

Technical Working Group Update

Chassahowitzka



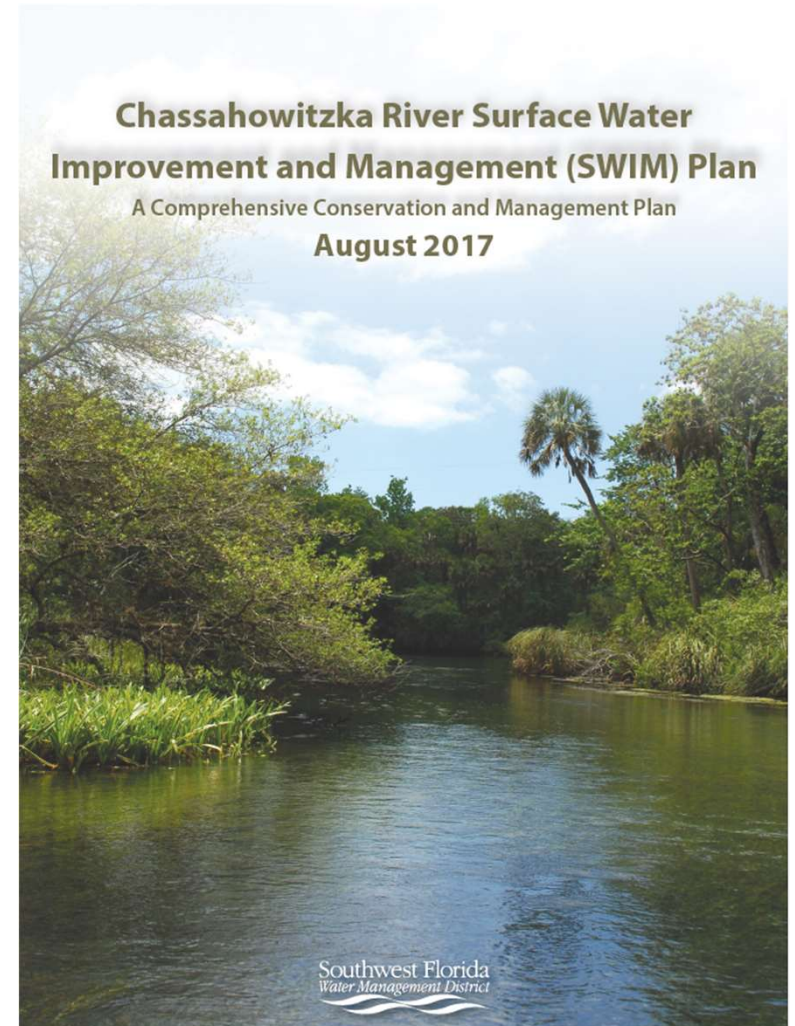
Madison Trowbridge, Ph.D.

Springs Scientist

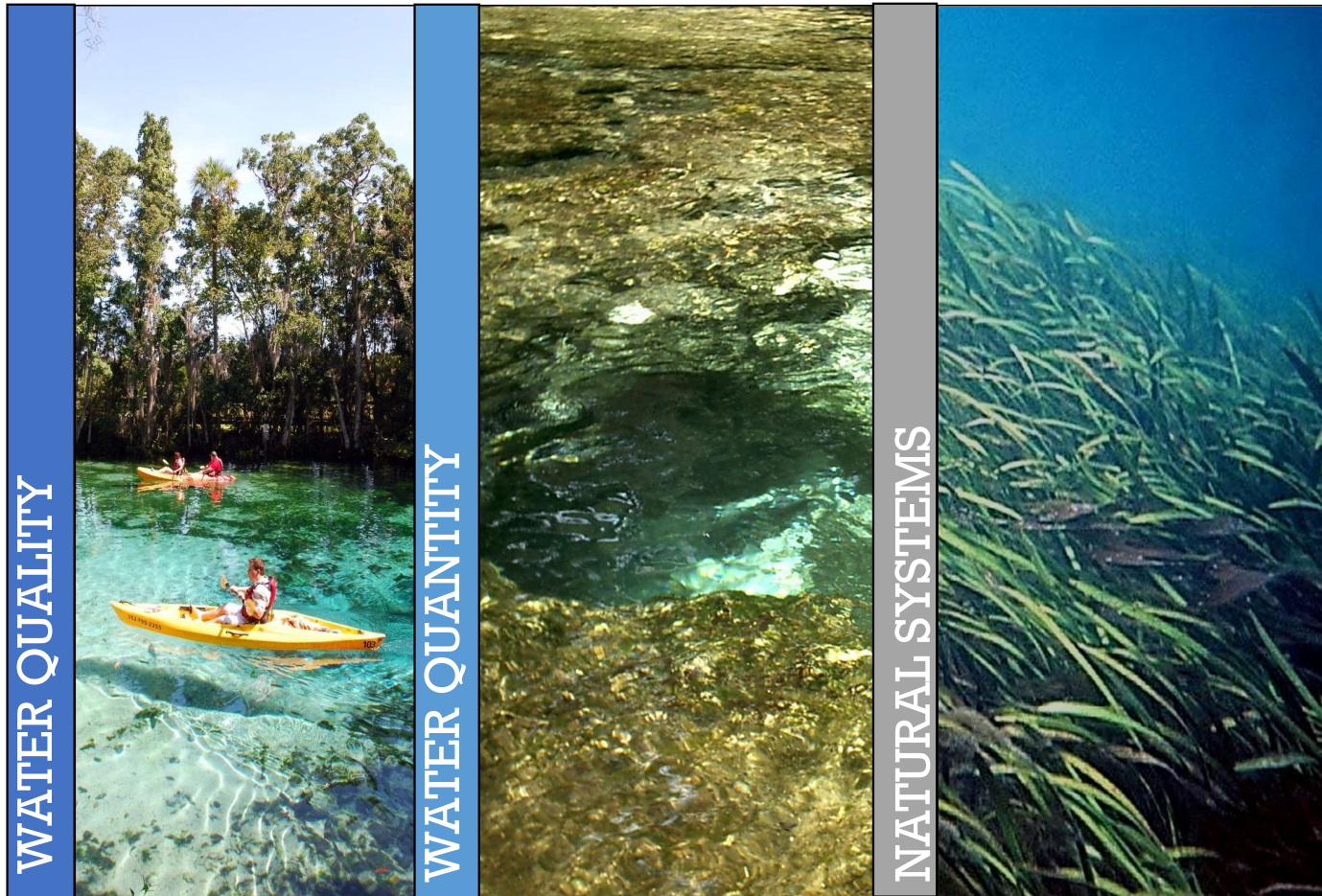
Natural Systems and Restoration

SWIM Plans

- **Surface Water Improvement & Management (SWIM) Plans**
 - **Issues & Drivers**
 - **Management actions**
 - Quantifiable objectives
 - **Projects and Initiatives**



