

February 7, 2023

Desalination – A Sustainable Solution

Port of Corpus Christi Authority

Joint Evaluation Meeting

Presented by



PORT CORPUS CHRISTI®

Presentation Overview

- **Team Introductions**
- **Meeting Objectives**
- **Project Overview**
- **Overview of Permitting Efforts**
- **Review of Facility Components**
- **Questions**

Introduction of Port Team

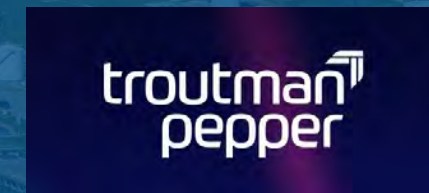
Harrison McNeil
Supervisor of
Environmental Permitting

Yvonne Dives-Gomez
Environmental Permitting
Specialist

Sarah Garza
Director of Environmental
Planning & Compliance



Law Offices of
Doug Allison



Tischler/Kocurek

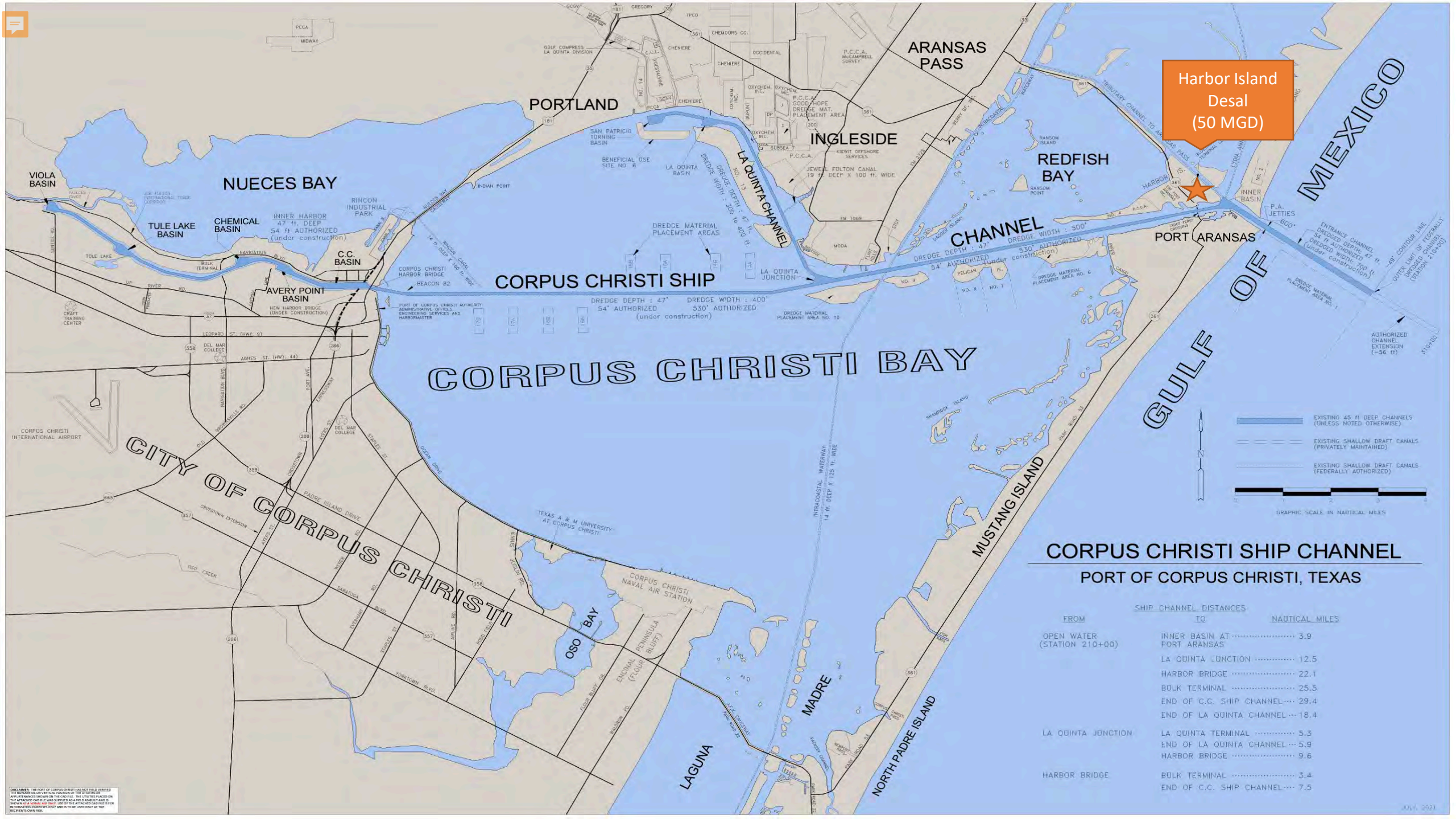
Meeting Objectives

- » **Establish an open line of communication:** It is important to the Port to have everyone hear from us directly about the project and be available to answer any questions, both today and going forward into the permit review process
 - » Applying for multiple permits on the same project concurrently:
 - U.S. Army Corps of Engineers – Intake / Diffuser
 - Texas Commission on Environmental Quality – Water Rights
 - Texas General Land Office – Surface Lease and Easement

- » **Manage multiple Agency considerations**

Project Background

- » Region is 100% reliant on surface water
- » Port has historic role in providing water delivery infrastructure
 - Mary Rhodes Pipeline
 - Water line infrastructure on North Side of Ship Channel
- » Economic Engine for the Region
 - Customer survey
 - Port Commission direction
- » Harbor Island infinitely scalable long-term



Harbor Island
Desal
(50 MGD)

CORPUS CHRISTI BAY

CORPUS CHRISTI SHIP CHANNEL PORT OF CORPUS CHRISTI, TEXAS

EXISTING 45 FT DEEP CHANNELS (UNLESS NOTED OTHERWISE)

 EXISTING SHALLOW DRAFT CANALS (PRIVATELY MAINTAINED)

 EXISTING SHALLOW DRAFT CANALS (FEDERALLY AUTHORIZED)

 GRAPHIC SCALE IN NAUTICAL MILES

FROM	SHIP CHANNEL DISTANCES TO	NAUTICAL MILES
OPEN WATER (STATION 210+00)	INNER BASIN AT PORT ARANSAS	3.9
	LA QUINTA JUNCTION	12.5
	HARBOR BRIDGE	22.1
	BULK TERMINAL	25.5
	END OF C.C. SHIP CHANNEL	29.4
LA QUINTA JUNCTION	END OF LA QUINTA CHANNEL	18.4
	LA QUINTA TERMINAL	5.3
	END OF LA QUINTA CHANNEL	5.9
HARBOR BRIDGE	BULK TERMINAL	3.4
	END OF C.C. SHIP CHANNEL	7.5

DISCLAIMER: THE PORT OF CORPUS CHRISTI HAS NOT BEEN VERIFIED FOR THE PURPOSES OF THIS MAP. THE USER ASSUMES ALL LIABILITY FOR ANY DAMAGE OR LOSS OF PROPERTY OR PERSONAL INJURY THAT MAY OCCUR AS A RESULT OF USING THIS MAP. THE PORT OF CORPUS CHRISTI HAS NOT BEEN VERIFIED FOR THE PURPOSES OF THIS MAP. THE USER ASSUMES ALL LIABILITY FOR ANY DAMAGE OR LOSS OF PROPERTY OR PERSONAL INJURY THAT MAY OCCUR AS A RESULT OF USING THIS MAP.

