TOWN OF LONGBOAT KEY ENVIRONMENTAL PERMITTING FOR SUBAQUEOUS FORCE MAIN

Pre-Submittal Meeting

October 2, 2020

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ESA

Overview

- Introductions
- Project History
- Data and Information Gathering
- Alignment Analysis
- Construction Alternatives
- Construction Approach
- Environmental Impact Quantification
- Proposed Mitigation
- Conclusions
- Questions and Discussion

Project History

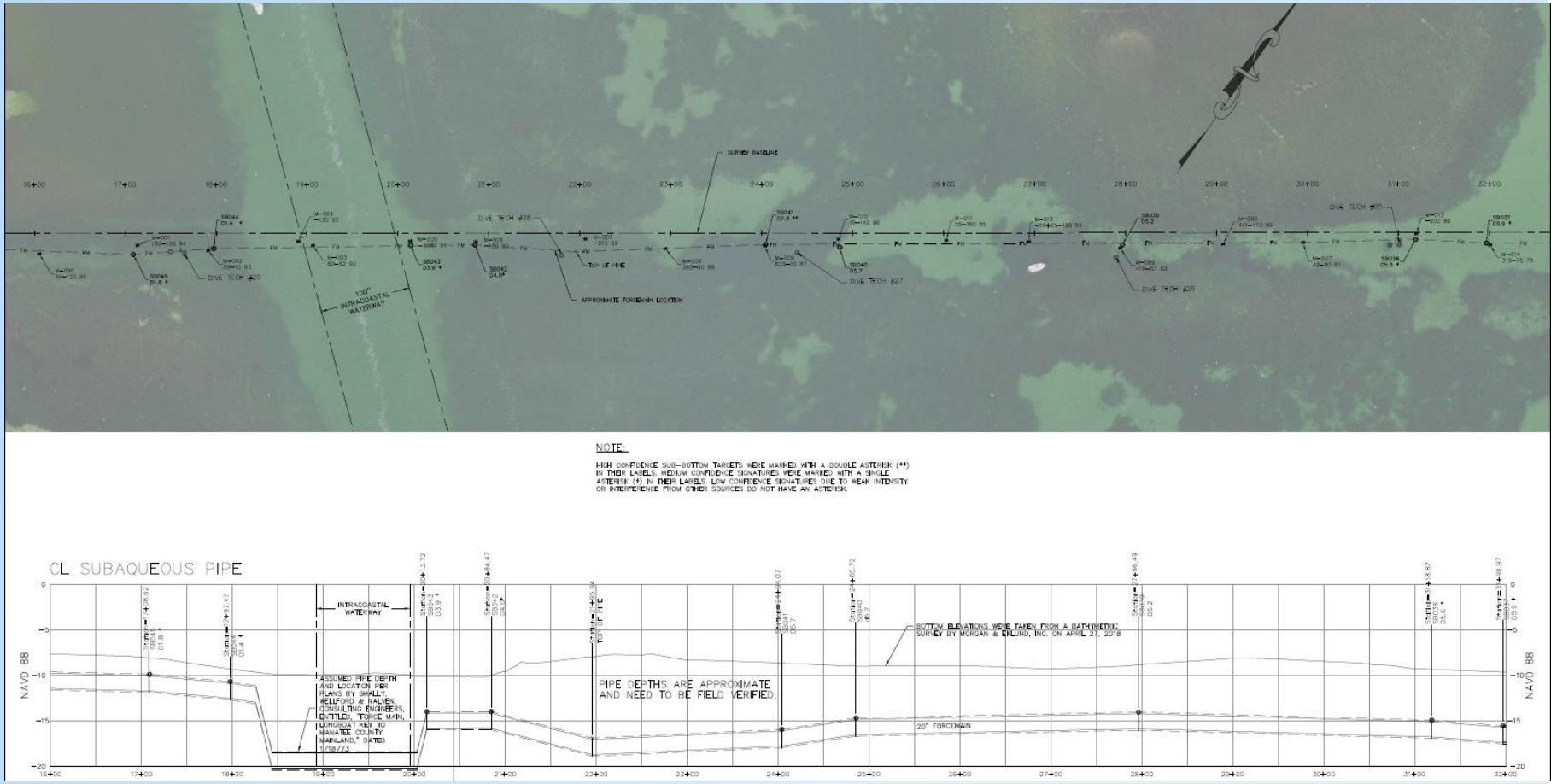
Project History

- Existing force main was constructed in 1973 and put in service in 1975.
- Constructed using open-cut trench approach.
- 45 years of continuous service with no issues – frequent diver inspections.
- Town began planning for a redundant force main in 2015.
- June 29, 2020 a sewer leak was discovered and repaired within mangroves on Manatee County side.

Data and Information Gathering

Data Gathering: Pipeline and Bathymetric Survey

- Surveyed location of existing pipeline and bathymetric survey completed in March 2020.



Data Gathering: Seagrass Survey

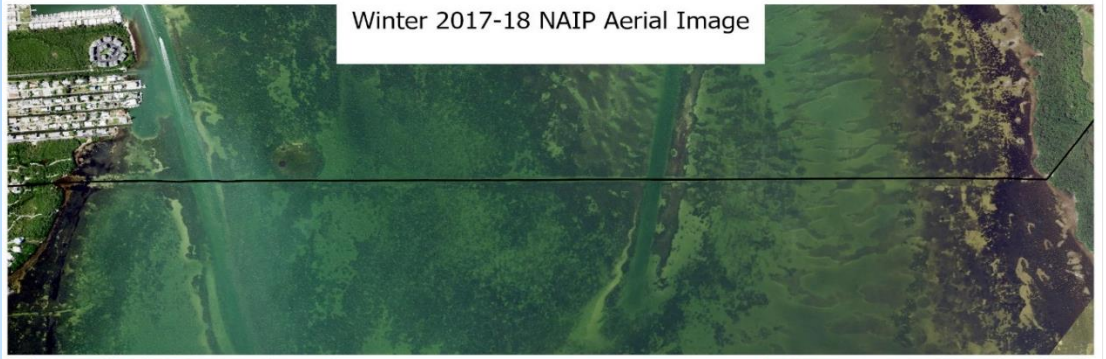
- ESA conducted an initial seagrass survey in 2018 pre-red tide event.
- Confirmed 2018 SWFWMD mapped seagrass coverage in project area.
- Deep unvegetated trench quite evident in 2018.

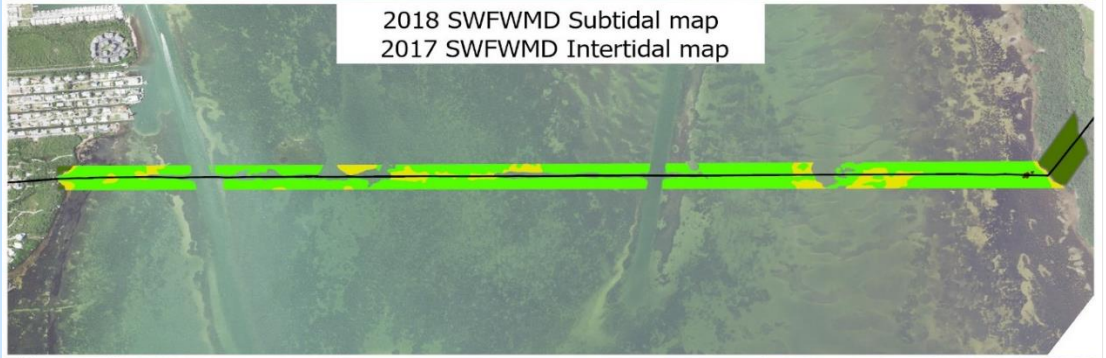
Data Gathering: Seagrass Survey

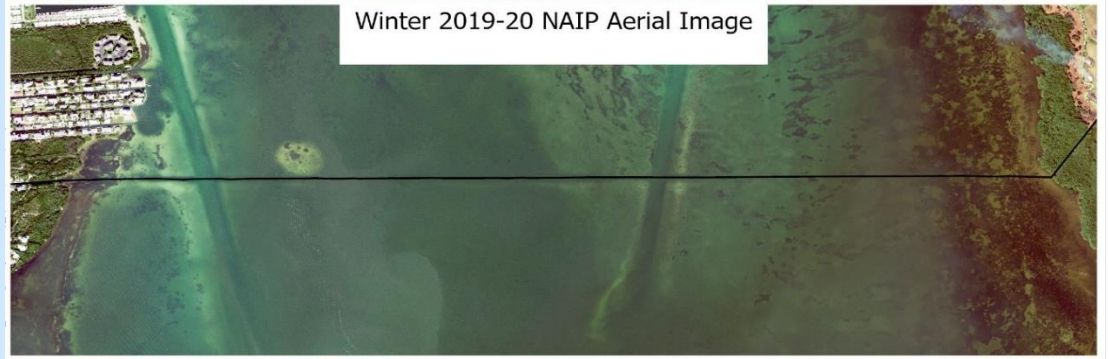
- ESA completed current seagrass survey July 2020 – documented extensive seagrass losses in project area.
- Awaiting 2020 SWFWMD mapped seagrass coverage results - to be published in early 2021.

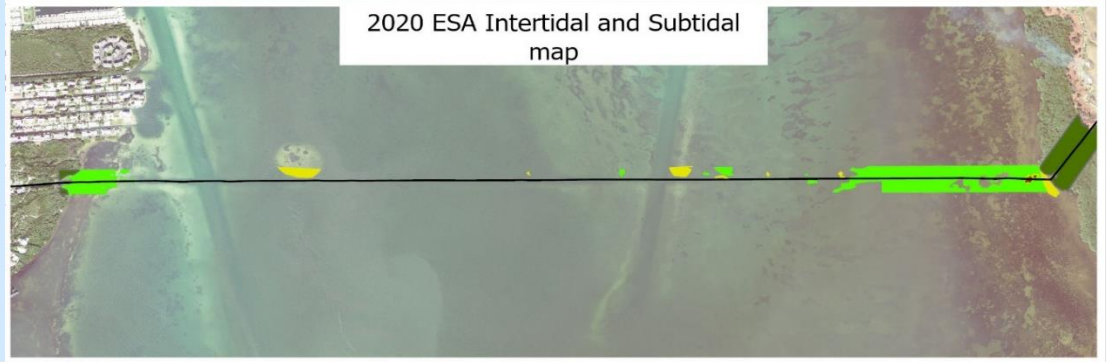
Comparison of 2018 and 2020 Seagrass Coverages

- In 2018 seagrass extended across the entire project corridor except for the deep trenched areas.
- In 2020 virtually seagrass is gone from the deeper portions of the corridor; with remaining coverages on the west and east ends.