Quantifiable Objectives



Quantifiable Objectives: Order of Systems

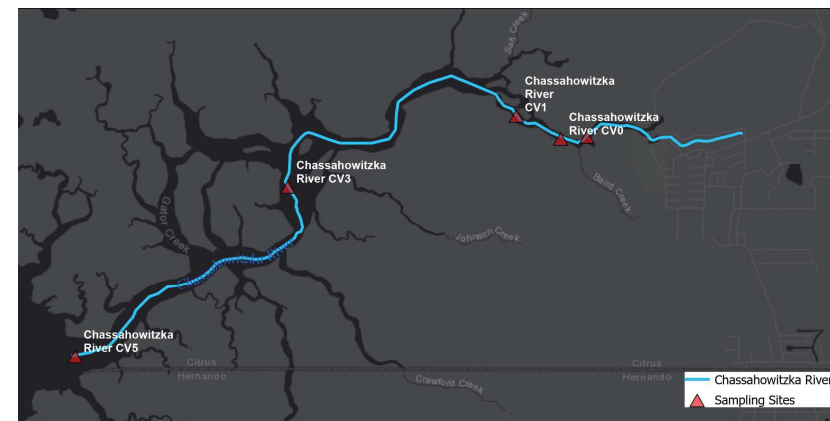
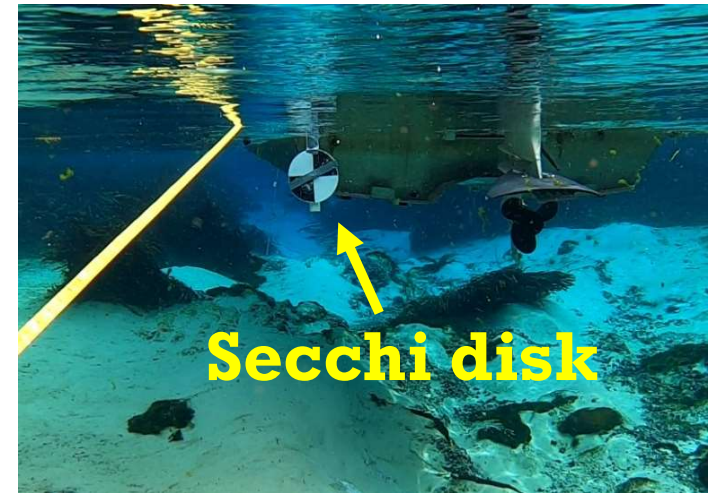
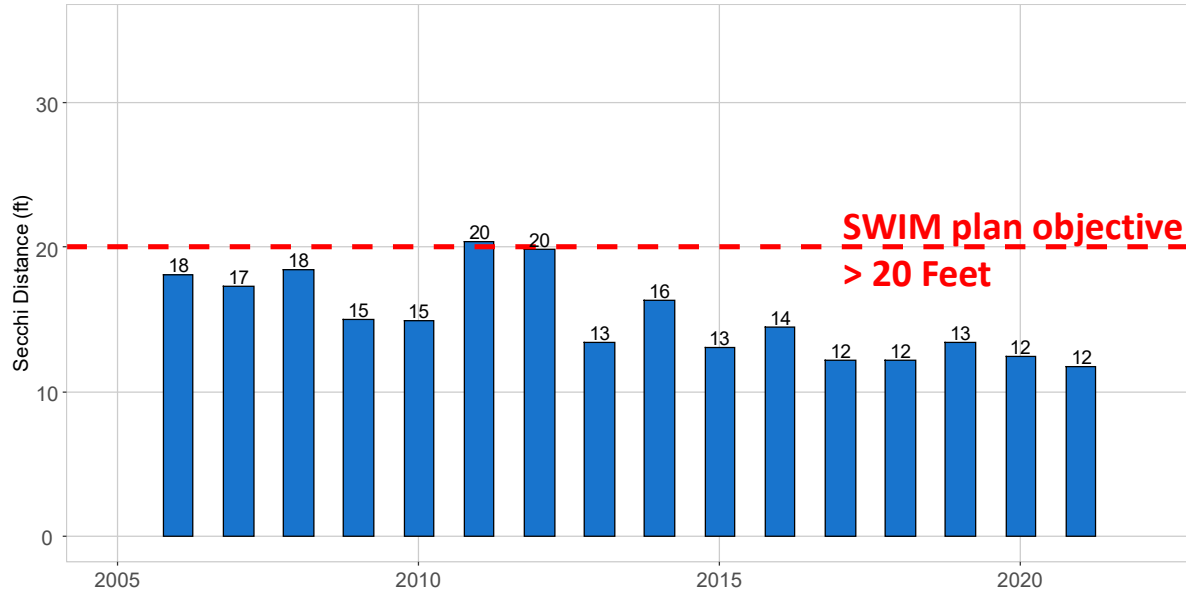
- Oldest to newest:
 - Rainbow (Nov 2015)
 - Crystal River/Kings Bay (Dec 2015)
 - Weeki Wachee (Mar 2017)
 - Chassahowitzka (Aug 2017)
 - Homosassa (Aug 2017)

Chassahowitzka - Current Quantifiable Objectives

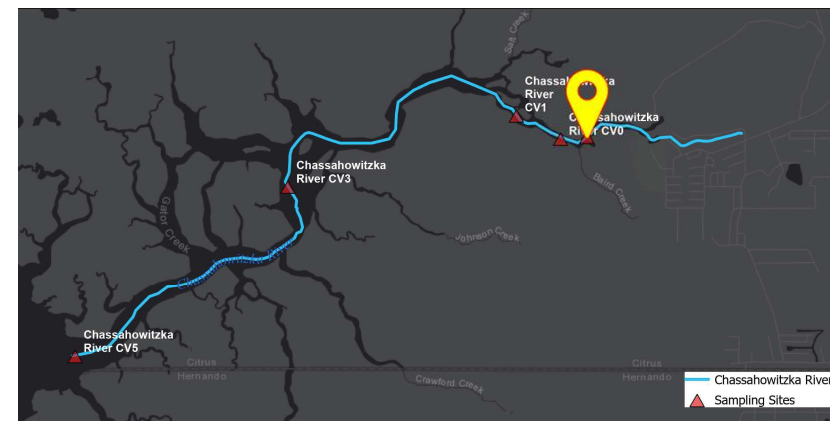
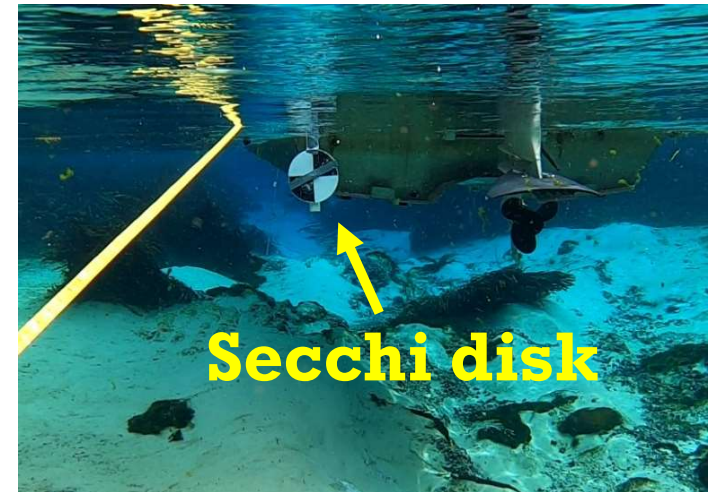
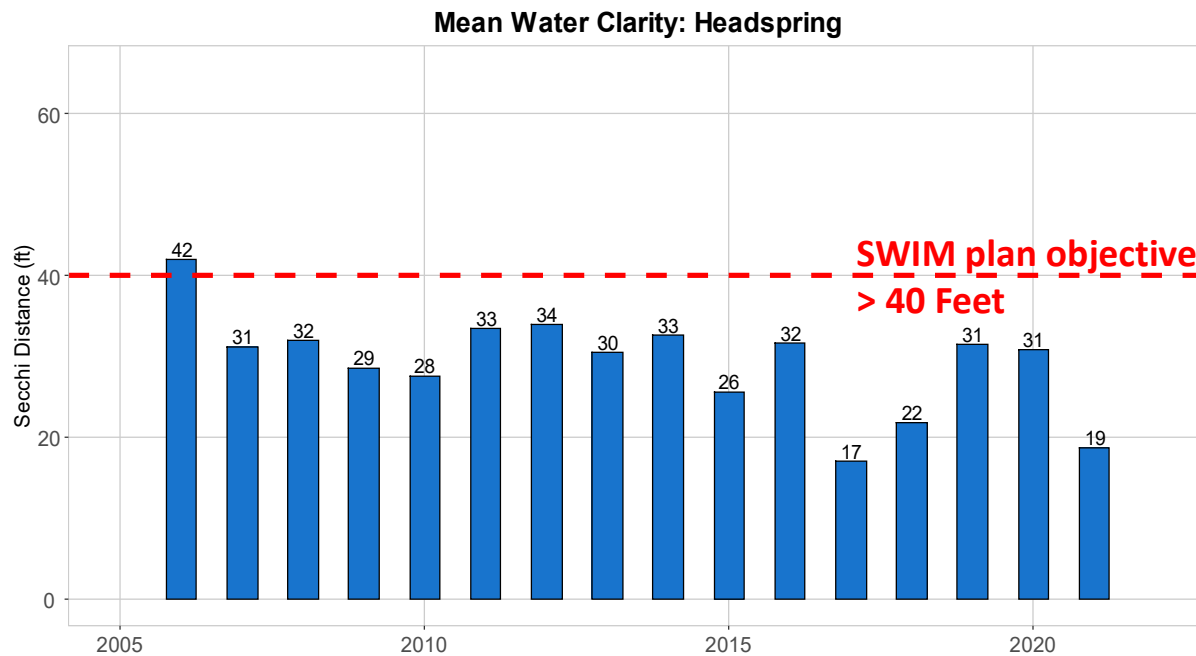
Water Quality	Target
Water clarity – river average	>20 feet
Water clarity – near the headspring	>40 feet
Nitrate concentration in the springs	<0.23 mg/L
Total nitrogen concentration in the river	<0.25 mg/L
Water Quantity	
Minimum flow for the river system	>97% natural flow
Natural Systems	
Coverage of desirable submerged aquatic vegetation in the river	>65%
Coverage of invasive aquatic vegetation (including filamentous algae) in the river	<10%

