

## Cow Pen Slough Condition Report for 2019



# PASS



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

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

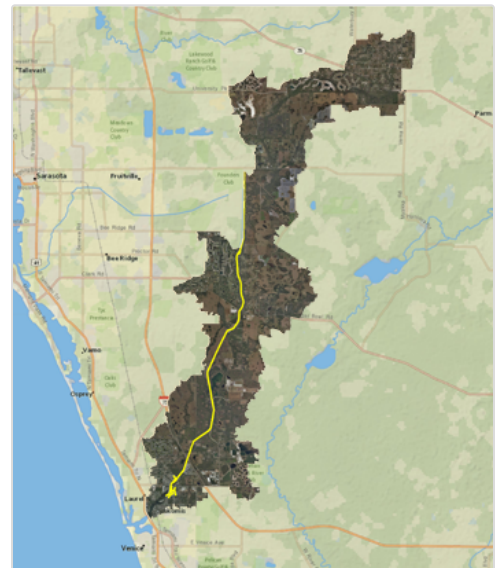
**Size:** 47,518 acres

**Location:** North and central Sarasota County, south Manatee County

**Discharges into:** Dona Bay

The hydrologic boundary of the Cow Pen Slough Basin is indeterminate in many areas due to the flat topography and undefined drainageways. Drainage from the basin is conveyed through 14 miles of improved channel. There are two operational flood control structures on the channel which were designed to provide grade control and water conservation. At present the Cow Pen Slough Basin is primarily rural in nature, with the majority of the land uses being classified as rangeland, crop and pastureland, orchards and groves, and upland forests. There are localized areas that are primarily urban in nature around Bee Ridge and north of Venice, with the majority being classified as residential. *For basin details see: **Cow Pen Slough Basin Master Plan (USDA Report, 1997)***

### Cow Pen Slough



**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.

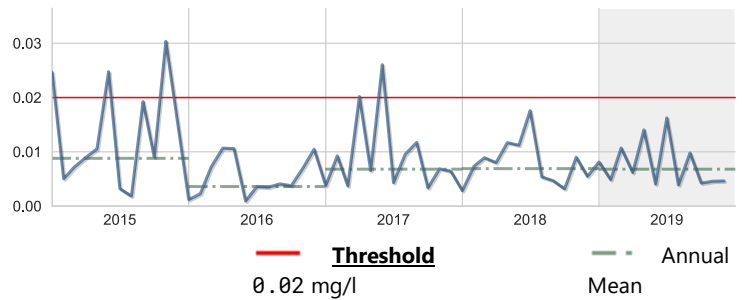


## Chlorophyll a

Score: Pass

Units: mg/l	Year 2019	Historical period of record
<b>High</b>	0.159	0.243
<b>Mean</b>	0.0068	0.0086
<b>Low</b>	0.0005	0.0005
<b>No. of Samples</b>	118	1,032

### Five-year Rolling Average

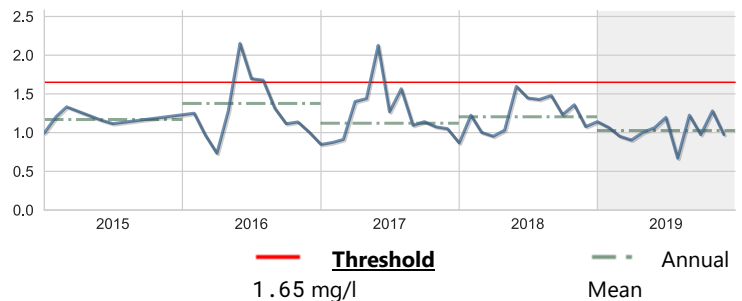


## Nitrogen, Total

Score: Pass

Units: mg/l	Year 2019	Historical period of record
<b>High</b>	2.39	3.108
<b>Mean</b>	1.0268	1.0397
<b>Low</b>	0.069	0.069
<b>No. of Samples</b>	116	663

