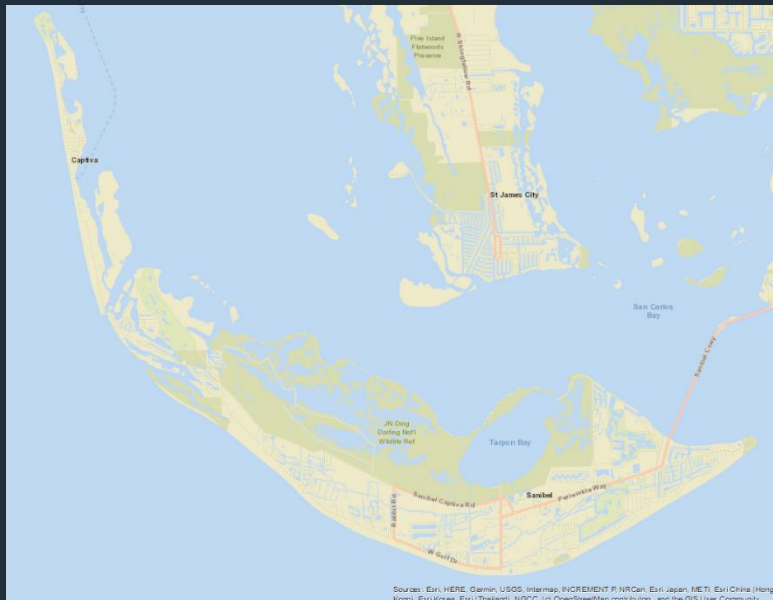


City of Sanibel

Captiva Island to Sanibel Wastewater Transmission

System Capacity Analysis Project Summary



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NOAA, (c) OpenStreetMap contributors, and the GIS User Community

Tetra Tech
12.06.2022

Background

- Lee County commissioned a study by an engineering firm to evaluate long term alternatives for wastewater service. The County's engineering firm identified two alternatives:
 - Option 1 – Continue operating as historically operated.
 - Option 2 – Partner with Sanibel to accept wastewater from Captiva, treat at the Donax WRF, and dispose of the effluent.
- Lee County then commissioned Tetra Tech's study to define the necessary improvements to Sanibel's wastewater transmission system to enable Sanibel to accept the flow from Captiva, **with or without flows from South Seas Plantation.**

Tetra Tech Scope

- Evaluated the wastewater pumping system and transmission network from the north end of the island (at the point wastewater from Captiva Island would enter Sanibel Island at Blind Pass) to the Donax WRF.
- Developed a new wastewater transmission system model to aid the hydraulic analyses.
- Identified deficiencies within the existing Sanibel wastewater transmission system.

Tetra Tech Scope (continued)

- Recommended improvements; pumping capacity, wet well capacity, force main capacity (new lines and/or increased pipe diameter).
- Provided opinions of costs for the recommended improvements.

Captiva Connection to Sanibel West Wastewater System (MLS 1 to Donax WRF)

- Wastewater from Captiva would be received at Sanibel's MLS-1 at Sea Spray Lane and conveyed to the Donax WRF using Sanibel's transmission infrastructure.



Summary of Study Findings

- The Sanibel wastewater transmission system was designed for Sanibel build-out conditions and currently can not reliably accept and convey flows from Captiva to the Donax WRF without significant improvements to the Sanibel conveyance infrastructure.
- Tetra Tech recommends that Sanibel consider implementing a 5-year capital improvement plan (CIP) to upgrade the City's wastewater transmission system. Initially, the focus should be on the West Wastewater System that would convey flows from Captiva Island.

Summary of Study Findings (continued)

- Improvements to the City's wastewater transmission system are recommended, regardless of whether additional flows from Captiva are accepted into Sanibel's system.
- Some improvement projects would be the responsibility of Captiva/Lee County and some improvement projects would be the responsibility of Sanibel.

