

Powell Creek Stream Assessment

Study Area

Powell Creek is a tributary to the Caloosahatchee River, is located a mile and a half upstream the Caloosahatchee River from Hancock Creek in Lee County. The watershed of Powell Creek has natural areas and mixed residential land uses with an LDI value of 5.7. The downstream portion of the creek is channelized and is navigable by boat having one side urbanized and the other being natural. The eastern branch of the upstream portion remains more naturally sloping but has a flood control structure on it. The western branch turns into a roadside drainage ditch for the N. Tamiami Trail. The immediate buffer area surrounding Powell creek is slightly more impacted than the watershed as a whole with an LDI value of 6.0.

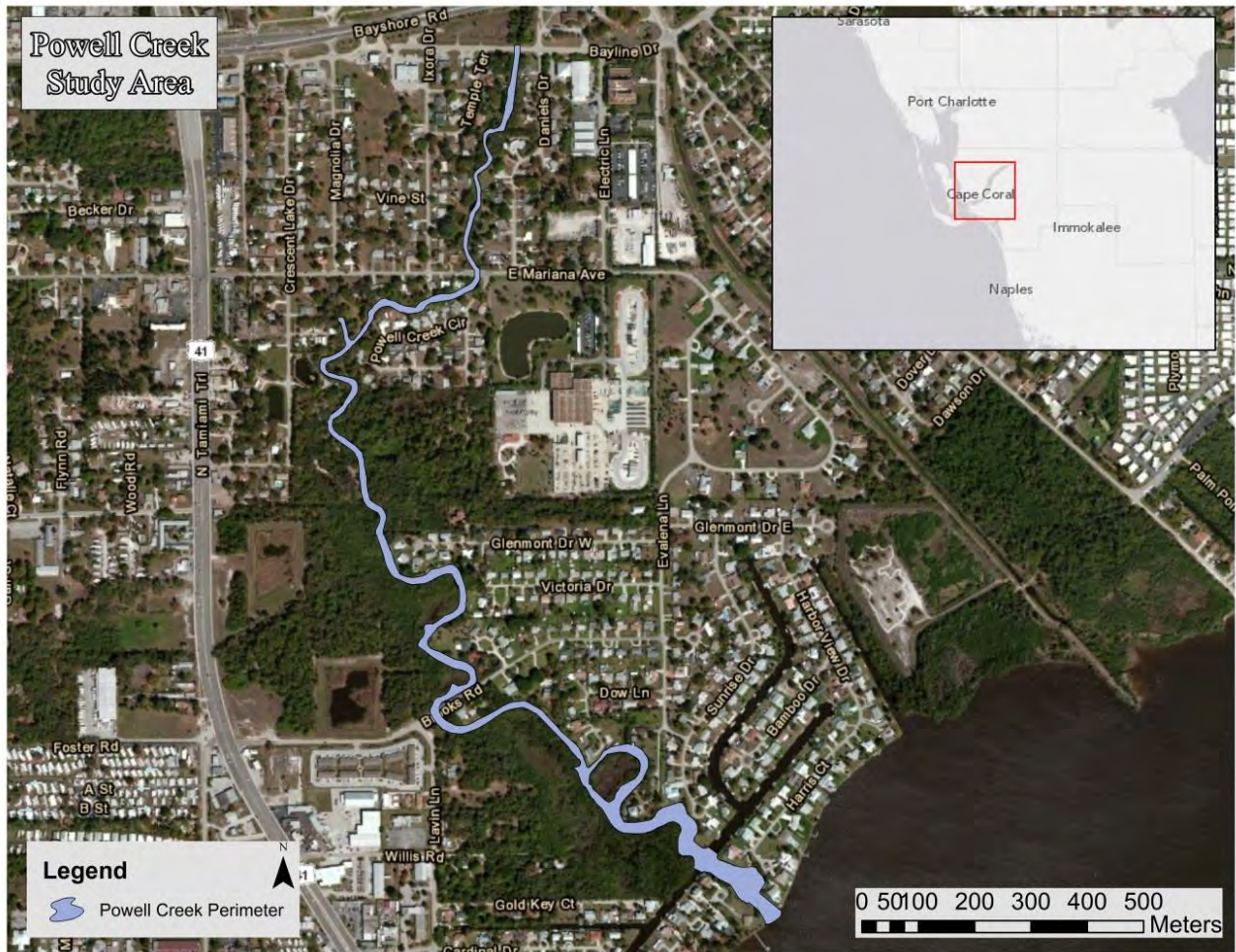


Figure 72. Overview of the Powell Creek Study Area

Vegetation Survey

The Powell Creek vegetation assessment encompassed 13 vegetation regions from the mouth in the tidal Caloosahatchee River to the overpass at Bayshore Road as shown in Figure 73. In these regions, 60 species of vegetation were identified. Regions 1 through 7 were dominated by mangroves (*Rhizophora mangle* and *Laguncularia racemosa*) with few other salt tolerant species present. The most upstream mangrove was *Rhizophora mangle* in Region 9. The first occurrence of Leather Fern (*Acrostichum danaeifolium*) was in Region 2, becoming dominant in regions 2 through 8.. Above Region 9 the vegetation communities are populated by many species indicative of dominating freshwater influence.



Figure 73. Overview of Powell Creek Vegetation Assessment Regions

Figure 74 shows the vegetation transition zone of Powell Creek indicating the most upstream Red Mangrove as well as the most downstream Leather Fern. Based on the vegetation assessment data for Powell Creek, regions 1 through 4 would comprise the highest salinity and tidal influence zone, regions 5 through 9 would comprise the “mixing” zone and regions 10 through 13 would comprise the freshwater dominant zone. The vegetation assessment species list is shown in Table 18.



