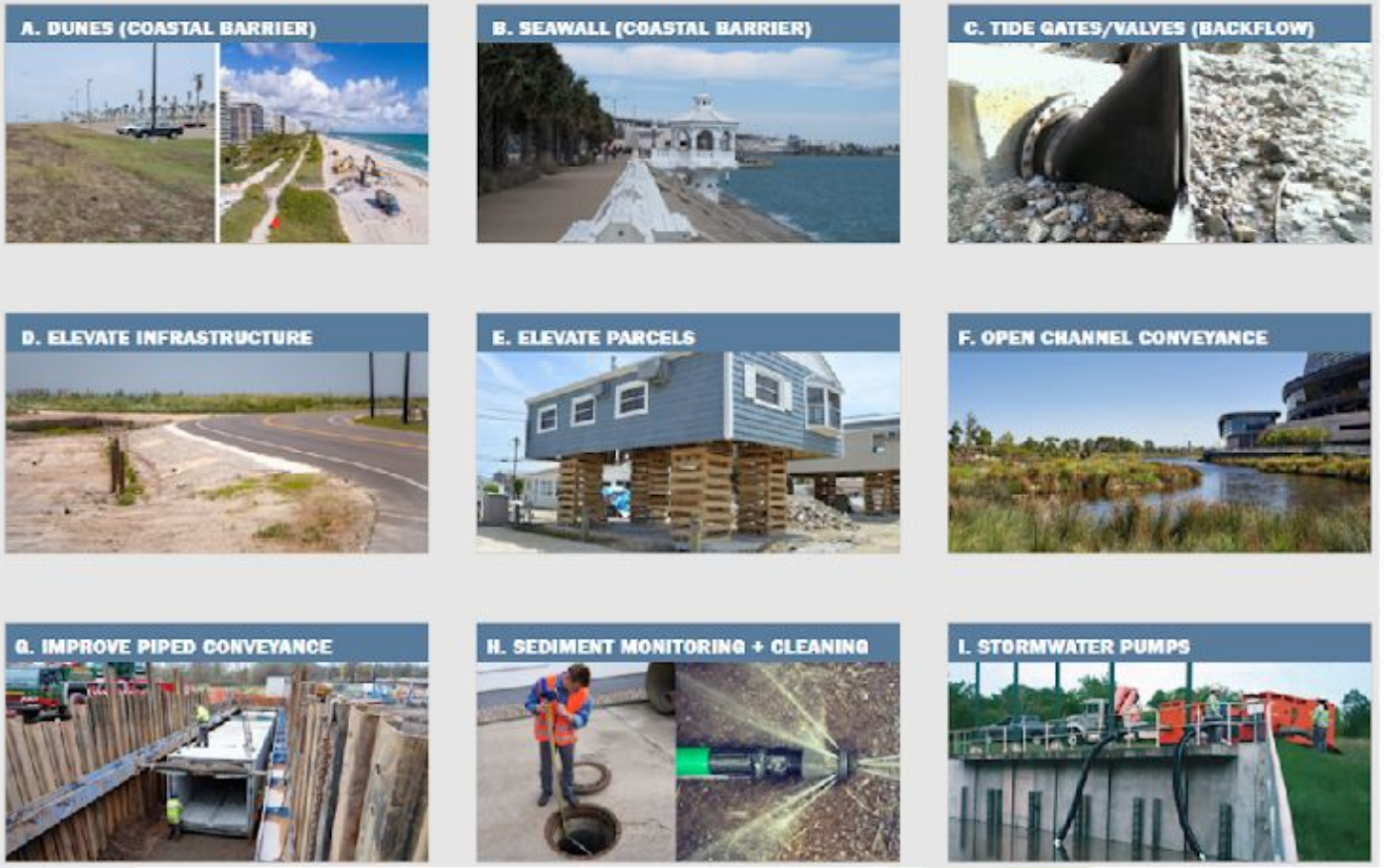
North Beach Drainage Improvements Project

30% Design Update

October 19, 2023



Background

- August 30, 2022: MIG presented their assessment and recommendations (option 2 – linear park) to address tidal, and rainfall flooding on North Beach

- April 18, 2023: City contracts with LAN to provide design, bid, and construction phase services for Phase 1 of the project. Project to be completed over four phases.

