North Creek Condition Report for 2011

CAUTION

Chl-a N P DO

2 out of 4 indicators were rated as **PASS**.

All four indicators must pass for the creek to be rated as **PASS**.

Size: 2,327 acres
Location: Central Sarasota County
Discharges into: Little Sarasota Bay

The surface water system in the North Creek Basin has undergone significant alteration over the past century. The 1847 General Land Office Survey shows North Creek extending from Little Sarasota Bay, east across the approximately 2½-mile-wide basin to what appears to be a pond. The 1959 USDA NRCS Soil Survey shows two north-south ditches leading to North Creek. The ditch to the south leads to an area in the west that appears to be a development. With the exception of the western boundary, U.S. 41, and some ditches, the basin was still fairly undeveloped by the 1970s. By 2000, roughly half of the basin was developed and about 1,930 people resided in the developed areas (U.S. Census Bureau, 2000). Today, about 75% of the basin is developed and laden with ditches and stormwater infrastructure, with half of the development residential. *For basin details see:* ***Little Sarasota Bay Water Quality Management Plan (2012)***

North Creek



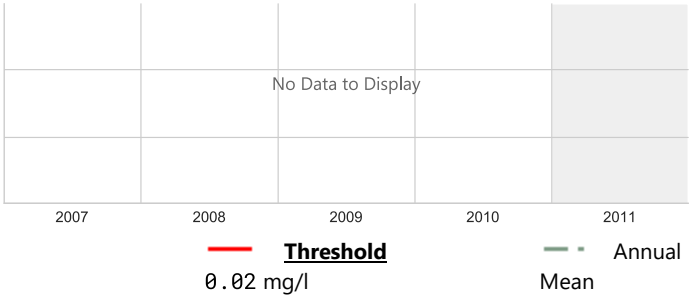
Water Chemistry Ratings | Freshwater Portion of the Creek

Creek Conditions Ratings are based on comparing nitrogen, phosphorus, chlorophyll and dissolved oxygen to water quality guidelines or regulations. Florida law defines a maximum allowable concentration of nitrogen, phosphorus, and chlorophyll *a*, and a minimum allowable concentration of dissolved oxygen in these streams.

Chlorophyll a

Units: mg/l	Year 2011	Historical period of record
High		0.032
Mean		0.0021
Low		0.0009
No. of Samples	0	9

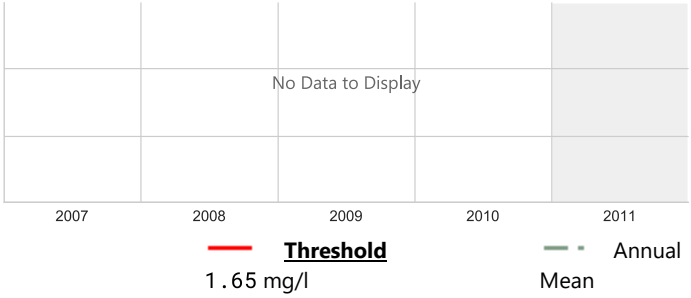
Five-year Rolling Average



Nitrogen, Total

Units: mg/l	Year 2011	Historical period of record
High		3.031
Mean		1.4041
Low		1.106
No. of Samples	0	9

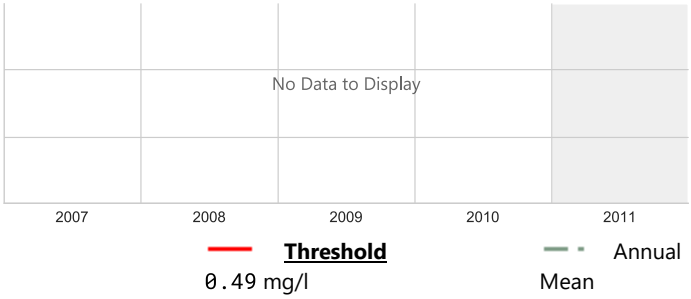
Five-year Rolling Average



Phosphorus, Total

Units: mg/l	Year 2011	Historical period of record
High		2.70
Mean		0.1632
Low		0.041
No. of Samples	0	13