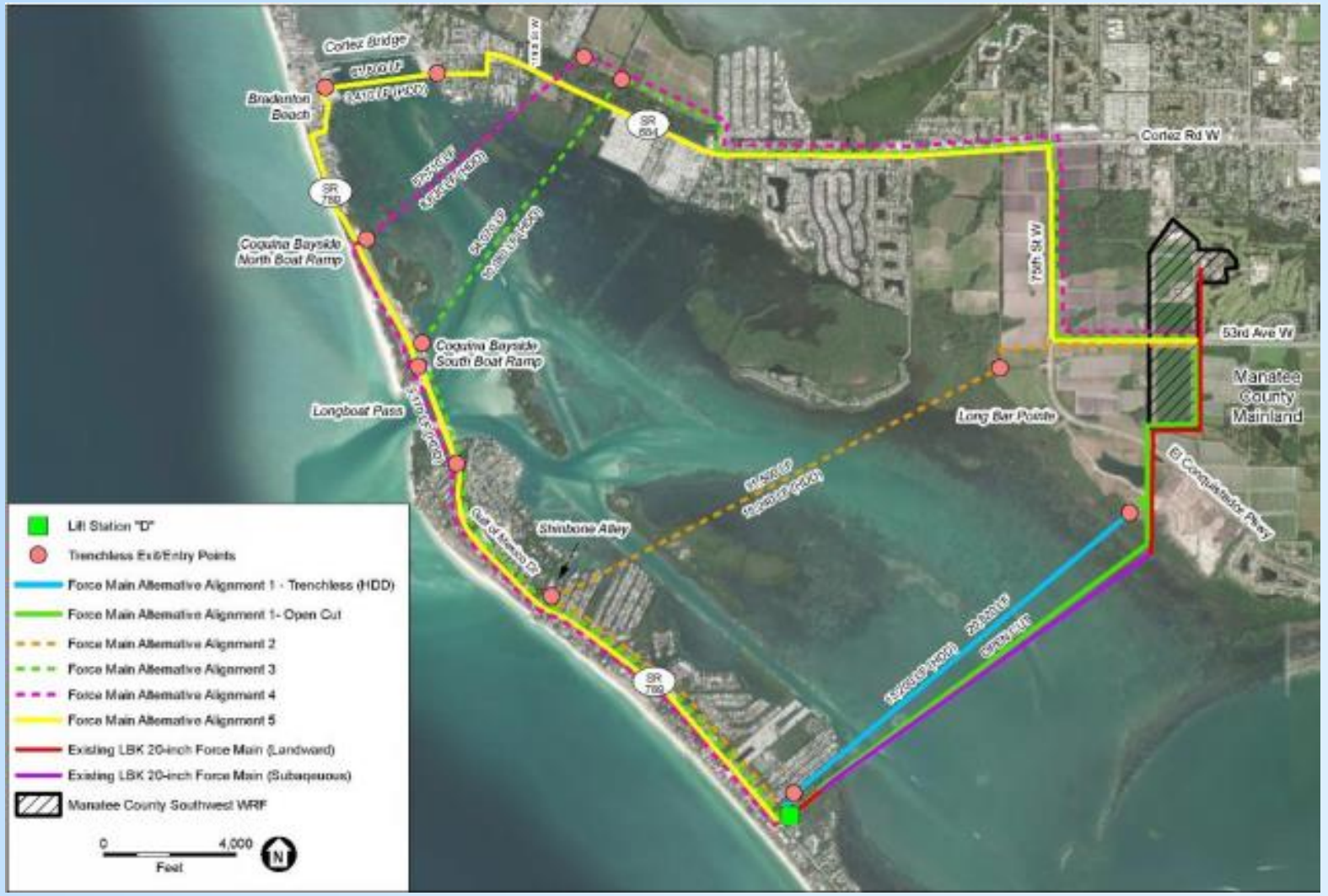


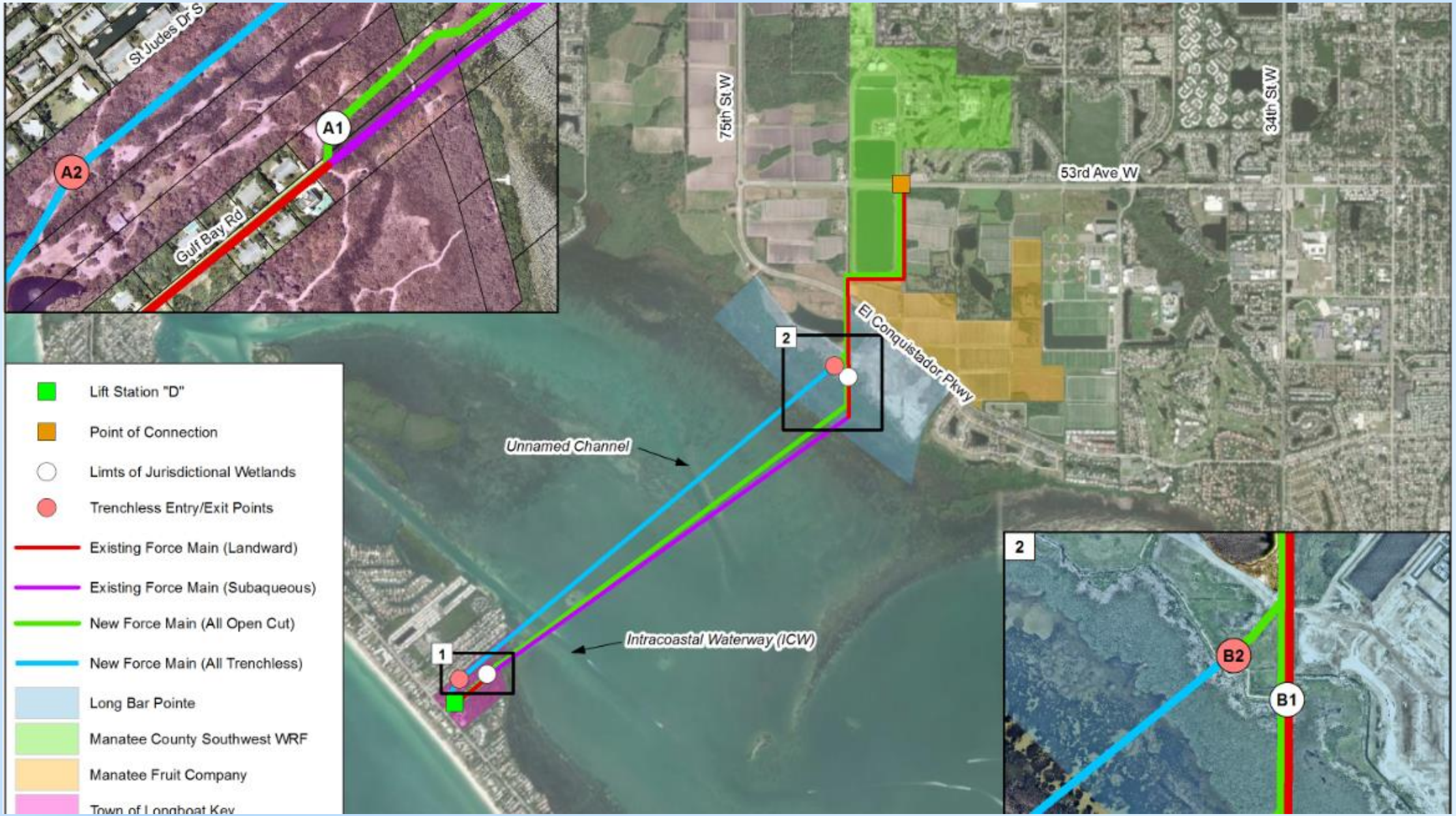


Alignment Analysis

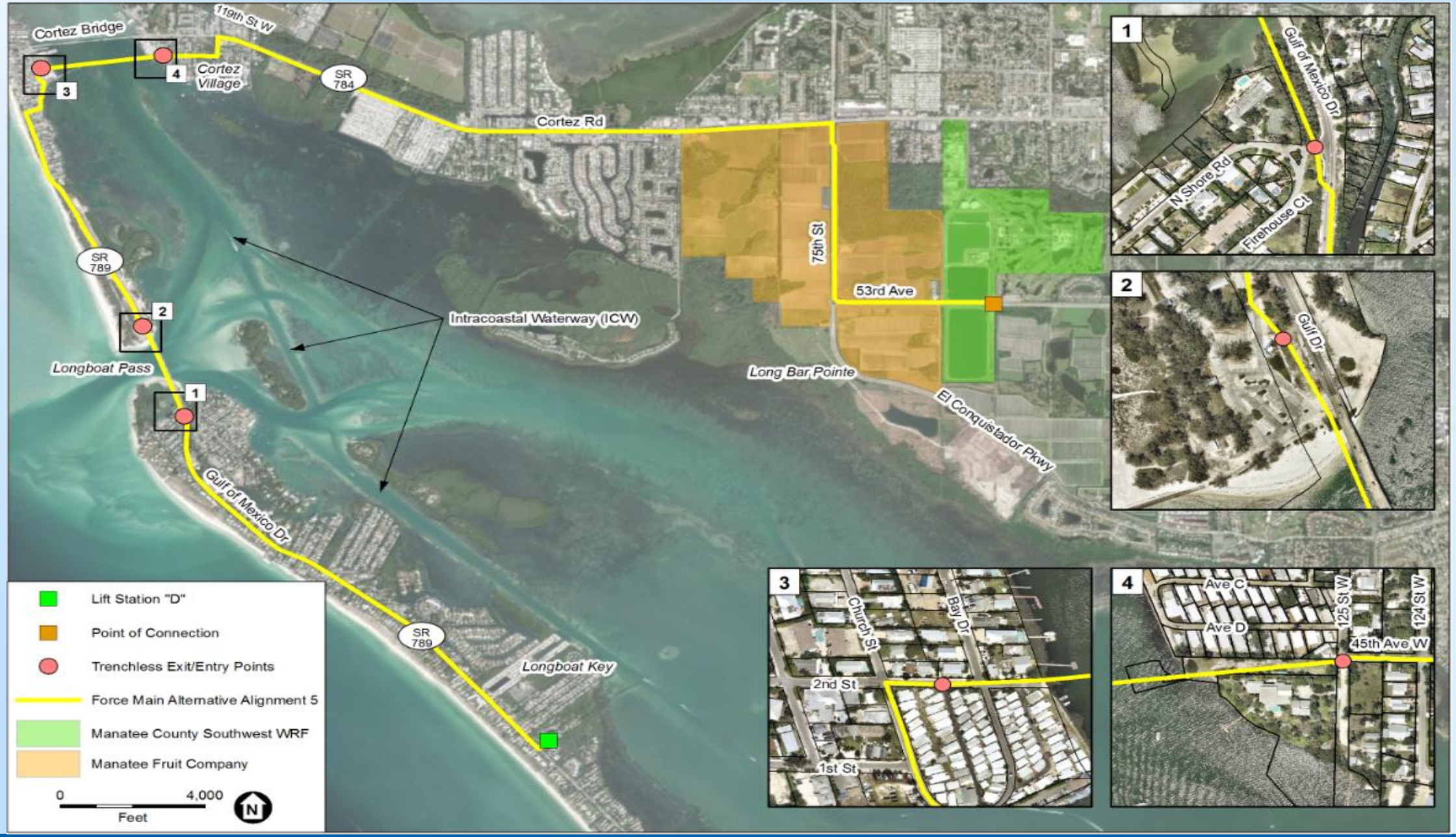
Alignment Analysis

- Alignment refers to the routing of the pipeline.
- 5 alternative alignments were developed and evaluated in the CDM report (2015)
- Narrowed down to Alignment 1 or 5.
- Alignment 1 is the existing force main alignment.