Figure 74. Powell Creek Vegetation Waypoints

Table 18. Powell Creek Vegetation Assessment List

Plant Species	Common Name	Sample Region													Regions Found
		1	2	3	4	5	6	7	8	9	10	11	12	13	
<i>Acrostichum danaeifolium</i>	Leather Fern		C	C	C	C	C	C	1	1	1	1	1	1	12
<i>Quercus laurifolia</i>	Laurel oak		1	1		1	1	1	1	1	1	1	1	1	11
<i>Crinum americanum</i>	Swamp lily			1	1	1	1		1	1	1	1	1	1	10
<i>Schinus terebinthifolius</i>	Brazilian Pepper	1	1	1	1	C	1	C	1					1	10
<i>Sphagneticola (Wedelia) trilobata</i>	Creeping Oxeye			1	1	1	1		1	1	1	1	1	1	10
<i>Ficus aurea</i>	Strangler Fig						1	1	1	1	1	1	1	1	8
<i>Panicum repens</i>	Torpedo Grass		1	1	1	1		1	1		1	1			8
<i>Rhizophora mangle</i>	Red Mangrove	D	C	C	C	C	C	C	1						8
<i>Alternanthera philoxeroides</i>	Alligator Weed						1	1	1	1	1	1	1	1	7
<i>Senna spp</i>	Senna						1	1	1	1	1		1	1	7
<i>Colocasia esculenta</i>	Wild Taro, Dasheen, Coco Yam						1	1	1	1	D	D	1		7
<i>Baccharis halimifolia</i>	Eastern False Willow, Saltbush					1		1	1	1	1		1		6
<i>Boehmeria cylindrica</i>	Bog Hemp, False Nettle							1	1	1	1	1	1	1	6
<i>Dioscorea bulbifera</i>	Air Potato							1	1	1	1	1	1	1	6
<i>Ludwigia repens</i>	Creeping Primrosewillow, Red Ludwigia							1	1	1	1	1	1	1	6
<i>Ulmus americana</i>	American Elm			1	1	1				1	1	1			6
<i>Annona glabra</i>	Pond Apple		1			C	C	1	1						5
<i>Bacopa monnieri</i>	Common Bacopa, Herb-Of-Grace			1							1	1	1	1	5
<i>Laguncularia racemosa</i>	White Mangrove	1	1	1			1	1							5
<i>Ruellia simplex</i>	Britton's Wild Petunia								1	1	1	1	1	1	5
<i>Syngonium podophyllum</i>	Nephtis, American Evergreen								1	1	1	1	1	1	5
<i>Thespesia populnea</i>	Seaside Mahoe					1	1	C	1	1					5
<i>Schoenoplectus californicus</i>	Giant Bulrush					1				1	1	1			4
<i>Taxodium distichum</i>	Bald Cypress							1	1	1				1	4
<i>Mikania scandens</i>	Climbing Hempvine							1	1	1					3
<i>Persea palustris</i>	Swampbay							1	1	1					3
<i>Pistia stratioides</i>	Water Lettuce		1						1	1					3
<i>Sambucus canadensis</i>	Elderberry								1			1		1	3
<i>Symphytotrichum carolinianum</i>	Climbing Aster								1	1	1				3
<i>Urochloa mutica</i>	Para Grass										1	1	1		3
<i>Bidens alba</i>	White Beggar Ticks								1					1	2
<i>Casuarina equisetifolia</i>	Australian Pine	1												1	2
<i>Dalbergia ecastaphyllum</i>	Coin Vine	1		1											2
<i>Fraxinus caroliniana</i>	Pop Ash												1	1	2
