

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Quantifiable Objective Refinement

Chassahowitzka



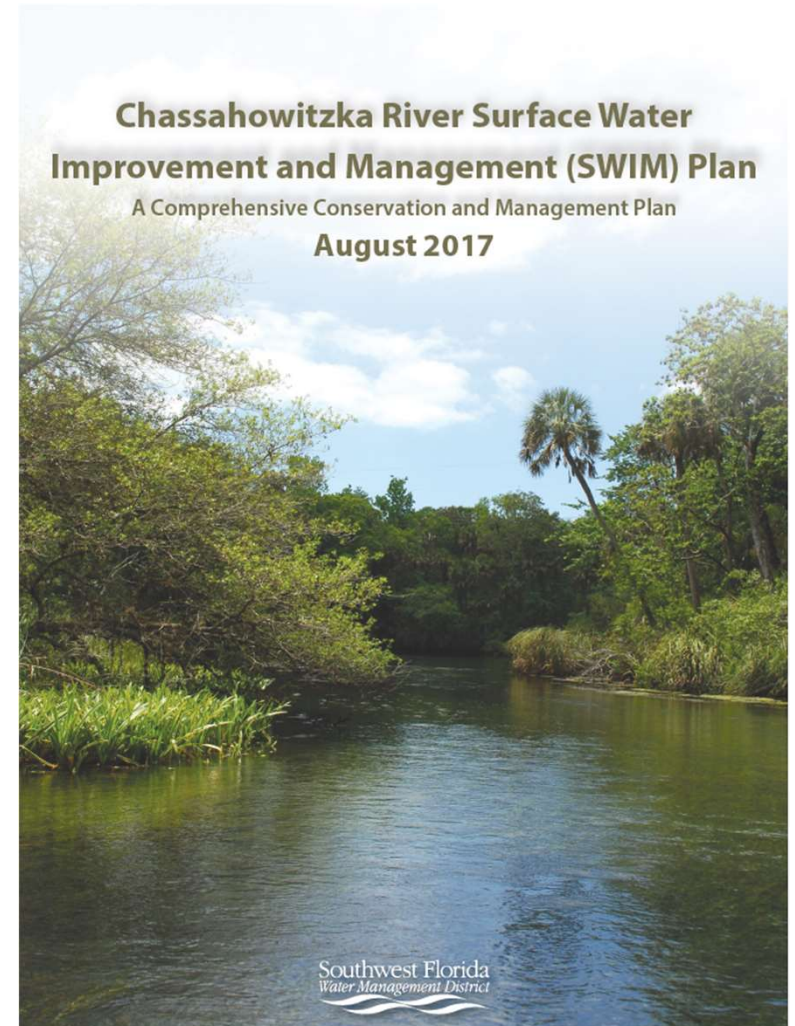
Madison Trowbridge, Ph.D.