Five-year Rolling Average

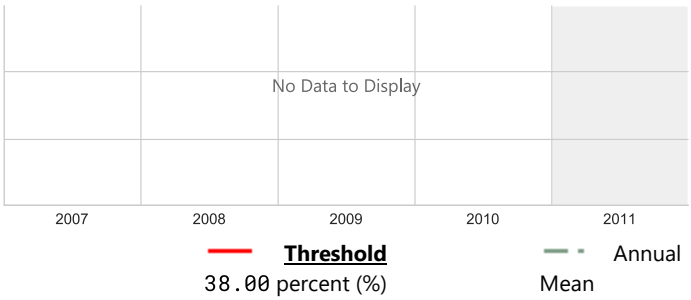


Dissolved Oxygen Saturation

Note: Low DO saturation also may be naturally influenced by inflows from nearby wetlands or groundwater sources.

Units: percent (%)	Year 2011	Historical period of record
High		54.10
Mean		26.28
Low		10.70
No. of Samples	0	13

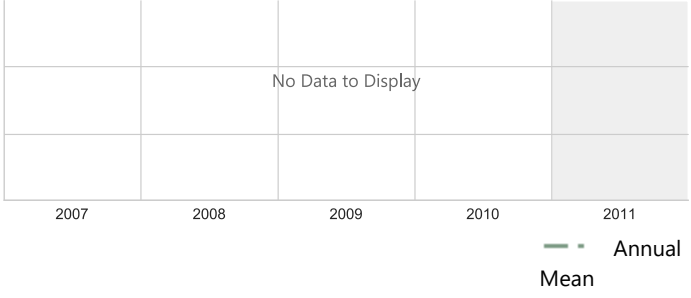
Five-year Rolling Average



Nitrogen, Ammonia + Ammonium as N

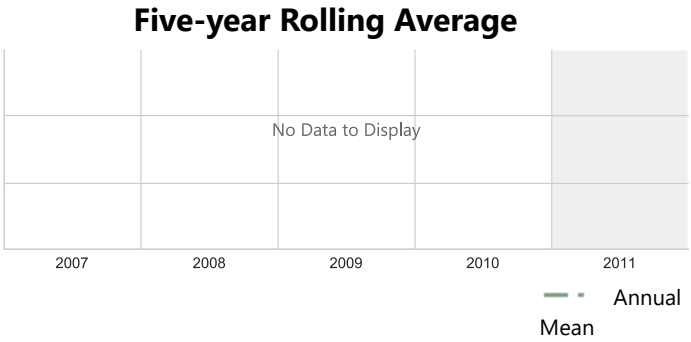
Units: ug/l	Year 2011	Historical period of record
High		460.00
Mean		83.04
Low		18.00
No. of Samples	0	10

Five-year Rolling Average



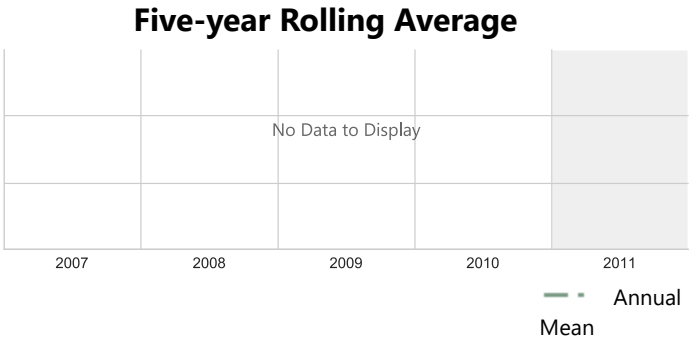
Nitrogen, Kjeldahl

Units: ug/l	Year 2011	Historical period of record
High		27000.00
Mean		1806.37
Low		1100.00
No. of Samples	0	10