<i>Hydrocotyl umbellata</i>	Manyflower Marshpennywort, Water Pennywort								1	1					2
<i>Ludwigia leptocarpa</i>	Anglestem Primrosewillow										1		1		2
<i>Melaleuca quinquenervia</i>	Punk Tree, Melaleuca					1	1								2
<i>Myrica cerifera</i>	Wax Myrtle					1	1								2
<i>Pluchea rosea</i>	Rosy Camphorweed										1		1		2
<i>Schoenoplectus robustus</i>	Saltmarsh Bulrush			1		1									2
<i>Algal Spp.</i>	Algal Mats, Floating				1										1
<i>Ampelopsis arborea</i>	Peppervine		1												1
<i>Andropogon virginicus var. glaucus</i>	Broom grass							1							1
<i>Broussonetia papyrifera</i>	Paper Mulberry								1						1
<i>Ceratopteris thalictroides</i>	Water Sprite										1				1
<i>Cinnamomum camphora</i>	Camphor-tree				1										1
<i>Coccoloba uvifera</i>	Seagrape		1												1
<i>Cyperus involucreatus</i>	Umbrella flat sedge				1										1
<i>Eustachys glauca</i>	Saltmarsh Fingergrass					1									1
<i>Leucaena leucocephala</i>	White leadtree								1						1
<i>Ludwigia octovalvis</i>	Mexican Primrosewillow, Long-stalked Ludwigia									1					1
<i>Ludwigia polypoides</i>	Water Primroses, Primrosewillow									1					1
<i>Polygonum hydropiperoides</i>	Swamp Smartweed										1				1
<i>Rumex verticillatus</i>	Swamp Dock									1					1
<i>Sabal palmetto</i>	Sabal Palm			1											1
<i>Salix caroliniana</i>	Carolina Willow; Coastalplain Willow					1									1
<i>Smilax bona-nox</i>	Saw Greenbrier Cat Briar					1									1
<i>Taxodium ascendens</i>	Pond Cypress									1					1
<i>Vitis rotundifolia</i>	Muscadine Grape					1									1
<i>Ximenia americana</i>	Tallow Wood, Hog Plum								1						1

Habitat Assessment

Collected sonar data was 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 Powell Creek. Figure 75 shows the bottom hardness raster for Powell Creek. This map is meant to help identify locations of harder and softer bottoms for benthic invertebrate sampling, fish sampling and benthic chlorophyll sampling.



Figure 75. Powell Creek Relative Bottom Hardness Map

Bathymetry Mapping

In the study area, Powell Creek had a mean depth of 3.66 feet and a maximum depth of 7.92 feet. A total of 10.16 acres of creek was mapped during the assessment. At the time of assessment, Powell Creek contained an estimated 8,606,125 gallons of water in the study area. Figure 76 and Figure 77 detail the bathymetric mapping for Powell Creek showing the three depth stratum.