Chassahowitzka QO: Water Quality

Mean Water Clarity: River Average



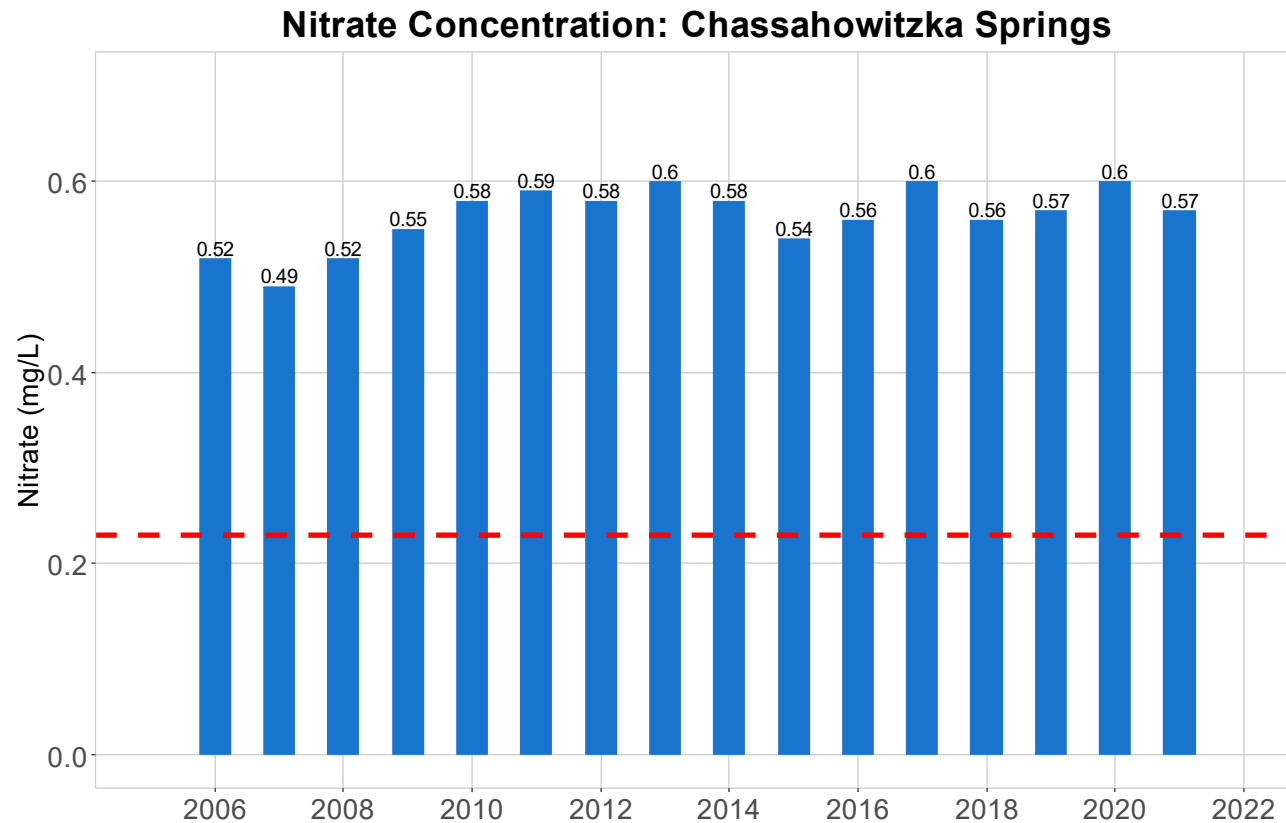
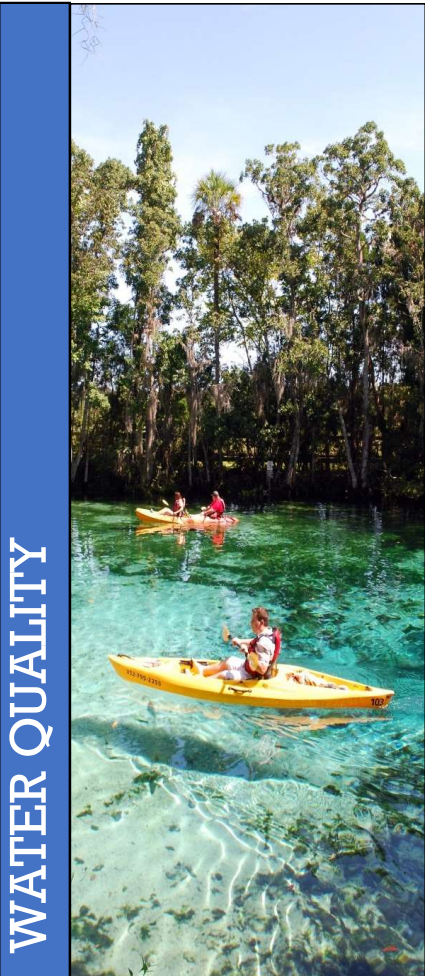
Chassahowitzka QO: Water Quality