St Judes Dr S
A1
A2
Gulf Bay Rd
75th St W
34th St W
53rd Ave W
El Conquistador Pkwy
2
Unnamed Channel
Intracoastal Waterway (ICW)
1
2
B2
B1
Lift Station "D"
Point of Connection
Limts of Jurisdictional Wetlands
Trenchless Entry/Exit Points
Existing Force Main (Landward)
Existing Force Main (Subaqueous)
New Force Main (All Open Cut)
New Force Main (All Trenchless)
Long Bar Pointe
Manatee County Southwest WRF
Manatee Fruit Company
Town of Longboat Key

Alignment 1

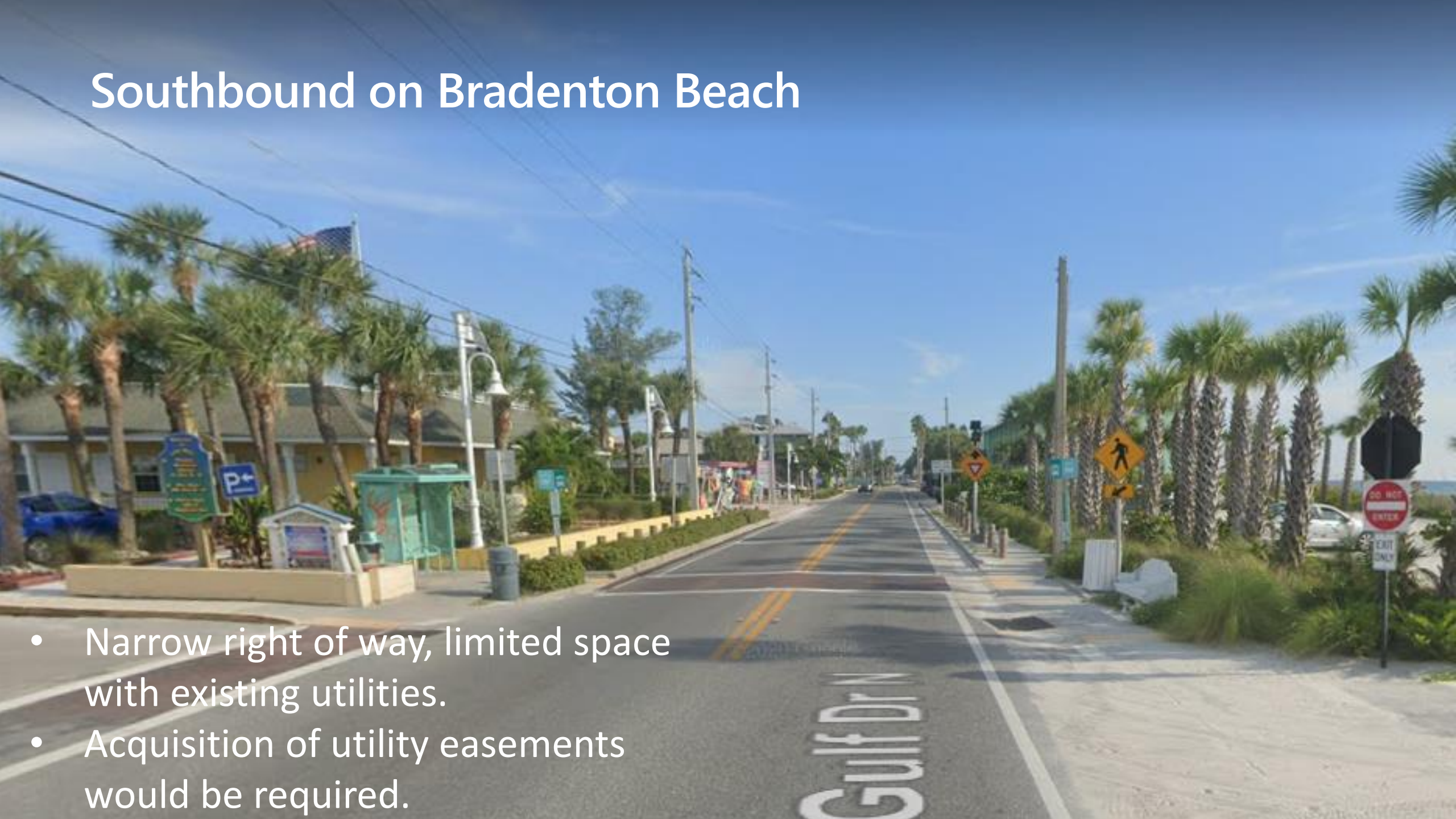

Cortez Bridge
119th St W
Cortez Village
SR 784
Cortez Rd
SR 789
Intracoastal Waterway (ICW)
Longboat Pass
Gulf of Mexico Dr
75th St
53rd Ave
Long Bar Pointe
El Conquistador Pkwy
SR 789
Longboat Key
1
2
3
4
Gulf of Mexico Dr
N Shore Rd
Firehouse Ct
Gulf Dr
Church St
Bay Dr
2nd St
1st St
Ave C
Ave D
125 St W
124 St W
45th Ave W
Lift Station "D"
Point of Connection
Trenchless Exit/Entry Points
Force Main Alternative Alignment 5
Manatee County Southwest WRF
Manatee Fruit Company
0
4,000
Feet
N

Alignment 5

Northbound near Longboat Pass Bridge

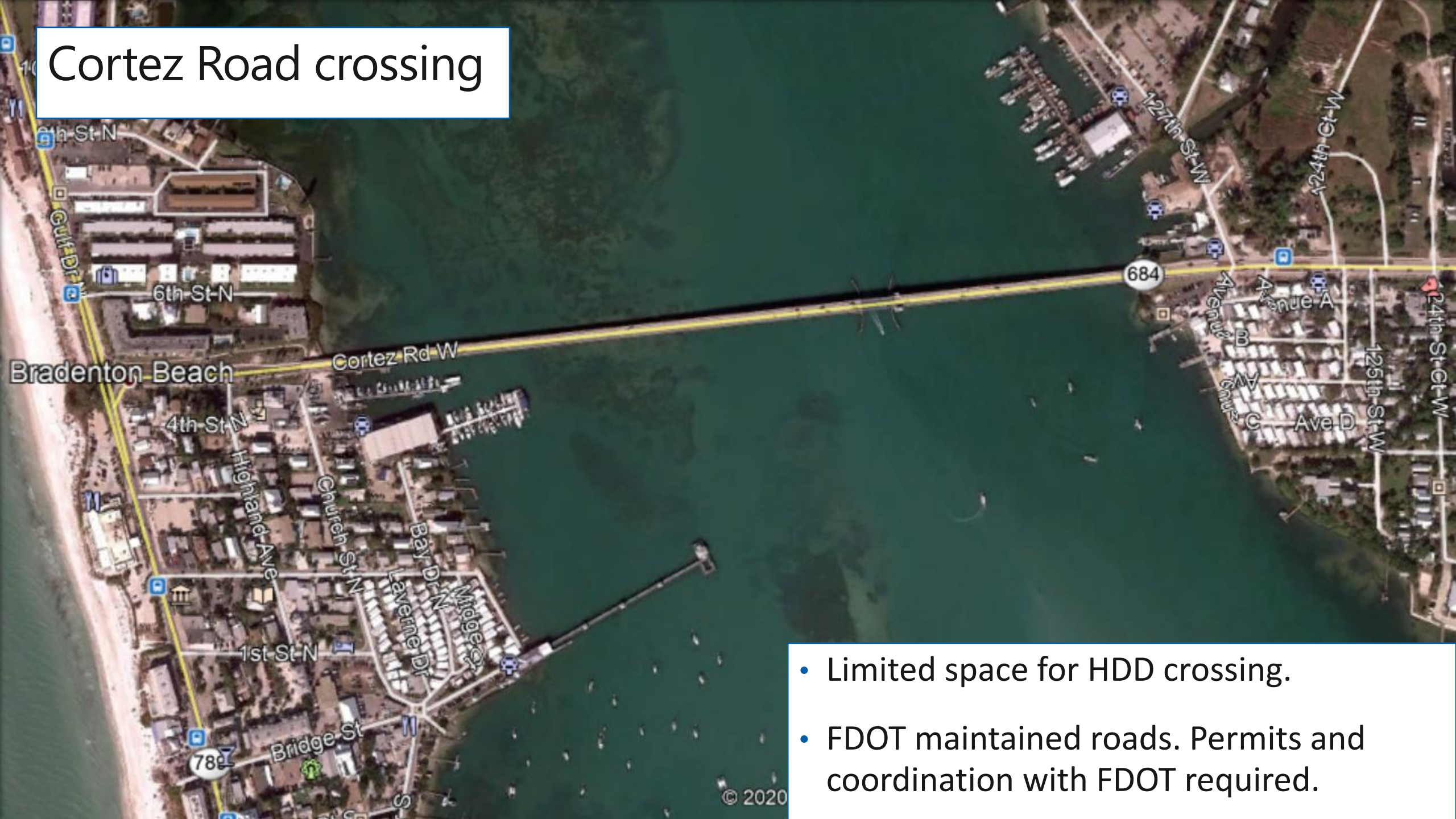
- Right of Way constraints
- Public opposition due to traffic already a historical issue
- Future replacement for Longboat Pass Bridge poses a potential conflict.

Southbound on Bradenton Beach



- Narrow right of way, limited space with existing utilities.
- Acquisition of utility easements would be required.

Cortez Road crossing



- Limited space for HDD crossing.
- FDOT maintained roads. Permits and coordination with FDOT required.