6 Environmental Precepts

Environmental Planning and Compliance



Air Quality

Reduce emissions by 15% in PM, VOCs, NOx, SOx every 3 years



Climate Action

Reduce GHG emissions per cargo ton by 7.5% annually



Water Quality

Reduce AL, Fe, Zn, Pb, TSS by 10% annually



Climate Adaptation

Implement Life Cycle Assessment tool on Port capital projects



Habitat Restoration

Create/restore 50 acres of habitat every 3 Years



Soils & Sediments

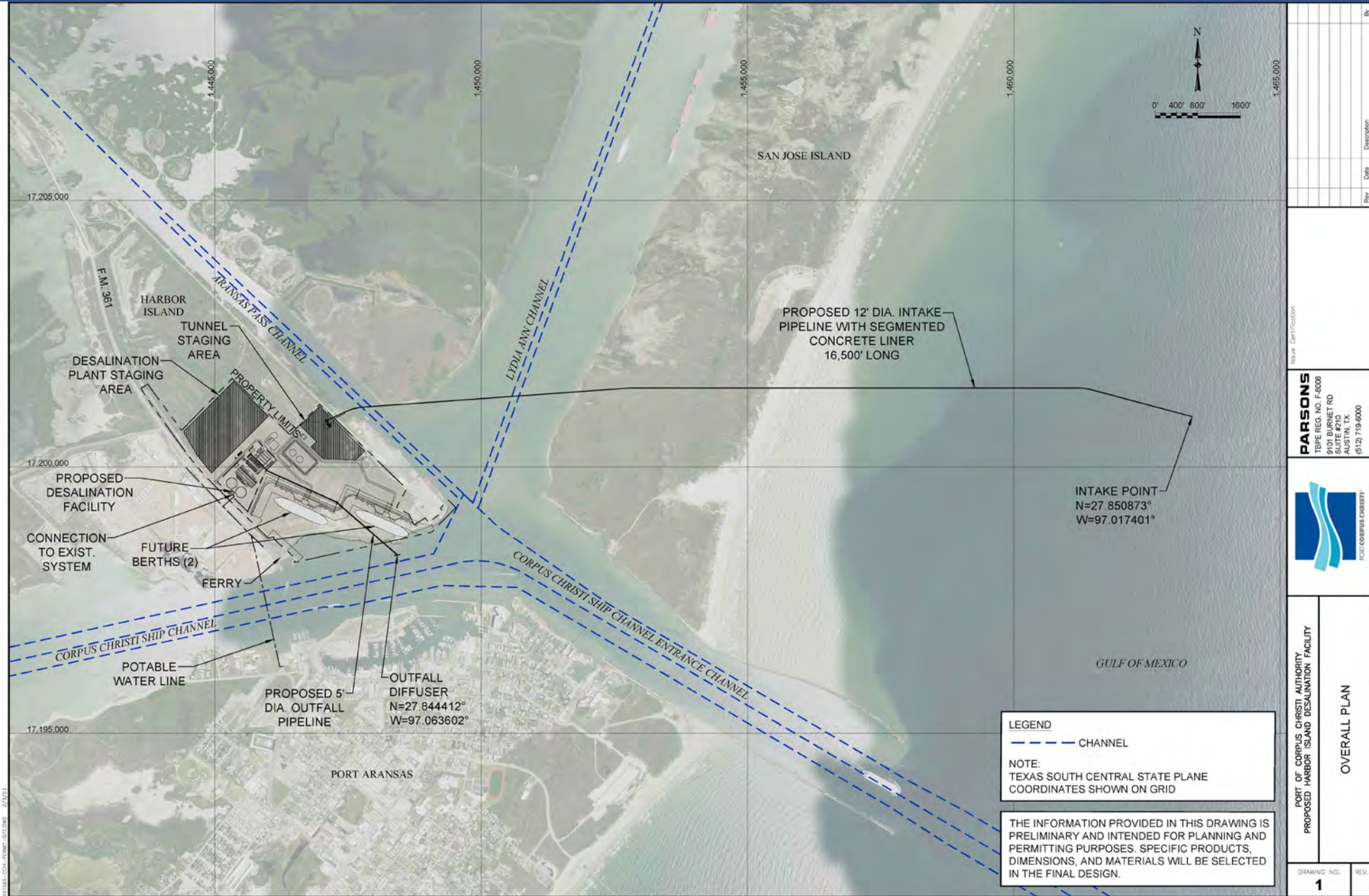
Remediate spills to residential standard



Harbor Island Desalination – Permitting Overview For Intake and Outfall/Diffuser

- » Land lease from TGLO
- » Easement from TGLO
- » Water Rights from TCEQ
- » 404 Nationwide Permit 7 Coverage for offshore intake and inshore outfall diffuser structures from USACE

