Whitaker Bayou Stream Assessment

Study Area

Whitaker Bayou is located in northern Sarasota County where it flows into Sarasota Bay. It was assessed on August 11, 2014. Whitaker Bayou's watershed is highly urbanized, having a drainage basin LDI value of 30.51 and is comprised predominantly of residential (37.26%) and industrial (18.96%) land uses. Whitaker Bayou in the upper creek portions of Regions 9 through 11 has been straightened and is characterized by steep banks. Regions 6 through 8 have increased natural sinuosity. Region 6 and below are characterized by an increase in bank alterations and seawalls before Whitaker Bayou reaches Sarasota Bay.

Figure 6. Whitaker Bayou Study Area

Vegetation Survey

The Whitaker Bayou vegetation assessment encompassed 11 vegetation regions from the mouth in Sarasota Bay to upstream from Myrtle St. as shown in Figure 7. In these regions, 52 species of vegetation were identified. Region 1 had no vegetation present below the seawall. Region 2 through Region 6 were dominated by mangroves (*Rhizophora mangle, Laguncularia racemosa* and *Avicennia geminans*) with few other salt tolerant species present. The most upstream mangrove was *Laguncularia racemosa* in Region 7. The first occurrence of Leather Fern (*Acrostichum danaeifolium*) was in Region 6. Saltmarsh Cordgrass (*Spartina alterniflora*) was first observed in Region 4. Above Region 7 the vegetation communities are populated by many species indicative of dominating freshwater influence.

Figure 7. Overview of Whitaker Bayou Vegetation Assessment Regions

Figure 8 shows the vegetation transition zone of Whitaker Bayou indicating the most upstream Mangroves as well as the most downstream Leather Fern and *Spartina*. Based on the vegetation assessment data for Whitaker Bayou, Regions 1 through 5 would comprise the highest salinity and tidal influence zone, Region 6 and Region 7 would comprise the "mixing" zone and Regions 8 through 11 would comprise the freshwater dominant zone. Stormwater outfalls are numerous (23) in the study area of Whitaker Bayou. The vegetation assessment species list is shown in Table 2.

Figure 8. Whitaker Bayou Vegetation Waypoints

Table 2. Whitaker Bayou Vegetation Assessment List

Plant Species	Common Name	Sample Region											Regions Found
		1	2	3	4	5	6	7	8	9	10	11	
Schinus terebinthifolius	Brazilian Pepper		1	1	1	1	1	1	1	1	1	1	**10**
Quercus geminata	Sand Live Oak				1	1	1	1	1	1	1	1	**8**
Acrostichum danaeifolium	Leather Fern						1	1	1	1	1	1	**6**
Dioscorea bulbifera	Air Potato				1			1	1	1	1	1	**6**
Laguncularia racemosa	White Mangrove		1	1	1	1	1	1					**6**
Leucaena leucocephala	White leadtree						1	1	1	1	1	1	**6**
Sabal palmetto	Sabal Palm		1	1	1		1		1			1	**6**
Sphagneticola trilobata	Creeping Oxeye				1		1	1	1	1	1		**6**
Panicum maximum	Guneagrass						1	1		1	1	1	**5**
Ruellia simplex	Britton's Wild Petunia							1	1	1	1	1	**5**
Syngonium podophyllum	Nephitis, American Evergreen							1	1	1	1	1	**5**
Avicennia germinans	Black Mangrove		1	1	1		1						**4**
Bidens alba	White Beggar Ticks						1	1		1		1	**4**
Colocasia esculenta	Wild Taro, Dasheen, Coco Yam								1	1	1	1	**4**
Rhizophora mangle	Red Mangrove		1	1	1		1						**4**
Blutaparon vermiculare	Silverhead, Saltweed		1	1	1								**3**
Campsis radicans	Trupetcreeper									1	1	1	**3**
Carya aquatica	Water Hickory									1	1	1	**3**
Eustachys glauca	Saltmarsh Finger Grass			1	1			1					**3**
Koelreuteria elegans	Golden Rain Tree			1	1		1						**3**
Panicum repens	Torpedo Grass				1		1	1					**3**
Sansevieria hyacinthoides	Bowstring Hemp							1	1	1			**3**
Tilia americana	Basswood								1	1	1		**3**
Urochloa mutica	Para Grass							1	1	1			**3**
Bauhinia variegata	Orchid Tree									1	1		**2**
Coccoloba uvifera	Seagrape		1			1							**2**
Echinochloa walteri	Coast Cockspur Grass (hairy)										1	1	**2**
Erythrina herbacea	Coralbean								1	1			**2**
Ficus aurea	Strangler Fig						1	1					**2**
Hydrilla verticillata	Hydrilla, water thyme									1		1	**2**
Juniperus virginiana	Red Cedar					1			1				**2**
Nephrolepsis spp.	Sword Fern								1	1			**2**
Parthenocissus quinquefolia	Woodbine				1		1						**2**
Thelypteris palustris	Marsh Fern								1	1			**2**
Vitis rotundifolia	Muscadine Grape									1		1	**2**
Albizia julibrissin	Silk tree Mimosa							1					**1**
Alternanthera philoxeroides	Alligator Weed							1					**1**
Boehmeria cylindrica	Bog Hemp, False Nettle										1		**1**
Casuarina equisetifolia	Australian Pine							1					**1**
Cinnamomum camphora	Camphor-tree									1			**1**
Conocarpus erecta	Buttonwood		1										**1**
Cupaniopsis anacardioides	Carrotwood							1					**1**
Cyperus involucratus	Umbrella flat sedge										1		**1**
Distichlis spicata	Salt Grass		1										**1**
Hydrocotyl umbellata	Manyflower Marshpennywort, Water Pennywort										1		**1**
Itea virginica	Virginia Willow								1				**1**
Phyla nodiflora	Frog-fruit, Carpetweed, Turkey Tangle Fogfruit							1					**1**
Prunus carolineana	Cherry Laurel									1			**1**
Quercus laurifolia	Laurel oak					1							**1**
Ricinus communis	Castor Bean								1				**1**
Sambucus canadensis	Elderberry								1				**1**
Spartina alterniflora	Salt Marsh Grass				1								**1**