Alignment Conclusion

- Alignment 5 has significant conflicts and challenges:
  - ROW / Easement
  - Public Impact/Traffic
  - FDOT
  - Hydraulic Limits - Additional Pump Station Location
- Alignment 1 is the preferred option:
  - Direct / established Route
  - Previous open-cut impacts can be restored
  - Little to no impact on island traffic / public
  - Hydraulically consistent

Alignment 1
Construction Alternatives

Alignment 1 Construction Alternatives

- Construction alternatives refers to the method of construction for pipeline installation. Methods include:
  - Open Cut (OC)
  - Horizontal Directional Drill (HDD)
  - Direct Pipe (DP)
- Eight construction alternatives for Alignment 1 were evaluated.
- Considerations:
  - Limitations to each method (depth, size, distance, soils, etc)
  - Combination of methods

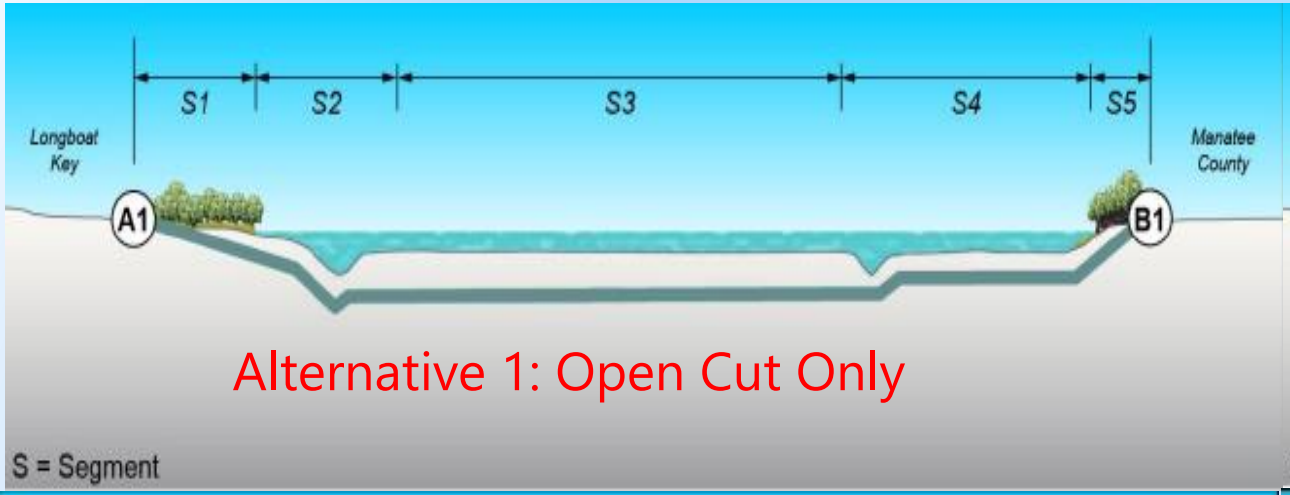
Alignment 1 Construction Alternatives

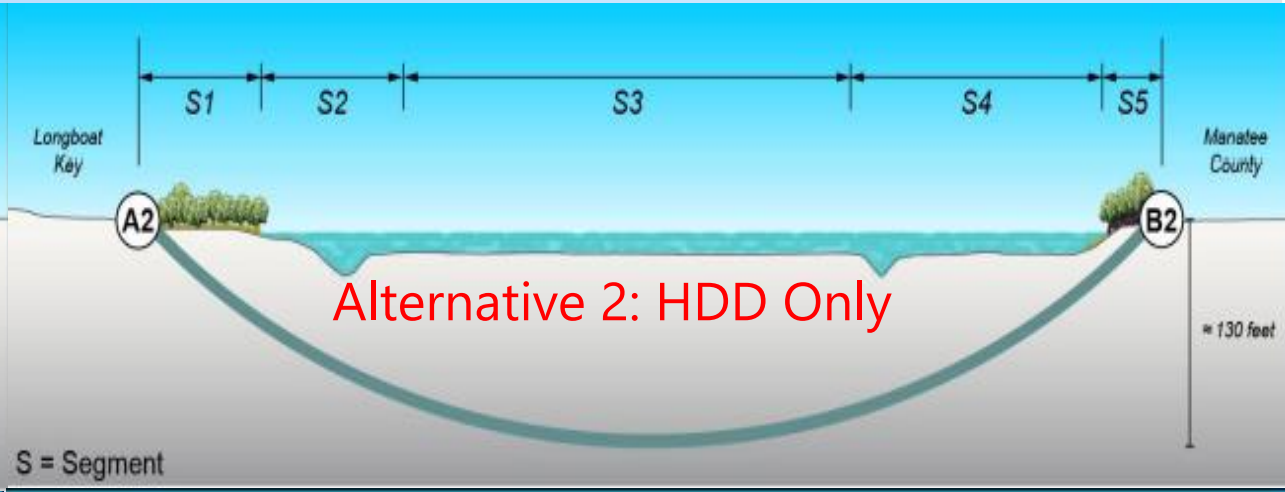
- Divided project into 5 segments due to varying field conditions along the alignment.

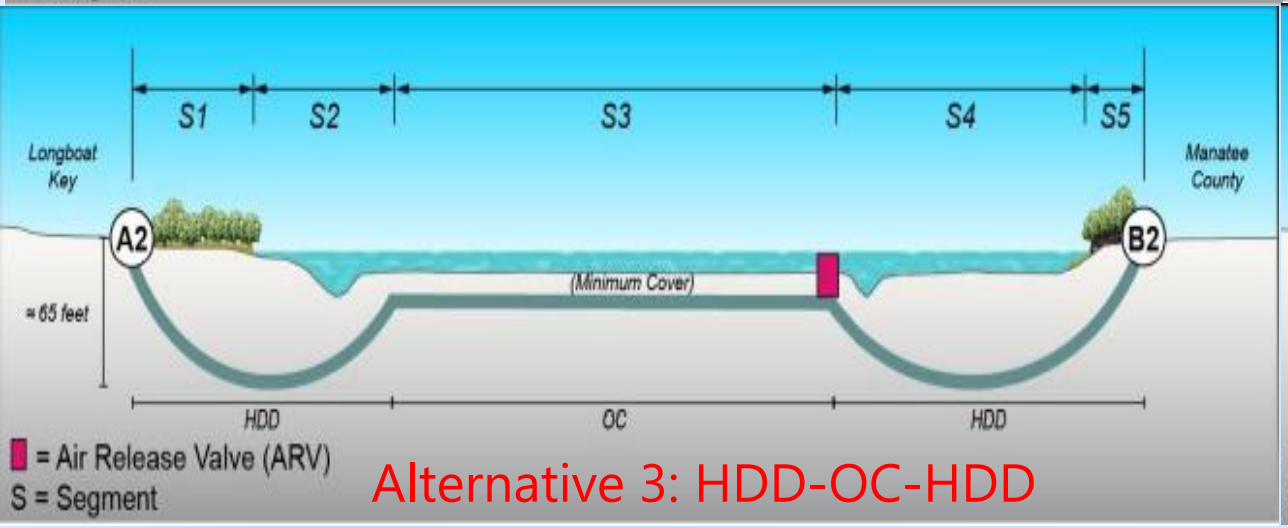
TABLE 2-3
SUMMARY OF ALIGNMENT 1 ALTERNATIVES

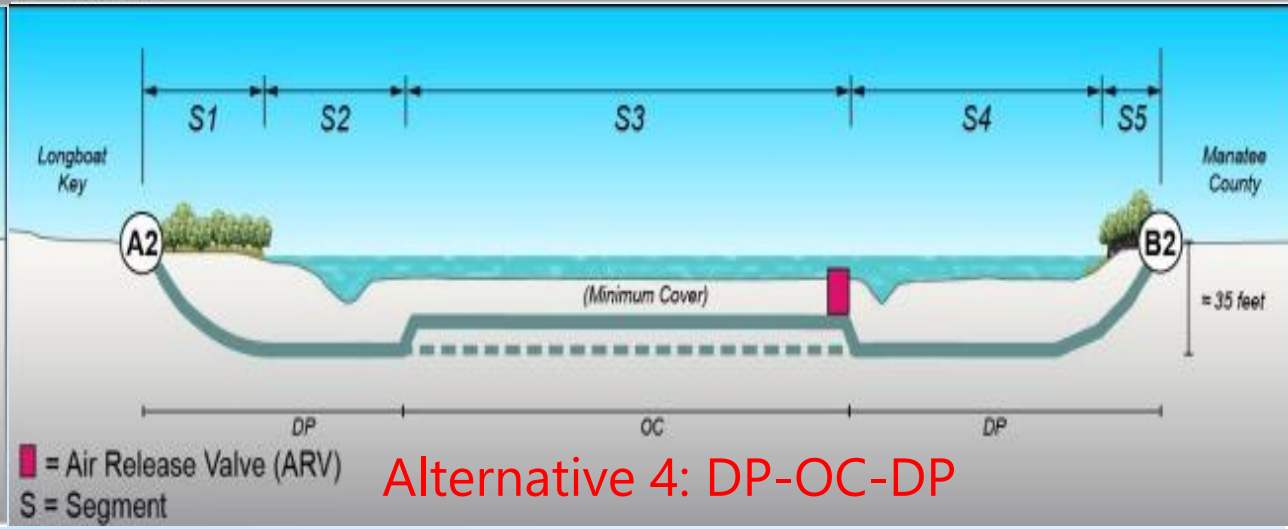
Construction Alternative	Description	Construction Method		
		Segments 1-2	Segment 3	Segments 4-5
1	All OC	OC	OC	OC
2	All HDD	HDD	HDD	HDD
3	Hybrid 1	HDD	OC	HDD
4	Hybrid 2	DP	OC	DP
5	Hybrid 3	HDD	OC	OC
6	Hybrid 4	DP	OC	OC
7	Hybrid 5	OC	OC	HDD
8	Hybrid 6	OC	OC	DP