Springs Scientist

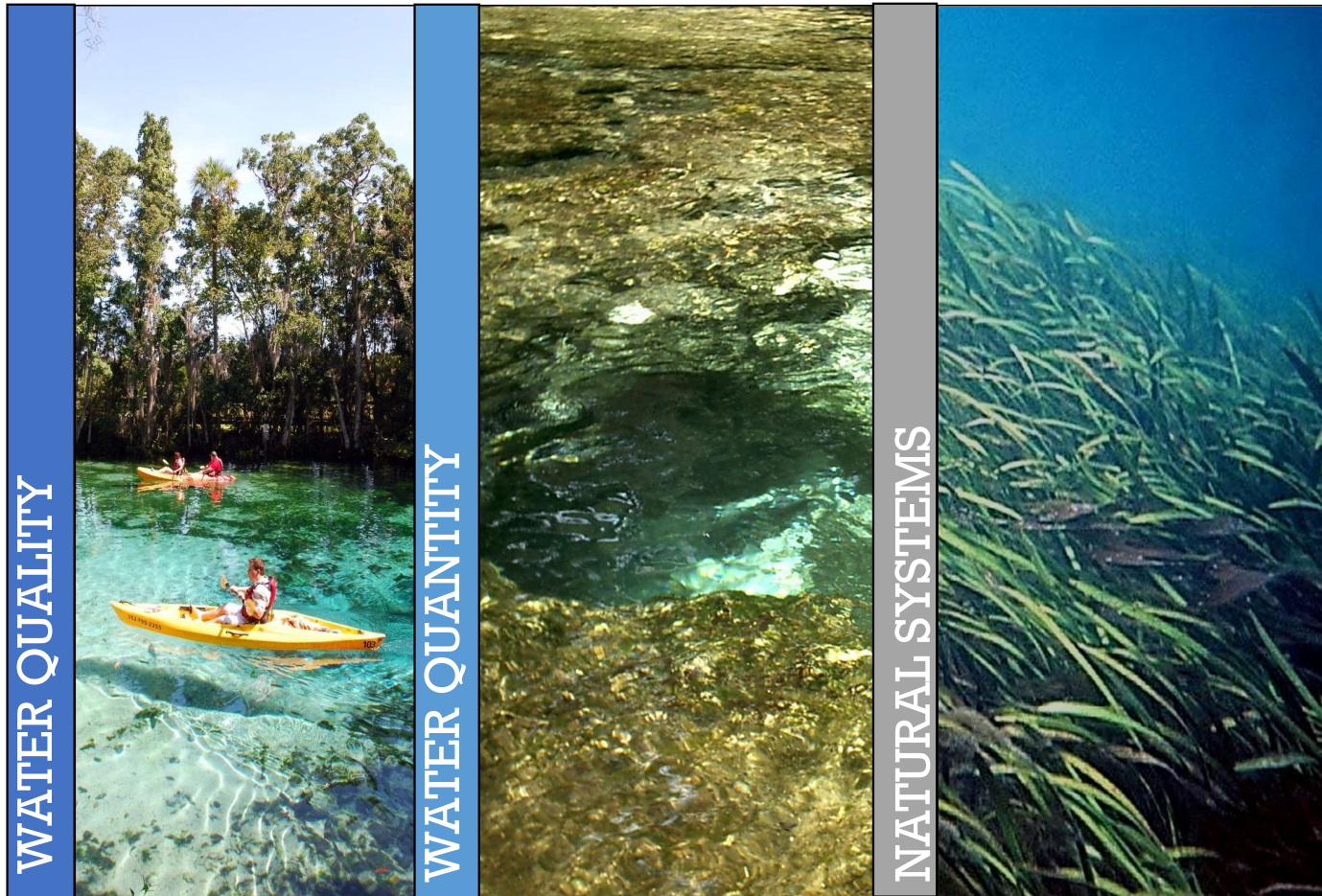
Natural Systems and Restoration

SWIM Plans

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



Quantifiable Objectives



Quantifiable Objectives Refinements

- **Refinements**
 - Rainbow – approved July 2021
 - Crystal River/Kings Bay – approved March 2022
 - Weeki Wachee – approved July 2022
 - Chassahowitzka – in progress
 - Homosassa – upcoming (tentative July 2023)
- **Public workshop**
- **District's Governing Board**

Chas: 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%

Chas: Refinement Discussion

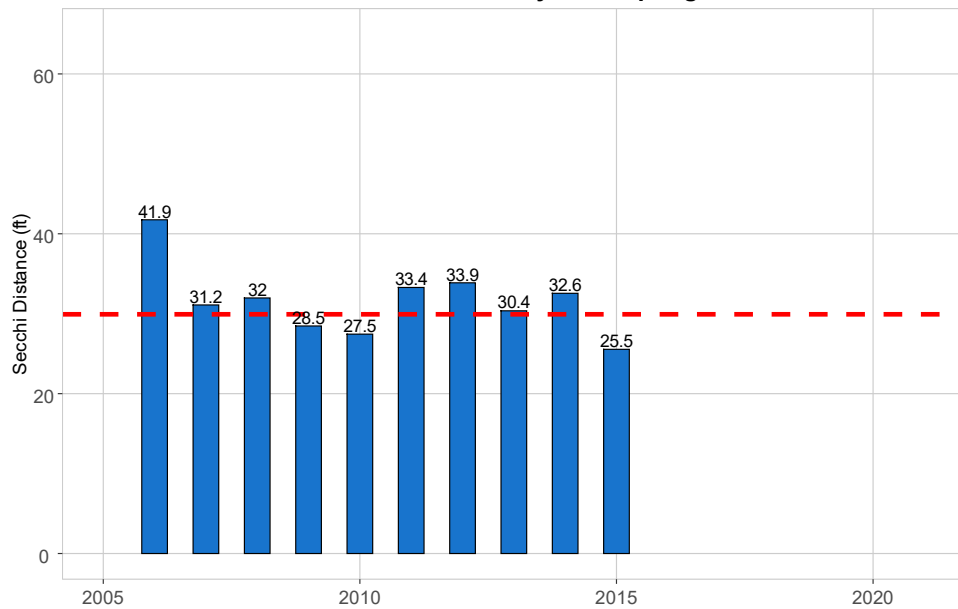
- Define quantifiable objectives as different river portions
 - Water clarity – headsprings, middle
 - Natural systems – tidal freshwater habitat, transition, estuarine
- Define water clarity as indicator
- Define desirable submerged aquatic vegetation targets