Chassahowitzka QO: Water Quality

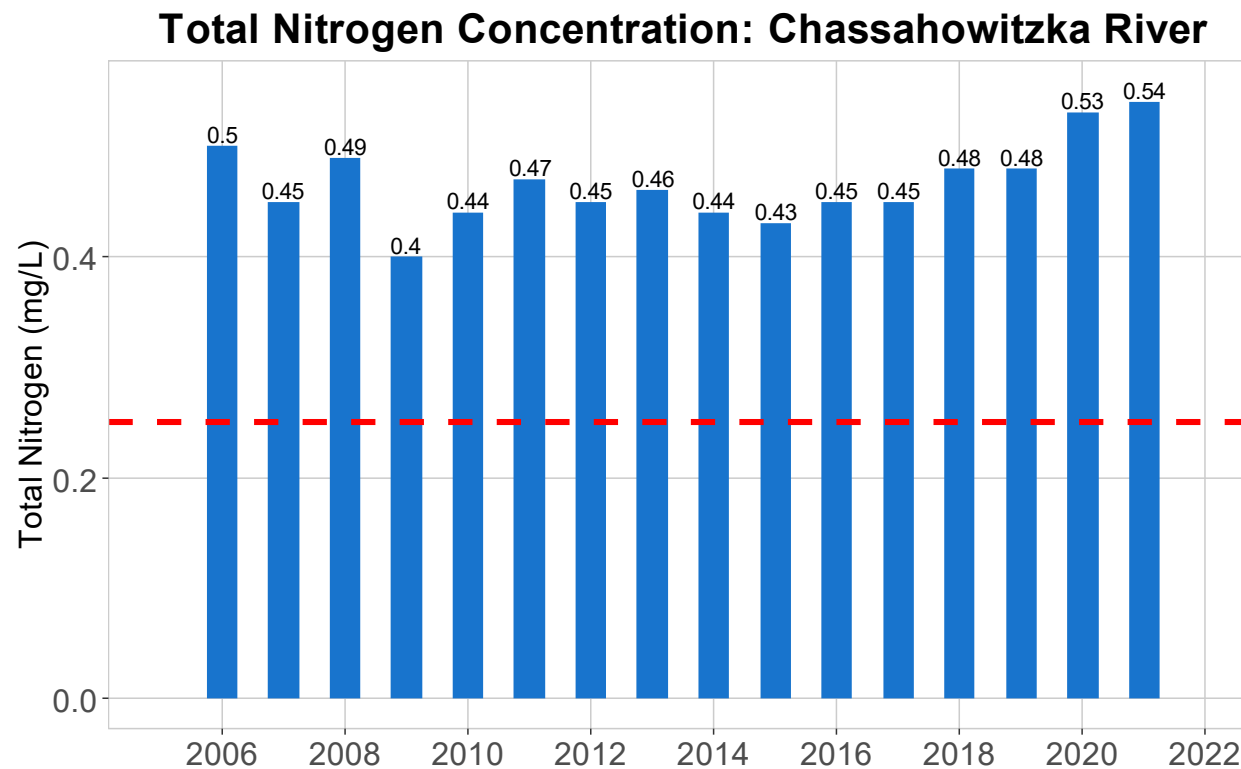
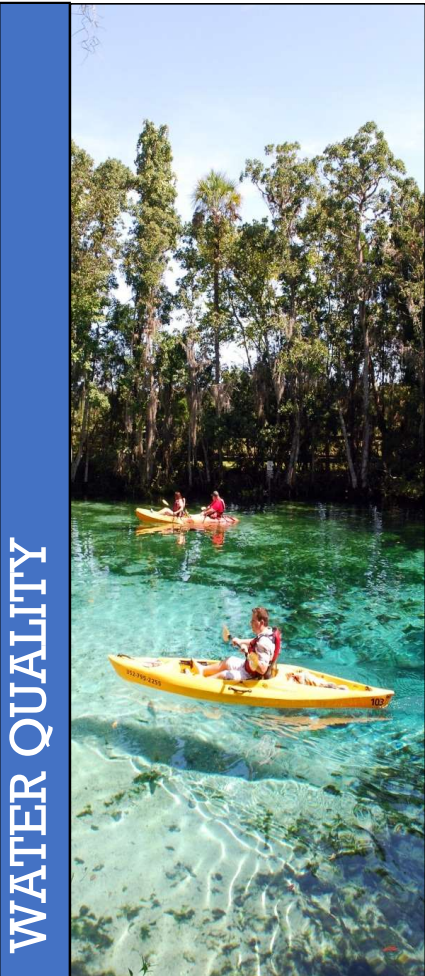


Chassahowitzka QO: Water Quality



**SWIM plan
objective
< 0.23 mg/L**

Chassahowitzka QO: Water Quality



**SWIM plan
objective
< 0.25 mg/L**

Chassahowitzka QO: Water Quantity



- Minimum Flow for the River
- **MFL Status: 99% Natural Flow**

Chassahowitzka Q0: Natural Systems

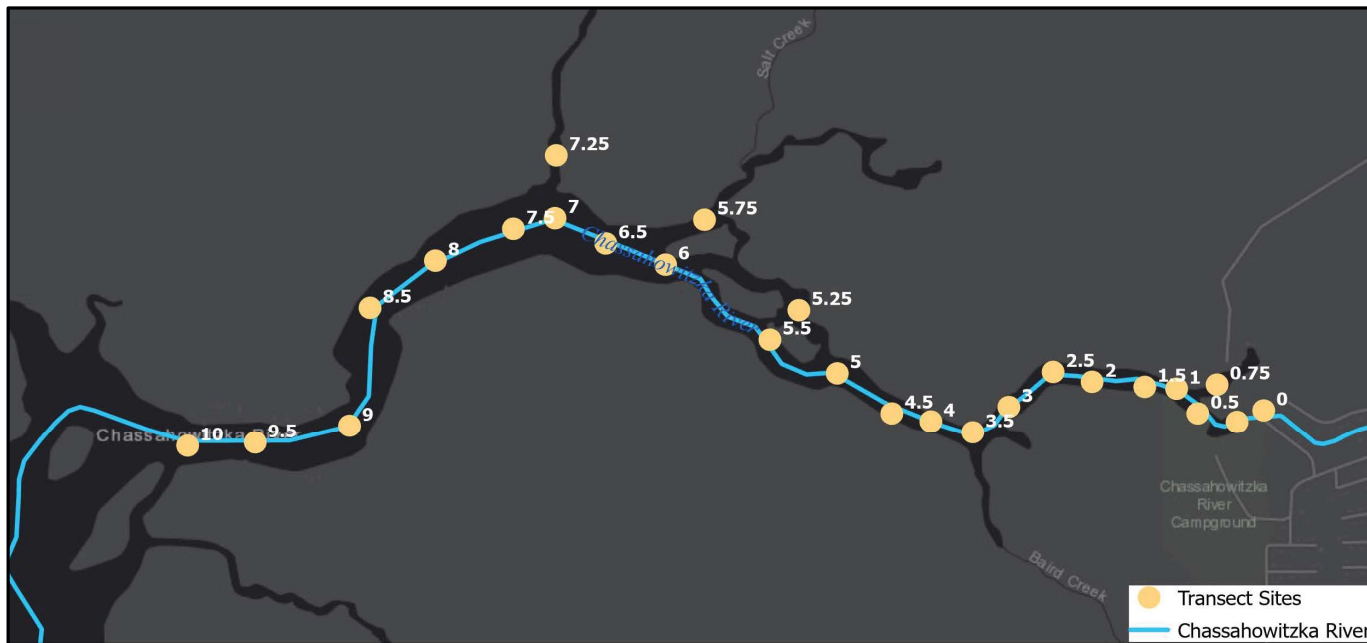
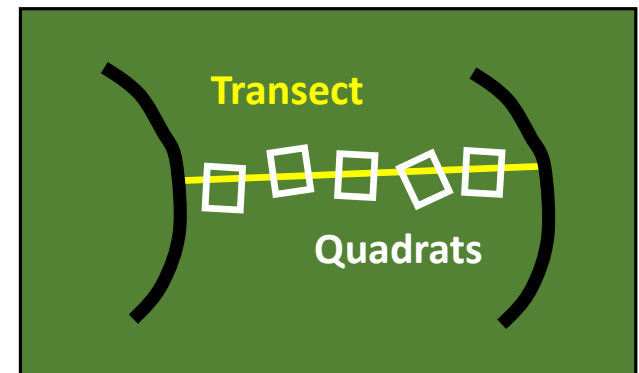
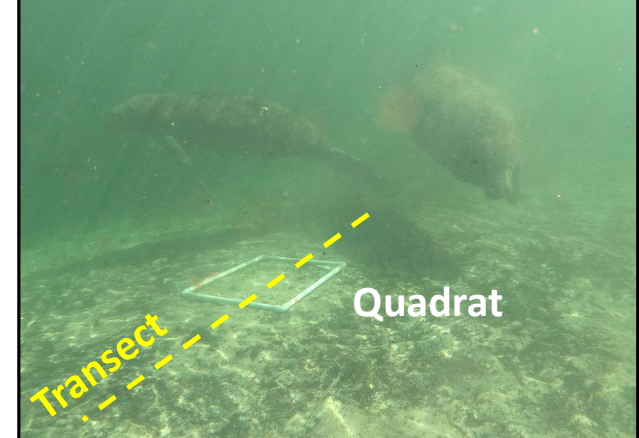
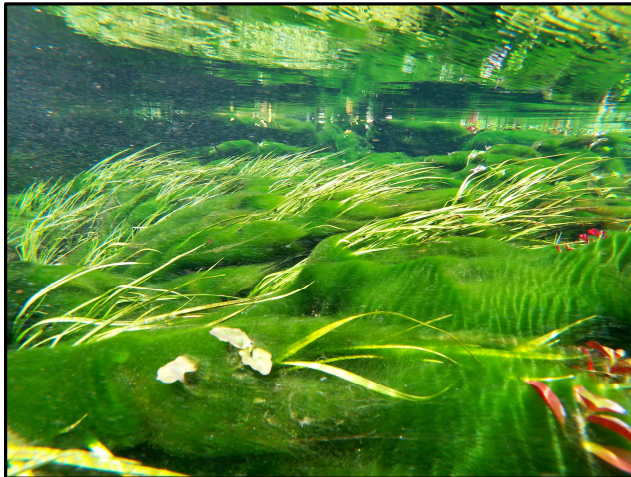