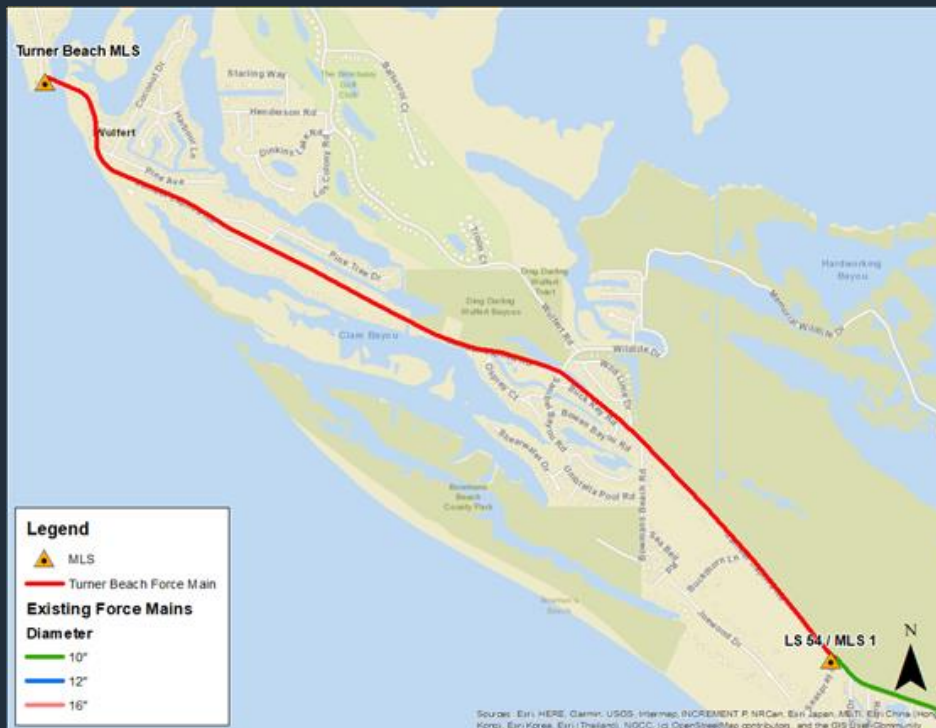
Replace all MLS pumps with larger pumps.

Replace 4,100 LF of 12-inch force main downstream of MLS 3 with 16-inch force main or add a 12-inch parallel force main to attain equivalent capacity.



Captiva/Lee County Improvements

These conveyance projects would be the responsibility of Captiva/Lee County.

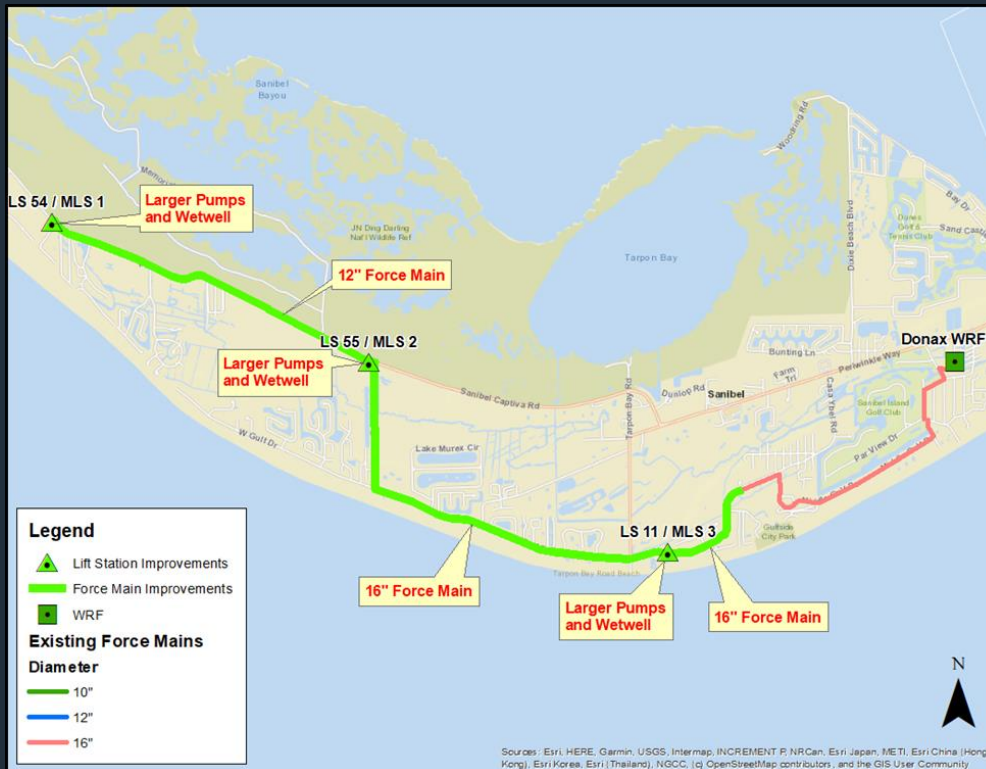


New MLS near Sanibel's Turner Beach Lift Station that now serves Lee County's public beachside restroom and shower facilities at Turner Beach.