Construction Alternatives Analysis

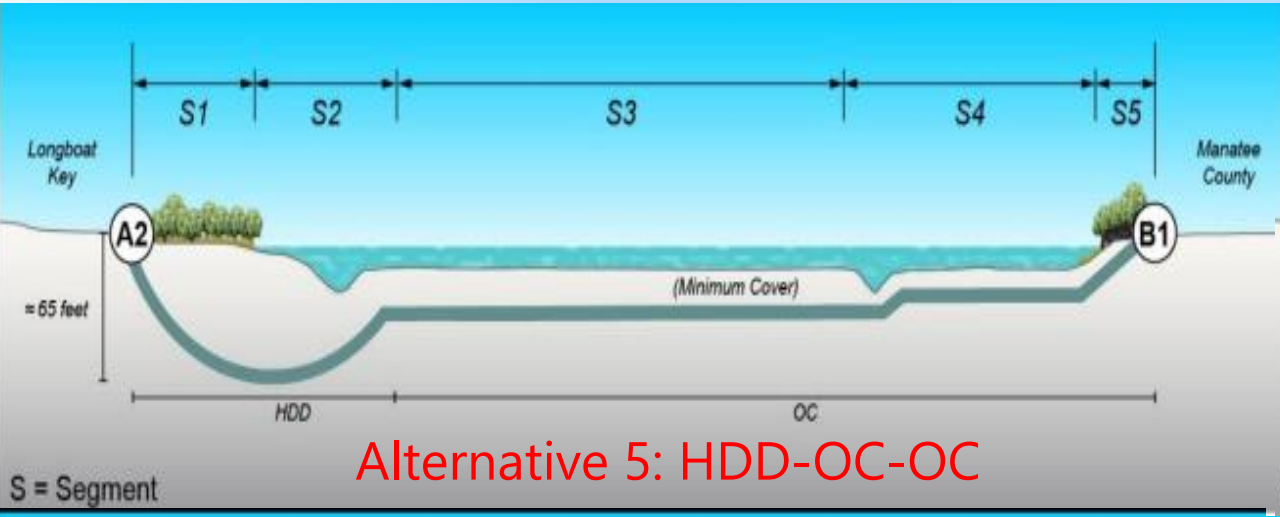




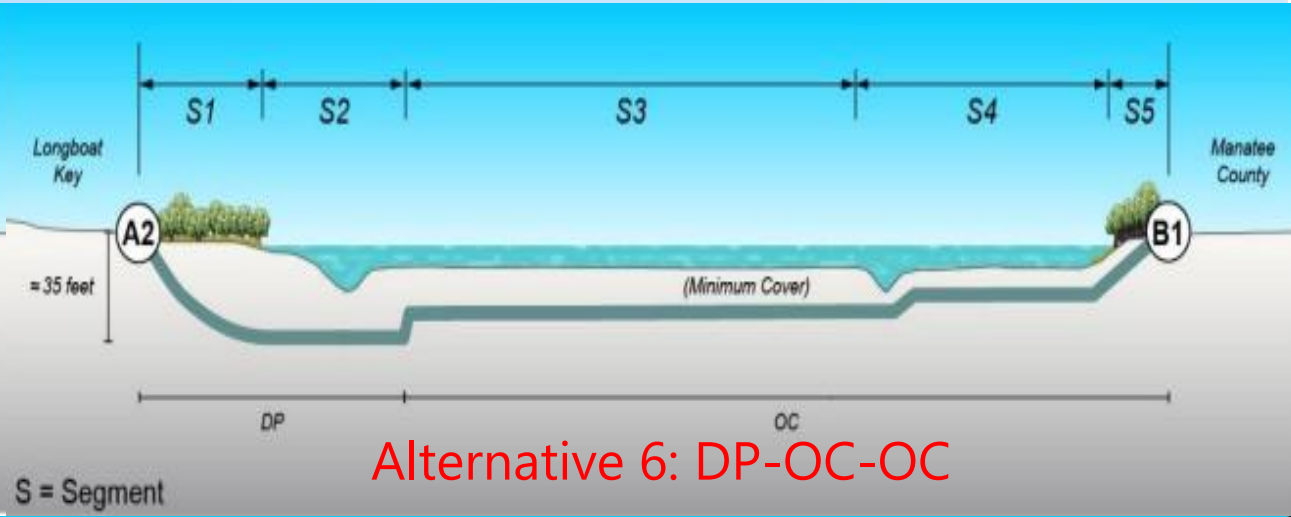




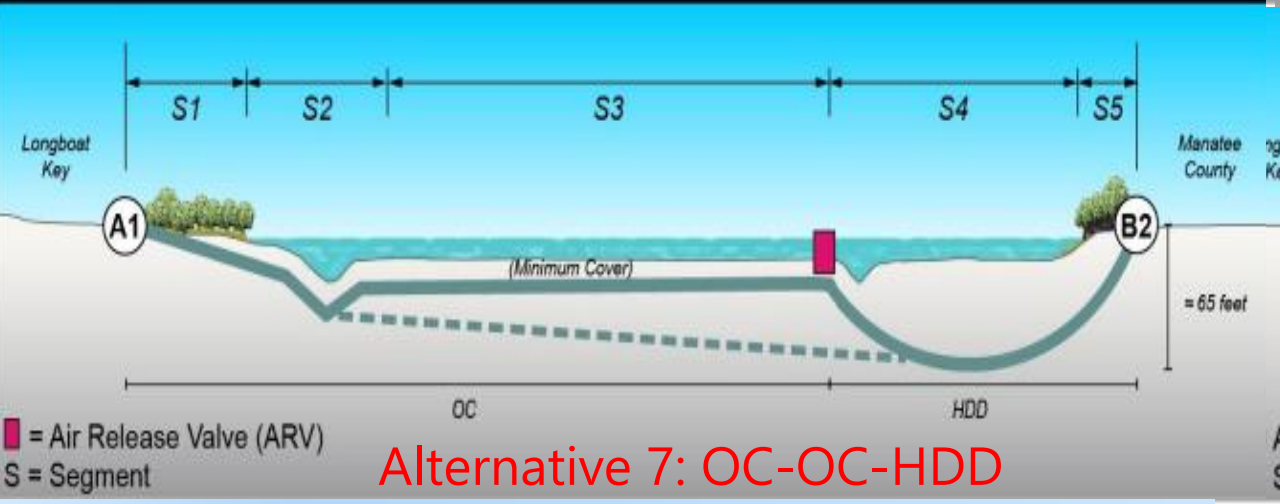
Construction Alternatives Analysis



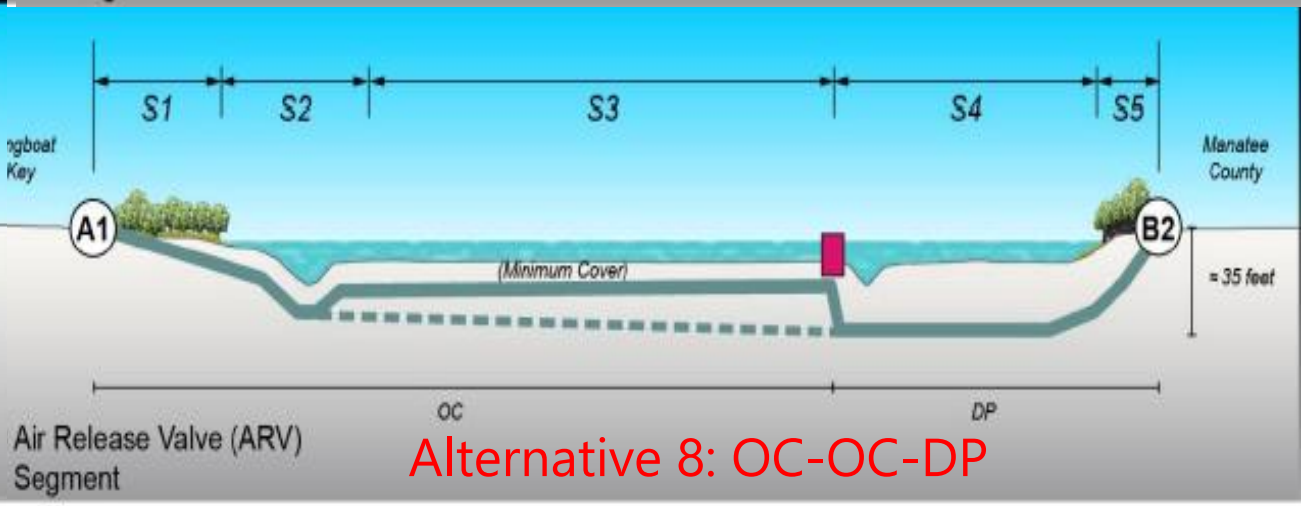
Alternative 5: HDD-OC-OC



Alternative 6: DP-OC-OC



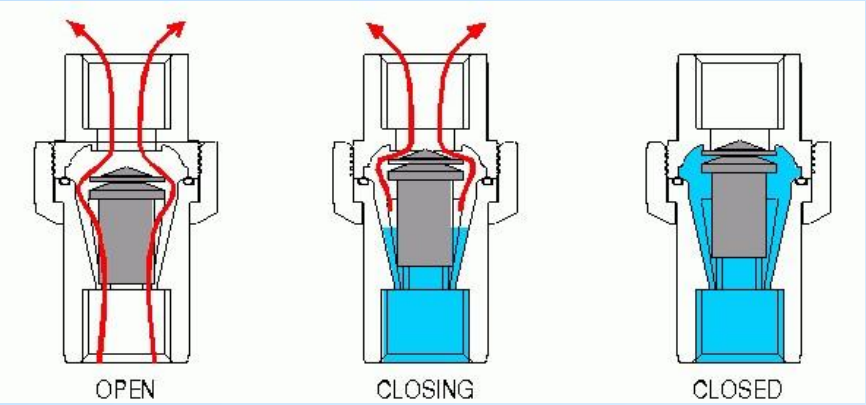
Alternative 7: OC-OC-HDD



Alternative 8: OC-OC-DP

Construction Alternatives Analysis – ARV Limitations

- Construction Alternatives 3, 4, 7, and 8 require air release valves (ARVs) in Sarasota Bay.
- ARVs pose a safety and maintenance hazard for boaters and maintenance personnel.
- ARVs have intermittent discharges of raw wastewater when air is released.
- ARVs can leak as their condition deteriorate.