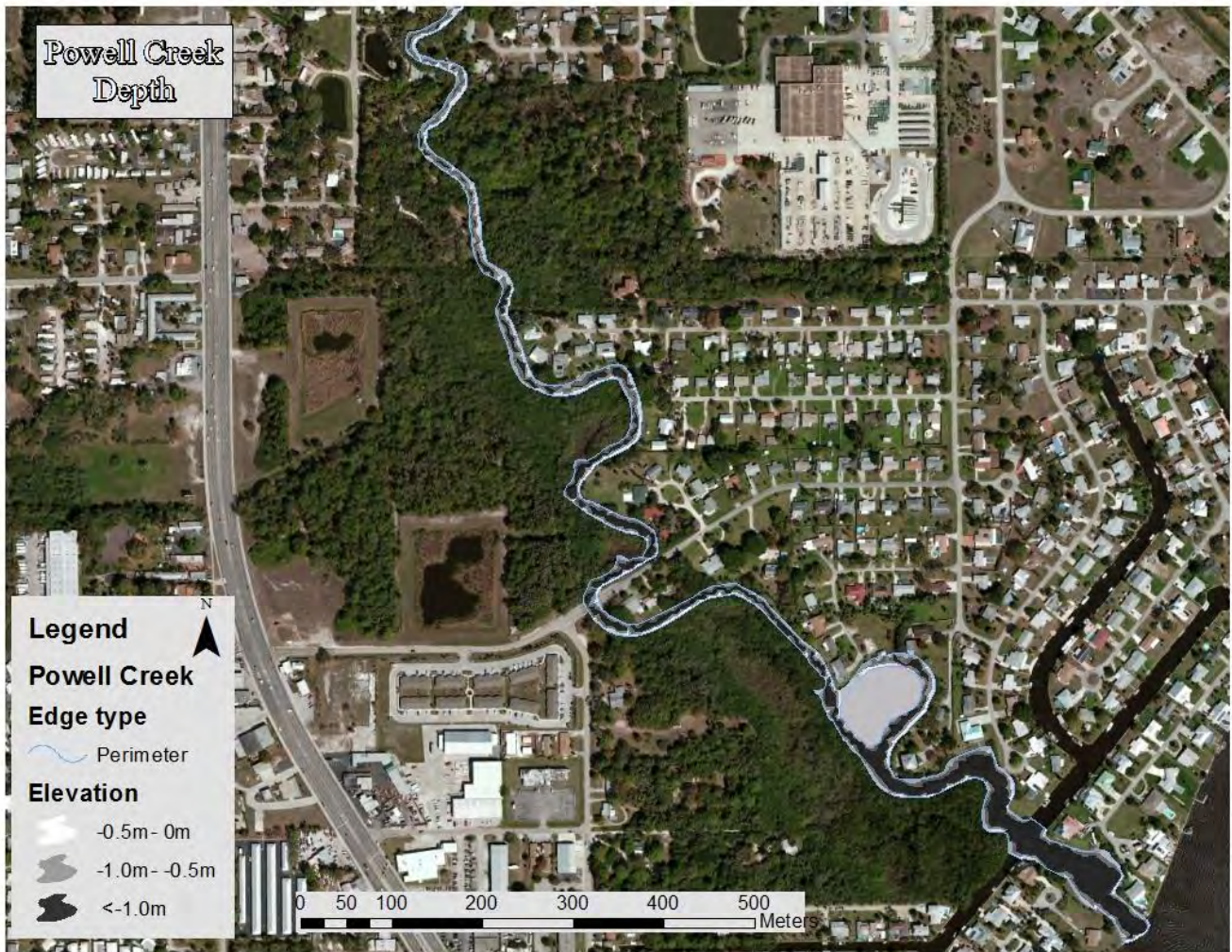


Figure 76. Powell Creek Bathymetric Stratum Map



Figure 77. Powell Creek Bathymetric Stratum Map