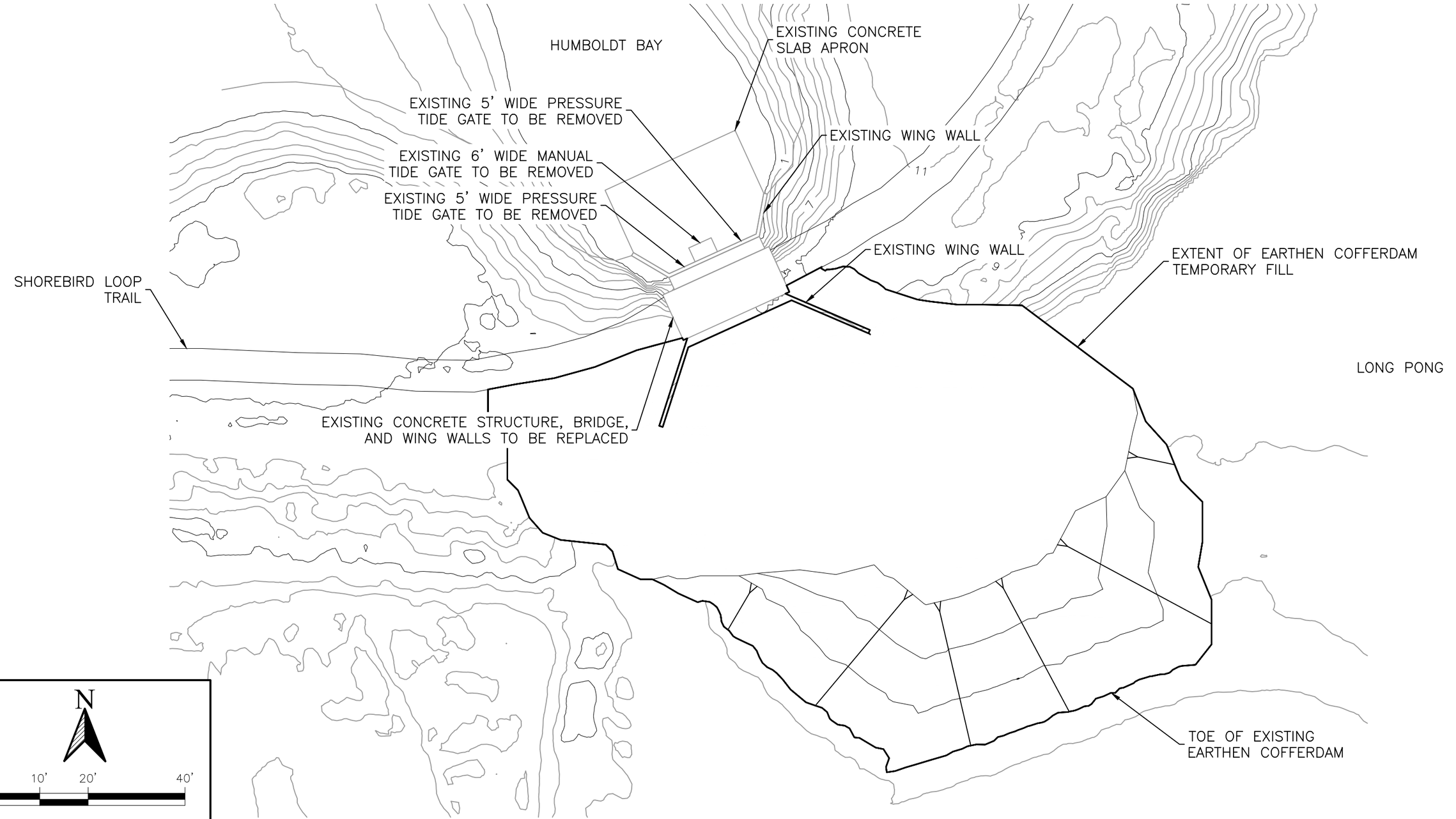

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FIGURE 4
SITE MAP – EXISTING CONDITIONS
LONG POND TIDAL WETLAND ENHANCEMENT PROJECT