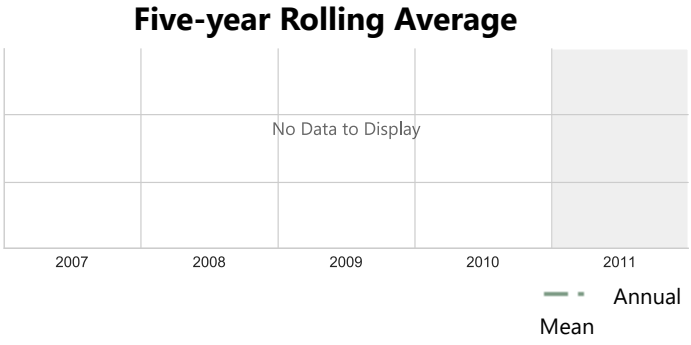
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2011	Historical period of record
High		230.00
Mean		21.89
Low		4.00
No. of Samples	0	10



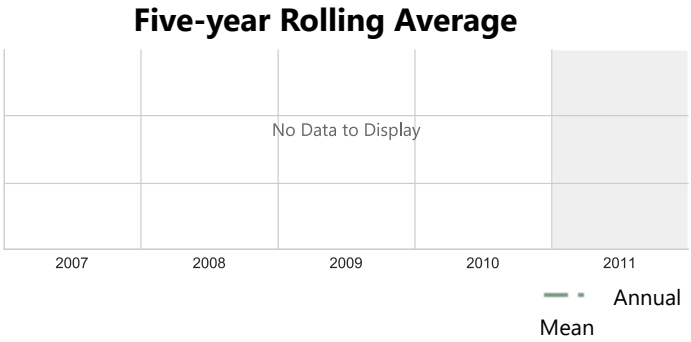
pH

Units: None	Year 2011	Historical period of record
High		7.51
Mean		7.21
Low		6.80
No. of Samples	0	13



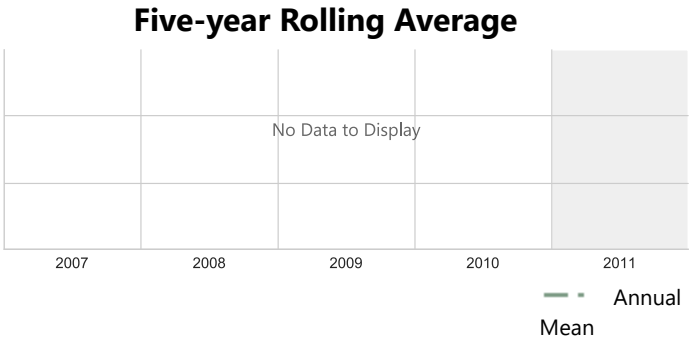
Specific conductance

Units: umho	Year 2011	Historical period of record
High		24590.00
Mean		1391.32
Low		328.00
No. of Samples	0	13



Temperature, water

Units: deg F	Year 2011	Historical period of record
High		85.028
Mean		71.32
Low		55.94
No. of Samples	0	13



Water Chemistry Ratings | Tidal Portion of the Creek

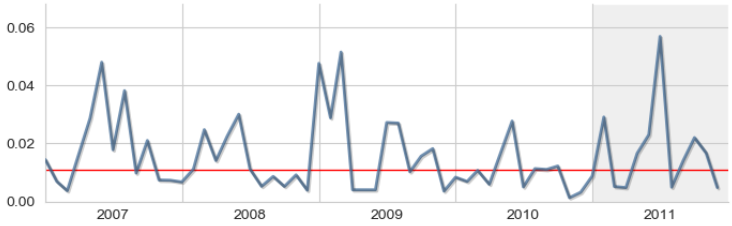
Creek Conditions Ratings are based on comparing nitrogen, phosphorus, chlorophyll and dissolved oxygen to water quality guidelines or regulations. Florida law defines a maximum allowable concentration of chlorophyll *a* and a minimum allowable concentration of dissolved oxygen in these streams. Florida has no regulatory thresholds for nitrogen or phosphorus in tidal creeks so trends are used to rate the creeks.