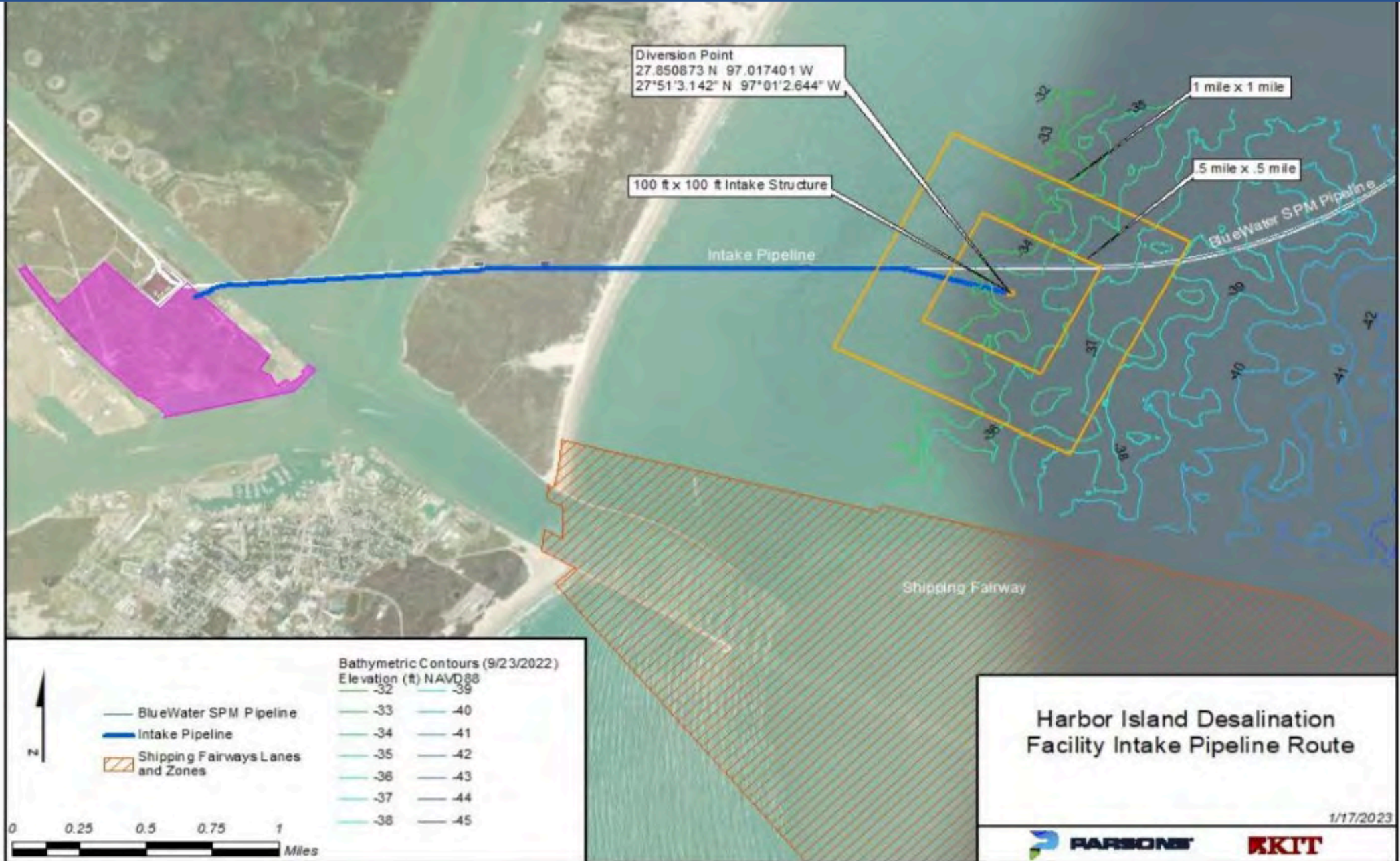
Overall Plan



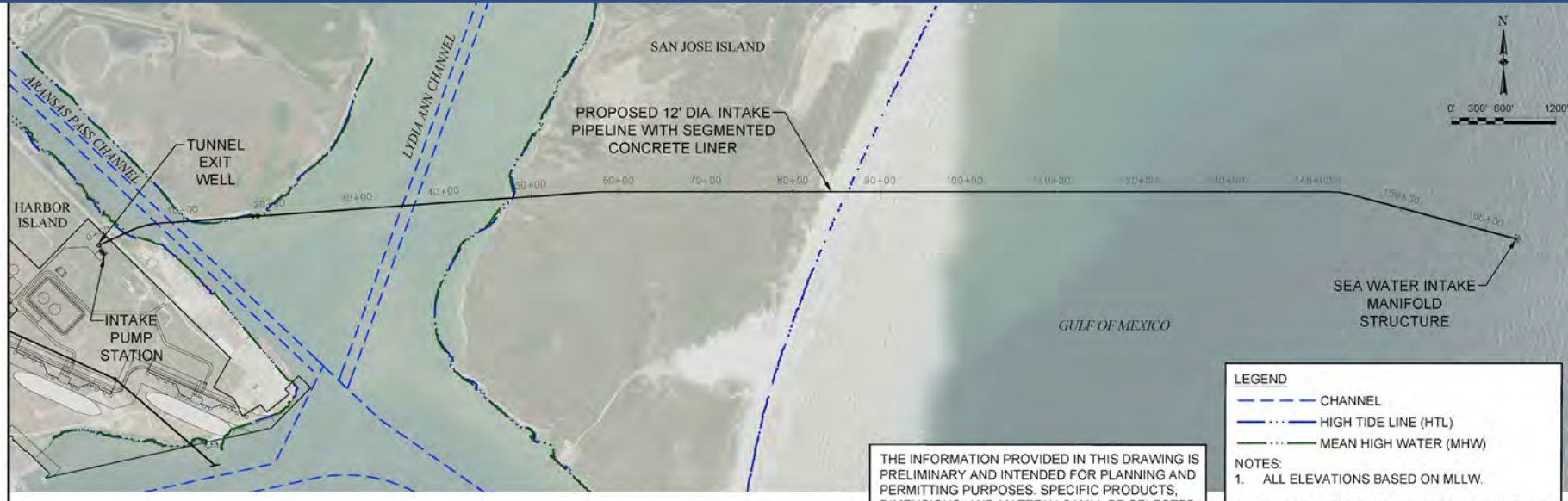
Harbor Island Desalination – Intake

- » Intake located 1.3 miles off San Jose Island following BWTT route in 35' of water in the Gulf of Mexico
- » 3.1-mile intake pipeline with 14' outside diameter/12' inside diameter at -65 ft NAVD88 below the surface and installed using a tunnel boring machine
- » Intake with 4-5 branches and velocity cap on each branch (30' apart)
 - Intake using velocity caps to slow water intake speed to less than or equal to 0.5 ft/sec
 - Raised 5-10' above sea bed floor
 - 3" wire screen on each velocity cap

