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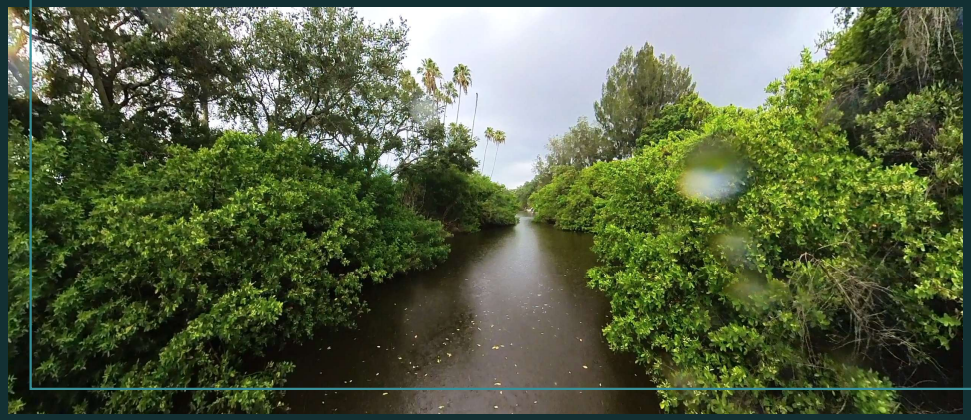


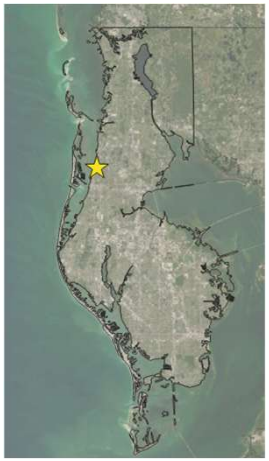
Stevenson Creek

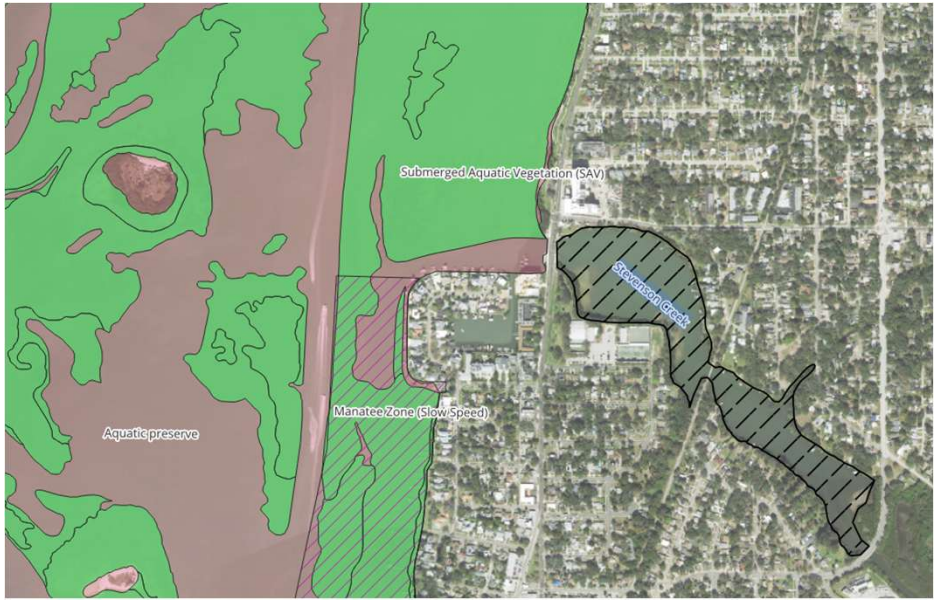
Slow Speed Zone Feasibility Review

Presentation overview

- Scope of work
    1. Shoreline stability assessment
    2. Slow speed zone alternatives investigation
- Shoreline stability assessment
- Slow speed zone alternatives investigated
- Evaluation of alternatives and recommended option
- Important considerations
- Recommended alternative requirements (data collection)
- Estimated costs and schedule
- Discussion

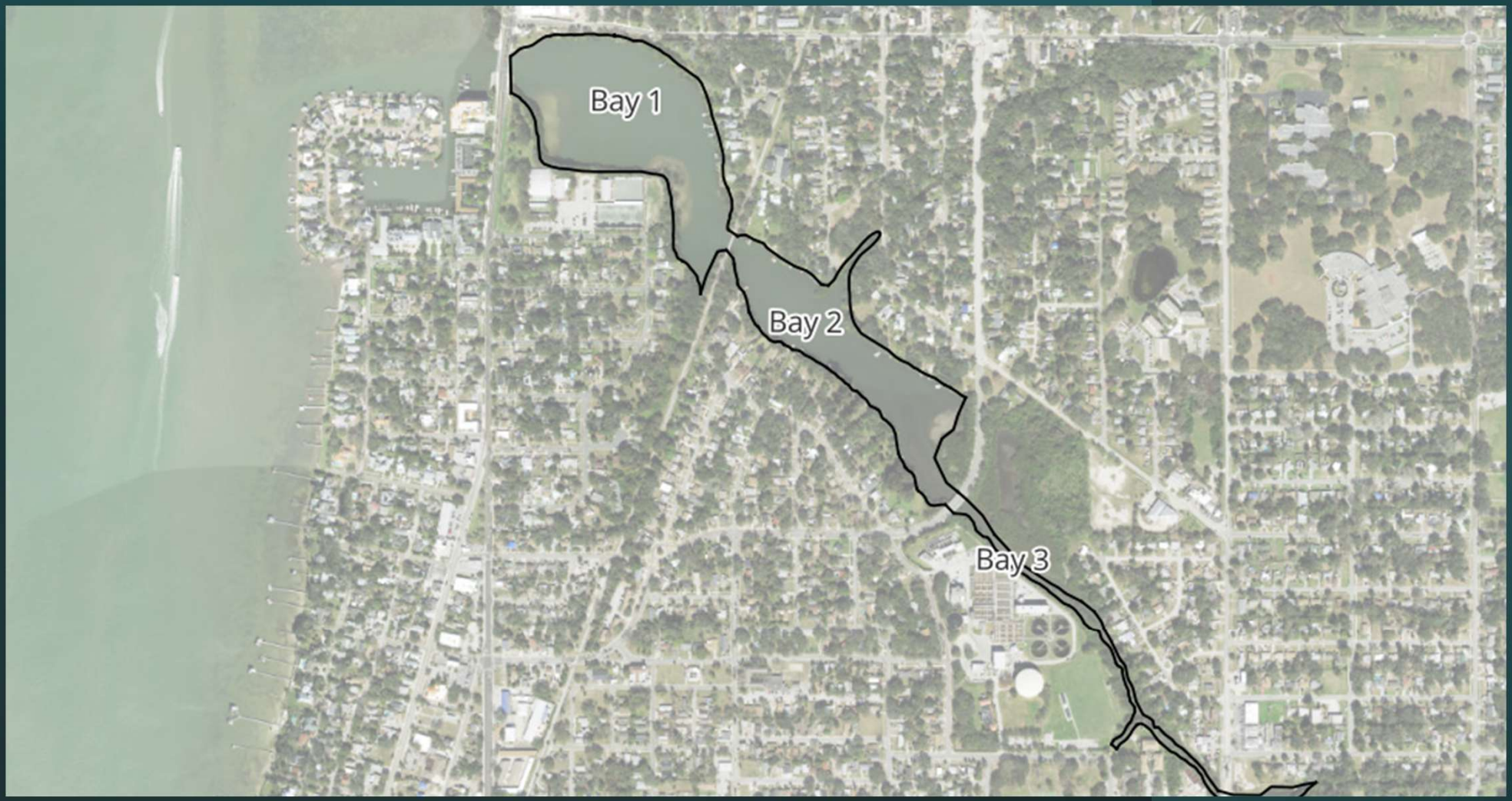
Stevenson Creek site preview





- Tributary to the Clearwater Harbor
- Approx. 1 mile of navigable waterway
- Limited bridge clearance for vessels (~ 6 ft)
- Diverse ecosystem documented outside of Stevenson Creek

Site Visit and 360 video


Bay 1
Bay 2
Bay 3

Shoreline stability assessment

- Conducted on June 27, 2024
- Assessed 11,600 ft of shoreline for:
  - Stability
  - Erosion due to boat wake
  - General shoreline habitat

- Findings
  - Shoreline appeared stable with no notable active erosion
  - No notable erosion due to boat wake
  - Healthy mix of shoreline habitat
  - Varying condition of hardened shorelines
  - One area of historic erosion noted.