- November 1, 2022, City Council adopted Phase 1 of the North Beach Drainage Improvement Project Plan created by MIG

Intervention Effectiveness

Intervention(s)	Direct Tidal Flooding	Backflow Flooding	Groundwater Seepage Flooding	Rainfall Induced Flooding
A. Dunes	✪✪✪✪			
B. Seawall	✪✪✪✪		✪✪✪	
C. Tide Gates/Valves		✪✪✪✪		
D. Elevate Infrastructure	✪✪✪	✪✪✪	✪✪✪	✪✪
E. Elevate Parcels	✪✪✪	✪✪✪	✪✪✪	✪✪
F. Open Channel Convey.				✪✪
G. Imp. Closed Convey.				✪✪
H. Sed. Monitoring + Clean.				✪
I. Stormwater Pumps			✪✪✪	✪✪✪
#1. G+H. "Stormwater Convey. + Ditch Imp." Option 1				✪✪✪
#2. A+D+E+F+G+H. "Linear Park" Option 2	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪
#3. A+D+E+F+G+H "Nav. Canal" Option 3A	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪
#4. A+D+E+F+G+H "Nav. Canal" Option 3B	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪
#5. A+D+E+G+H "Storm Drains w/ Elev."	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪
#6. A/B+C+G+H+I "Storm Drains w/o Elev. + Pumps"	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪	✪✪✪✪✪

Prioritization

$4.5M — Elevate. In-progress.

$2.5M — Elevate.

$5M — Elevate and reconstruct. Limited conveyance improvements.

$10M — Elevate. Major conveyance improvements, portion of linear open-space, new south-end outfall. Backflow prevention.

$5M — Elevate. Connect linear open-space.

$16M — Permanent or mobile pump station locations. Piped conveyance. Coastal barrier (dunes).

- Not Shown - Future Phases. Elevation and/or additional pump station locations.

Note: Rough order of magnitude costs are provided in Aug. 2022 dollars. Based on 2021 Study cost estimate with 15% cost escalation since Feb. 2021.

Phase 1 Projects

$7M

Linear Open Space and Channel

Elevating roadways, creating open channel, installing new northern outfall to Eco Park, temporary channel aeration/circulation system, redirect existing Gulfbreeze piped conveyance to linear open space channel with backflow prevention, linear open space activation improvements, pedestrian improvements

2.55 M

Gulfspray and Beach

Reconstruction: Elevating roadways, elevating parking and pedestrian improvements

4.5M

Surfside Park

Elevating parking, restroom and active park areas

Initial Funding Plan

Available Budget: $14.05M

Bond 2020/2022	$4.50M
ARPA	$5.00M
Bond 2018 - Beach Avenue	$1.00M
Bond 2018 - Gulfspray Pedestrian Access	$0.30M
Bond 2018 - NB Primary Access Project	$1.25M
(To be redirected to Gulfspray and Beach)	
FY 2023 General Fund	$2.00M

Where we are today

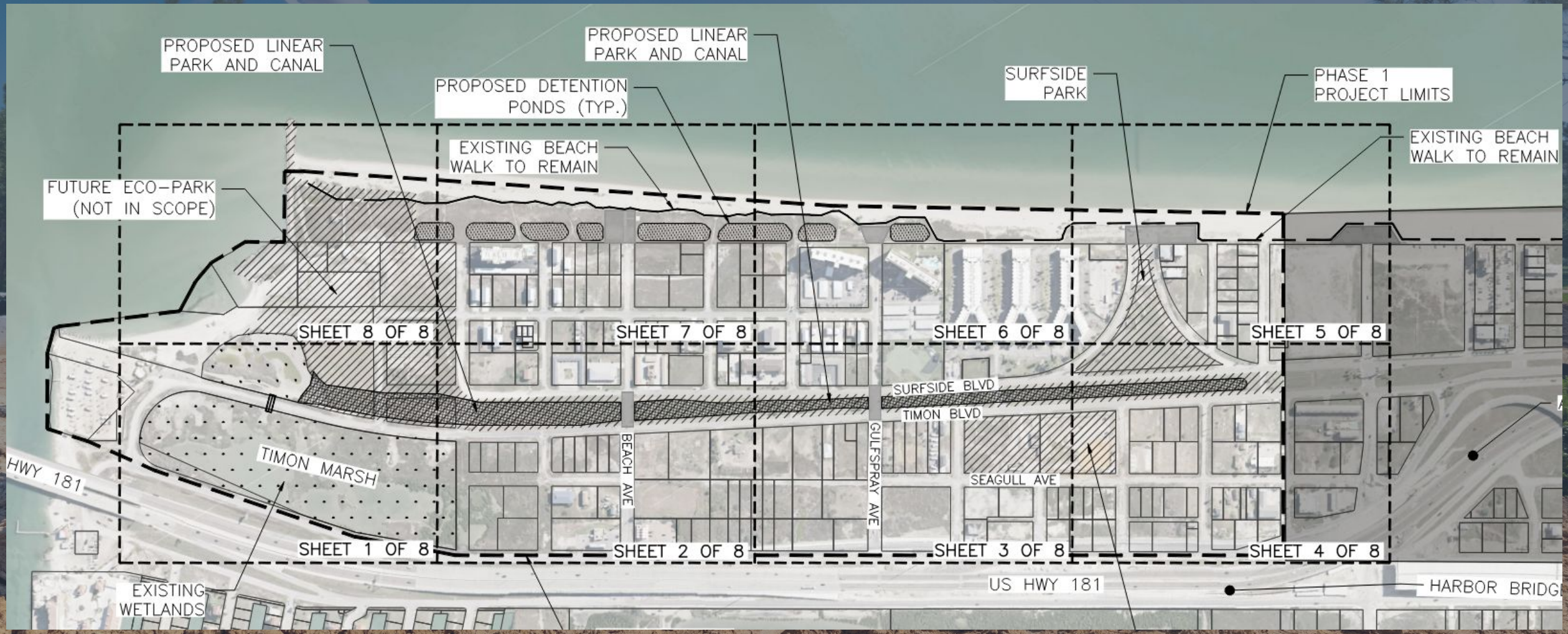
- Staff has been working with LAN to design projects as part of the adopted Phase 1 plan.
- LAN submitted their 30% design for review and comment