Intake Structure

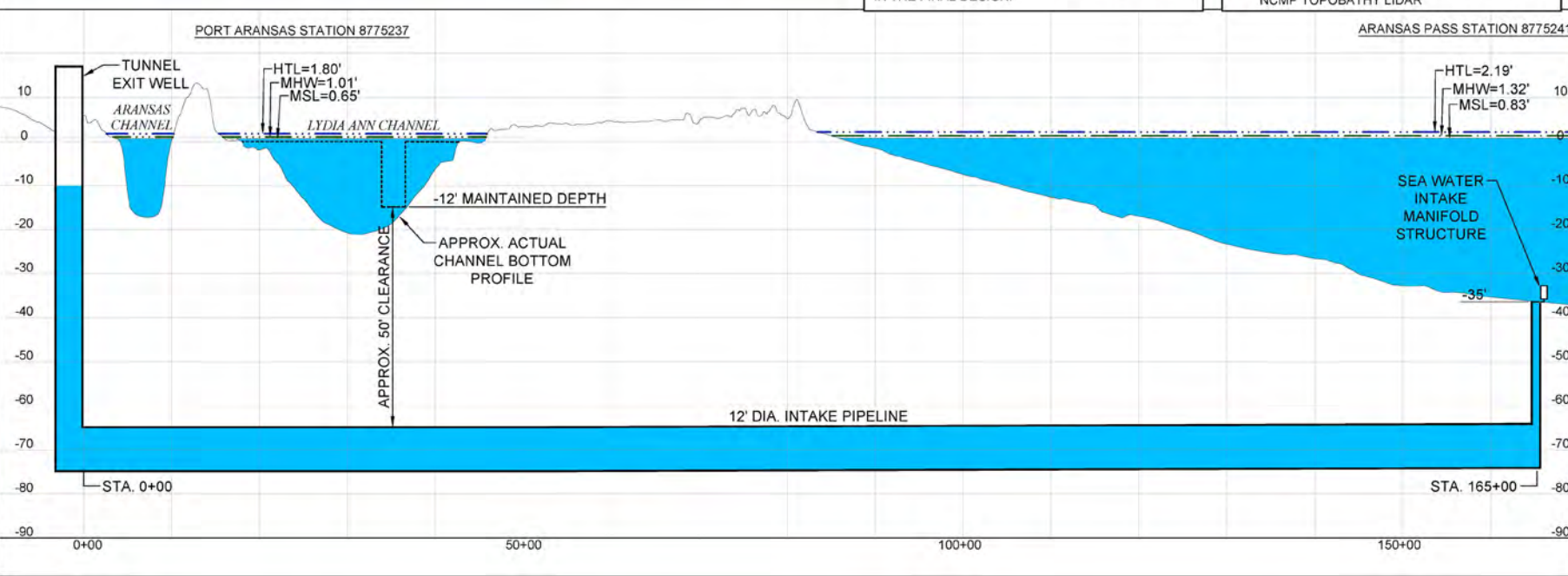


Intake Structure



- LEGEND**
- CHANNEL
 - HIGH TIDE LINE (HTL)
 - MEAN HIGH WATER (MHW)
- NOTES:**
- ALL ELEVATIONS BASED ON MLLW.
 - DIGITAL ELEVATION DATA FROM 2016 USACE NCMP TOPOBATHY LIDAR

THE INFORMATION PROVIDED IN THIS DRAWING IS PRELIMINARY AND INTENDED FOR PLANNING AND PERMITTING PURPOSES. SPECIFIC PRODUCTS, DIMENSIONS, AND MATERIALS WILL BE SELECTED IN THE FINAL DESIGN.



PARSONS
 TYPE REG. NO. F-6008
 9101 BURNETT RD.
 P.O. BOX 219089
 AUSTIN, TX
 (512) 719-6000

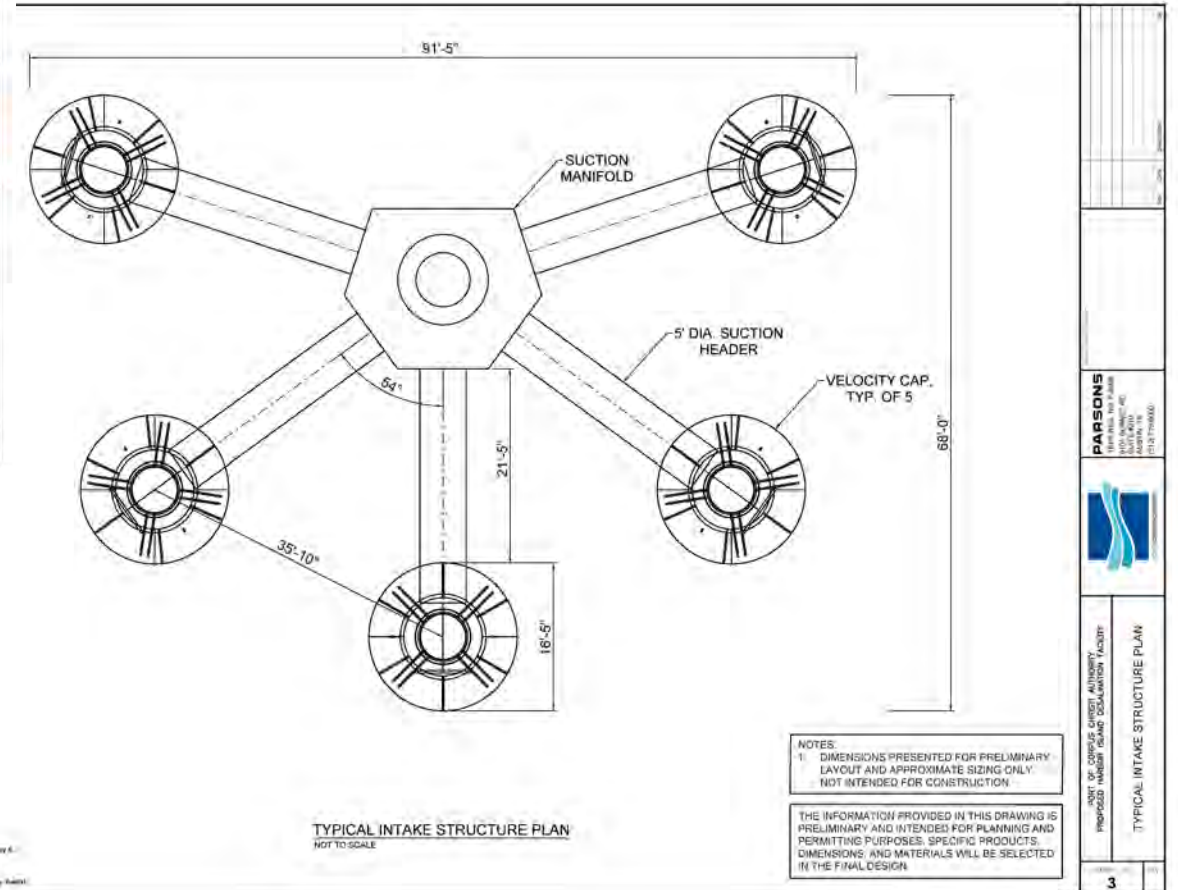
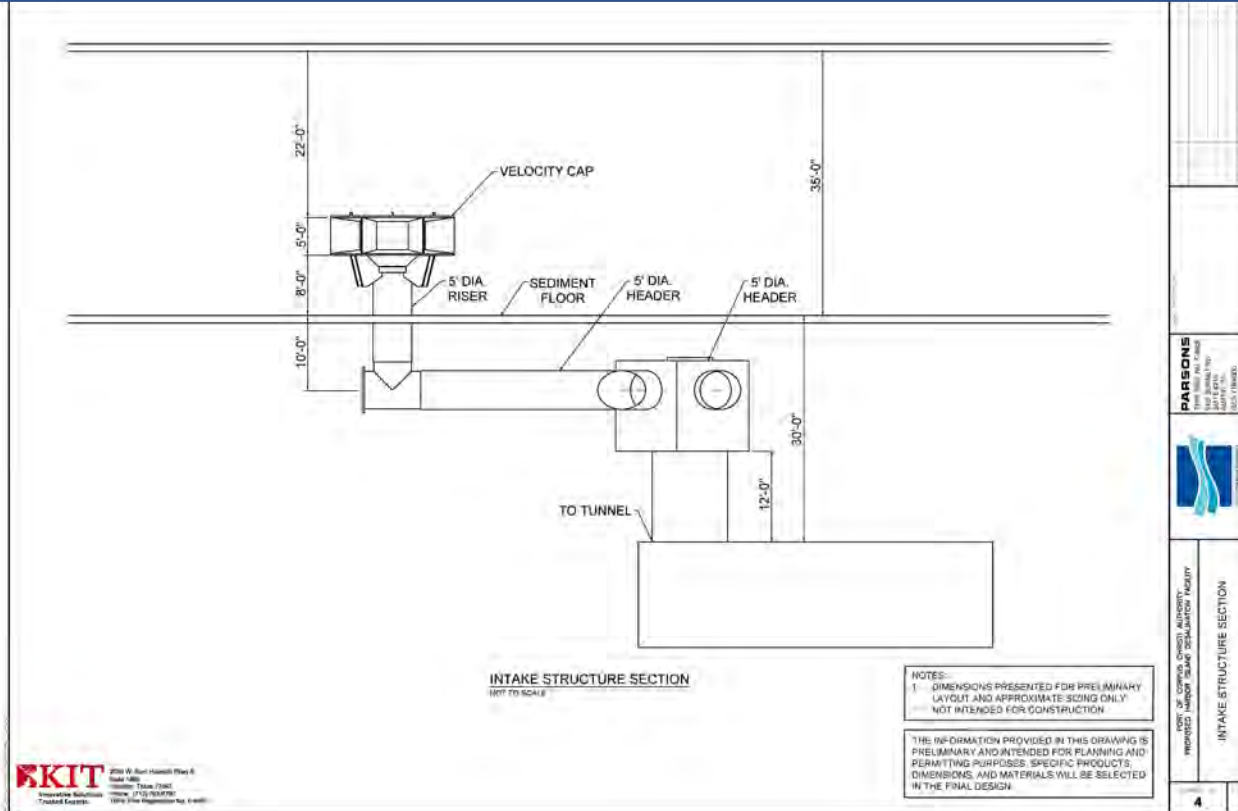