Chlorophyll a

Score: Caution

Units: mg/l	Year 2011	Historical period of record
High	0.1	0.1
Mean	0.0126	0.0104
Low	0.0048	0.0009
No. of Samples	36	146

Five-year Rolling Average



Threshold
0.011 mg/l

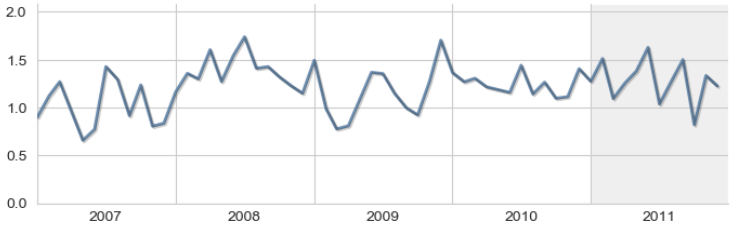
Annual Mean

Nitrogen, Total

Score: Pass

Units: mg/l	Year 2011	Historical period of record
High	1.6	2.3
Mean	1.2586	1.2329
Low	0.82	0.16
No. of Samples	12	129

Five-year Rolling Average



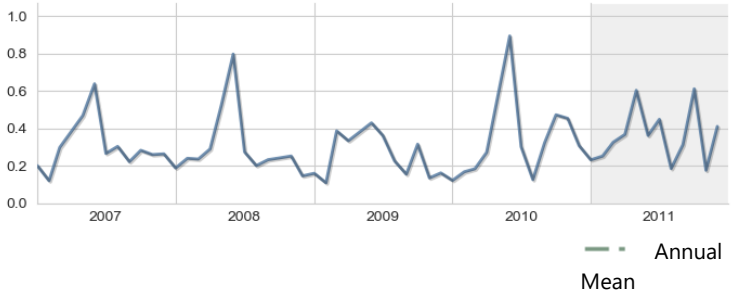
Annual Mean

P Phosphorus, Total

Score: Pass

Units: mg/l	Year 2011	Historical period of record
High	0.6	0.9
Mean	0.3305	0.2781
Low	0.175	0.08
No. of Samples	36	190

Five-year Rolling Average



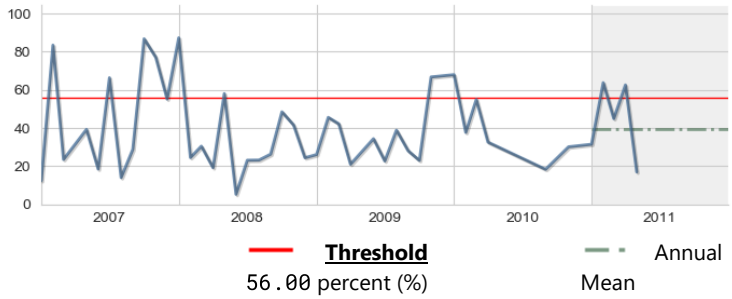
DO Dissolved Oxygen Saturation

Note: Low DO saturation also may be naturally influenced by inflows from nearby wetlands or groundwater sources

Score: Caution

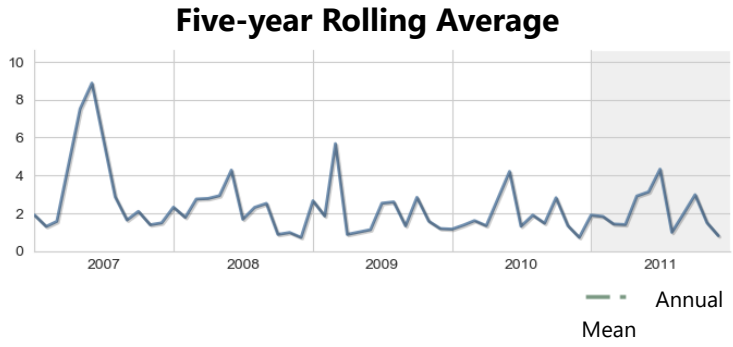
Units: percent (%)	Year 2011	Historical period of record
High	63.7	157.4
Mean	39.36	41.66
Low	16.8166	1.50
No. of Samples	40	269

Five-year Rolling Average



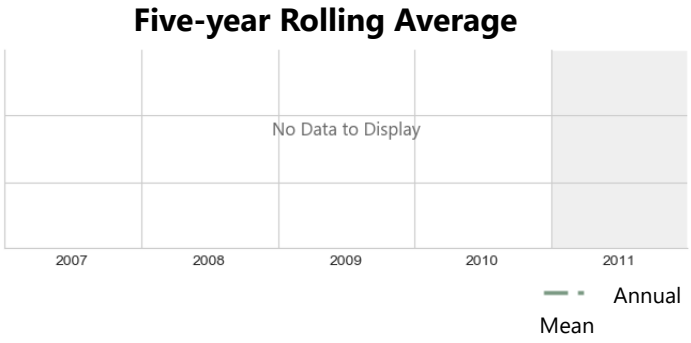
BOD, Biochemical oxygen demand

Units: mg/l	Year 2011	Historical period of record
High	4.3	8.9
Mean	1.87	1.85
Low	0.80	0.50
No. of Samples	36	129



