

Storm Drainage Element

Sanibel Plan Steering Committee

3/18/2026

Oisin Dolley, City Engineer, Sanibel Public Works

Background Discussion Highlights

- **Development Requirements**
- Stormwater drainage systems for infill development are required to design for the 5-year storm event of one-hour duration.
- New development and redevelopment activities that are not exempt from permitting requirements of the SFWMD are required to be 25-year storm event with 3 day duration

Background Discussion Highlights

- The method of dealing with stormwater drainage so as to minimize harmful impact of development on the environment is to preserve and use the inherent capabilities of the site to absorb water effectively with minor modifications to land configuration.
- The Natural Storm Drainage system can achieve the following:
 - Maximize recharge of the shallow groundwater aquifer
 - Minimize runoff
 - Minimize erosion and siltation
 - Minimize vegetation removal
 - Minimize maintenance and drainage system costs
 - Improve water quality
 - Enhance flow in Sanibel River

Background Discussion Highlights

- In general, after heavy rainfall events there may be periods of several days' duration with standing water in some locations. This standing water will result in inconveniences to residents and visitors, but is necessary to sustain native wildlife and its habitat, to recharge the groundwater aquifer, to impede saltwater intrusion and to nourish the native vegetation.

Regional Impacts on the Quality of Surface and Ground Waters

- Sanibel Efforts
 - Best Management Practices for Golf Courses
 - Fertilizer Ordinance
 - Wastewater Improvements
 - Total Maximum Daily Loads (TMDLs)
- Regional Impacts
 - Caloosahatchee River Watershed
 - Lake Okeechobee Releases