PRELIMINARY NOT FOR CONSTRUCTION

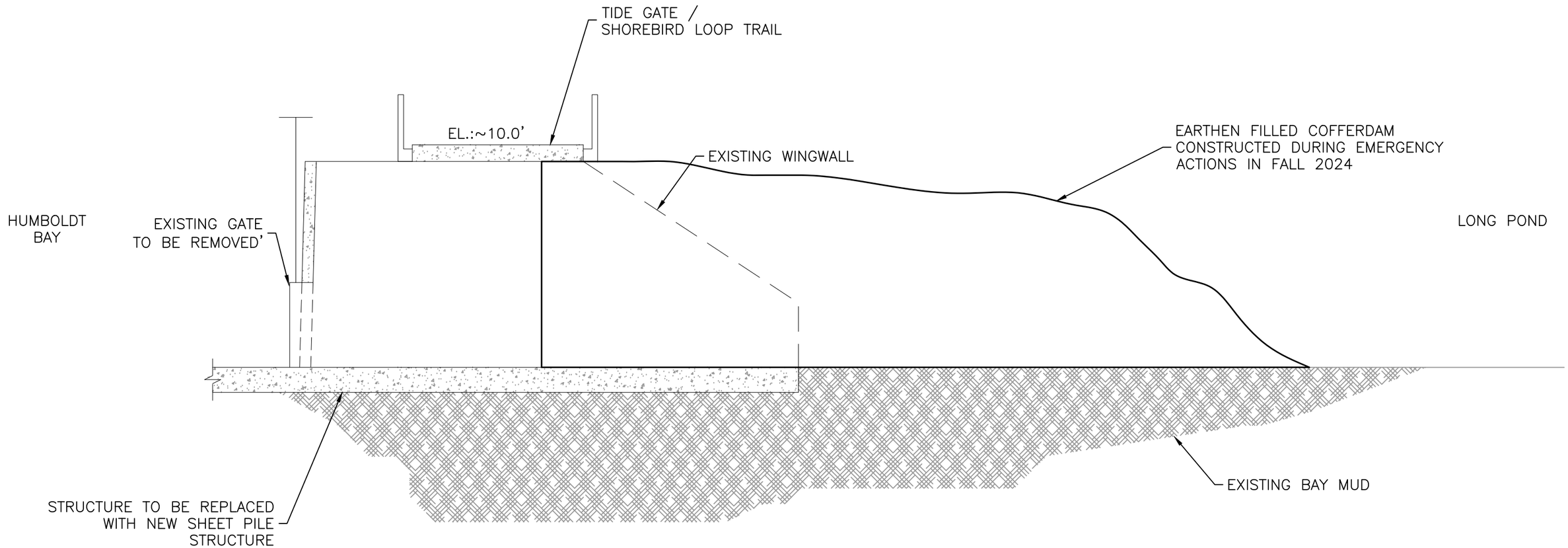

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FIGURE 5
EARTHEN COFFERDAM PROFILE – EXISTING CONDITIONS
LONG POND TIDAL WETLAND ENHANCEMENT PROJECT