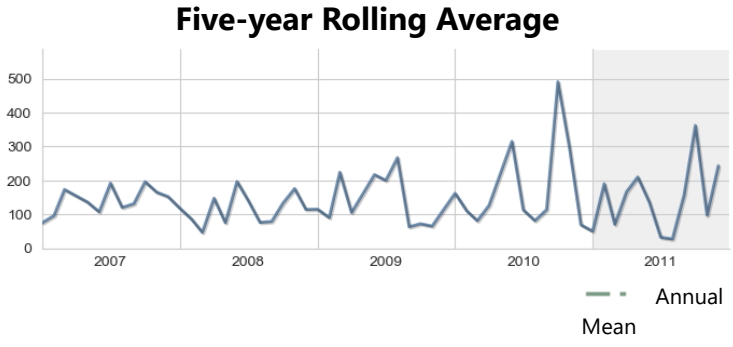
Color

Units: PCU	Year 2011	Historical period of record
High		300.0
Mean		63.13
Low		5.00
No. of Samples	0	133



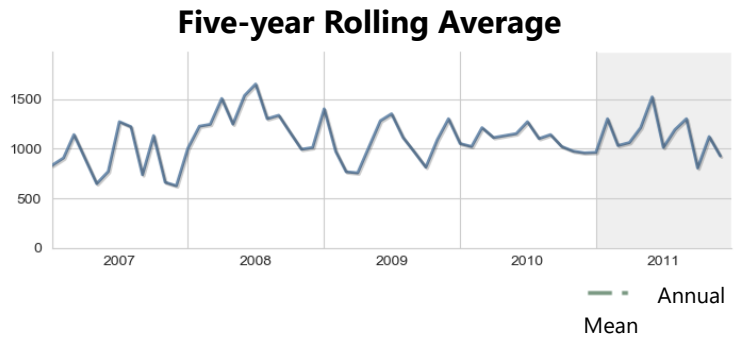
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2011	Historical period of record
High	362.0	550.0
Mean	111.32	19.82
Low	27.00	0.1455
No. of Samples	36	241



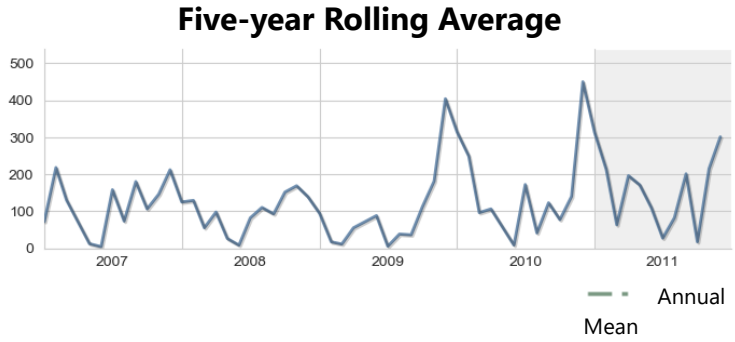
Nitrogen, Kjeldahl

Units: ug/l	Year 2011	Historical period of record
High	1,520.0	2,220.0
Mean	1103.41	1095.6
Low	803.00	50.00
No. of Samples	36	237