SANIBEL'S PRECIOUS FRESHWATER RESOURCE

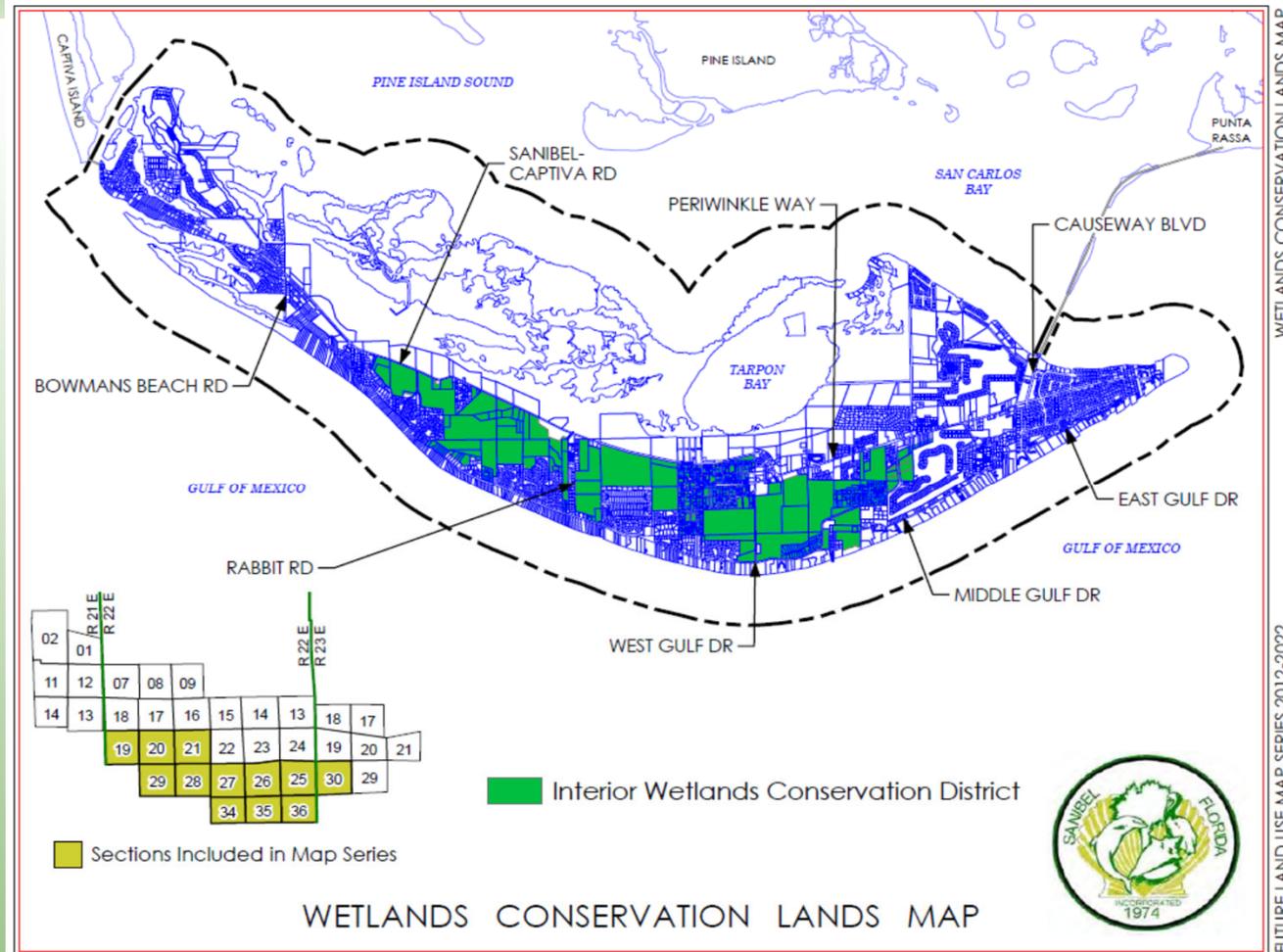


JOHNSON
ENGINEERING
— An Apex Company —

Benefits to Maintaining Sanibel's Freshwater Environment

- Unique wetland conditions
- Fire and Mosquito Control
- Combat Salt Water Intrusion
- Controls Invasive Vegetation
- Water Quality Benefits

Goal of Surface Water Management for Sanibel is to maintain as much fresh water on island as possible to benefit the island's Interior Wetland System, so long as developed areas are not adversely impacted.



Significance of Freshwater Lens

Goal of Surface Water Management for Sanibel is to maintain as much fresh water on island as possible to benefit the island's Interior Wetland System, so long as developed areas are not adversely impacted.

Benefits to Maintaining Sanibel's Freshwater Environment

- Unique wetland conditions
- Fire and Mosquito Control
- Combat Salt Water Intrusion
- Controls Invasive Vegetation
- Water Quality Benefits

For every foot the fresh water table is elevated above mean sea level, the salt water underlying it is depressed by 40 feet.