Shoreline Type/Habitat	Approx. Linear Feet	Percent of Total Shoreline
Mangrove	7,398	64%
Brazilian Pepper	340	3%
Seawall	1,634	14%
Riprap	439	4%
Flats	314	3%
Grass Bank	854	7%
Marsh/wetland	599	5%

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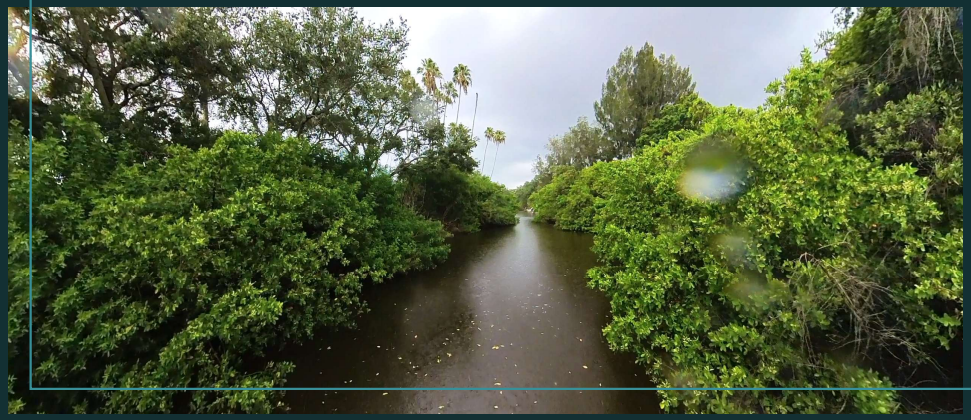


Stevenson Creek

Slow speed zone alternatives study

Explore establishing slow speed zone for watercraft in navigable limits of Stevenson Creek

Three options were considered:

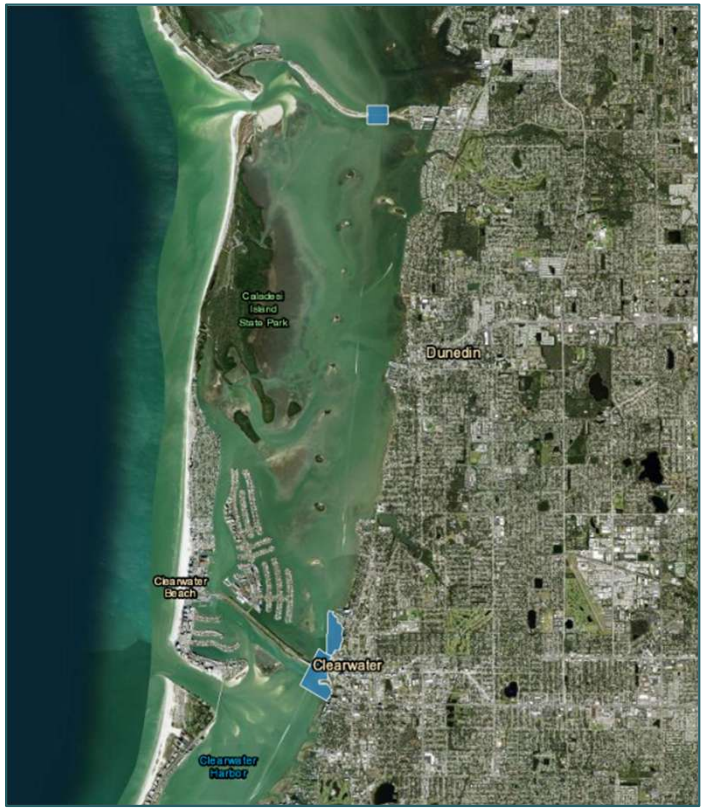
- 1. Boating Restricted Area (BRA)
- 2. Manatee Protection Zone (MPZ)
- 3. Local government manatee slow speed zone

1. Boating restricted area (BRA)

"…least restrictive necessary for public safety"

Criteria:

- Visibility
- Hazardous water levels or currents
- Other navigational hazards
- Vessel traffic congestion
- Other safety data



Rule Name	Area Number	Area Name	Condition Summary
Pinellas County Boating Restric...	68D-24.010(1)(a)1.b.	Pinellas Bayway (SR 682) Bridge	At All Times
Pinellas County Boating Restric...	68D-24.010(1)(a)2.	Corey Causeway (SR 699) Bridge	At All Times
Pinellas County Boating Restric...	68D-24.010(1)(a)3.	Tom Stuart (Welch) Causeway (...	At All Times

2. Manatee protection zone (MPZ)

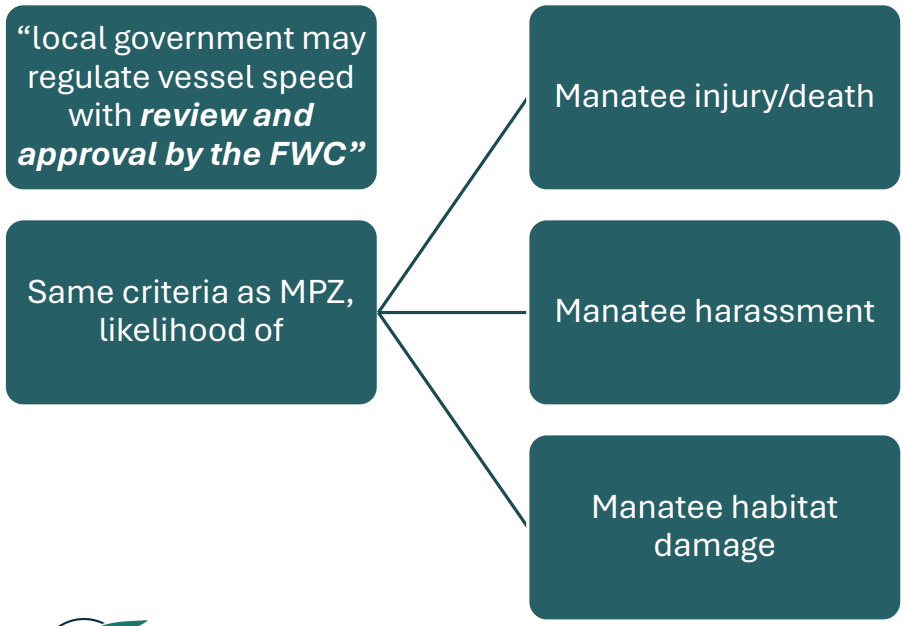
Criteria - in the absence of restrictions, the following is likely to occur:

- Manatee injury/death
- Mantee harassment
- Manatee habitat damage

Factors to be considered:

- patterns of boating
- patterns of manatee use
- manatee mortality in area
- food sources available
- favorable water depths
- waterway characteristics
- fresh/warm water sources

3. Local government manatee slow speed zone (SSZ)



Factors to be considered:

- patterns of boating
- patterns of manatee use
- manatee mortality in area
- food sources available
- favorable water depths
- waterway characteristics
- fresh/warm water sources

3. Local government manatee slow speed zone (SSZ)

If disagreement

- Between FWC and local government on proposed ordinance, a local manatee protection committee is to be formed
- Committee would be charged with:
  - Reviewing technical data from FWC and FWS
  - Resolving ordinance conflicts

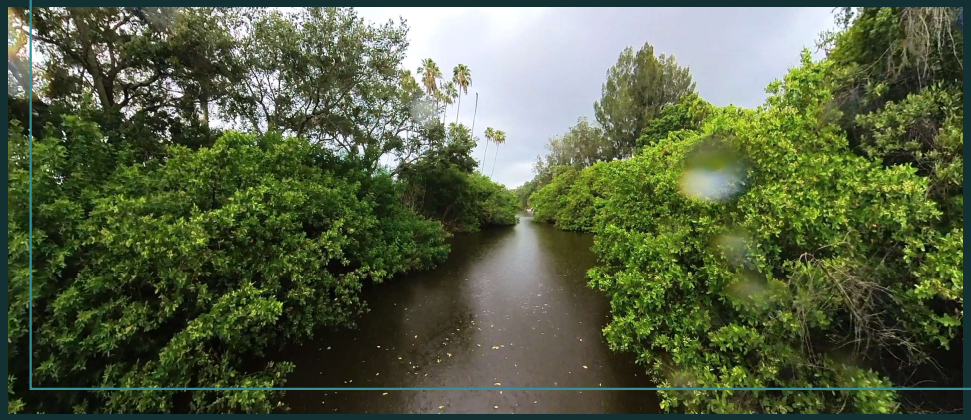
Manatee protection committee:

- A FWC representative
- A County representative
- A US Fish and Wildlife Service (FWS) representative
- A local marine-related business representative
- A Save the Manatee Club representative
- A representative that is a local fisher
- An affected property owner representative
- A Florida Marine Patrol representative