Construction Alternatives Analysis

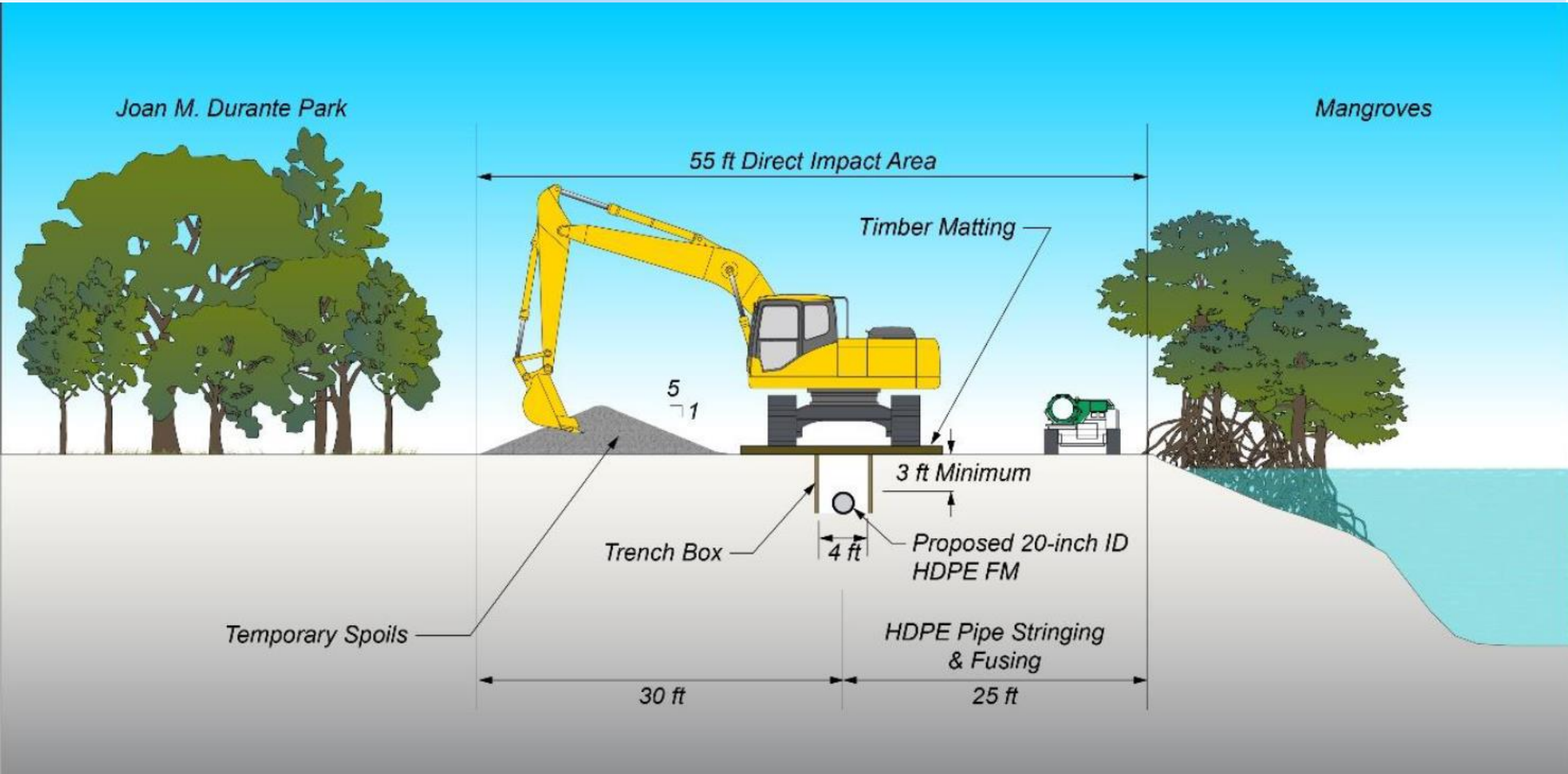
- Length of trenchless runs increases project and construction complexity.
- Longer pulls have higher risk of frack out.
  - Intermediate receiving pits a possibility
- Deep pipe runs required for appropriate geological conditions for successful installation and to reduce frack out risk into the bay.
  - Receiving pits very deep to receive the cutting heads, making open cut from these pits less feasible.
- **All open-cut approach proposed.**

Construction Approach

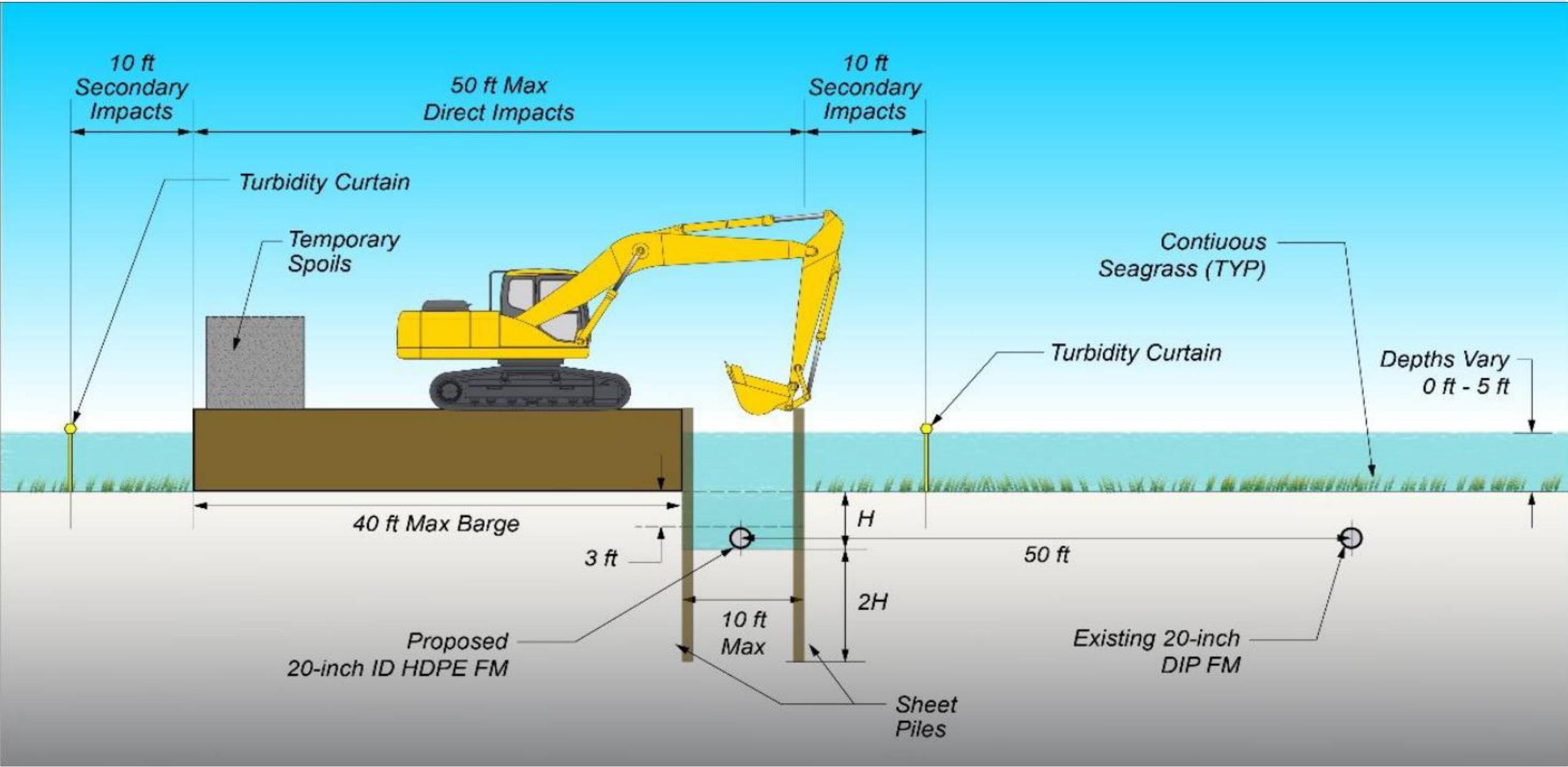
Construction Approach

- Refers to the means and methods for how the open-cut trench installation is performed.
- Minimize environmental impacts as much as possible.
  - Impact areas minimized by sheet-piling, shoring, and turbidity screens.
  - Impact areas categorized as direct or secondary to identify project boundaries.
- Project boundaries were determined for each segment based on seagrass survey and construction limitations based on discussion with contractors.
- In areas of dense seagrass or mangroves, use sheet piles or trench boxes to reduce trench width and impact areas.