Chas: Refinement Discussion



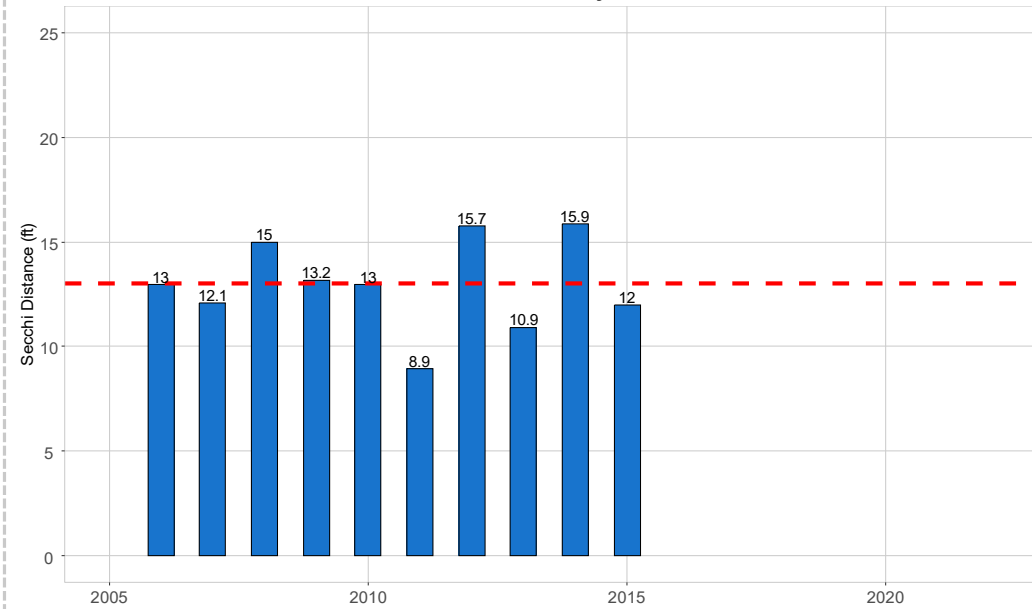
Chas: Refinement Discussion

Mean Water Clarity: Headspring



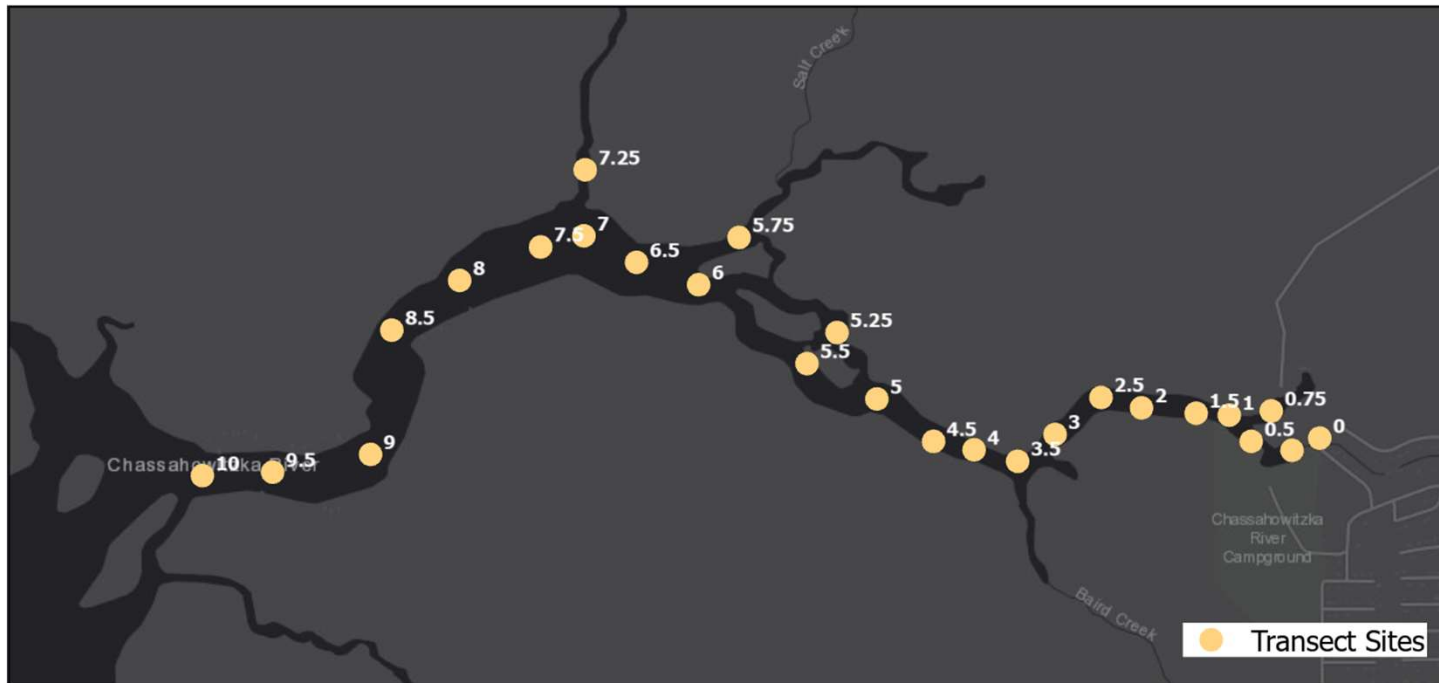
Average: 32 ft

Mean Water Clarity: Middle

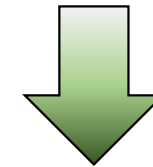


Average: 13 ft

Chas: Refinement Discussion



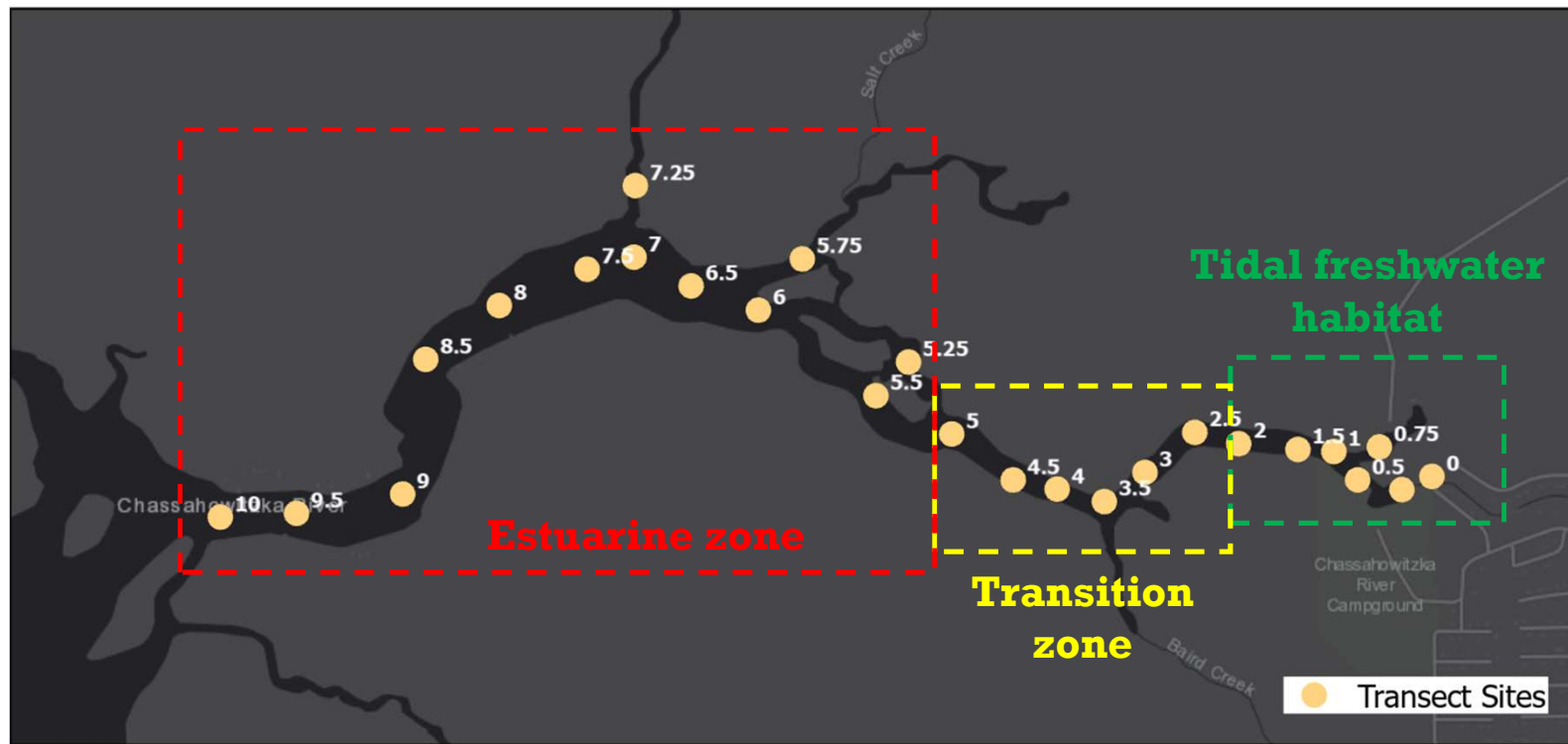