FIRST LINE COASTAL

Stevenson Creek

Evaluation of alternatives



1. Boating restricted area (BRA)

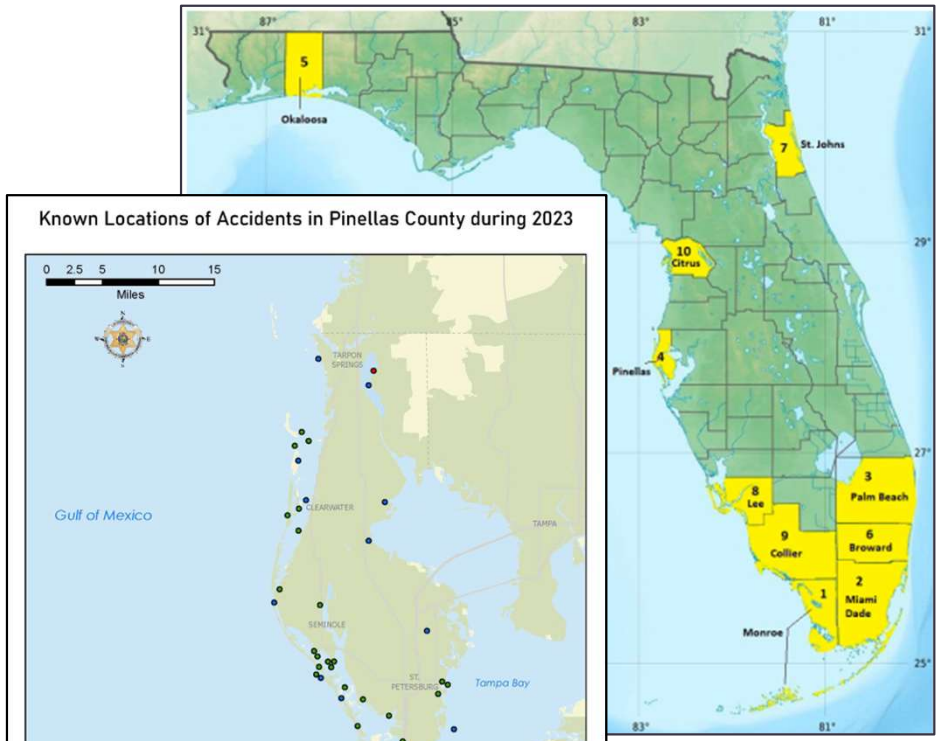
Based on boater safety

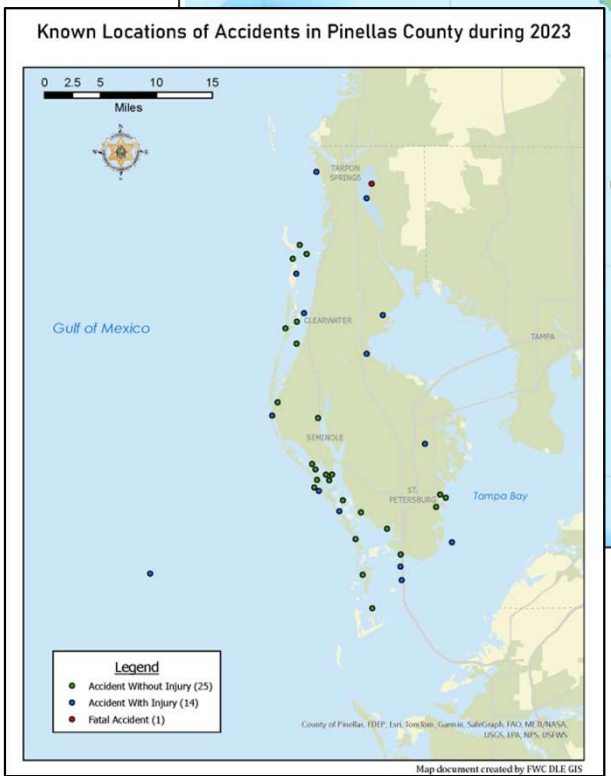
Stevenson Creek

- No recorded accidents
- No FWC citations
- No known safety concerns
- Minimal vessel traffic

Does not qualify for BRA

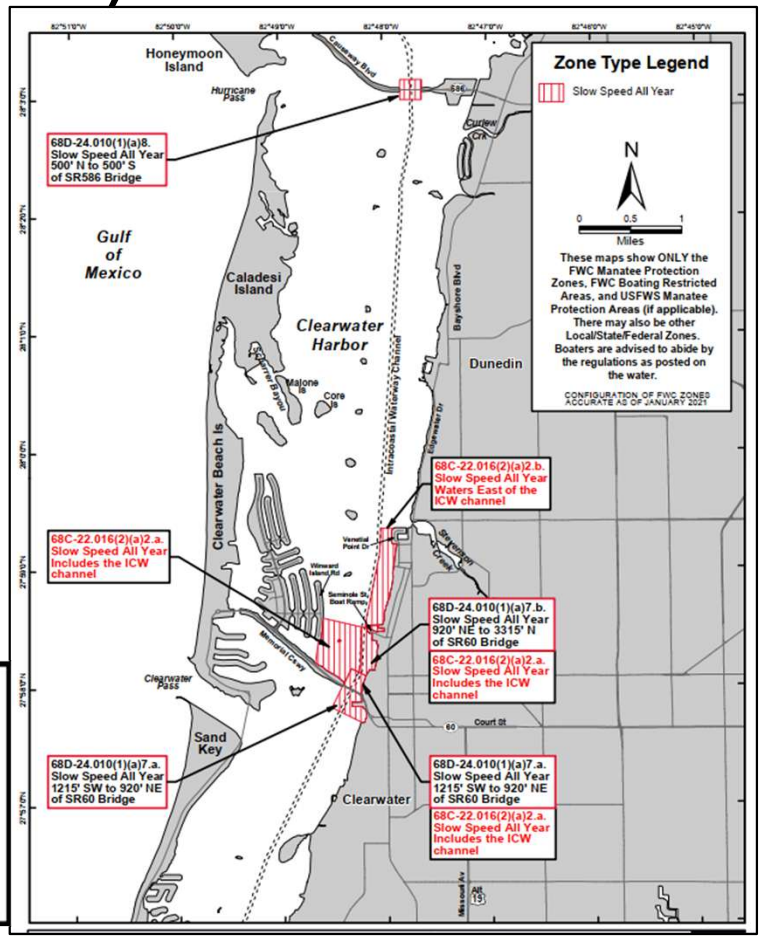
FWC's annual boating accident statistical report 2023





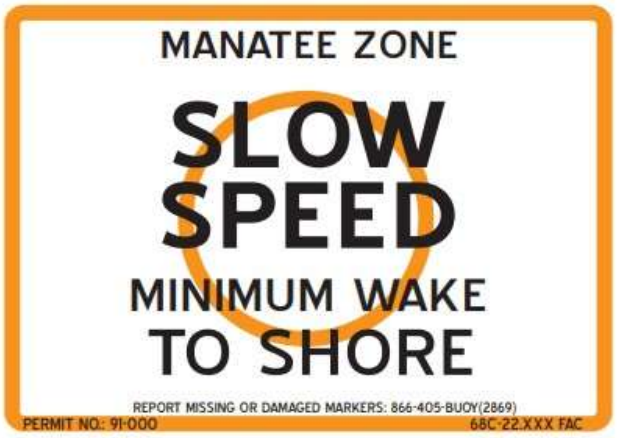
2. Manatee protection zone (MPZ)

- Adopted via rulemaking process
- Can be very lengthy (4 years for existing MPZs)
- Would ‘open’ rule such that existing MPZs could be challenged
- Not recommended



3. Local government manatee SSZ

- Similar to MPZ
- Does not require rulemaking process
- Same criteria as MPZ
- Requires FWC approval
- Recommended as most viable option



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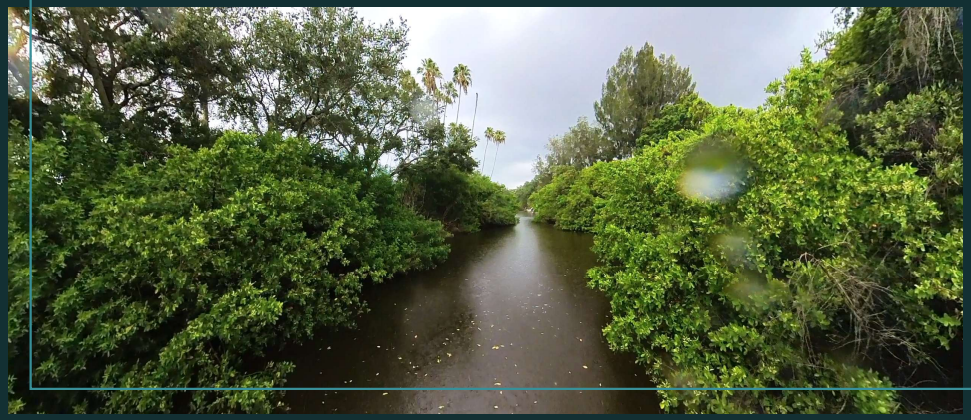


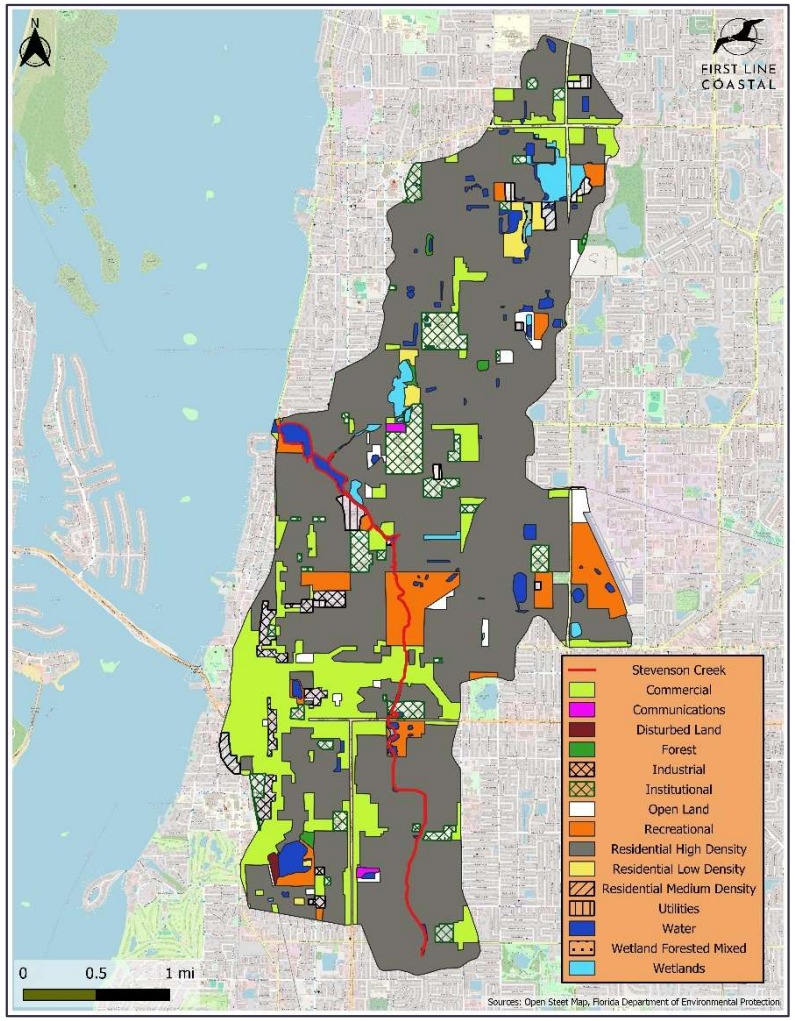
Stevenson Creek

Important considerations

Stevenson Creek watershed

Background

- Stevenson Creek 3.2 miles long
- Tidally influenced segment 1.6 miles
- Upland development mostly medium to high density residential, some commercial, industrial, and recreational open spaces
- Most development prior to water quality legislation/regulation
- Negative impact on water quality resulted in increased stormwater runoff, sediment and pollution