PORT OF CORPUS CHRISTI AUTHORITY
 PROPOSED HARBOR ISLAND DESALINATION FACILITY

DRAWING NO. **6** REV.

2/1/2024 08:43 AM REVISED 10:45 AM 8/2/23

Intake Structure



Harbor Island Desalination – Discharge Permit

Discharge Permit

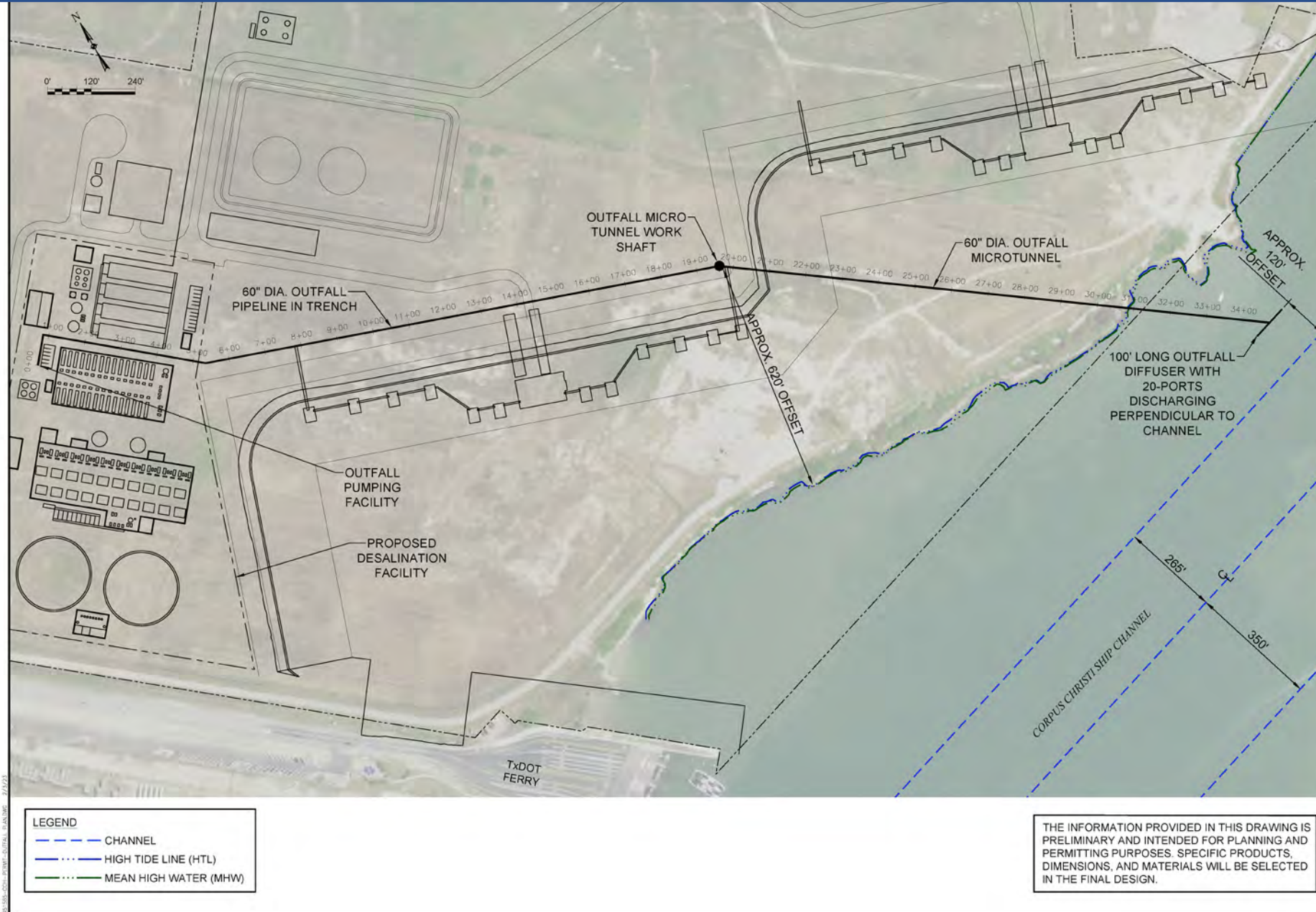
- » **December 22:** Received final TPDES discharge permit from TCEQ
- » **Permit Highlights:** WQ0005253000 TPDES Discharge Permit
 - Diffuser 60 feet below surface
 - Maximum effluent percentages at each mixing zone
 - Worst case salinity at edge of innermost mixing zone
 - Salinity limit of 2 ppt over ambient 100 m from outfall (average ambient salinity range ~ 30 ppt – 35 ppt)
 - Monitoring plan to ensure compliance