Freshwater algae



Salinity

Marine drift algae

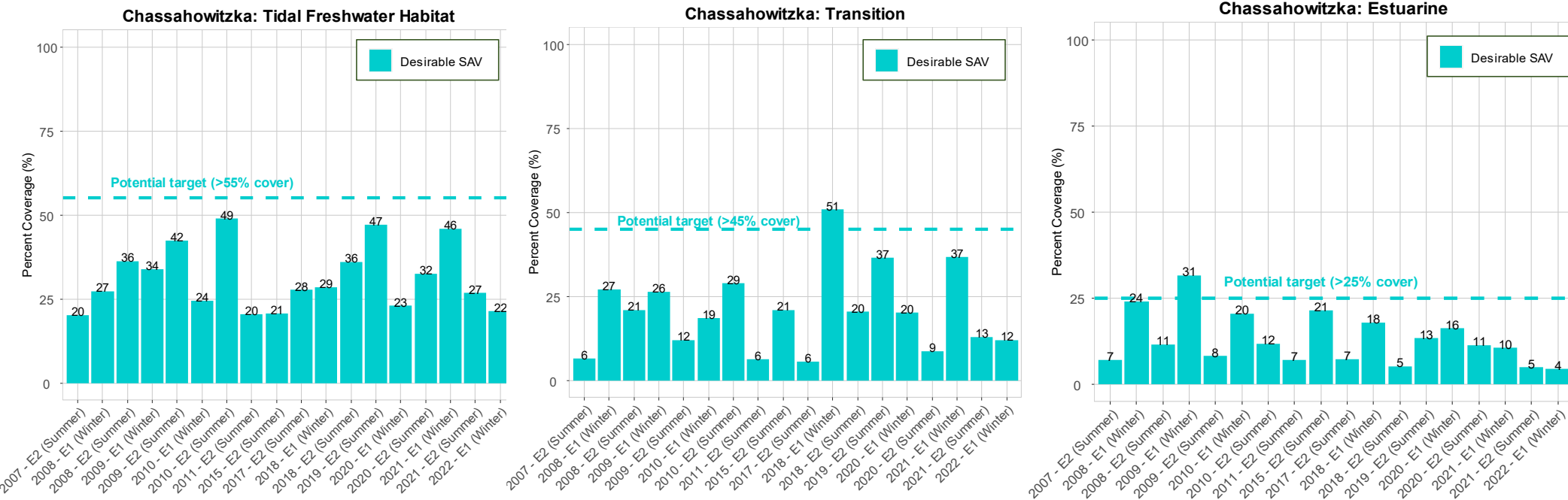
Chas: Refinement Discussion



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



Chas: Refinement Discussion



Chas: Refinement Discussion

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%

Action Item

Approve refinements to the quantifiable objectives as recommended by District staff.

- **Update minimum flows target as adopted**
- **Redefine water clarity as an indicator**
- **Define water clarity evaluated as headsprings and middle portions**
- **Define natural systems evaluated as tidal freshwater habitat, transition, and estuarine portions**
- **Redefine desirable submerged aquatic vegetation targets**