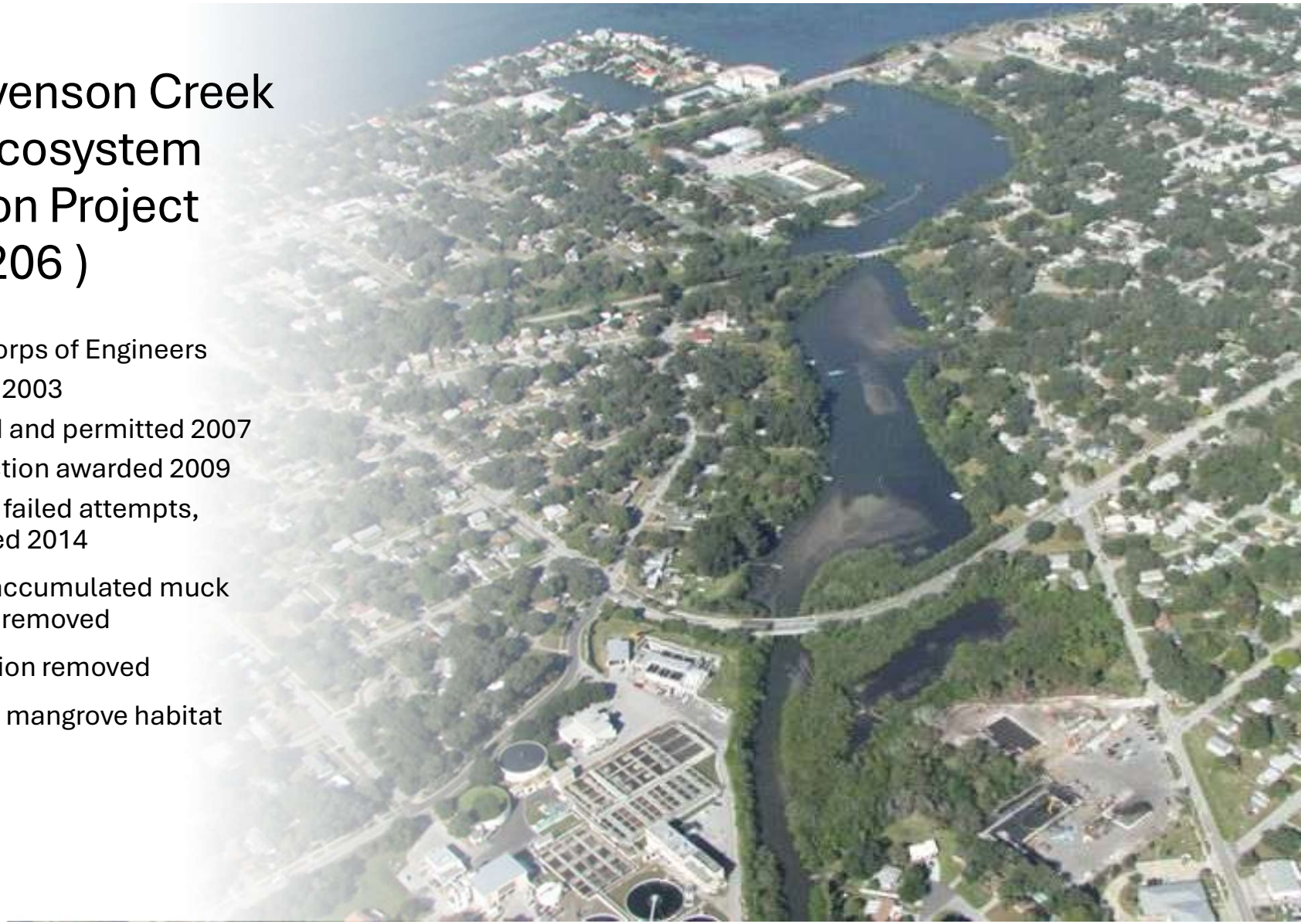
2001 Stevenson Creek Watershed Management Plan (WMP)

- Joint effort between City, County and SWFWMD
- Goal to address flooding, water quality, erosion, and habitat loss
- Recommendations to guide development, manage resources, and prioritize projects

Watershed Reach	Project No.	Project Description	Weighted Evaluation Score	Rank	Completed (YES/NO)	In progress or planning (YES/NO)
Middle Stevenson	3A	Glen Oaks Stormwater Detention Facility	8.5	**1**	YES	
Lk Bellevue Branch	6A.1	Expansion of Lake Bellevue	6.1	**2**	YES	
Spring Branch	1A.1	Spring Branch Conveyance Enhancements	5.7	**3**	YES	
Jeffords St Branch	7C	Jeffords Street/Barry Road Detention Pond	5.5	**4**	NO	
Upper Stevenson	4C	St Thomas Drive / Bellevue Boulevard Creek Restoration	4.5	**5**	NO	
Spring Branch	1C	Spring Branch Flood Detention Basin	4.4	**6**	NO	YES
Jeffords St Branch	7A	Crest Lake Expansion	4.1	**7**	YES	
Lk Bellevue Branch	6A.2	Upper Lake Bellevue Culverts	4.1	**8**	YES	
Lower Stevenson	2A	Palmetto Street Sediment Sump	3.7	**9**	YES	
Upper Stevenson	4A	Hillcrest Avenue Overflow Bypass Culvert	3.3	**10**	YES	

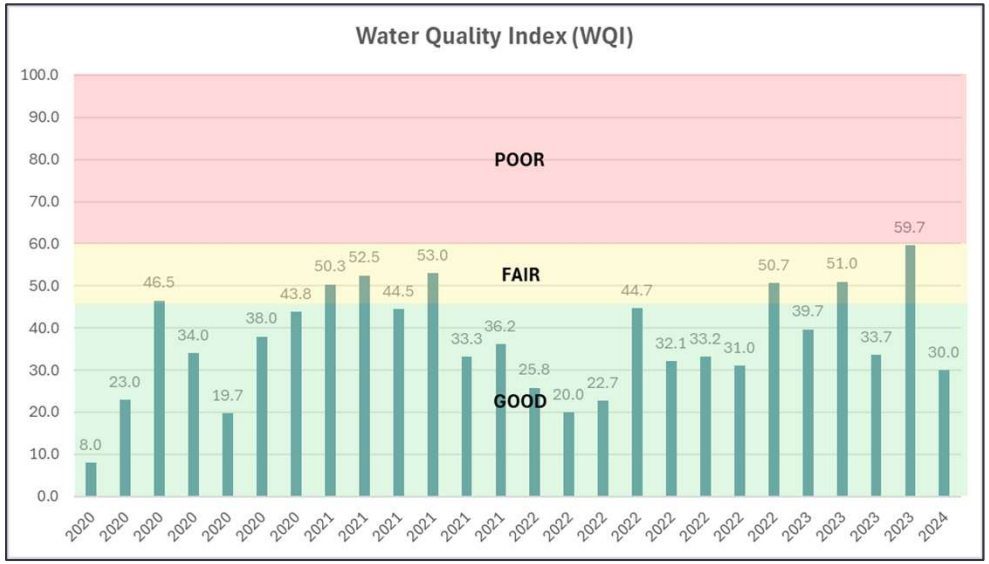
2014 Stevenson Creek Aquatic Ecosystem Restoration Project (Section 206)

- By US Army Corps of Engineers
  - Selected 2003
  - Designed and permitted 2007
  - Construction awarded 2009
  - After two failed attempts, completed 2014
- 90,000 CY of accumulated muck and sediment removed
- Exotic vegetation removed
- Three acres of mangrove habitat created



Stevenson Creek water quality

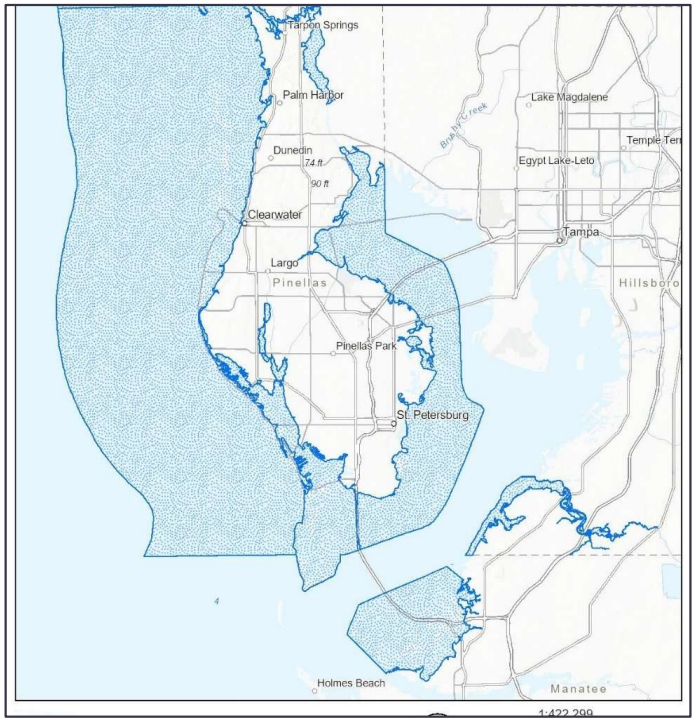
- Class III waters
- 2007 deemed impaired
  - Total maximum daily loads (TMDLs)
    - DO (TN, TP, and BOD)
    - Excessive nutrients
- Pinellas County Water Atlas
  - Water quality monitoring
  - Impairment status
  - Water Quality Index (WQI)
  - TMDLs met for Chl-a and DO
  - Remains impaired due to fecal coliform



Pinellas County Aquatic Preserve

The Pinellas County Aquatic Preserve, established in 1972, covers 357,000 acres of Florida's Gulf Coast near St. Petersburg, Clearwater, and Tampa. The preserve is one of two aquatic preserves in Pinellas County, collectively referred to as the Pinellas County Aquatic Preserves, along with the Boca Ciega Bay Aquatic Preserve. Both preserves were established in response to concerns about the extensive coastal development of Tampa Bay, specifically the largely unregulated dredging and filling of the bay that occurred in the 1950s. Under the Riparian Act of 1856, landowners adjacent to the state's submerged lands could claim ownership of those lands through activities like dredging, filling, and building docks. Remaining in effect until 1957, impacts to coastal habitat went largely unchecked for decades. Despite the many decades of development, spectacular submerged resources, such as seagrass beds, hardbottom corals, and sponge beds, account for much of the underwater acreage, and the aquatic preserves islands serve important roles in an otherwise urban landscape. More than 150 species of plants, 1,100 species of invertebrates, nearly 200 species of fish, and more than 250 species of birds make their home in this vibrant ecosystem. Visitors to the preserves can enjoy a variety of recreational activities such as boating, fishing, bird watching, and snorkeling in this protected area that not only preserves vital habitat for native wildlife, but also serves as a reminder of the importance of conserving Florida's natural coastal environments amidst ongoing urbanization.