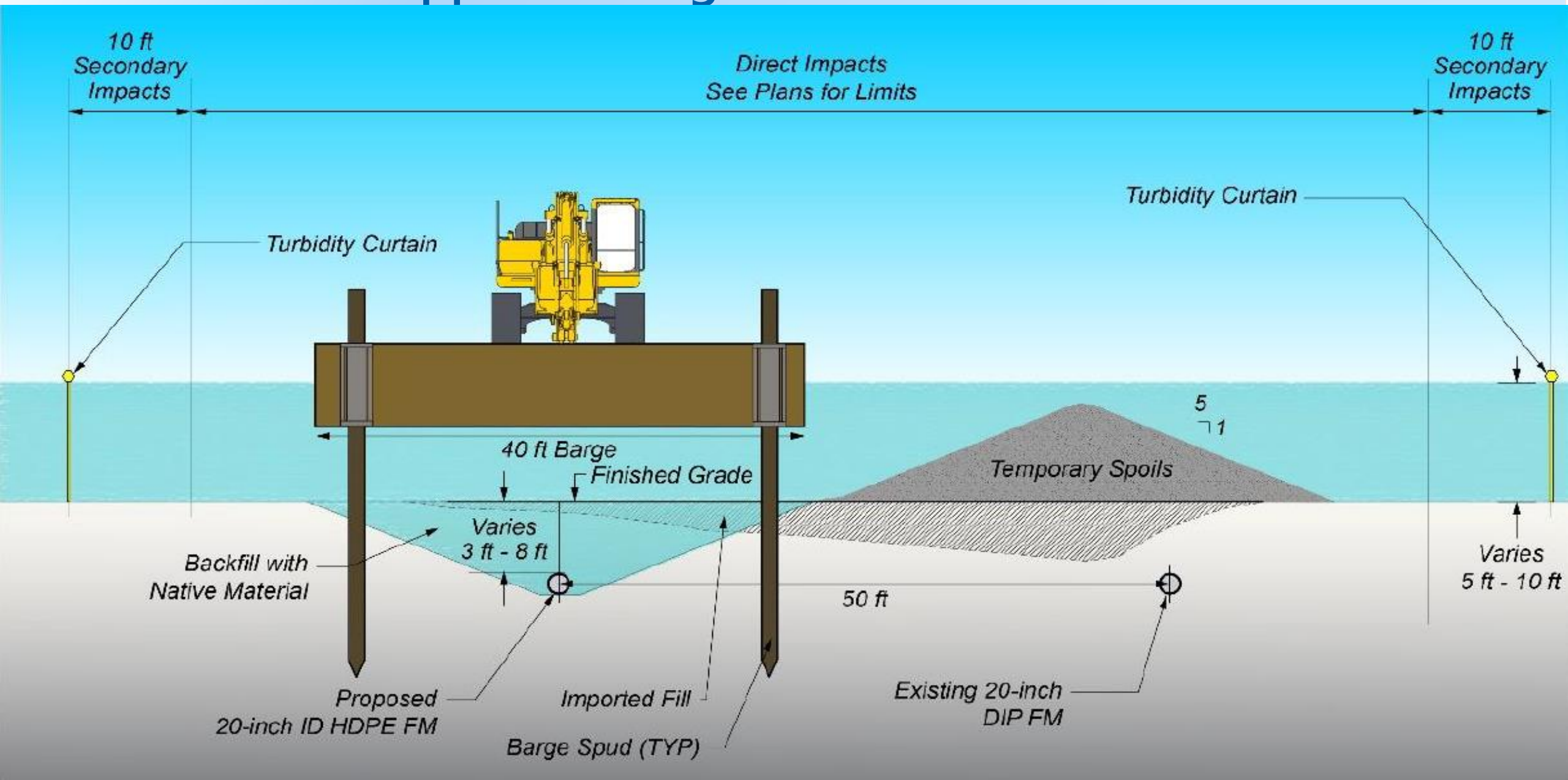
Construction Approach: Segment 1



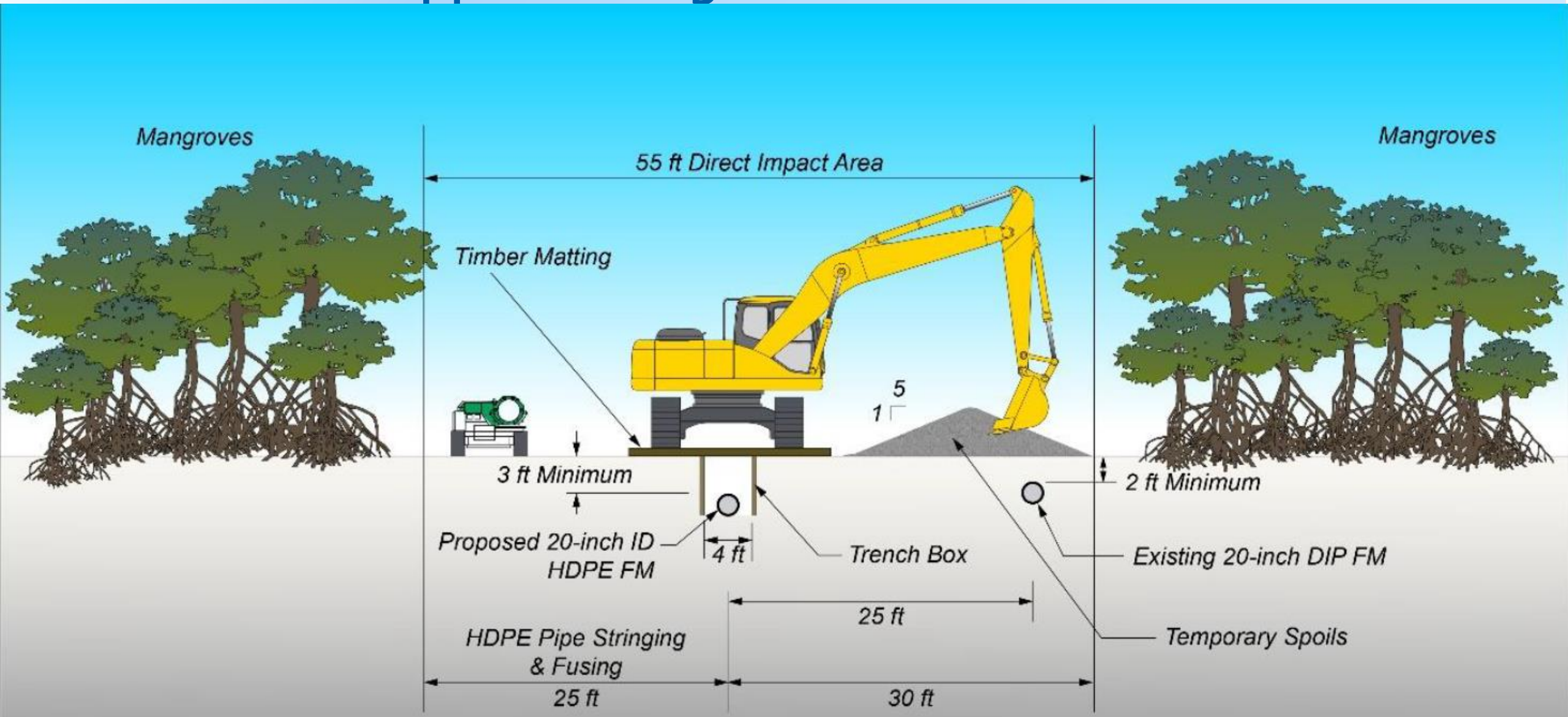
Construction Approach: Segments 2 and 4



Construction Approach: Segment 3



Construction Approach: Segment 5



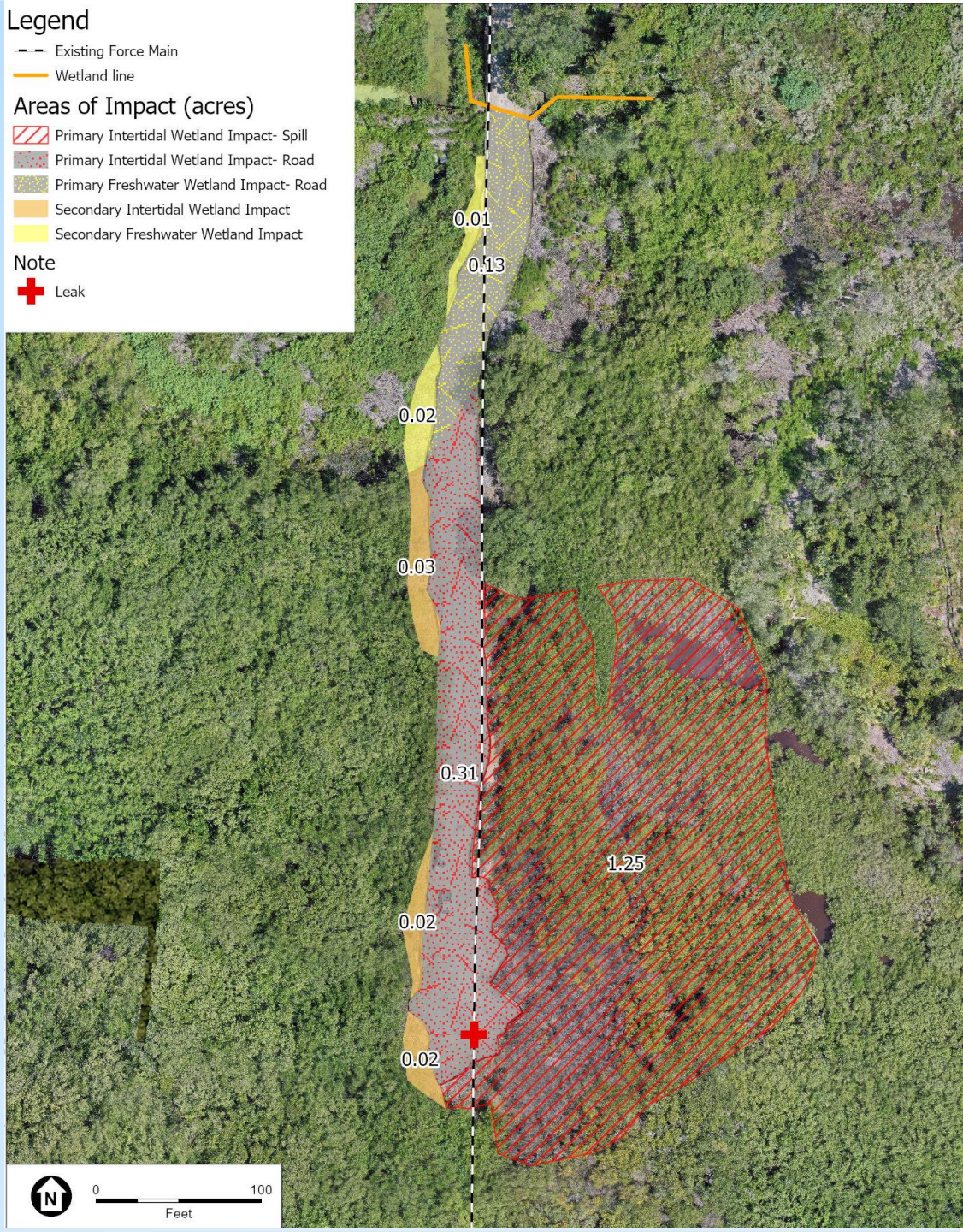
Environmental Impact Quantification

Impact Quantification

- GIS data, ESA seagrass/oyster survey, and mangrove delineation used to quantify wetlands and aquatic resources in construction corridor.
- Iterative process with construction approach to minimize footprints and impact areas
- Overlaying construction limits with GIS coverages of wetlands and aquatic resources generated the following impact estimates:
  - Seagrass:
    - Direct: 3.5 acres (direct physical disturbance)
    - Secondary: 2.2 acres (outside of sheet piling but within turbidity curtains)
  - Mangroves: 1.63 acres
  - Oysters: 0.2 acres

Mangrove Impacts from Sewer Leak

- The June 2020 sewer leak discharged raw sewage to the north and west of the leak, into surrounding mangroves
- A fill road was constructed to get into the area and conduct repairs
- Mangroves were impacted by the fill road and sewage (oxygen stress)