JOHNSON
ENGINEERING
— An Apex Company —

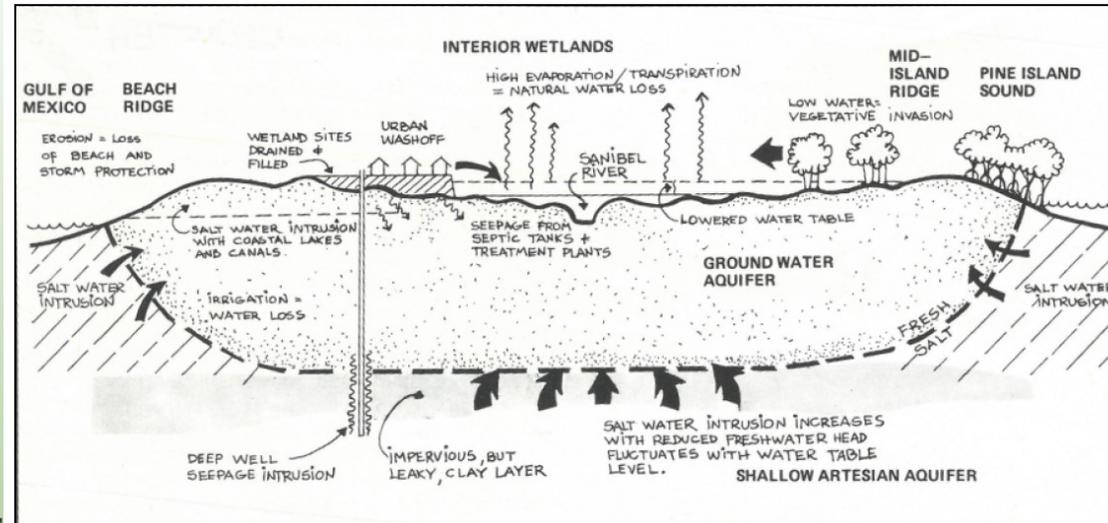
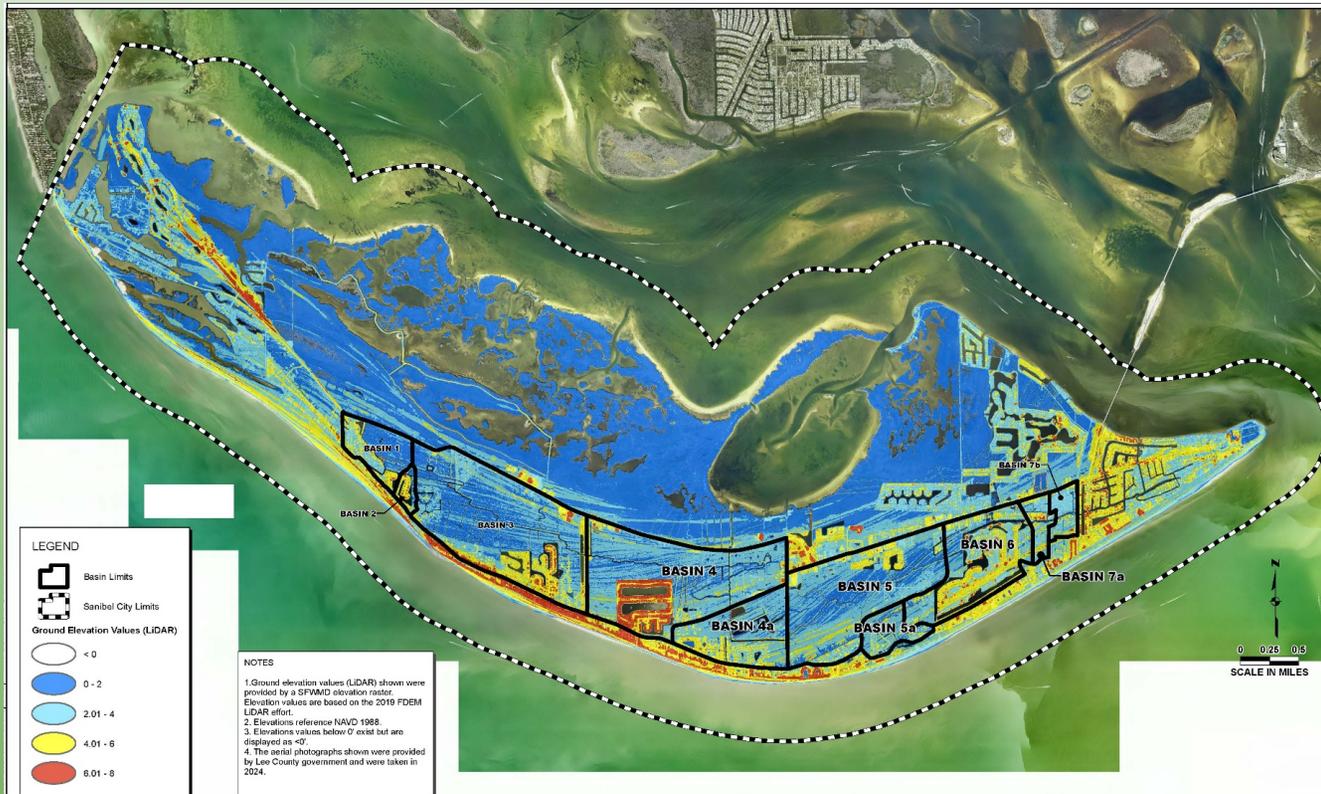


Figure 1. Graphical representation of the water budget of the freshwater basins on Sanibel, taken from The Sanibel Report (1976).