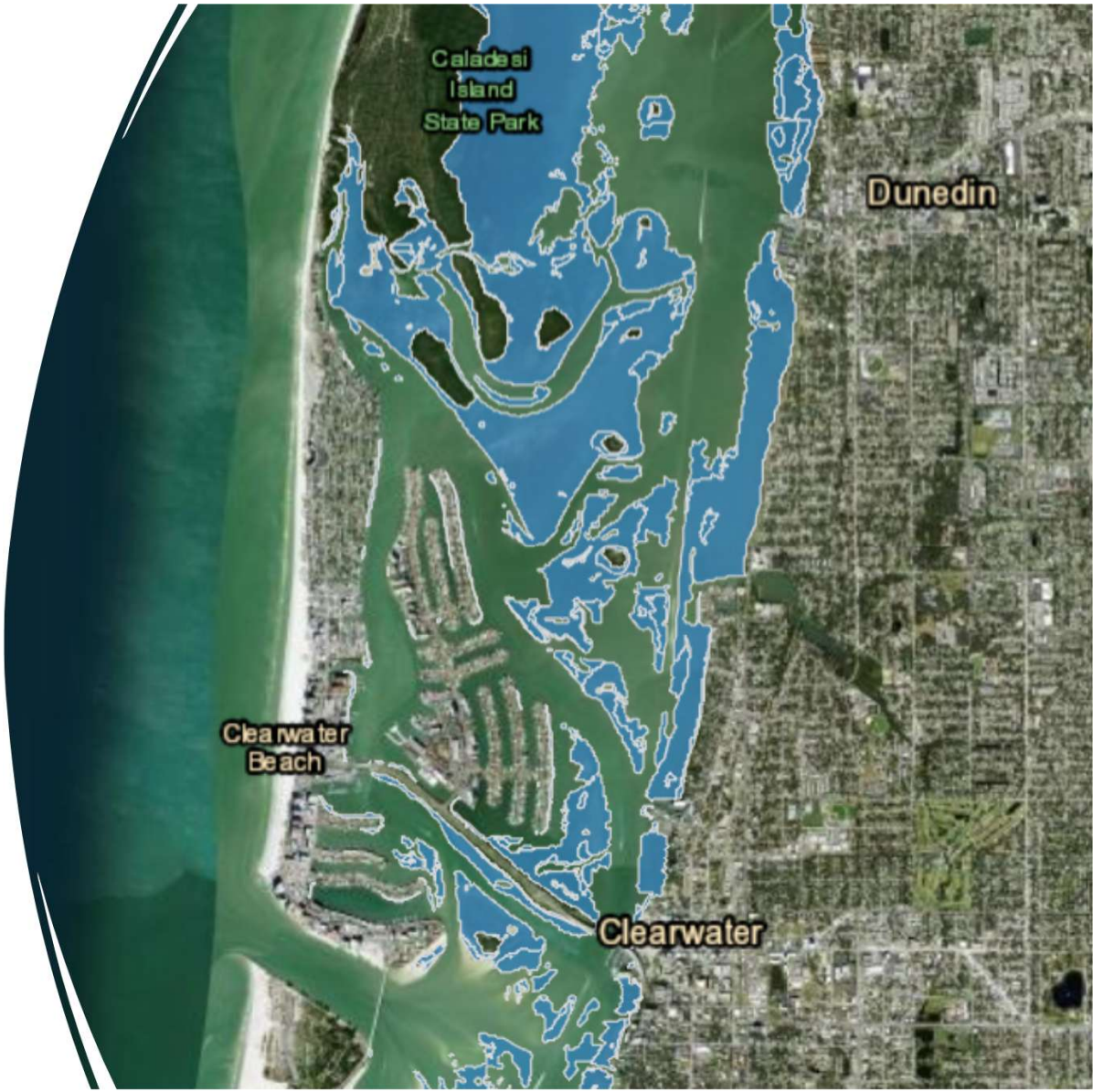
~ FDEP



Submerged aquatic vegetation (SAV)

- SAV provides food, shelter, sediment stabilization and supports nutrient cycles
- Extensive seagrass coverage throughout Clearwater Harbor
- Seagrass surveys do not extend into Stevenson Creek

FWC seagrass habitat map 2022




Manatee habitat?

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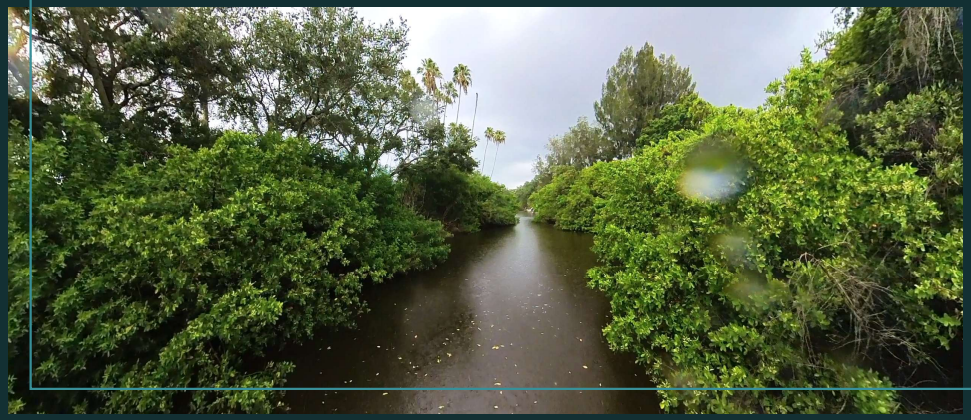


Stevenson Creek

Data collection required for the recommended alternative:

- local government manatee slow speed zone

Recommended alternative:
Local government manatee SSZ (similar to MPZ)

Criteria: In the absence of restrictions, there is a likelihood of

Data to be evaluated:

- patterns of boating
- patterns of manatee use
- manatee mortality in area
- food sources available
- favorable water depths
- waterway characteristics
- fresh/warm water sources

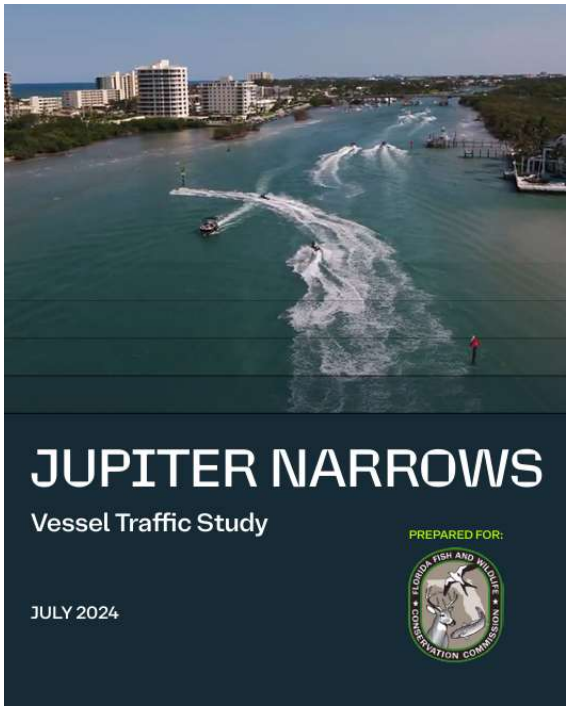
Data collection

Data to be evaluated:

- **patterns of boating**
- patterns of manatee use
- manatee mortality in area
- food sources available
- favorable water depths
- waterway characteristics
- fresh/warm water sources

Vessel traffic study

- Extensive observation, recording and analysis of vessel traffic
- Typically, 14 day minimum that includes a holiday weekend
- Expensive (> $50,000)
- Excessive