Other Permit Considerations

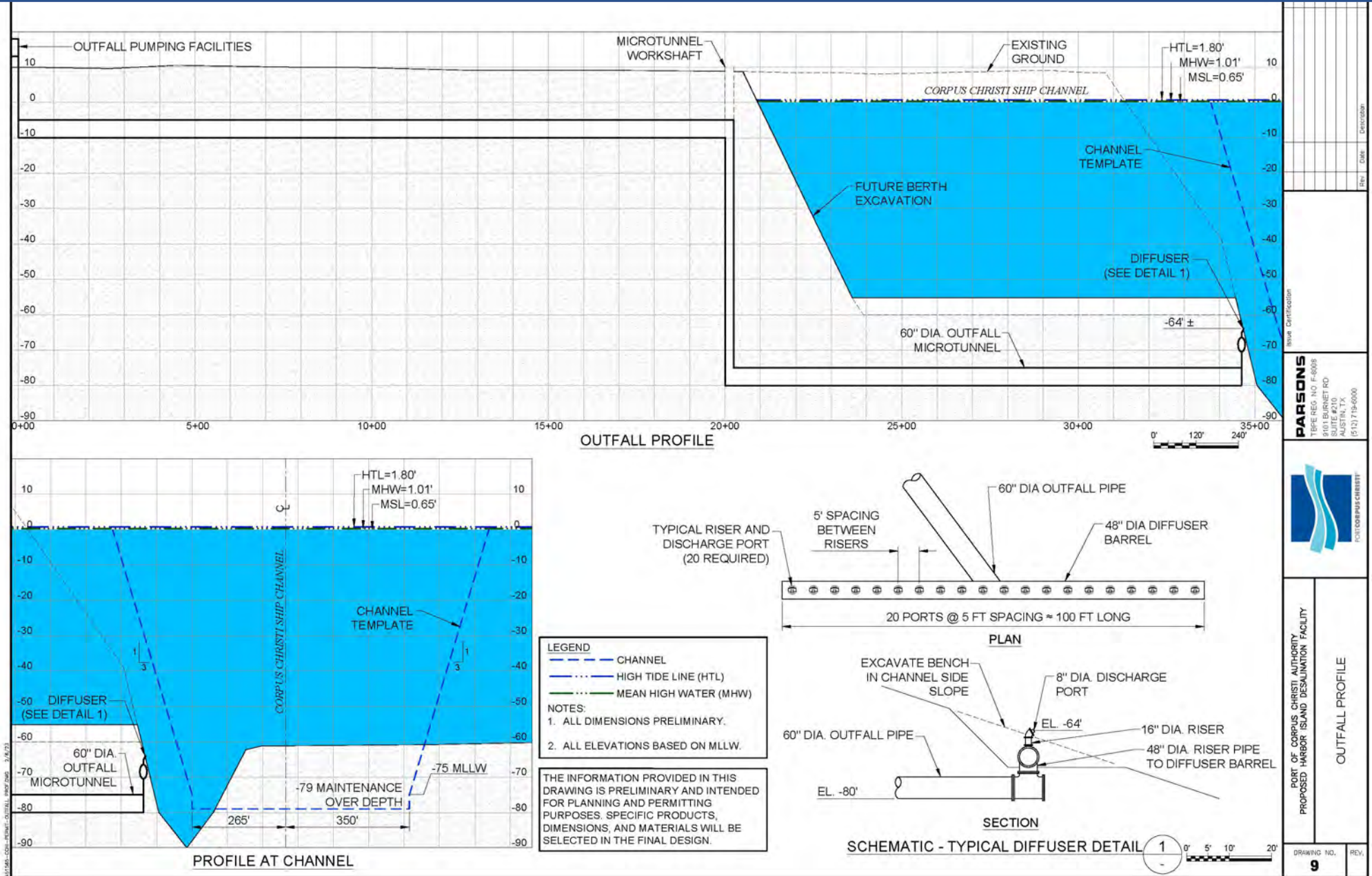
- » Port Commission approved resolution in May 2020 to place the intake in the Gulf of Mexico

Harbor Island Desalination – Diffuser

- » Inshore diffuser located approximately 230 feet from shoreline
- » Located in approximately 65' of water
- » Diffuser is 100 ' long with 20 ports on 5' spacing
- » Diffuser pipeline to be installed via micro-tunnel boring machine or HDD