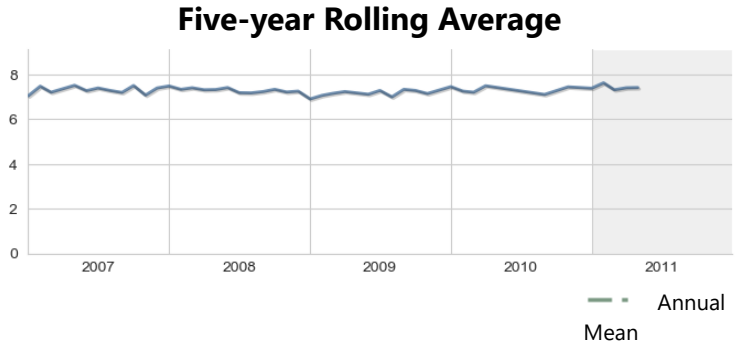
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2011	Historical period of record
High	313.0	527.0
Mean	118.3	77.01
Low	17.00	0.00
No. of Samples	36	196



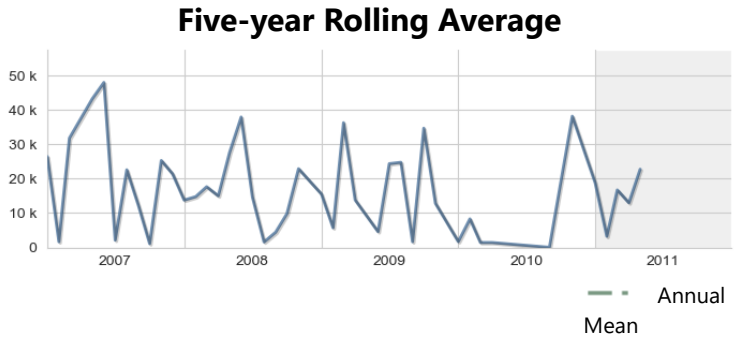
pH

Units: None	Year 2011	Historical period of record
High	7.6	8.8
Mean	7.43	7.52
Low	7.32	5.40
No. of Samples	15	255



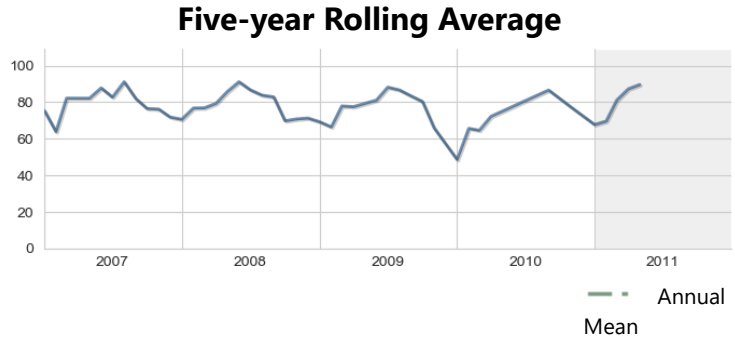
Specific conductance

Units: umho	Year 2011	Historical period of record
High	22,797.0	650,900.0
Mean	12457.61	12504.18
Low	3218.00	25.058
No. of Samples	15	323