Most recent vessel traffic study commissioned by FWC at Jupiter Narrows

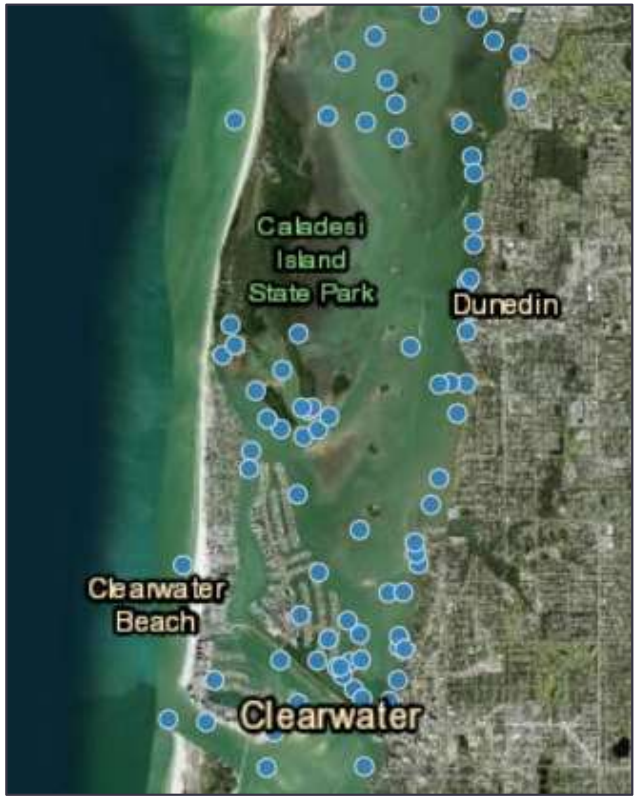
Data collection

Data to be evaluated:

- patterns of boating
- **patterns of manatee use**
- manatee mortality in area
- food sources available
- favorable water depths
- waterway characteristics
- fresh/warm water sources

Aerial manatee surveys

- Low level aerial surveys
- At least quarterly, often monthly
- Expensive (≈ $56,000)
- Excessive



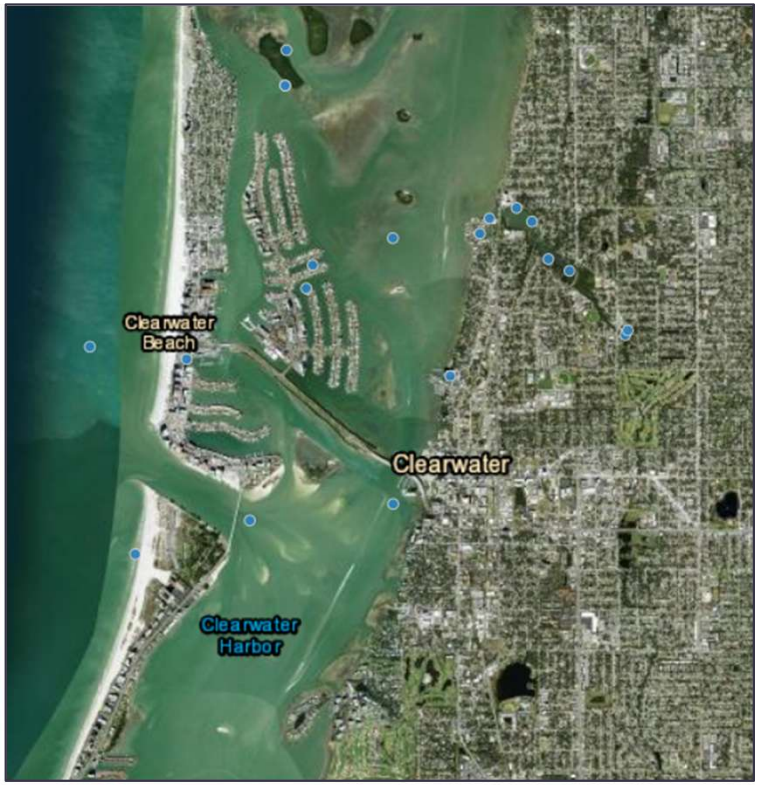
FWC aerial manatee distribution surveys 2008 to 2010

Data collection

Data to be evaluated:

- patterns of boating
- patterns of manatee use
- **manatee mortality**
- food sources available
- favorable water depths
- waterway characteristics
- fresh/warm water sources

FWC manatee mortality data



Date	Sex	Length (cm)	Lat	Long	Mortality
2016-08-05	F	255	27.97854	-82.78278	Human Related: Watercraft Collision
2017-04-17	M	291	27.98885	-82.79237	Human Related: Watercraft Collision
2018-10-31	M	166	27.99009	-82.79395	Undetermined: Too Decomposed
2019-03-17	M	194	27.97896	-82.78252	Natural: Other (includes red tide)
2019-05-03	F	357	27.98437	-82.78851	Human Related: Watercraft Collision
2021-05-14	F	115	27.98543	-82.79070	Perinatal (<= 150 cm)

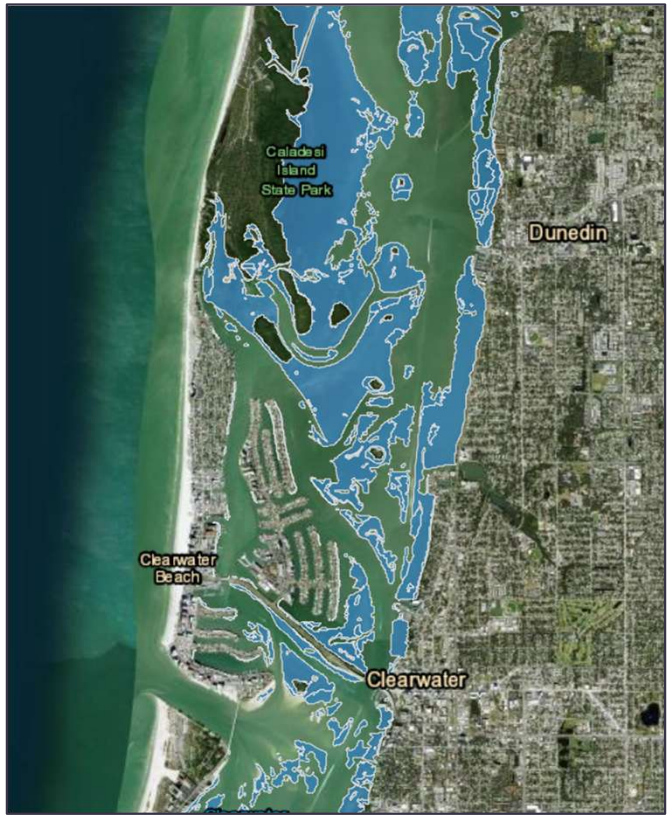
Data collection

Data to be evaluated:

- patterns of boating
- patterns of manatee use
- manatee mortality in area
- **food sources available**
- favorable water depths
- waterway characteristics
- fresh/warm water sources

SAV survey

- Standard method
- Often coupled with aerial photography analysis
- Moderately expensive (≤ $25,000)



FWC seagrass habitat map 2022

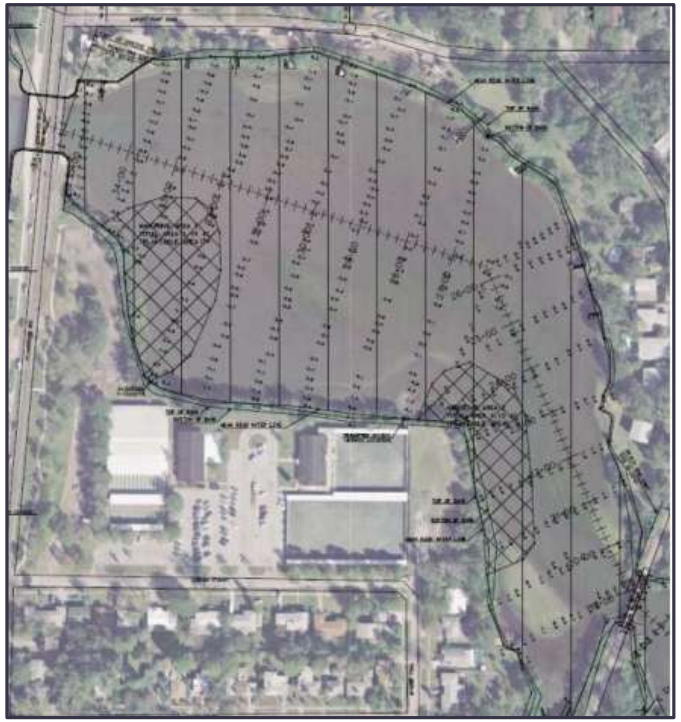
Data collection

Data to be evaluated:

- patterns of boating
- patterns of manatee use
- manatee mortality in area
- food sources available
- **favorable water depths**
- **waterway characteristics**
- fresh/warm water sources

Bathymetric survey

- Relatively inexpensive (≈$7,500)
- Define depths and natural channels
- Assess shoaling conditions throughout estuary



Data collection

Data to be evaluated:

- patterns of boating
- patterns of manatee use
- manatee mortality in area
- food sources available
- favorable water depths
- waterway characteristics
- **fresh/warm water sources**

Freshwater sources known

- Tributaries
- Stormwater
- Effluent from Marshall Street Advanced Wastewater Treatment Plant

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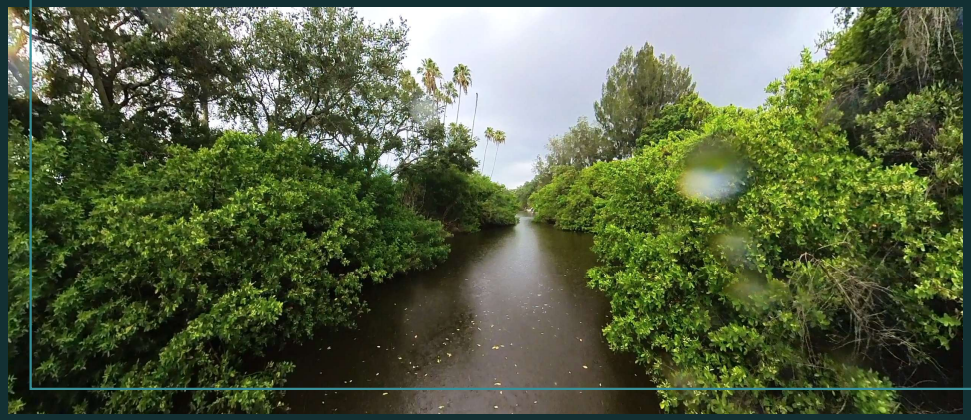

Stevenson Creek

Alternative to traditional data collection?