Executive Summary / Project Components

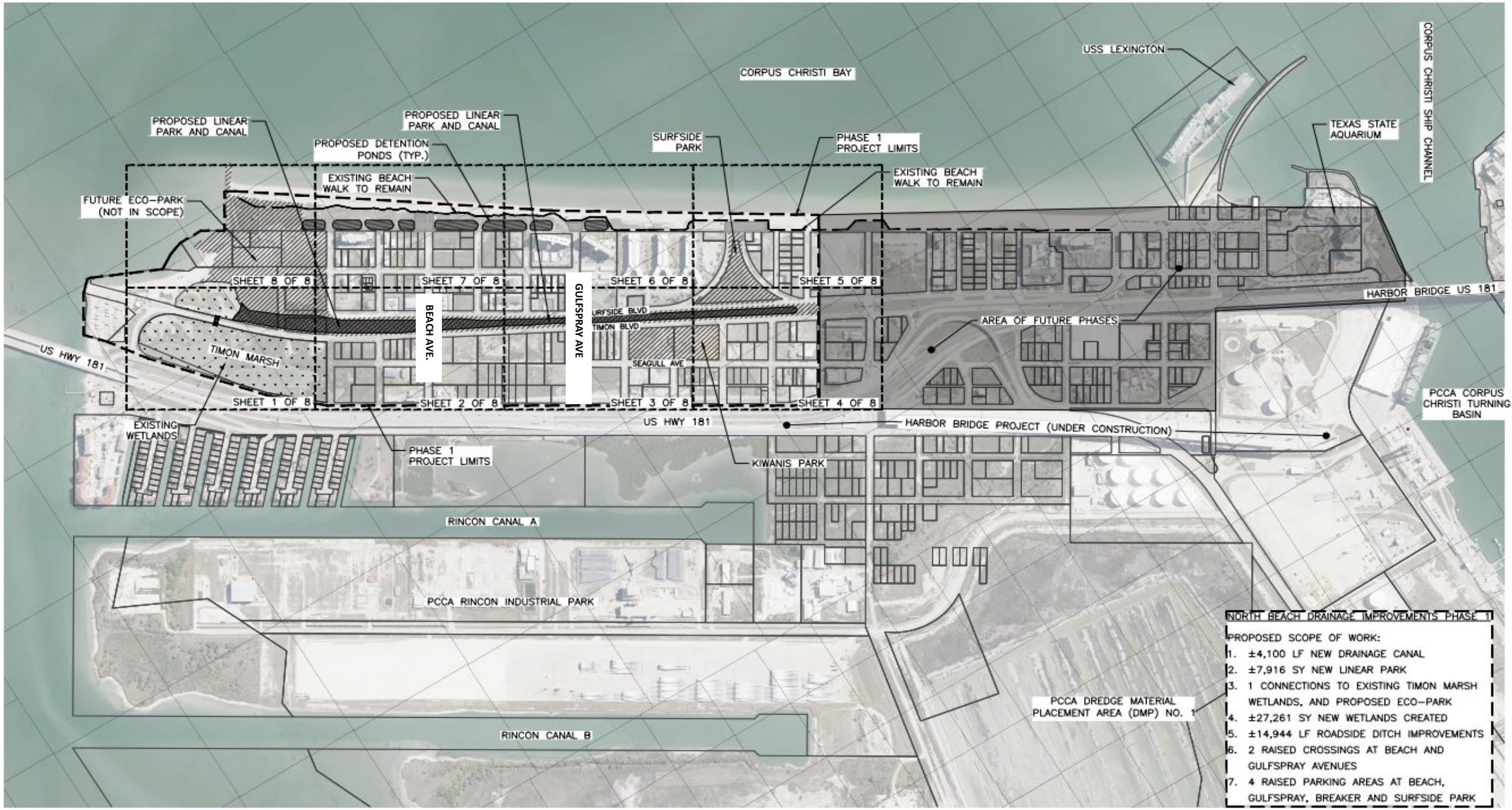
- New Canal = Storage
- Connections to Wetlands, Enhancements
- Roadside Ditches
- Underground Storm Water
- Sidewalks / Trails / Parks
- Bridge & Pedestrian Crossings
- Relocated WW Lift Station
- Utility Improvements