Habitat Assessment

Collected sonar data were processed through Dr. Depth software to analyze the strength of the return signal from the bottom to get an estimate of the relative bottom hardness for Whitaker Bayou. Figure 9 shows the bottom hardness raster for Whitaker Bayou. This map is meant to help identify locations of harder and softer bottoms for benthic invertebrate sampling, fish sampling and benthic chlorophyll sampling. In this raster dataset, the higher the hardness value, the harder the bottom substrate.

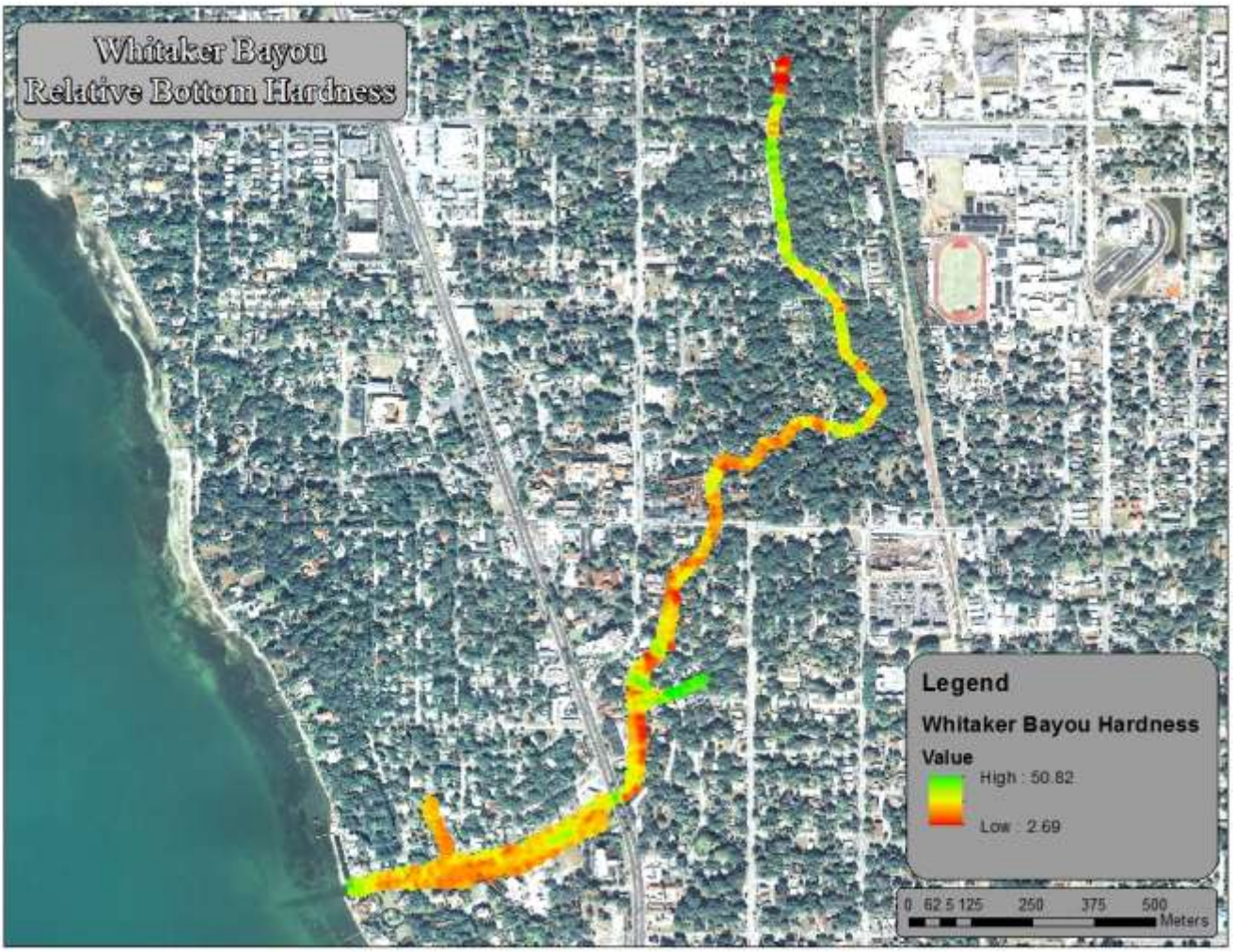

Figure 9. Whitaker Bayou Relative Bottom Hardness Map

Bathymetry Mapping

In the study area, Whitaker Bayou had a mean depth of 2.57 feet and a maximum depth of 8.03 feet. A total of 12.90 acres of creek was mapped during the assessment. At the time of assessment, Whitaker Bayou contained an estimated 9,200,464 gallons of water in the study area. At the time of the assessment, the water level elevation was 1.78 feet at USGS 2299861. Figure 10 details the bathymetric mapping for Whitaker Bayou showing the three depth strata.

Figure 10 Whitaker Bayou Bathymetric Stratum Map