Alternative data collection method?

Data to be evaluated

- patterns of boating — Vessel traffic study **$$$**
- patterns of manatee use — Aerial surveys **$$$**
- manatee mortality in area ✓
- food sources available — SAV survey **$$**
- favorable water depths — Bathymetric survey **$**
- waterway characteristics — Bathymetric survey **$**
- fresh/warm water sources ✓

Citizens Science?

"…where science is collaborative and participation is open to everyone."

- 'Crowdsourcing' data collection
- Inclusive
- Collaborative
- Increased trust in scientific process

Citizens Science (www.citizensscience.gov)

Resources on how to:

- Design a project
- Build community of participants
- Standardize and manage data collection
- Sustain participation

With local interest, may be a viable option

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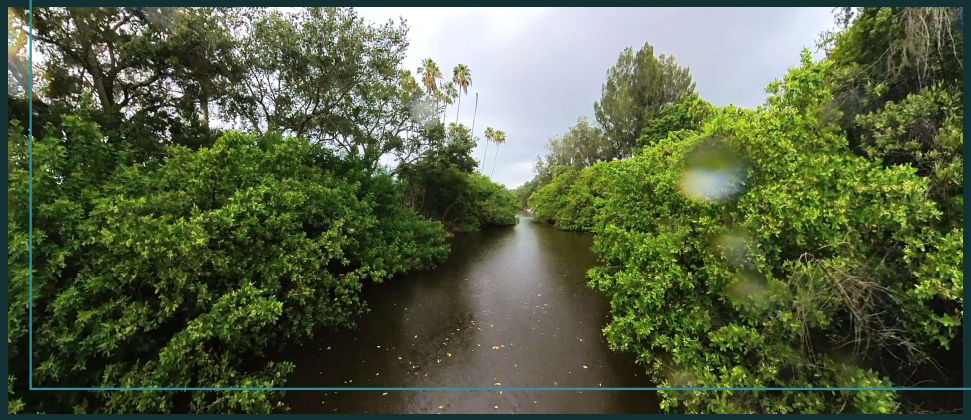


Stevenson Creek

Estimated costs and schedule

Data collection cost estimates

Factors to be considered	Status	Data collection method	Cost	Alternate method	Cost
patterns of boating	unknown	Vessel traffic study	$ 50,000.00	Boating use observations	$ 10,000.00
patterns of manatee use	unknown	Manatee aerial surveys	$ 56,000.00	Manatee observations	
manatee mortality in area	known	FWC rescue/ salvage	$ -	Manatee observations	
food sources available	unknown	SAV surveys	$ 25,000.00	Existing survey data	$ -
favorable water depths	partially known	Bathymetric survey	$ 7,500.00	Existing survey data	$ -
waterway characteristics	partially known	Bathymetric survey		Existing survey data	$ -
fresh/warm water sources	known	N/A	$ -	N/A	$ -
		Total	$ 138,500.00	Total	$ 10,000.00

Total project cost estimates

Consulting services estimate

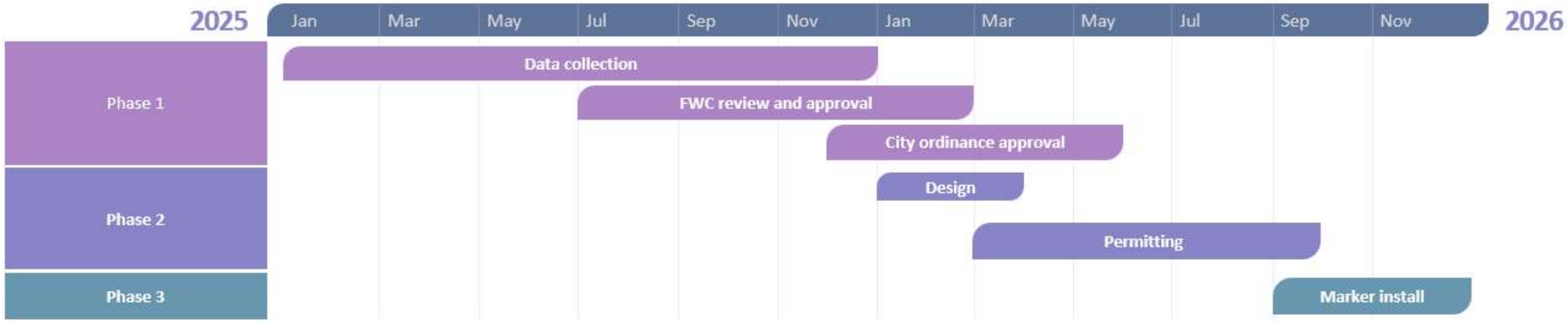
Consulting services	Cost
Data collection and FWC coordination	$ 35,000.00
Citizen's science management	$ 50,000.00
Design and permitting	$ 30,000.00
Marker installation and close out	$ 5,000.00
Total	**$120,000.00**

Range of total project costs

Phase	Total cost	With traditional data collection methods	With alternative data collection methods
1	Data collection and FWC coordination	$ 173,500.00	$ 45,000.00
1	Citizen's science management	$ -	$ 50,000.00
2	Design and permitting	$ 30,000.00	$ 30,000.00
3	Marker installation and close out	$ 5,000.00	$ 5,000.00
	Total cost	**$ 208,500.00**	**$ 130,000.00**

Schedule estimate

Approximately two years



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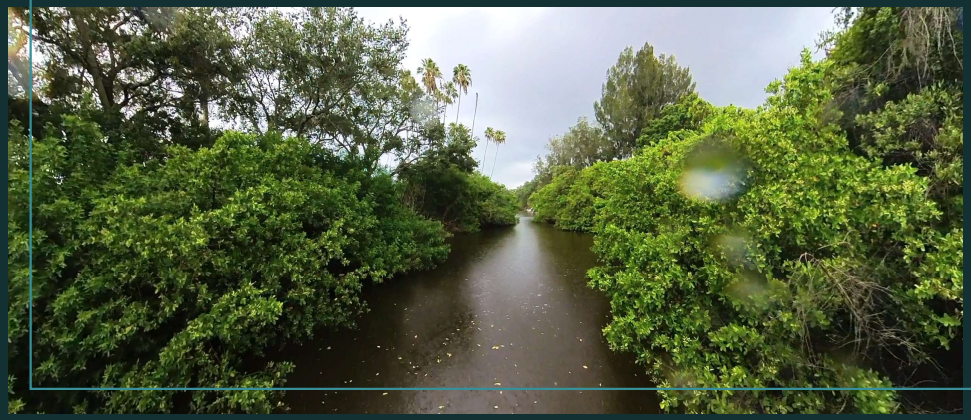
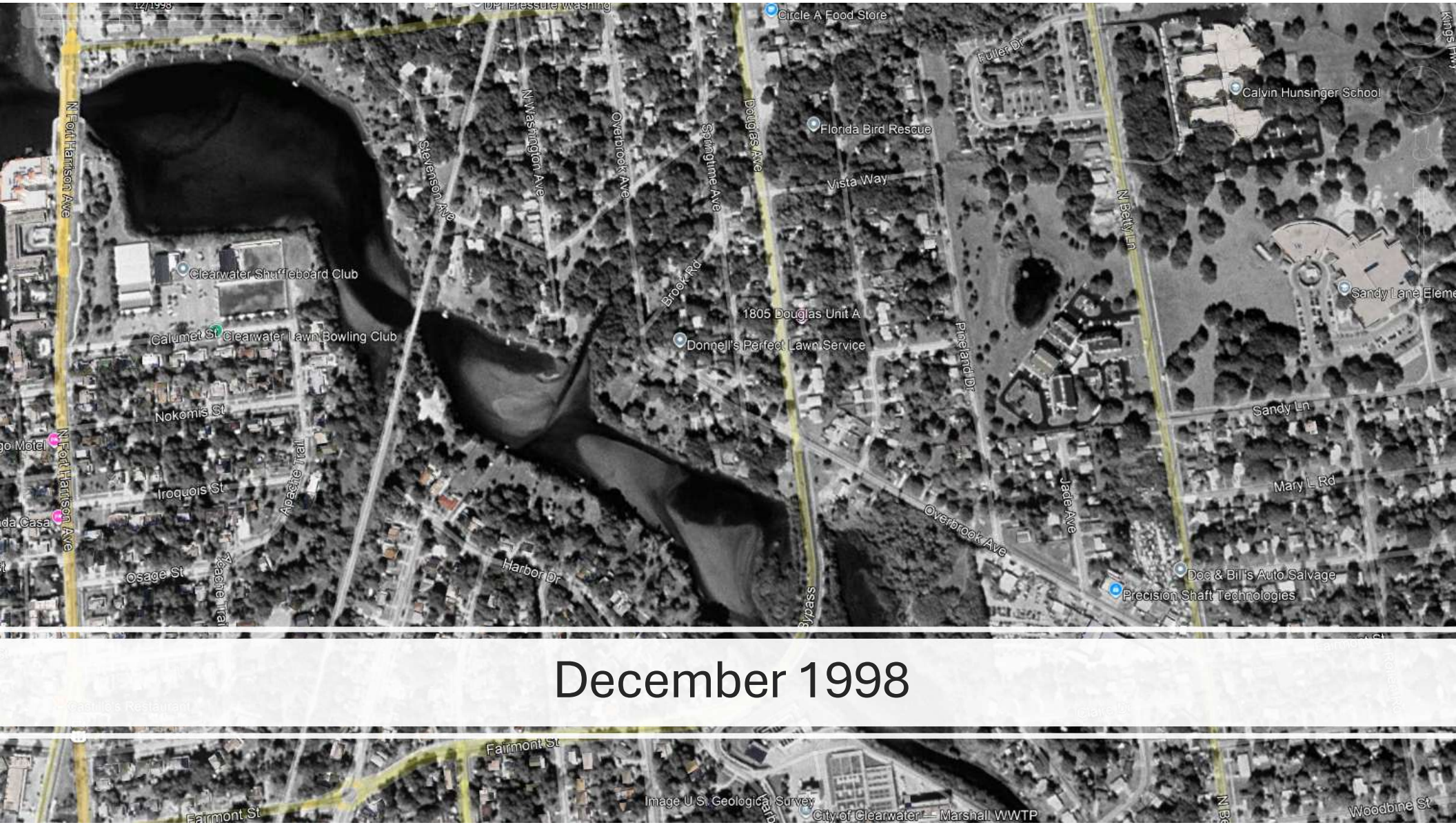


Stevenson Creek

Slow speed zone feasibility review

Questions?