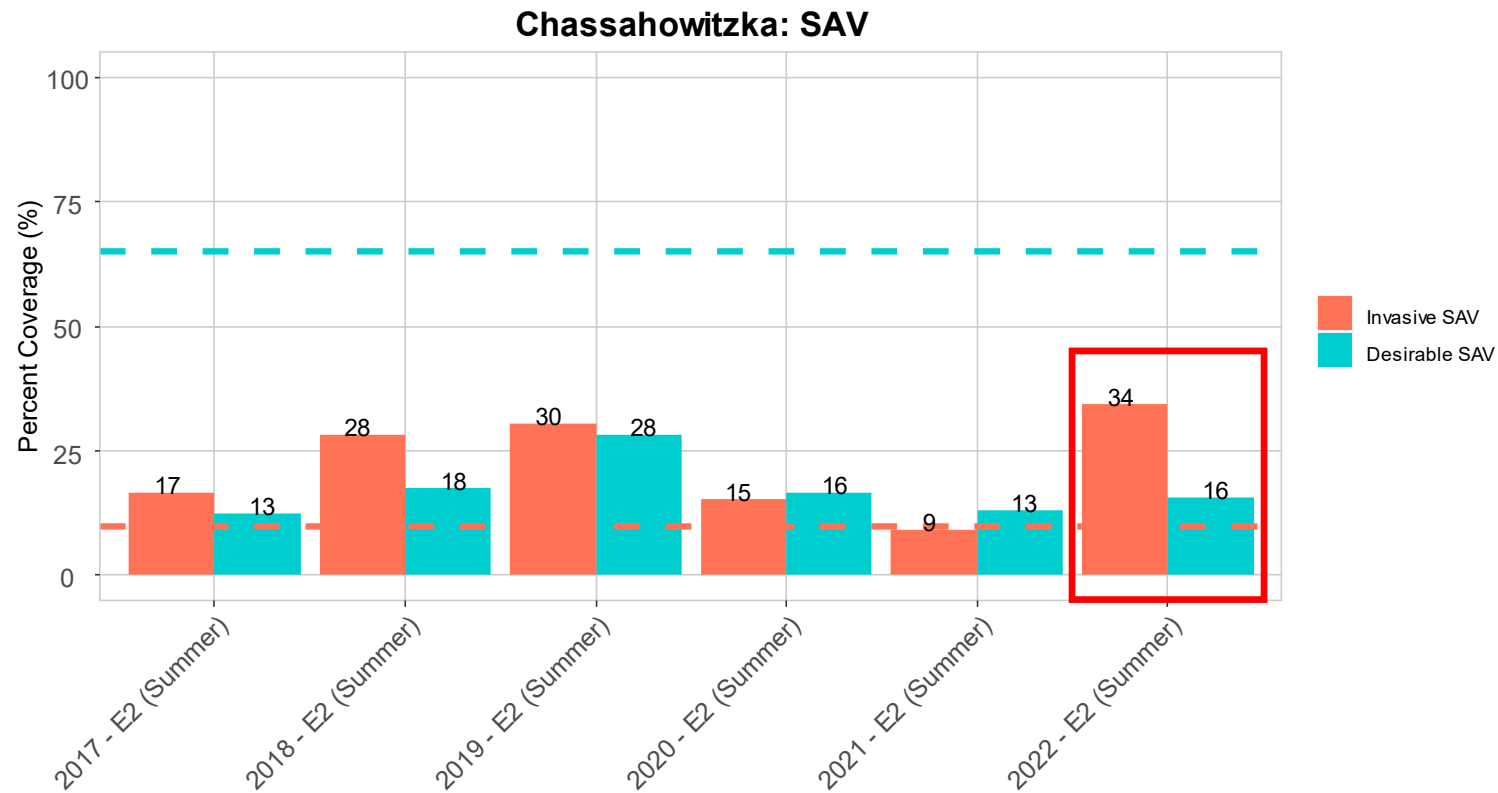
Photo taken at Transect 0.25



Chassahowitzka Q0: Natural Systems



Chassahowitzka Q0: Natural Systems



Chassahowitzka QO: Current

	Water Quality	Target
👎	Water clarity – river average	>20 feet
👎	Water clarity – near the headspring	>40 feet
👎	Nitrate concentration in the springs	<0.23 mg/L
👎	Total nitrogen concentration in the river	<0.25 mg/L
	Water Quantity	
👍	Minimum flow for the river system	>97% natural flow
	Natural Systems	
👎	Coverage of desirable submerged aquatic vegetation in the river	>65%
👎	Coverage of invasive aquatic vegetation (including filamentous algae) in the river	<10%