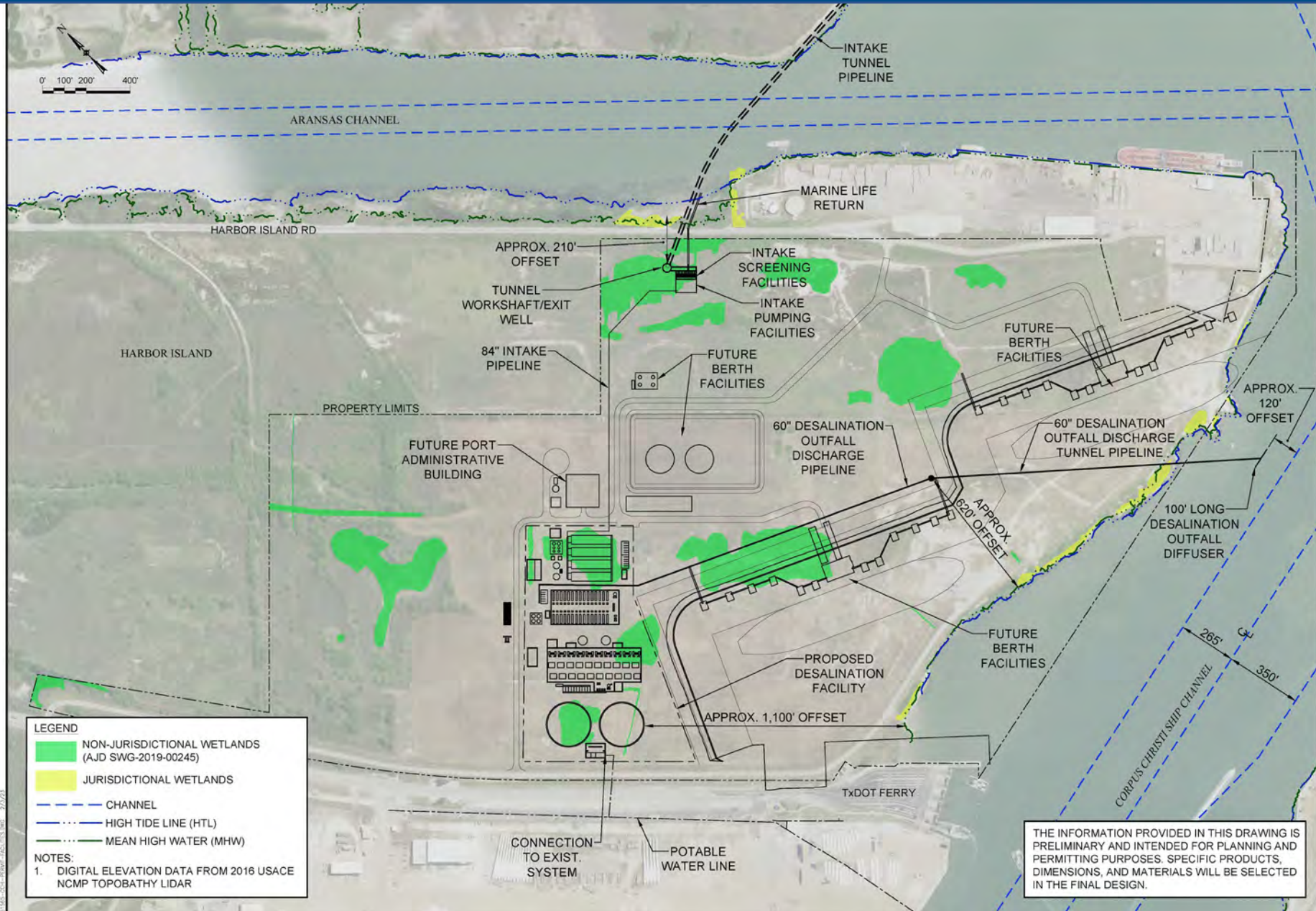


<p>PORT OF CORPUS CHRISTI AUTHORITY PROPOSED HARBOR ISLAND DESALINATION FACILITY</p>		<p>PARSONS TYPE REG. NO. F-8008 9101 BURNETT RD SUITE 100 AUSTIN, TX (512) 719-6000</p>	
<p>OUTFALL PLAN</p>		<p>PORT OF CORPUS CHRISTI AUTHORITY</p>	
<p>DRAWING NO.</p> <p>8</p>	<p>REV.</p>	<p>DATE</p>	
<p>DESCRIPTION</p>			



<p>DATE</p> <p>DESCRIPTION</p>
<p>ISSUE CERTIFICATION</p>
<p>PARSONS</p> <p>TBPE REG. NO. F-6008</p> <p>8101 BURNET RD</p> <p>SUITE #210</p> <p>AUSTIN, TX</p> <p>512.719.6000</p>
<p>PORT OF CORPUS CHRISTI</p>
<p>PORT OF CORPUS CHRISTI AUTHORITY</p> <p>PROPOSED HARBOR ISLAND DESALINATION FACILITY</p> <p>OUTFALL PROFILE</p>
<p>DRAWING NO. 9</p> <p>REV.</p>

Upland Facilities



LEGEND

- NON-JURISDICTIONAL WETLANDS (AJD SWG-2019-00245)
- JURISDICTIONAL WETLANDS
- CHANNEL
- HIGH TIDE LINE (HTL)
- MEAN HIGH WATER (MHW)

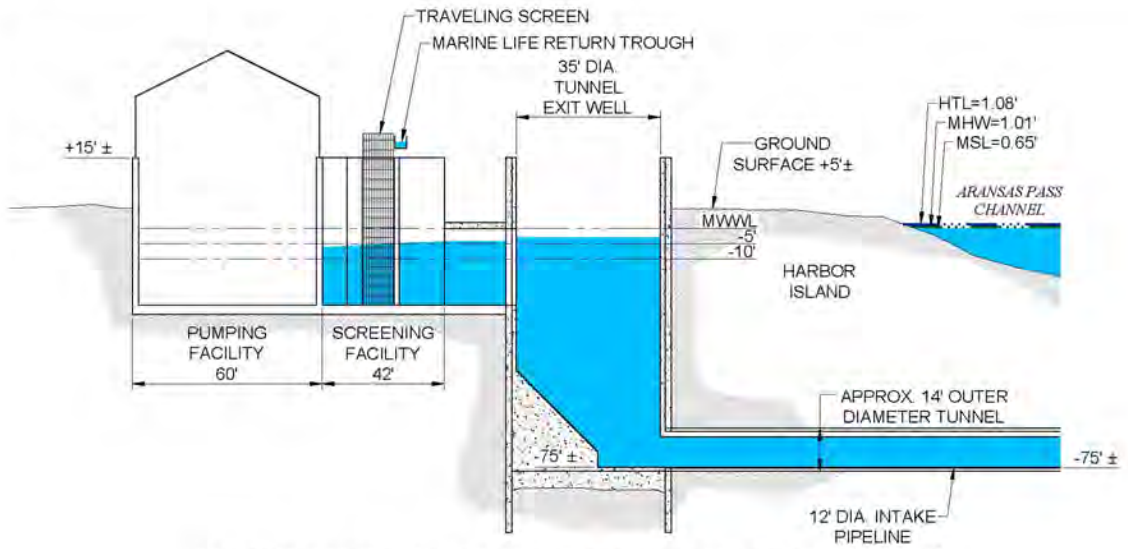
NOTES:

- DIGITAL ELEVATION DATA FROM 2016 USACE NCMPTOPOBATHY LIDAR

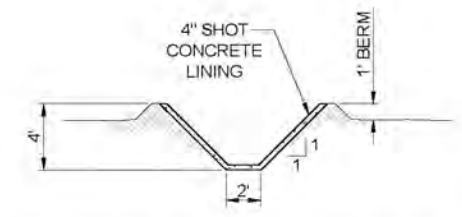
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<p>DATE: _____</p> <p>REV: _____</p>	
<p>PROJECT: PROPOSED HARBOR ISLAND DESALINATION FACILITY</p>	
<p>LANDSIDE FACILITIES</p>	
<p>CONTRACTOR: PARSONS</p> <p>PROJECT NO: F-8008</p> <p>9101 BURNETT RD</p> <p>SUITE 100</p> <p>AUSTIN, TX</p> <p>(512) 718-6000</p>	
<p>SCALE: AS SHOWN</p>	
<p>DRAWING NO. 7</p>	<p>REV.</p>