PRELIMINARY NOT FOR CONSTRUCTION

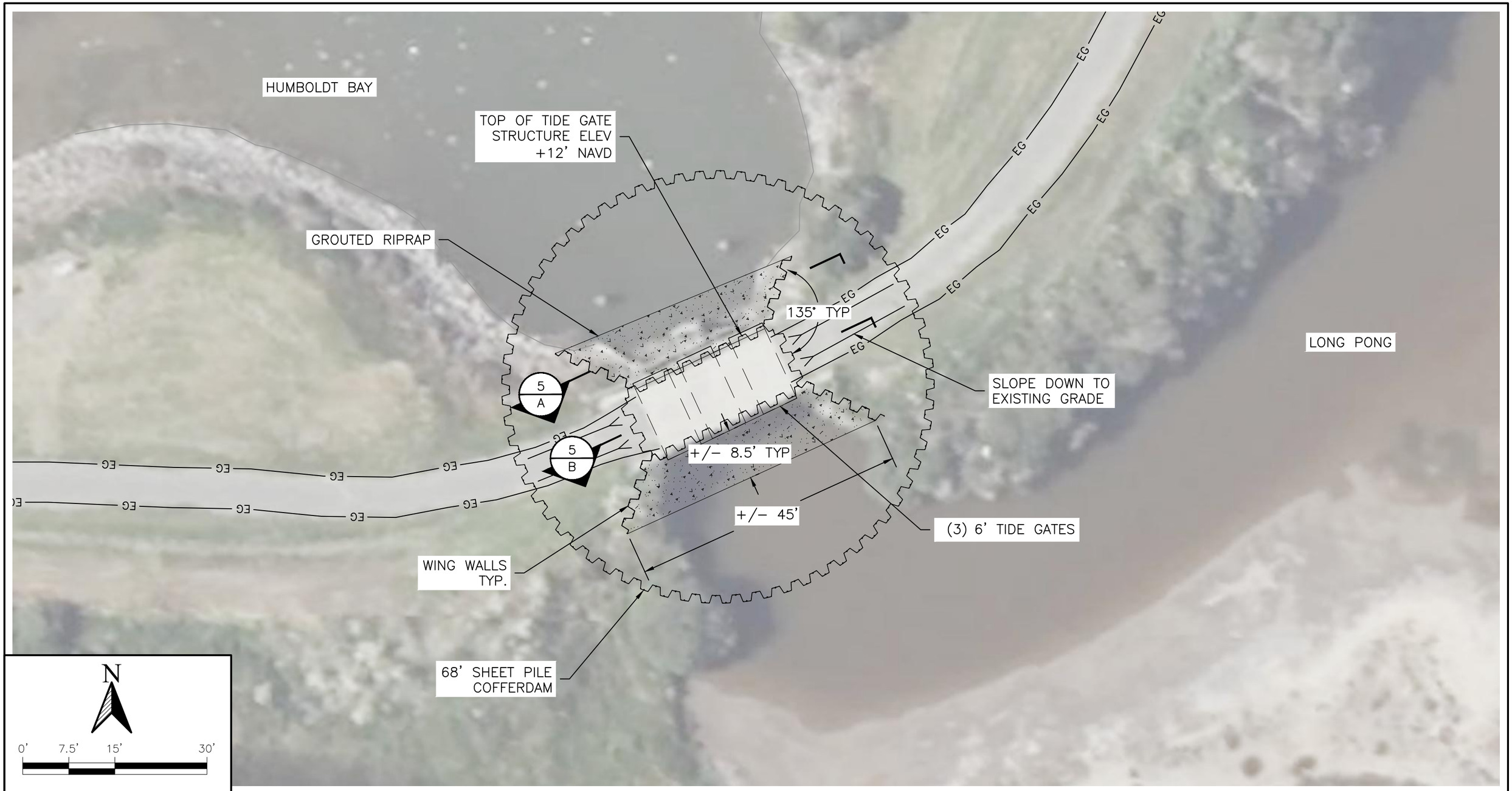

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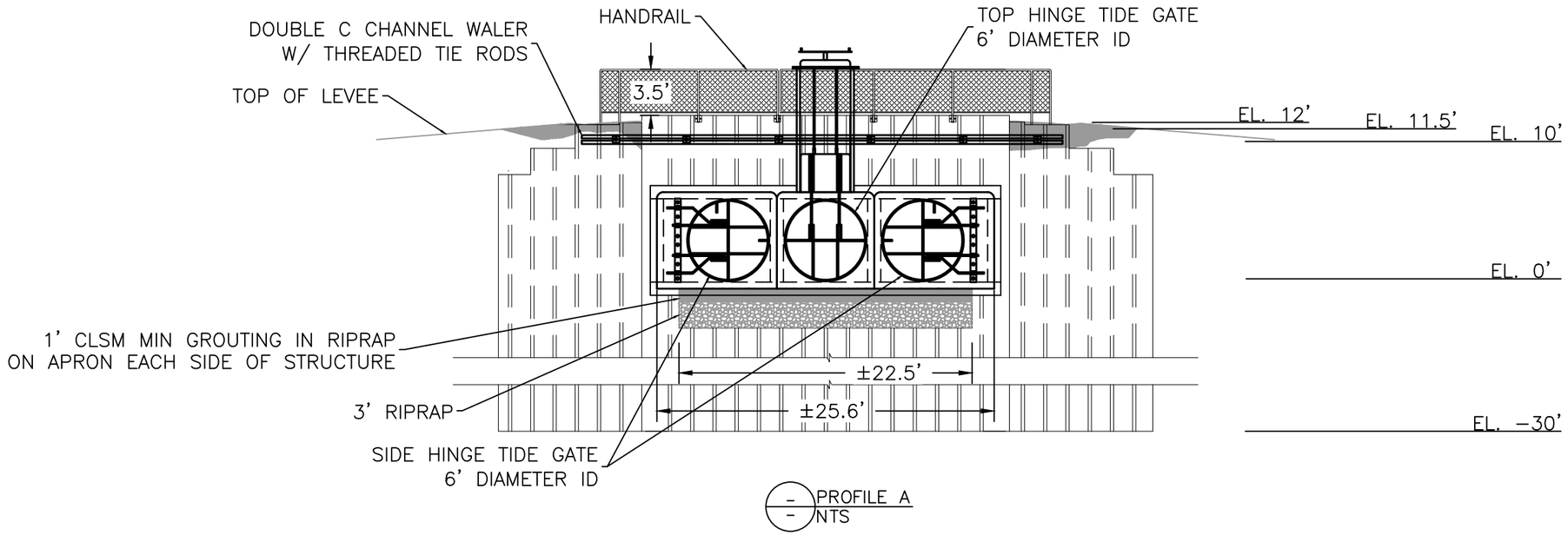
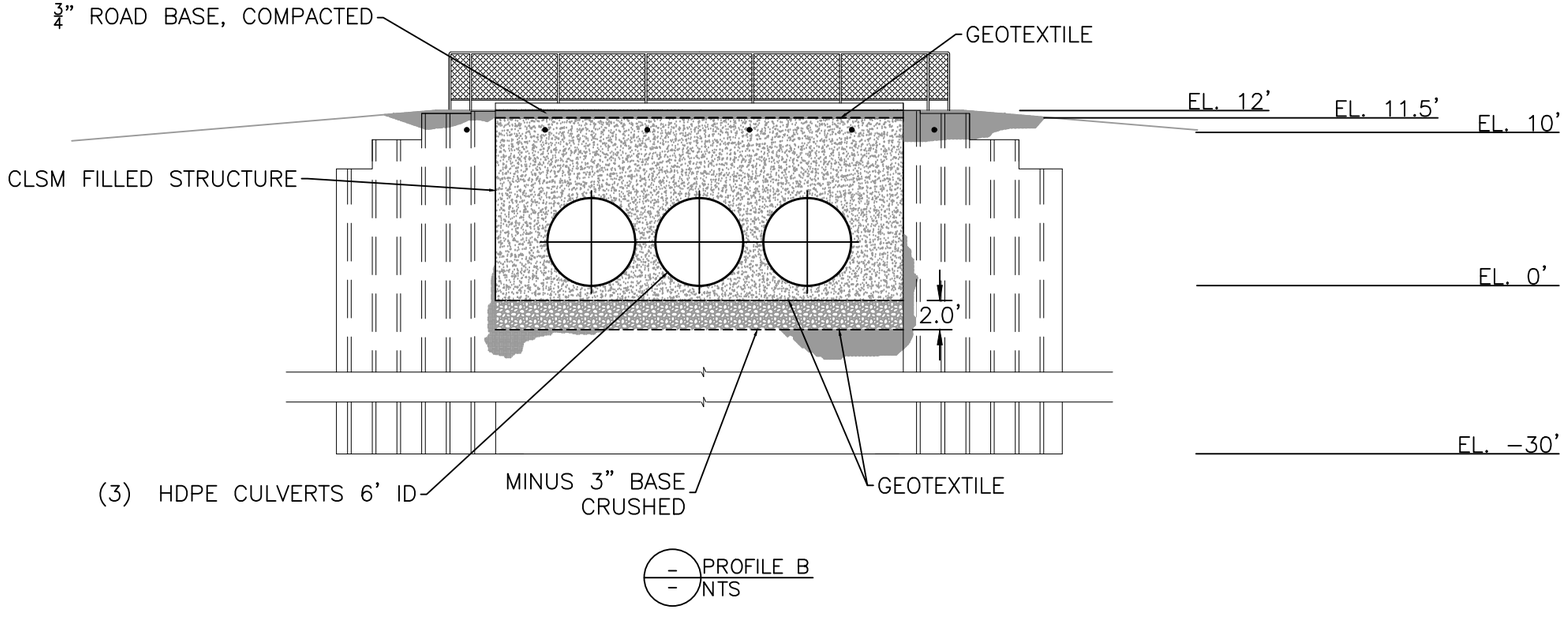
FIGURE 6
PHASE 1 – TIDE GATE REPLACEMENT SITE MAP
LONG POND TIDAL WETLAND ENHANCEMENT PROJECT

PRELIMINARY NOT FOR CONSTRUCTION



PROFILE A
NTS



PROFILE B
NTS

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FIGURE 7
PHASE 1 – TIDE GATE PROFILE
LONG POND TIDAL WETLAND ENHANCEMENT PROJECT

PRELIMINARY NOT FOR CONSTRUCTION

PHOTOS

PRE-CONSTRUCTION PHOTOS

Photo 1: South wingwall, timber retaining wall, and evidence of water seepage

Photo 2: South wingwall

Photo 3: Tide gate, Humboldt Bay


Photo 4: Further damage to South wingwall