- Phase 1
- Timon Marsh (north) to Surfside Park(south)
- Approximately 4300 LF of Canal
- 20’ to 68’ wide (top bank – top bank)

Phase 1 Project Footprint

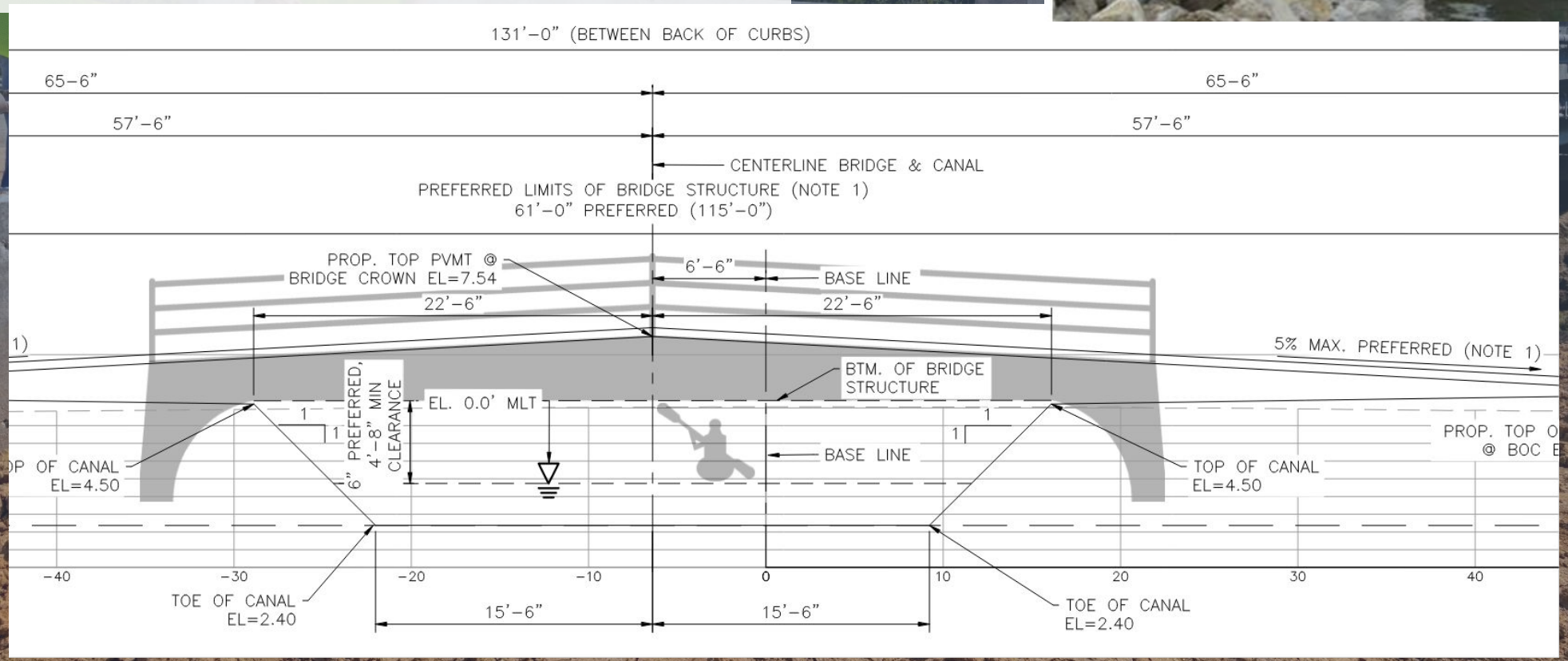


PROJECT MAP


CORPUS CHRISTI BAY
USS LEXINGTON
CORPUS CHRISTI SHIP CHANNEL
TEXAS STATE AQUARIUM
PROPOSED LINEAR PARK AND CANAL
PROPOSED LINEAR PARK AND CANAL
PROPOSED DETENTION PONDS (TYP.)
SURFSIDE PARK
PHASE 1 PROJECT LIMITS
EXISTING BEACH WALK TO REMAIN
EXISTING BEACH WALK TO REMAIN
FUTURE ECO-PARK (NOT IN SCOPE)
SHEET 8 OF 8
SHEET 7 OF 8
SHEET 6 OF 8
SHEET 5 OF 8
BEACH AVE.
GULFSPRAY AVE
SURFSIDE BLVD
TIMON BLVD
SEAGULL AVE
HARBOR BRIDGE US 181
AREA OF FUTURE PHASES
US HWY 181
TIMON MARSH
SHEET 1 OF 8
SHEET 2 OF 8
SHEET 3 OF 8
SHEET 4 OF 8
PCCA CORPUS CHRISTI TURNING BASIN
EXISTING WETLANDS
US HWY 181
HARBOR BRIDGE PROJECT (UNDER CONSTRUCTION)
PHASE 1 PROJECT LIMITS
KIWANIS PARK
RINCON CANAL A
PCCA RINCON INDUSTRIAL PARK
PCCA DREDGE MATERIAL PLACEMENT AREA (DMP) NO. 1
RINCON CANAL B
NORTH BEACH DRAINAGE IMPROVEMENTS PHASE 1
PROPOSED SCOPE OF WORK:
1. ±4,100 LF NEW DRAINAGE CANAL
2. ±7,916 SY NEW LINEAR PARK
3. 1 CONNECTIONS TO EXISTING TIMON MARSH WETLANDS, AND PROPOSED ECO-PARK
4. ±27,261 SY NEW WETLANDS CREATED
5. ±14,944 LF ROADSIDE DITCH IMPROVEMENTS
6. 2 RAISED CROSSINGS AT BEACH AND GULFSPRAY AVENUES
7. 4 RAISED PARKING AREAS AT BEACH, GULFSPRAY, BREAKER AND SURFSIDE PARK

Bridges and Crossings

- Beach Street Vehicle Crossing (w Pedestrian sidewalks)
- Timon Marsh Crossing - interconnection
- Ped Crossings: Eco-Park, Gulfspray, Kiwanis/Surfside Park
- All are Pre-Engineered Structures