Marine Life Return System

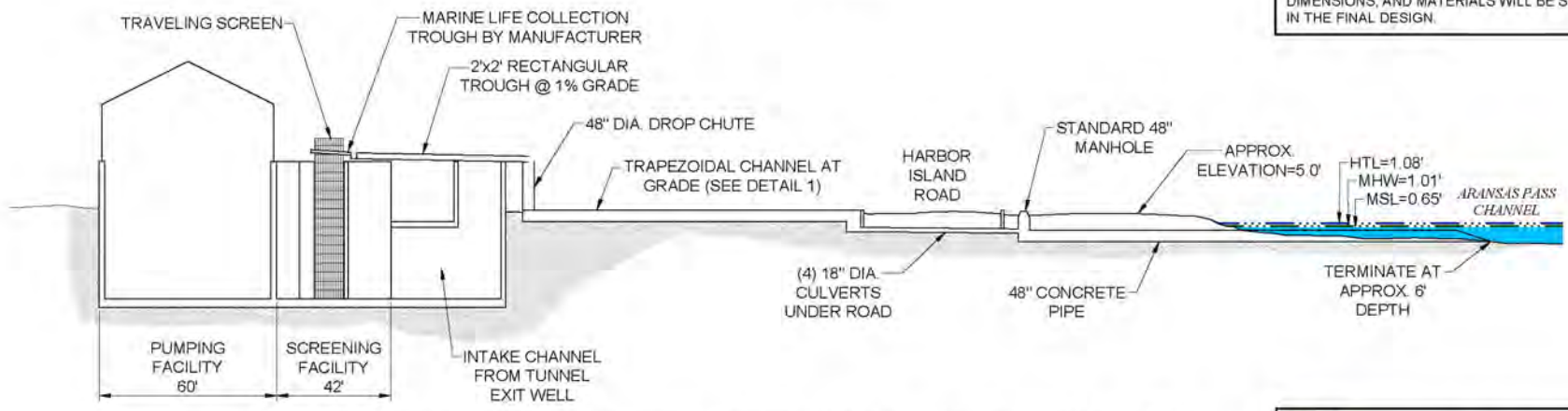


SCHMATIC CROSS-SECTION OF SCREEN AND PUMPING FACILITY **A**



TYPICAL MARINE LIFE RETURN CHANNEL DETAIL **1**

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SCHMATIC TYPICAL CROSS-SECTION OF MARINE LIFE RETURN CHANNEL **B**

LEGEND

- HIGH TIDE LINE (HTL)
- MEAN HIGH WATER (MHW)

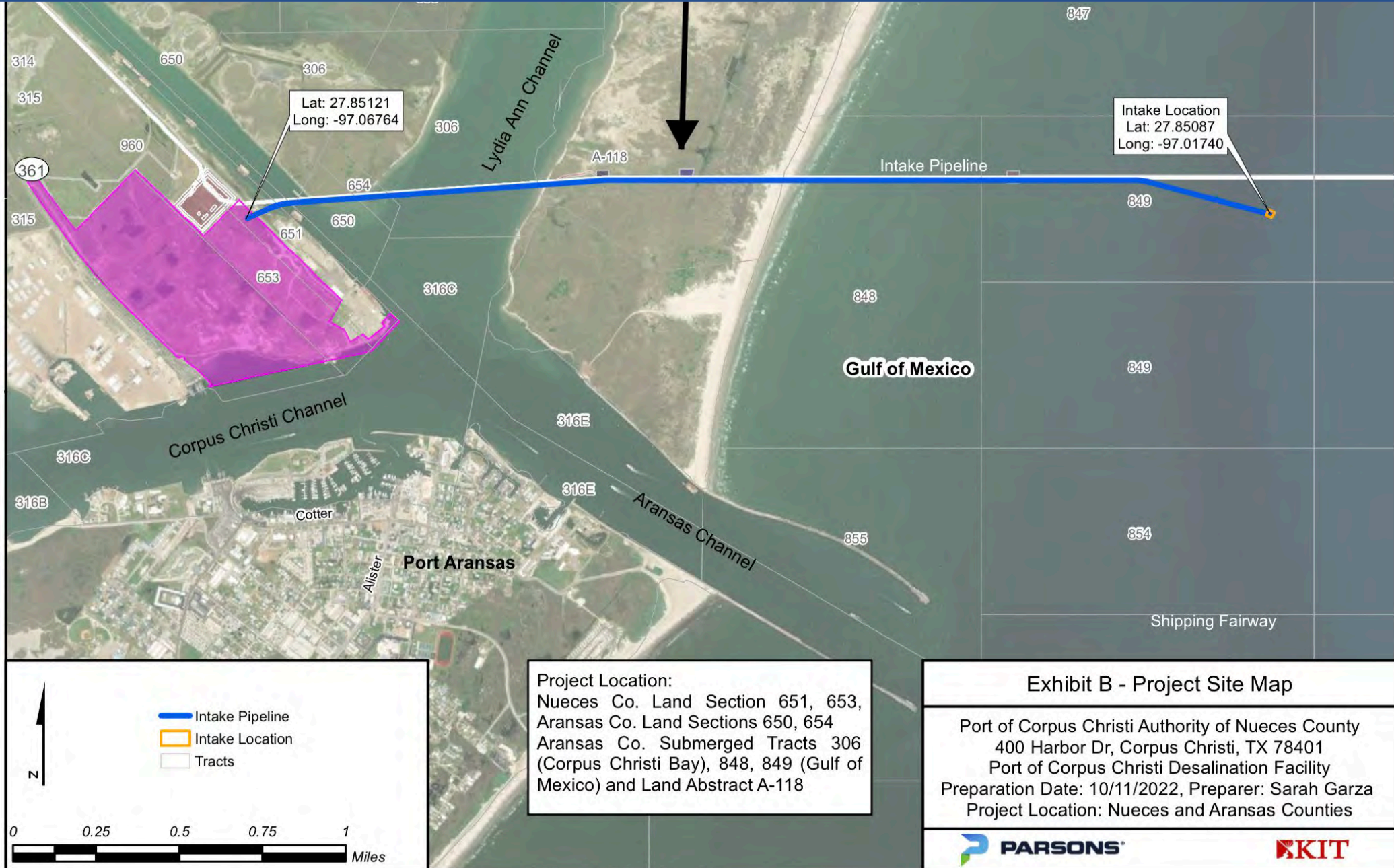
NOTES:

- ALL DIMENSIONS PRELIMINARY
- ALL ELEVATIONS BASED ON MLLW.



<p>PARSONS 5001 BURBANK RD SUITE 200 AUSTIN, TX 78721-9900</p>	
<p>PORT OF CORPUS CHRISTI AUTHORITY PROPOSED HARBOR ISLAND DESALINATION FACILITY</p>	
INTAKE SECTION	
DRAWING NO.	REV.
5	

Easement and Lease



Request for State Water Rights

- » 50 MGD desalination facility expanded to 100MGD in the future
 - Phase I—175,000 acres-feet/year at a max diversion rate of 109,000 gpm
 - Phase II—350,000 acres-feet/year at a max diversion rate of 217,000 gpm

- » Measures minimizing impingement and entrainment:
 - Intake structure offshore
 - Place intake in deeper water (~20' below surface) to lessen draw of eggs/larvae near surface
 - Raise intake 5-10' above sea bed to lessen intake of benthic organisms
 - Utilize velocity caps to assure intake flow velocity ≤ 0.5 ft/s
 - Utilize traveling marine life return system

- » Project reflected in the 2021 State Water Plan

Questions?



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