Temperature, water

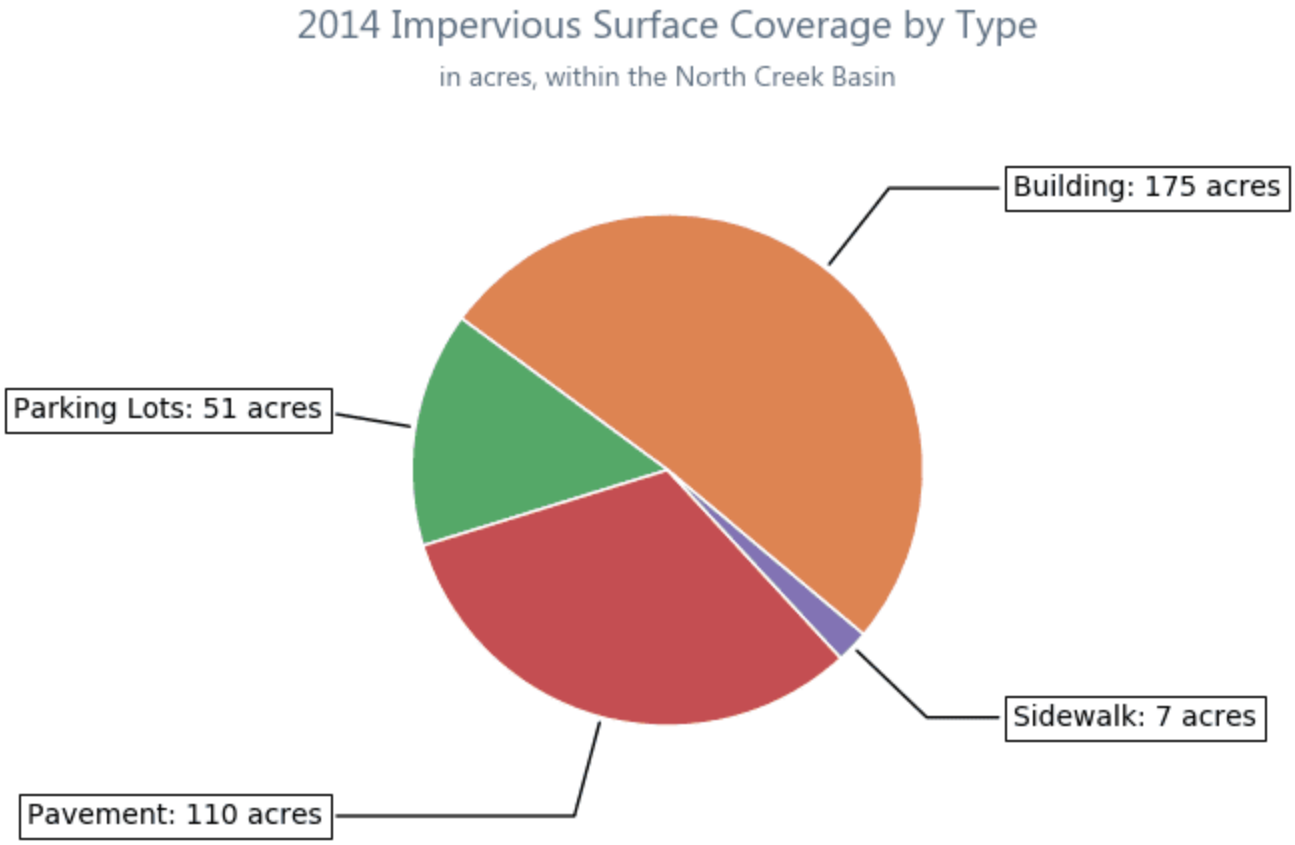
Units: deg F	Year 2011	Historical period of record
High	89.7	96.8
Mean	78.61	76.87
Low	67.748	48.56
No. of Samples	10	229



Impervious Features

Rain that falls on land that is in a natural state is absorbed and filtered by soils and vegetation as it makes it way into underground aquifers. However, in developed areas, "impervious surfaces" impede this process and contribute to polluted urban runoff entering surface waters. These surfaces include human infrastructure like roads, sidewalks, driveways and parking lots that are covered by impenetrable materials such as asphalt, concrete, brick and stone, as well as buildings and other permanent structures. Soils that have been disturbed and compacted by urban development are often impervious as well.

15% of the land area within the **North Creek Basin** is covered by impervious surfaces