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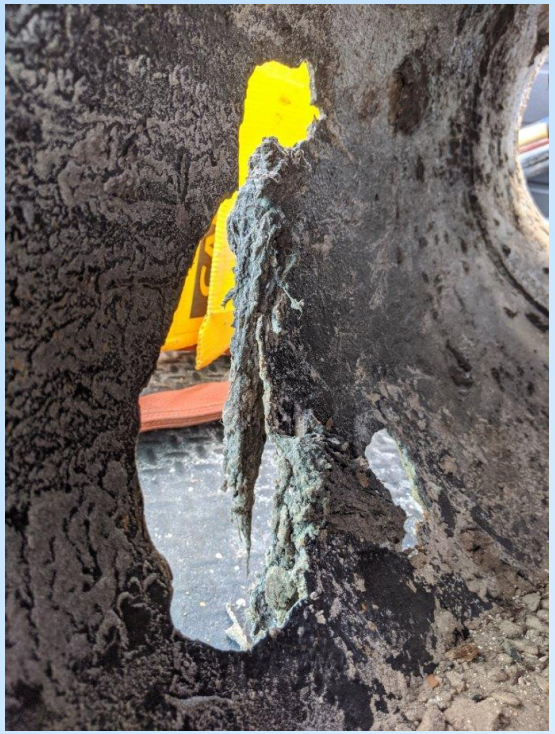
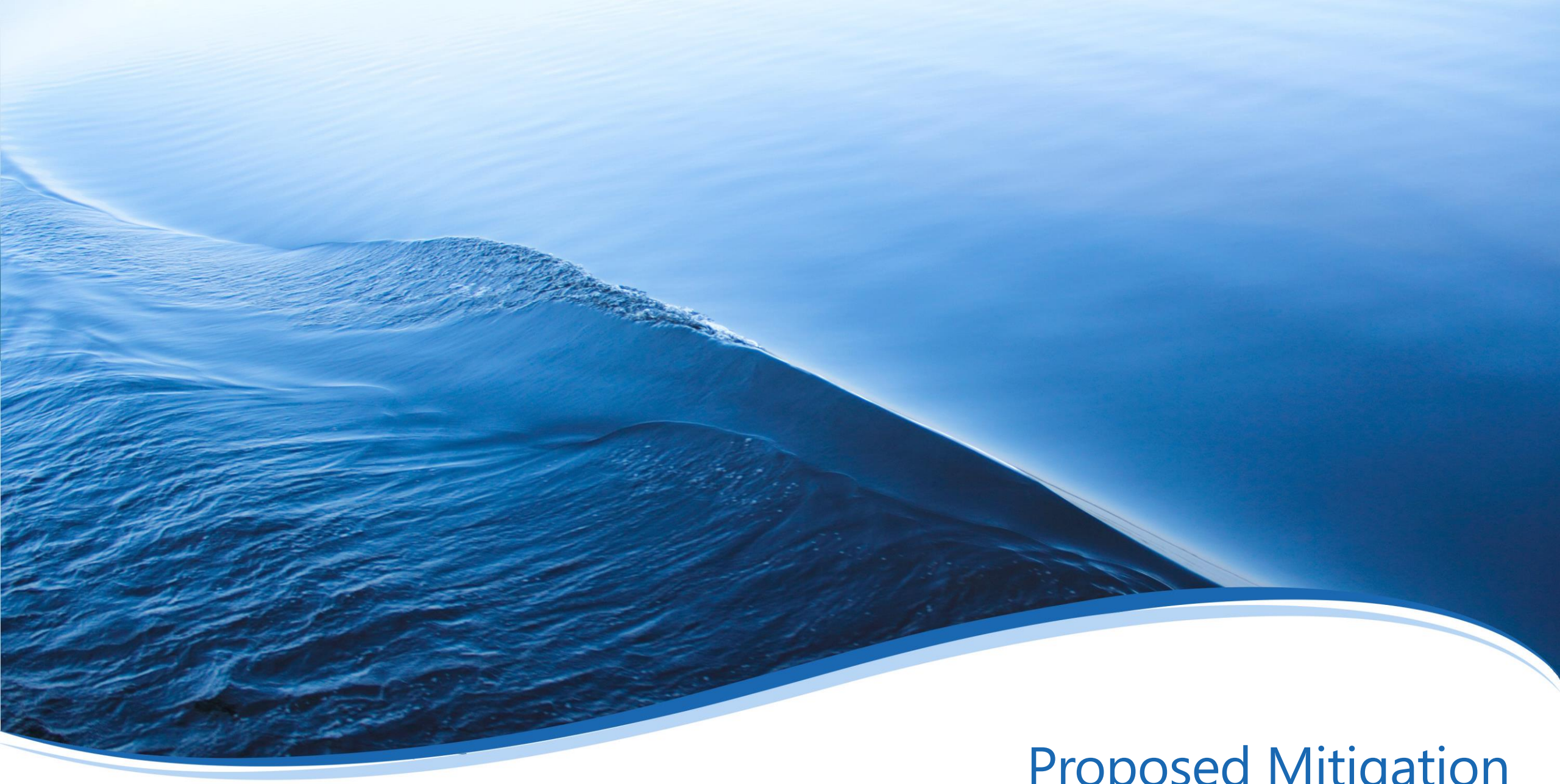




Proposed Mitigation

Previous Impacts from Existing Force Main Construction

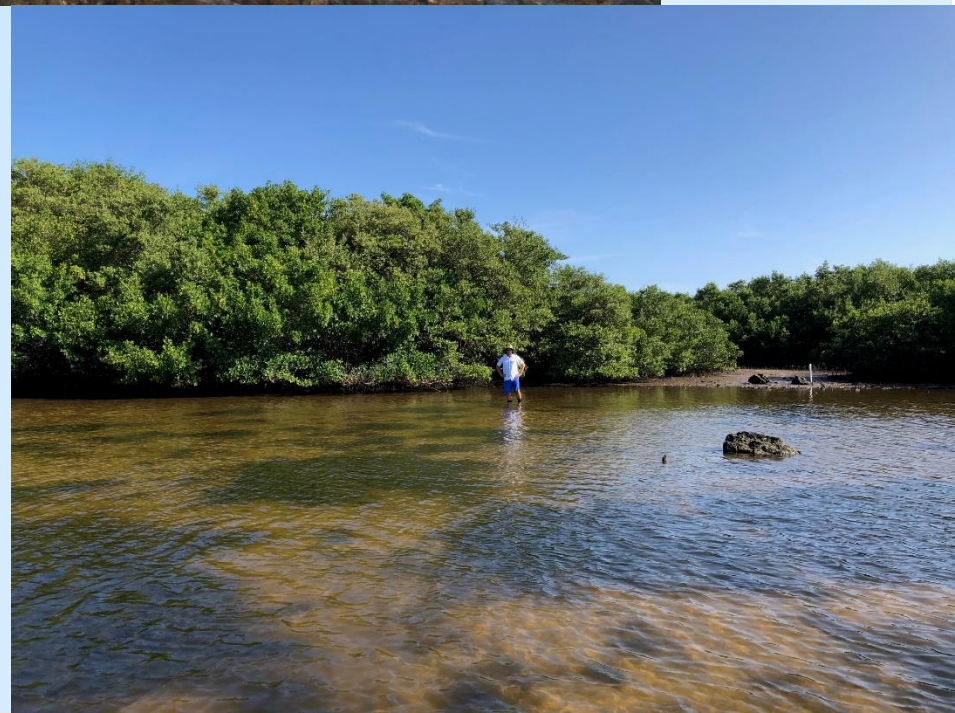
- Based on seagrass trend analyses and surveys (SWFWMD), seagrass coverage in the project area reached its apex in 2016-2018.
- Even during this period the deep trench cut from the original construction never supported seagrass.

Proposed Seagrass Mitigation

- Proposed mitigation includes backfilling deep trench areas and the unnamed channel within the project boundaries to provide viable area for seagrass recovery where it has historically been absent.
- 6.5 acres (15,300 CY) of backfill
- 1.9:1 mitigation ratio

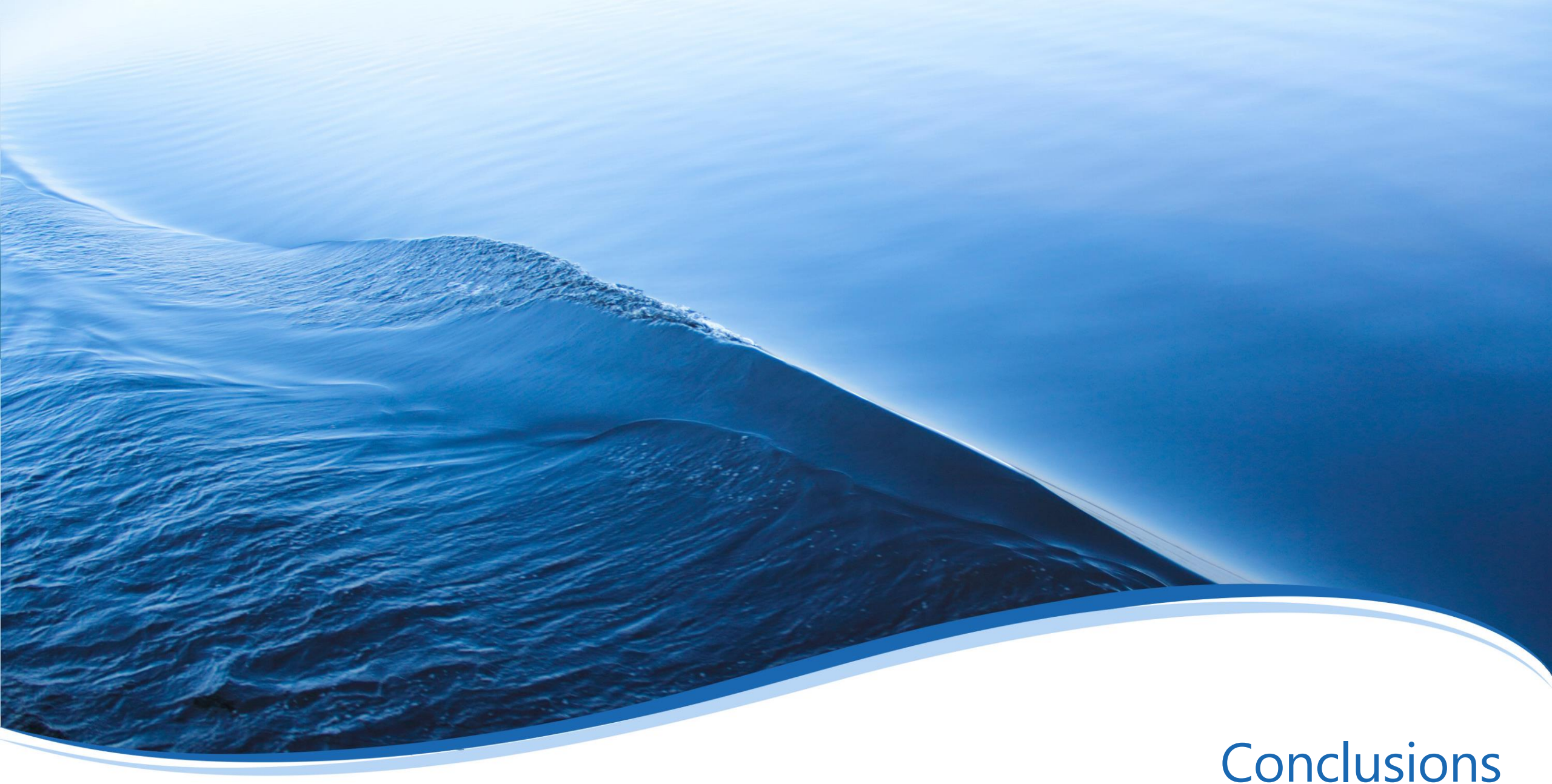
Mangrove and Oyster Mitigation

- All mangrove impact areas will be regraded to appropriate elevations and planted on 3-foot centers.
- Oyster impacts will be offset by placement of cleaned shell material on direct impact areas.



Impact and Mitigation Summary

- All impacts to wetland and aquatic resources associated with the construction of the new force main are temporary impacts – no permanent dredge/fill.
- Opportunities exist for a net environmental benefit by backfilling old dredge cuts to support future seagrass recovery.



Conclusions

Conclusions

- Critical and urgent infrastructure project needed to reinforce the integrity of wastewater services for the Town, and to protect the integrity of the immediate marine ecosystem.
- Propose open-cut construction along Alignment 1.
- All impacts to wetlands and aquatic resources will be temporary impacts.
- All directly impacted areas will be restored back to natural elevations and graded immediately upon installation and burial of the new force main.
- The proposed project has the potential to result in a net environmental benefit to the Sarasota Bay marine ecosystem with respect to seagrass recovery.

Questions and Discussion

Open Cut

HDD

Direct Pipe

Sectional Barge

Subaqueous Pipe Installation