KNOWING HOW YOUR AREA WORKS IS KEY



1) Canal Systems (East/West Ends)

- Swales and Retention Areas overflow through tidal outfalls
- Can require 24-48 hours for excess water to overflow out depending on tides.

2) Subdivision Retention

- Properties use subdivision system as retention. Examples: Dunes, Lake Murex
- In some cases there is an established overflow route for excess water but not always.

3) River Basins

- Sanibel Slough provides overflow route through weirs and acts as retention.
- Water table within East/West basin is consistent across each basin.

4) Localized Drainage Areas

- Areas manage water within retention areas but established overflow routes for excess do not exist.
- Properties here manage water independently with on site retention systems.

For Review

01/09/2025 5:03:18 PM

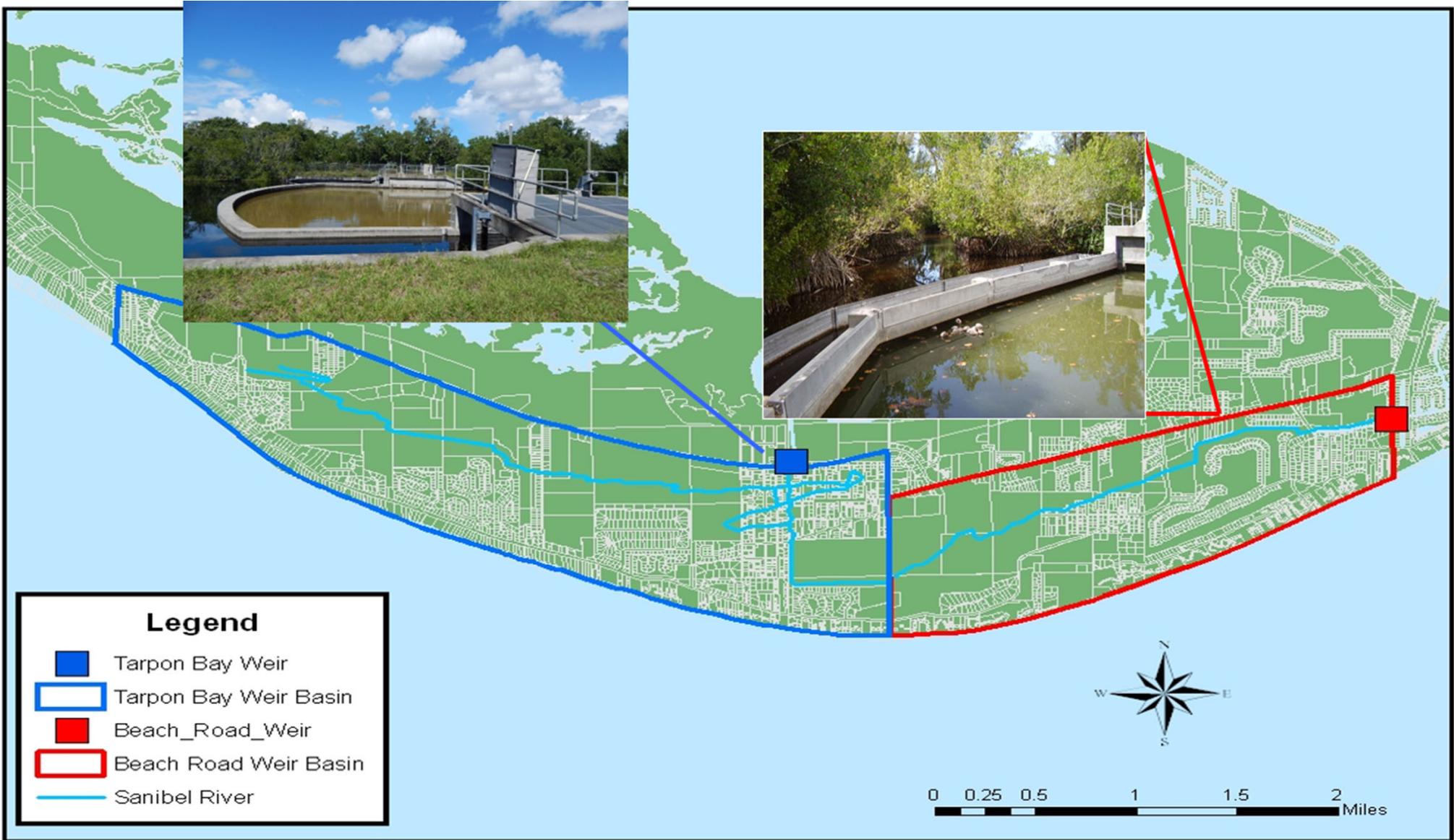
City of Sanibel
Lee County, Florida

JOHNSON
ENGINEERING
— An Apex Company —

JOHNSON ENGINEERING, LLC.
2122 JOHNSON STREET
FORT MYERS, FLORIDA 33901