New 10-inch wastewater transmission main from Turner Beach Lift Station to Sanibel's MLS-1 at Sea Spray Lane.

Captiva/Lee County Improvements

These projects would increase transmission capacity and be the responsibility of Captiva/Lee County.



Replace 12,500' of existing 10-inch force main downstream of MLS 1 with a 12-inch force main or add a 12-inch parallel force main to attain equivalent capacity.

Replace 15,500' of existing 12-inch force main downstream of MLS 2 with a 16-inch force main or add a 12-inch parallel force main to attain equivalent capacity.

Without South Seas Plantation Participating

Replace 12,400' of existing 16-inch force main downstream of MLS 3 with a 20-inch force main or add a 12" parallel force main to attain equivalent capacity.



Basis for Opinions of Probable Cost

Improvements	Proposed Parallel Transmission Main	Unit Price	Sanibel Capacity Improvements	Adding Captiva Island Without South Seas Plantation	Adding Captiva Island With South Seas Plantation
Master Lift Stations					
Replace Pumps with Larger Pumps and Miscellaneous Upgrades	NA	NA	MLS 1, MLS 2, MLS 3	For this conceptual analysis, no additional pump improvements required if commitments to serve Captiva Island with or without South Seas Plantation are established before pumps are upgraded.	
Replace Wetwells with Larger Wetwells or Supplement with an Additional Wetwell	NA	NA	NA	MLS 1 improvements cost is included in "Captiva Wastewater Feasibility Study", Kimley-Horn, 2022. Costs for MLS 2 & MLS 3 improvements are included in this conceptual analysis.	
Transmission Mains					
From MLS 1 to MLS 2	12-inch Directionally Drilled HDPE Parallel to Existing 10-inch from MLS 1 to MLS 2	\$200/LF	NA	12,600	No additional transmission main capacity upgrades needed.
From MLS 2 to MLS 3	12-inch Directionally Drilled HDPE Parallel to Existing 12-inch from MLS 2 to MLS 3	\$200/LF	NA	15,600	No additional transmission main capacity upgrades needed.
From MLS 3 to 16-inch Connection	16-inch Directionally Drilled HDPE Parallel to Existing 12-inch from MLS 3 to 16-inch Connection	\$250/LF	4,100	No additional transmission main capacity upgrades needed.	No additional transmission main capacity upgrades needed.
From MLS 3 from 16-inch Connection to Donax WRF	12-inch Directionally Drilled HDPE Parallel to Existing 16-inch from 16-inch Connection to Donax WRF	\$200/LF	NA	NA	12,500
Total LF of Transmission Mains			4,100	32,300	44,800

Summary of Project Costs

Improvements	Present Day Cost Range	Future Cost Range
Sanibel Capacity Improvements	\$2,760,000 to \$2,950,000	\$3,320,000 to \$3,540,000
Additional Captiva Capacity Improvements	\$13,040,000 to \$13,900,000	\$15,640,000 to \$16,680,000
Additional South Seas Plantation Capacity Improvements	\$4,550,000 to \$4,860,000	\$5,460,000 to \$5,830,000

Notes:

1. Costs will be influenced by when commitments to serve Capita, with or without South Seas Plantation, are established.
2. Costs will be influenced by changes in economic factors that may include inflationary impacts on material pricing, and regional bidding competition.
3. Future cost estimated based on escalating present day cost by 20% to account for two years of inflation.

Summary of Project Costs (continued)

- Additional design development would be required to improve the accuracy of the cost opinions prepared by Tetra Tech.
- The required improvements to Sanibel's MLS 1, MLS 2, and MLS 3 would be influenced by the final design flows established, the addition of wetwell capacity, and the sequence and size of any transmission main additions.
- For example, it might be feasible to design new submersible lift station pumps with variable frequency drives that would meet the full range of flow conditions anticipated under the various capacity expansion alternatives. This could reduce costs by eliminating the need to replace pumps more than once, and this cost efficiency is reflected in the opinions of probable cost presented above.

Next Steps

1. Complete Effluent Disposal Options Study and cost estimate.
2. Work towards a final determination regarding whether Sanibel will increase the capacity of their wastewater transmission system to serve Capita, with or without South Seas Plantation.
3. If an agreement to serve Capita, with or without South Seas Plantation, is executed, begin work on:
 - a. investigating project funding options
 - b. advancing the design of improvements
 - c. updating opinions of probable cost
 - d. developing improvements sequence and schedule

Discussion