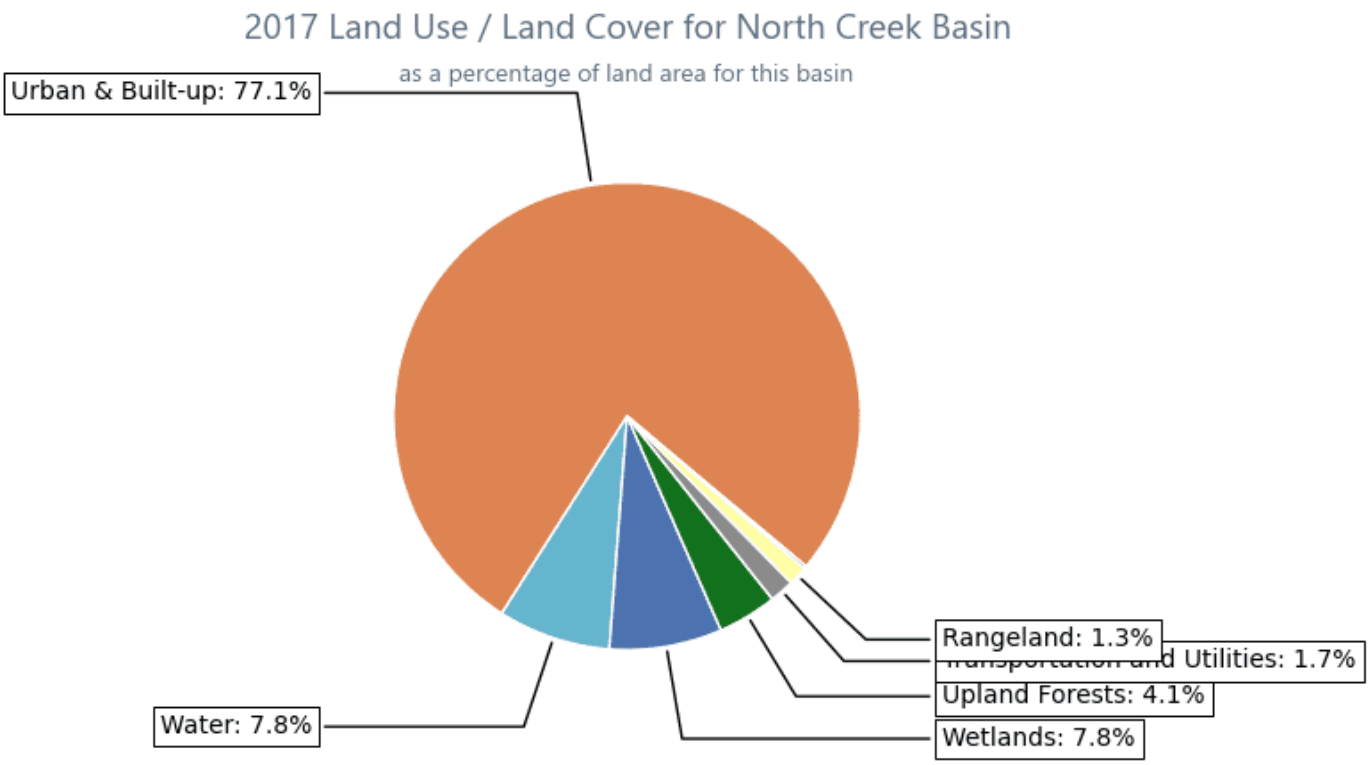


Land Use / Land Cover

Land use within a creek's watershed has a major effect on its water quality. In general, less development means better water quality. Land Cover/Land Use classifications categorize land in terms of its observed physical surface characteristics (e.g. upland or wetland), and also reflect the types of activity that are taking place on it (agriculture, urban/built-up, utilities, etc.). Florida uses as its standard a set of statewide classifications which were developed by the Florida Department of Transportation.

Acreage and Percentage within each Land Use / Land Cover Category for North Creek Basin

Land Use Classification	1990	1995	1999	2005	2011	2014	2017	Trend
Urban & Built-up	1,074 46.2%	1,584 68.1%	1,652 71%	1,702 73.2%	1,699 73%	1,679 72.2%	1,795 77.1%	
Agriculture	79 3.4%	86 3.7%	18 0.8%	9 0.4%	4 0.2%	122 5.2%	4 0.2%	
Rangeland	0 0%	0 0%	0 0%	75 3.2%	74 3.2%	20 0.9%	30 1.3%	
Upland Forests	845 36.3%	275 11.8%	277 11.9%	142 6.1%	141 6.1%	97 4.2%	94 4.1%	
Water	77 3.3%	161 6.9%	180 7.8%	180 7.7%	177 7.6%	177 7.6%	182 7.8%	
Wetlands	216 9.3%	201 8.6%	179 7.7%	178 7.7%	191 8.2%	191 8.2%	182 7.8%	
Barren Land	17 0.7%	0 0%	0 0%	0 0%	1 0%	0 0%	0 0%	
Transportation and Utilities	18 0.8%	20 0.8%	20 0.8%	40 1.7%	40 1.7%	40 1.7%	40 1.7%	


2017 Land Use / Land Cover for North Creek Basin
as a percentage of land area for this basin
Urban & Built-up: 77.1%
Rangeland: 1.3%
Utilities: 1.7%
Upland Forests: 4.1%
Wetlands: 7.8%
Water: 7.8%