QO: Chassahowitzka TWG Discussions

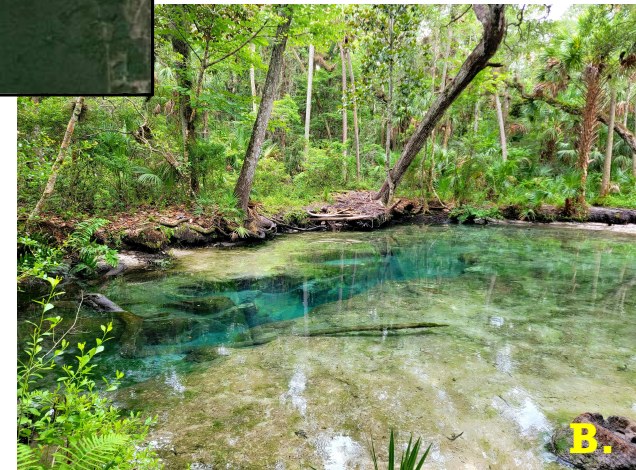
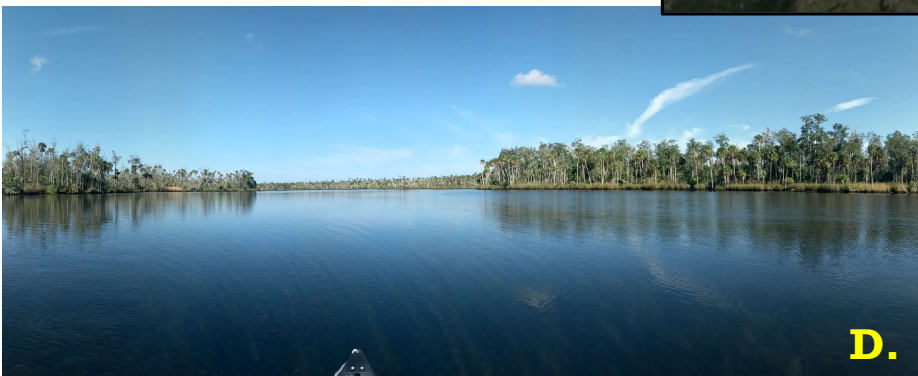
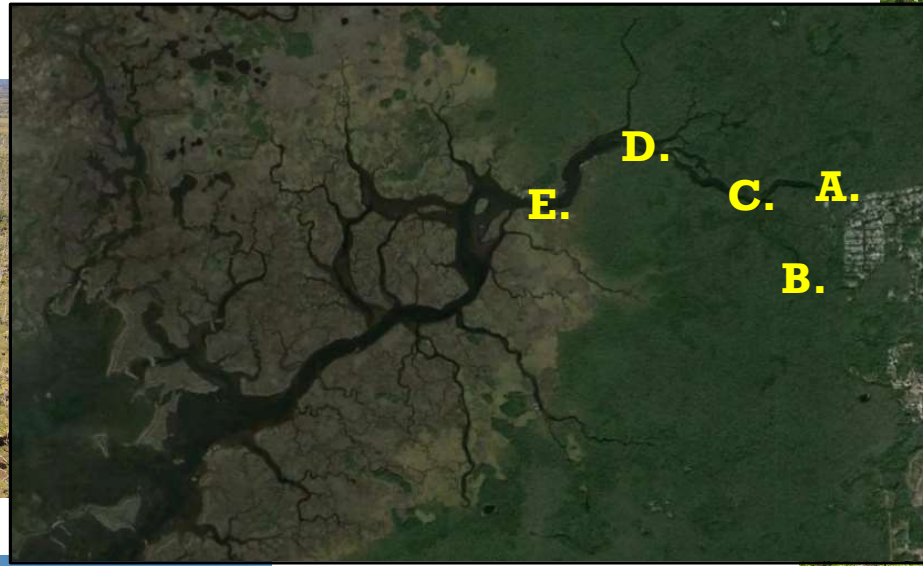
Indicators

Water clarity	Threshold
Near the headspring	32 ft
Middle portion of river	13 ft

Quantifiable Objectives

Water quality	Target
Nitrate concentration in the springs	< 0.23 mg/L
Total nitrogen concentration in the river	< 0.25 mg/L
Water quantity	
Minimum flows for the springs and river	> 92% natural flow
Natural systems	
Coverage of desirable submerged aquatic vegetation in the tidal freshwater habitat.	> 55%
Coverage of desirable submerged aquatic vegetation in the transition zone.	> 45%
Coverage of desirable submerged aquatic vegetation in the estuarine zone.	> 25%
Coverage of invasive aquatic vegetation in the tidal freshwater habitat, transition zone, and estuarine zone.	< 10%