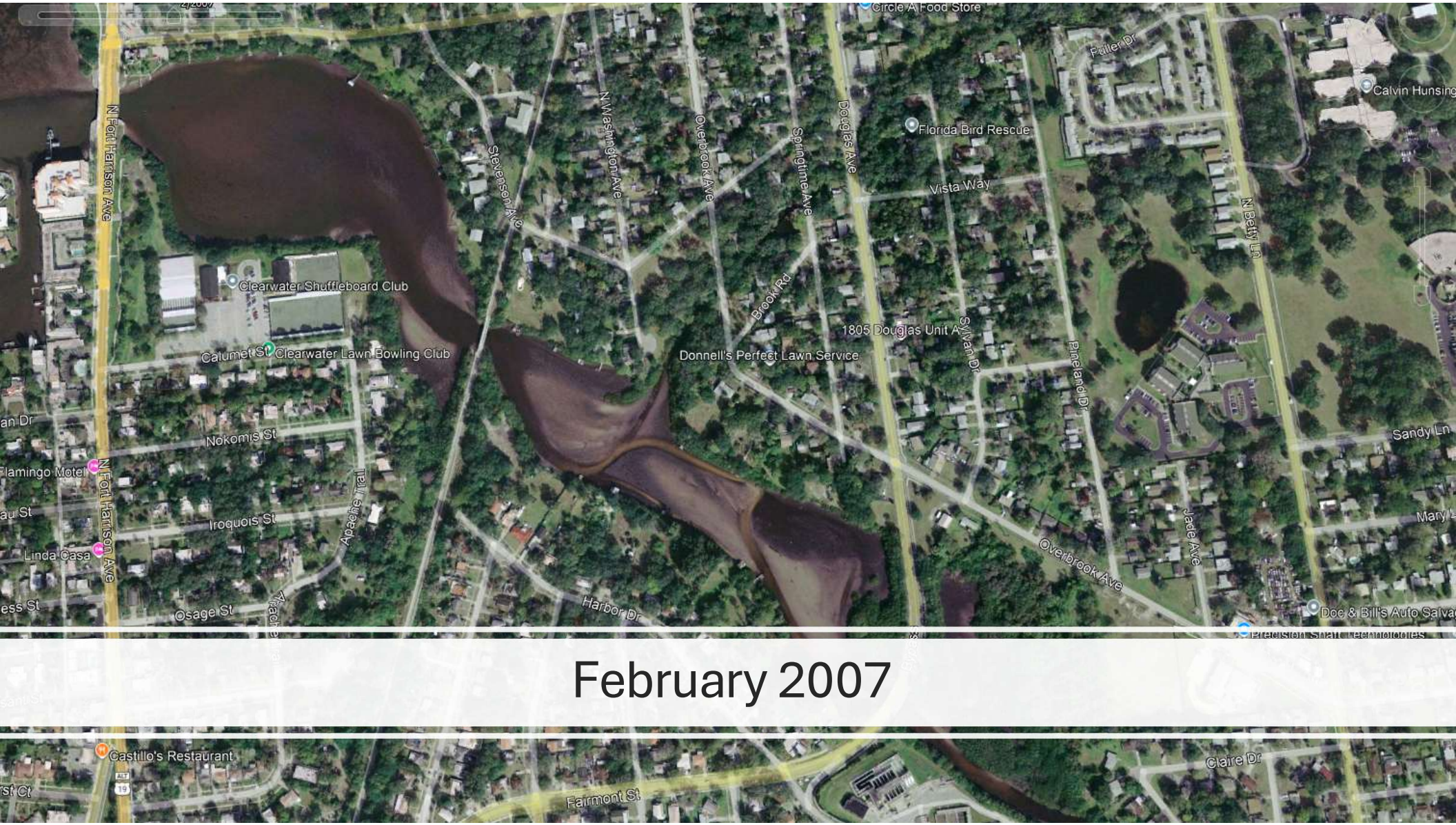


December 1998

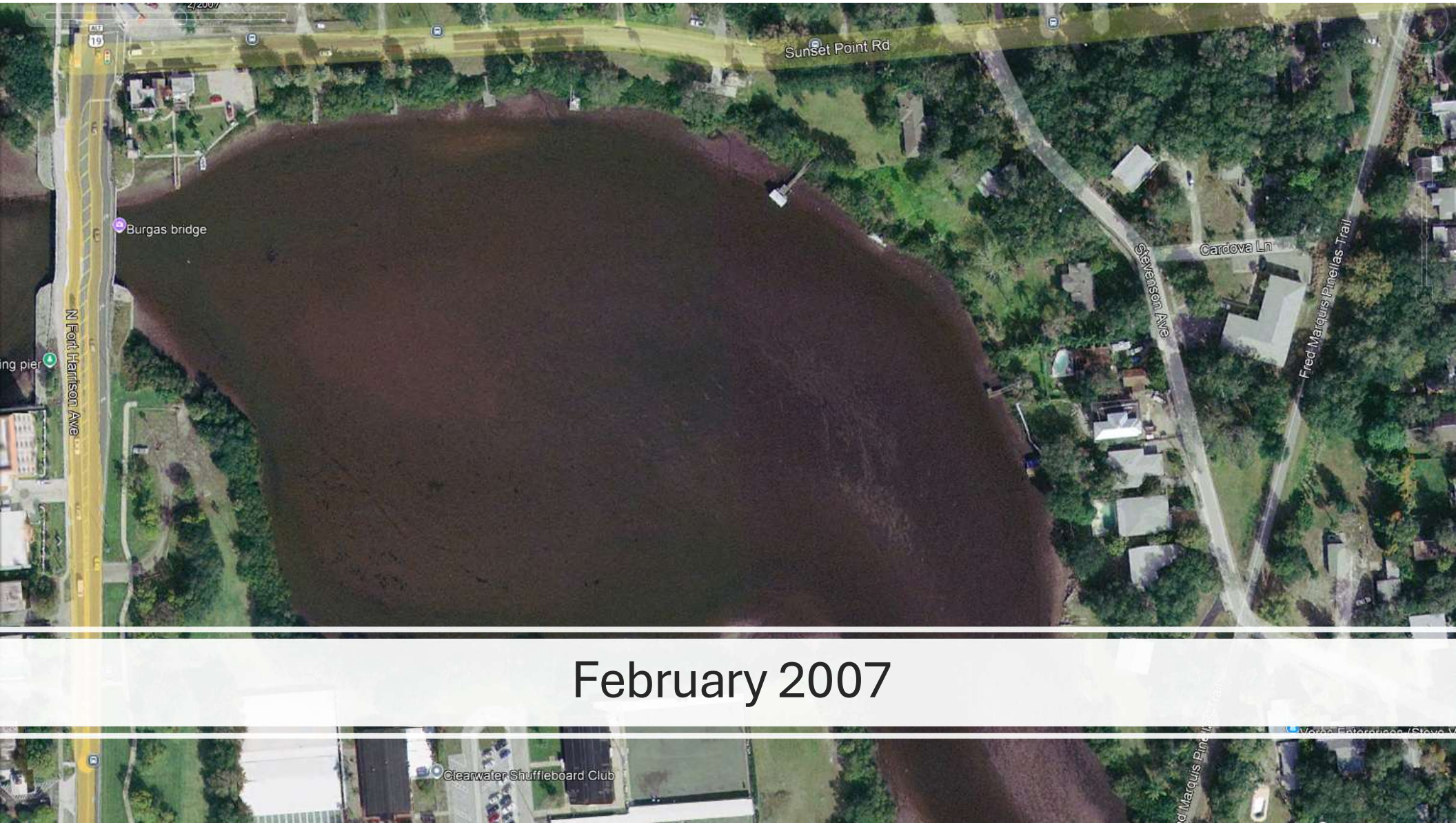
December 1998

December 2004

December 2004



February 2007



February 2007


Circle A Food Store
Fuller Dr
N Fort Harrison Ave
Stevenson Ave
N Washington Ave
Overbrook Ave
Springtime Ave
Douglas Ave
Vista Way
N Betty Ln
Clearwater Shuffleboard Club
Calumet St
Clearwater Lawn Bowling Club
Brook Rd
1805 Douglas Unit A
Donnell's Perfect Lawn Service
Sylvan Dr
Pineland Dr
Nokomis St
Lebeau St
Iroquois St
Apache Trail
Overbrook Ave
Jade Ave
Pleasant St
Castillo's Restaurant
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Claire Dr

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Sunset Point Rd
Burgas bridge
N Fort Harrison Ave
Varvara fishing pier
Stevenson Ave
Clearwater Shuffleboard Club
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November 2019

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