Supporting Projects / North Beach Streets

- Beach Ave, Gulfspray, Surfside / Timon
  - Overlaid Future Streets on Drainage Plans
  - Underground Storm Water is part of Drainage project
  - Streets are a separate project from Drainage Project
  - Status – Fee Proposals being developed
- Master Grading Plan
- Eco-Park

Future Drainage Improvement Phases (consistent w MIG recommendations)

- Phase 2
  - Elevate roadways
  - Extend Linear Park / Canal to south
  - Channel Aeration / Circulation
  - Shoreline Blvd underground system
- Phase 3
  - Elevate roadways
  - Complete open channel imps
- Phase 4
  - More substantial coastal barrier
  - Pump Stations?

Linear Canal

- Will require excavation of ~42,700 CY of material
- Features:
  - Length – 4,300 LF
  - Top Bank Width – varies from 20 ft to 68 ft
  - Bottom Width – varies from 2 ft to 28 ft
  - Depth – 6 ft to 8 ft deep (from natural ground)
  - Normal Water Depth – 2 ft – 3 ft
  - Side Slopes – varies from 2:1 to 4:1 w intermittent vertical walls

Takeaway

- Phase 1 estimated value: $10M
  - Linear Canal
  - Roadside Ditches / Cross Culverts / Select Driveways
  - Underground storm water improvements and inlets
  - New detention ponds along beach
  - Bridge crossing at Beach
  - Park Improvements
  - Utility improvements along Surfside / Timon
- Estimated 18–20-month construction time
- Canal & Ditch system provides for rainfall storage, like a detention pond but linear, removes water from streets / properties
- Series of created natural wetlands along beach provide for storage of high-tides – mostly dry during the year.

Comments?