PHONE (239) 334-0046
E.B. #042 & L.B. #042

Topographic Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
01/09/2025	20250101-001	-	As Shown	1



CITY OF SANIBEL WEIR CONTROL POLICY

Established through City Council approval in 1997.

Weirs are opened if:

1. Interior Flooding Conditions

- Public or private streets impassible
- When one of river gauges in west basin adjacent to Gulf Pines, Rabbit Road or San-Cap Rd. = or > 3.3' NGVD for 24 hour period; 2.8' NGVD in east basin

2. Pre-Storm Conditions

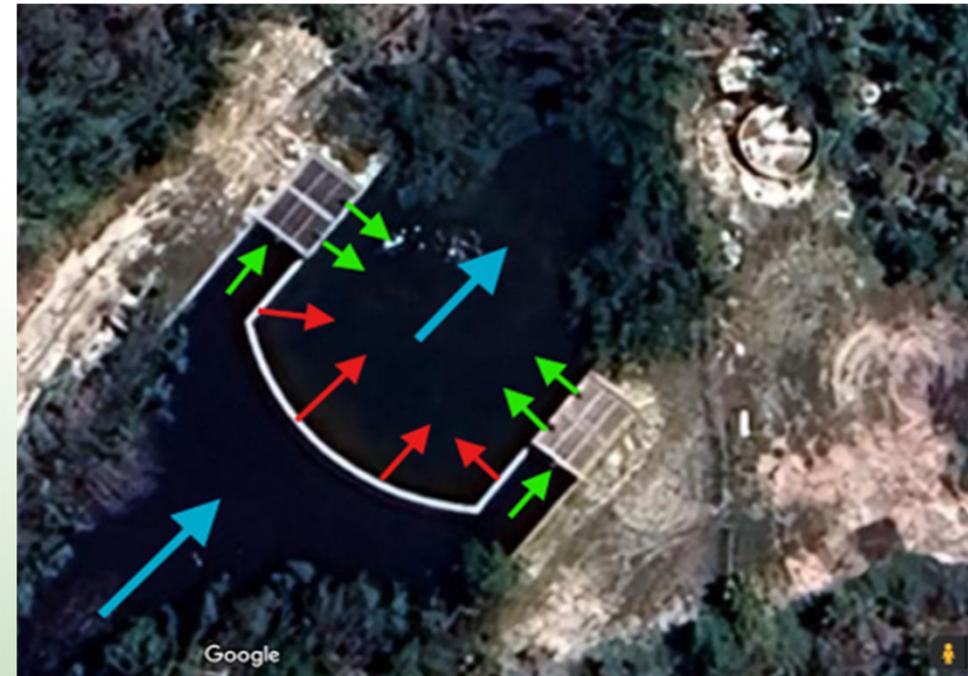
- Opened up to 36 hours in advance of storm (>3.2';2.7')

3. Surface Water Duration Conditions

- 3.2' NGVD west gauges for 90 consecutive days – reduce to 3.0' NGVD for remainder of calendar year

4. Miscellaneous Conditions

- When deemed necessary by City Manager for the prevention of immediate harm to persons, property, or the environment.



Tarpon Bay Weir

RED-Weir Overflow (>3.2 NGVD)

GREEN- Flow through Gates when tide is lower