QO: Chassahowitzka TWG Discussions



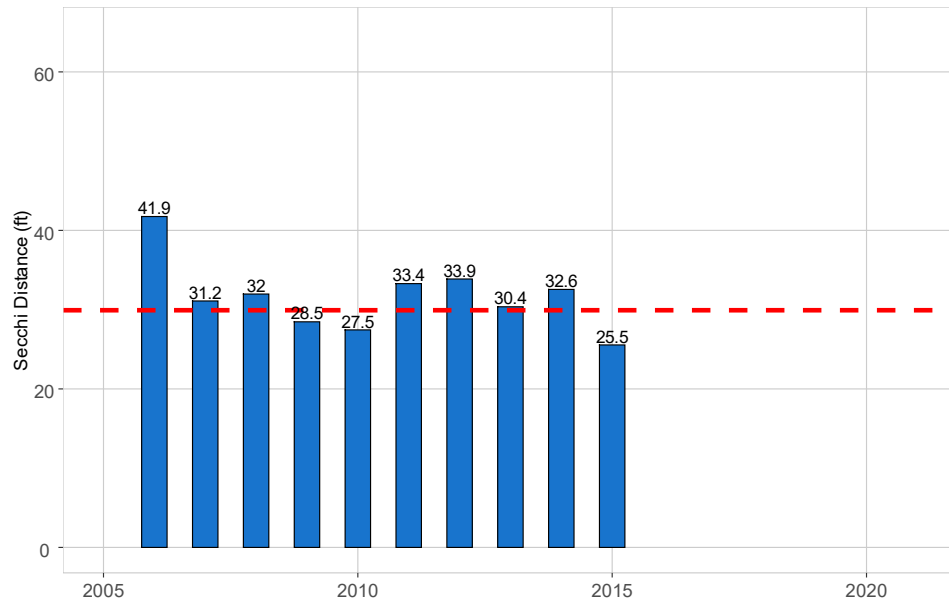
Q0: Chassahowitzka –water clarity



Station	Clarity (ft)
CV0	30
CV0.5	17
CV1	13
CV3	6
CV5	6

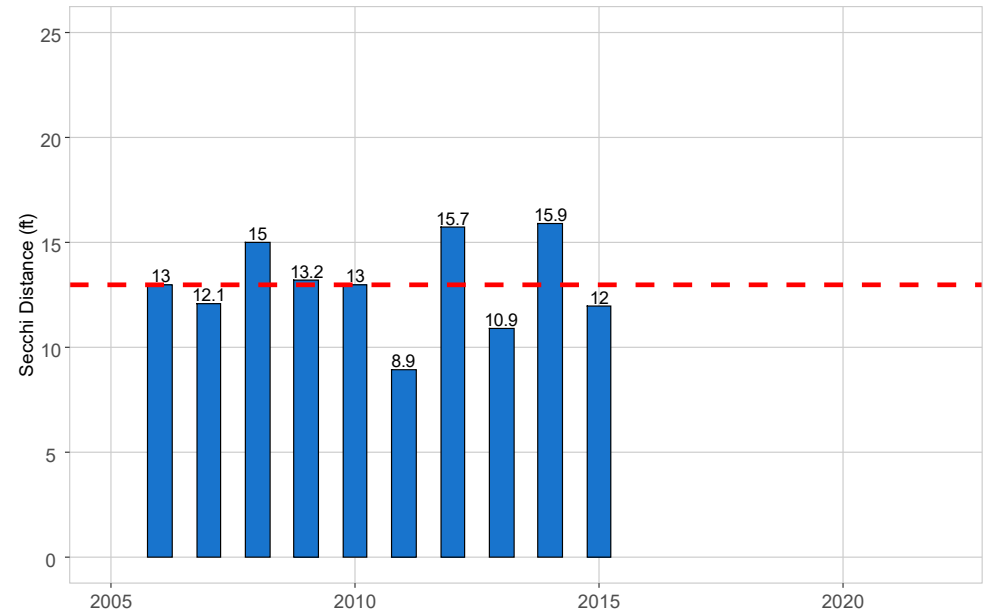
Q0: Chassahowitzka TWG –water clarity

Mean Water Clarity: Headspring



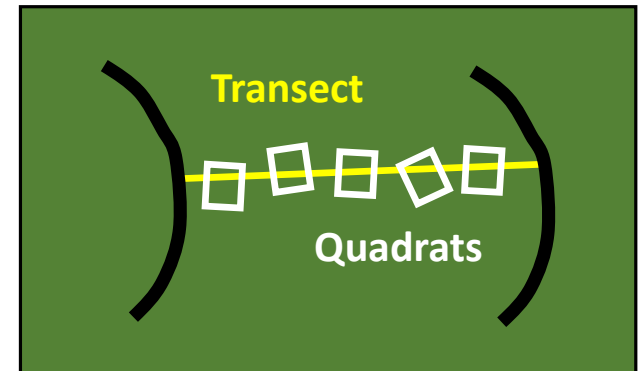
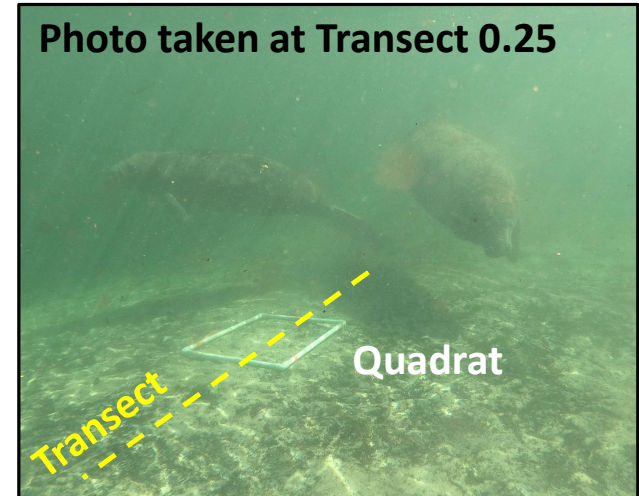
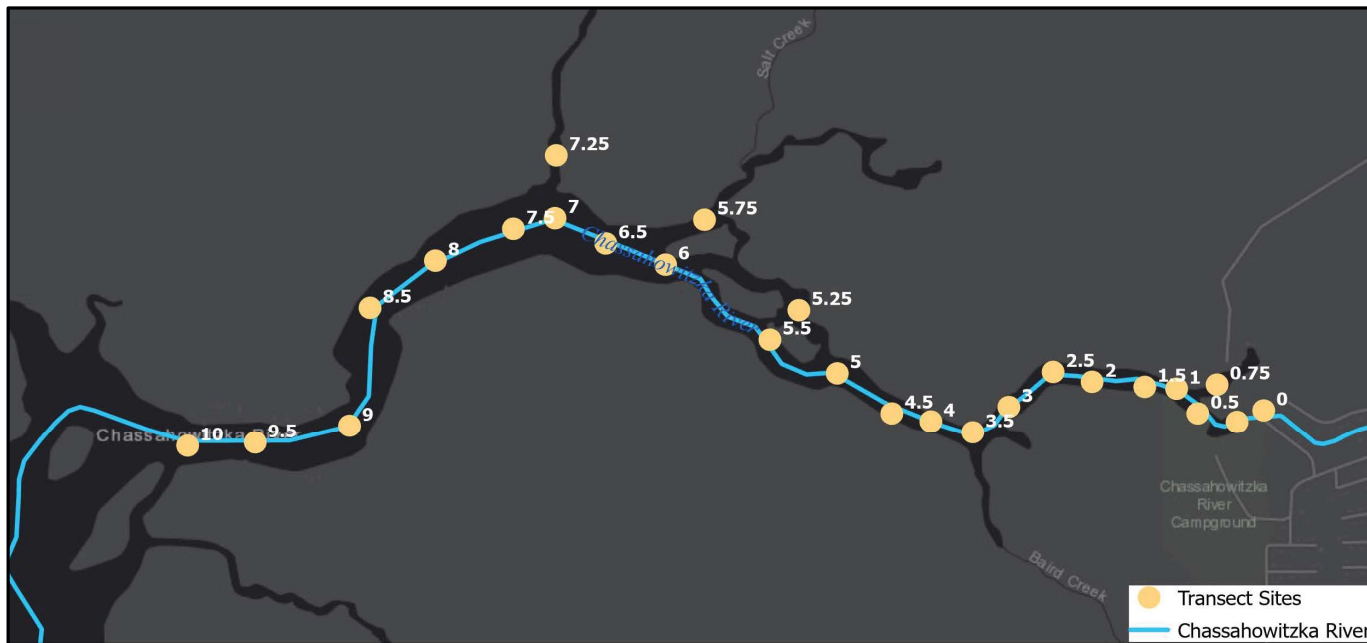
Average: 32 ft

Mean Water Clarity: CV1

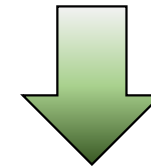
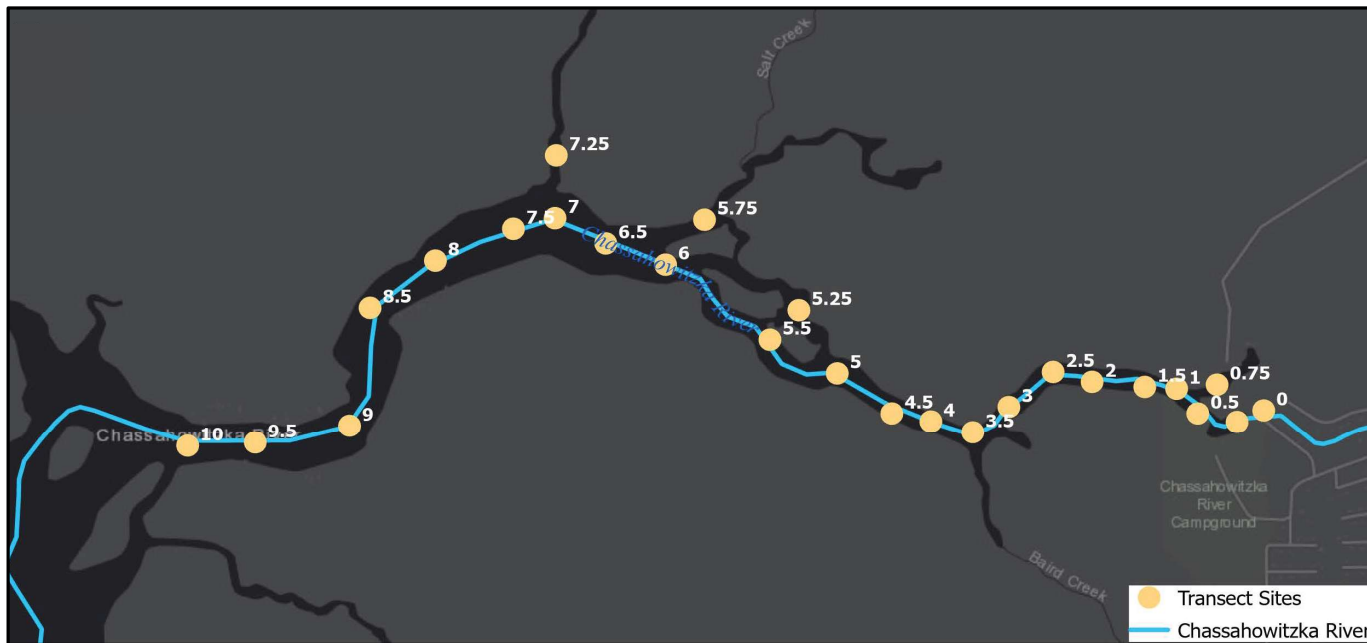


Average: 13 ft

Q0: Chassahowitzka – natural systems



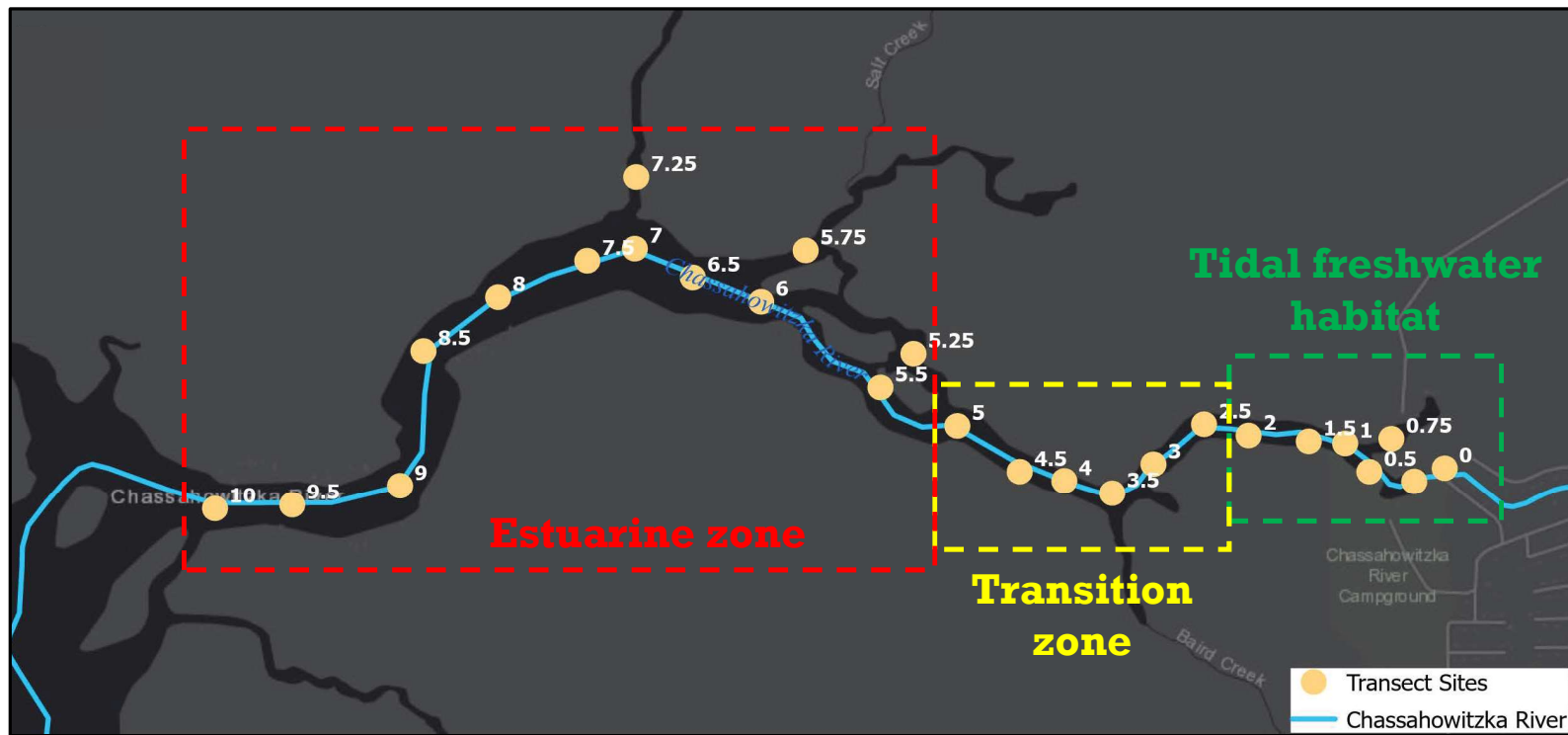
Q0: Chassahowitzka – natural systems



Salinity



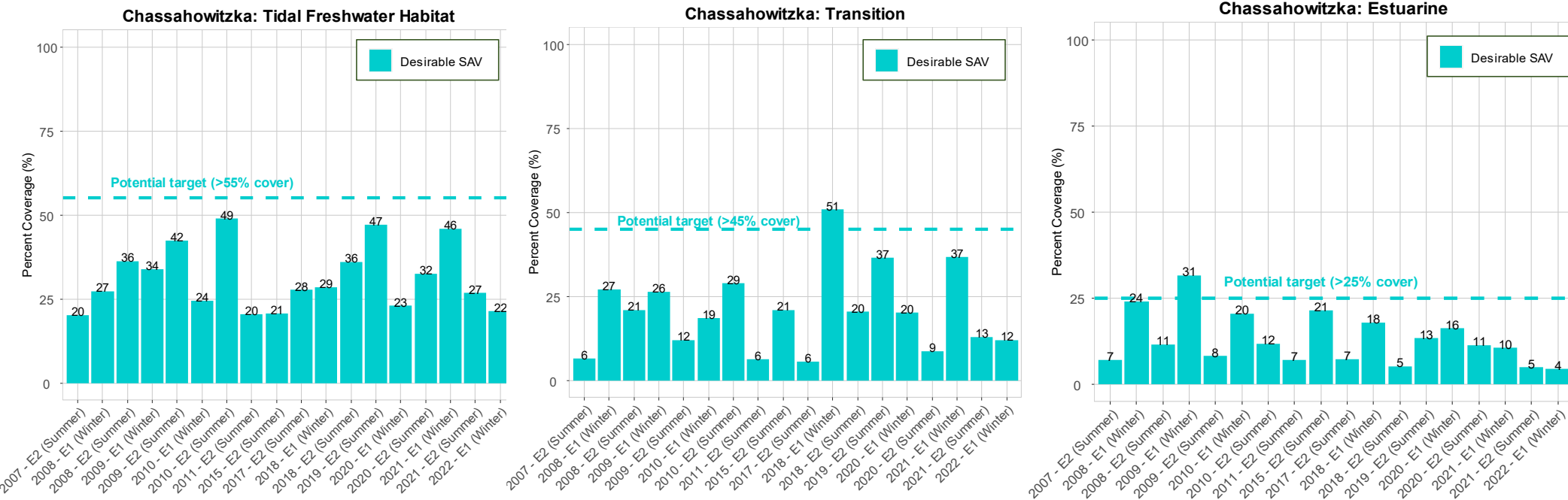
Q0: Chassahowitzka – natural systems



Modified from Trowbridge, MC (2022). *Estimating salinization of spring-fed rivers using submerged aquatic vegetation*. Manuscript in preparation.



Q0: Chassahowitzka – natural systems



QO: Chassahowitzka TWG – review

Water Quality	Target
Water clarity – river average	>20 feet
Water clarity – near the headspring	>40 feet
Nitrate concentration in the springs	<0.23 mg/L
Total nitrogen concentration in the river	<0.25 mg/L
Water Quantity	
Minimum flow for the river system	>97% natural flow
Natural Systems	
Coverage of desirable submerged aquatic vegetation in the river	>65%
Coverage of invasive aquatic vegetation (including filamentous algae) in the river	<10%

Indicators

Water clarity	Threshold
Near the headspring	32 ft
Middle portion of river	13 ft

Quantifiable Objectives

Water quality	Target
Nitrate concentration in the springs	< 0.23 mg/L
Total nitrogen concentration in the river	< 0.25 mg/L
Water quantity	
Minimum flows for the springs and river	> 92% natural flow
Natural systems	
Coverage of desirable submerged aquatic vegetation in the tidal freshwater habitat.	> 55%
Coverage of desirable submerged aquatic vegetation in the transition zone.	> 45%
Coverage of desirable submerged aquatic vegetation in the estuarine zone.	> 25%
Coverage of invasive aquatic vegetation in the tidal freshwater habitat, transition zone, and estuarine zone.	< 10%

Questions?

Madison Trowbridge, Ph.D.

Surface Water Improvement and Management
Natural Systems and Restoration Bureau

madison.trowbridge@swfwmd.state.fl.us