### Five-year Rolling Average



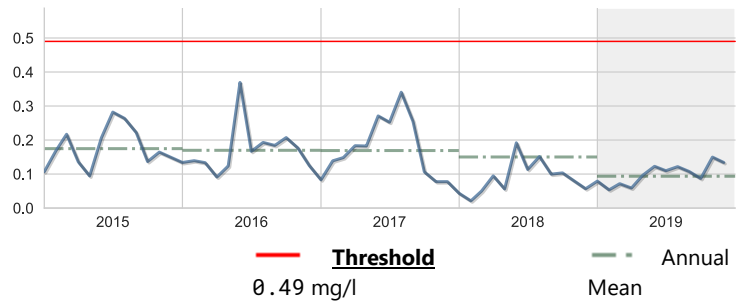


## Phosphorus, Total

Score: Pass

Units: mg/l	Year 2019	Historical period of record
<b>High</b>	0.291	1.19
<b>Mean</b>	0.0936	0.1482
<b>Low</b>	0.008	0.008
<b>No. of Samples</b>	116	1,085

### Five-year Rolling Average



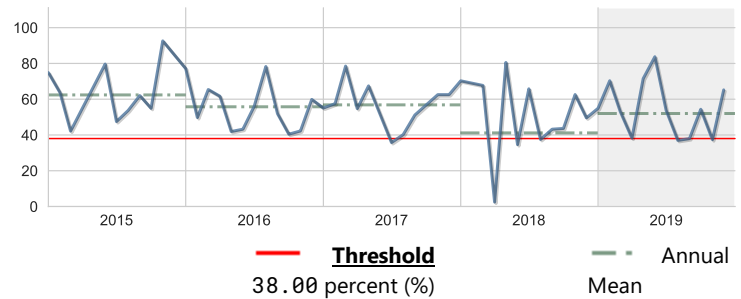
## Dissolved Oxygen Saturation

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

Score: Pass

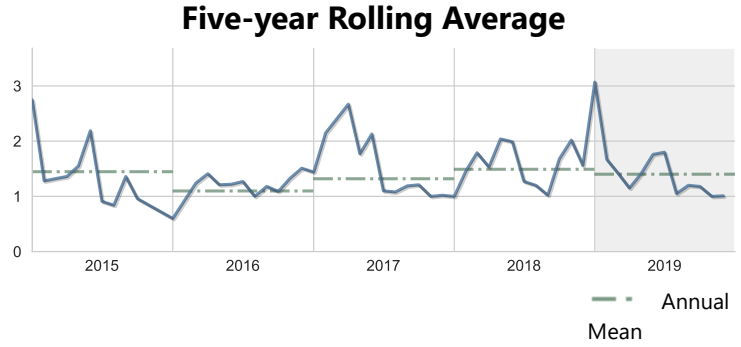
Units: percent (%)	Year 2019	Historical period of record
<b>High</b>	140.261	227.16
<b>Mean</b>	52.0	65.47
<b>Low</b>	6.10	1.80
<b>No. of Samples</b>	59	1,188

### Five-year Rolling Average



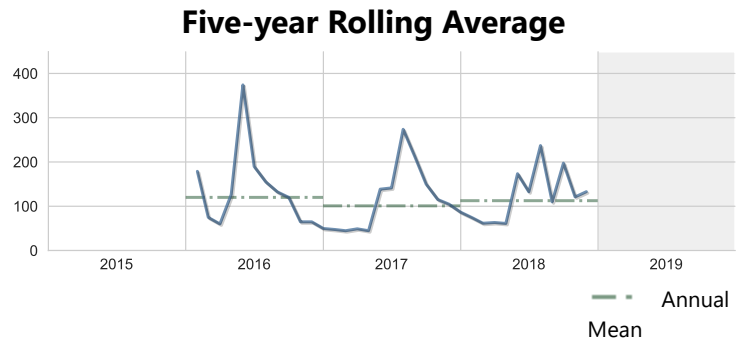
## BOD, Biochemical oxygen demand

Units: mg/l	Year 2019	Historical period of record
<b>High</b>	4.75	13.90
<b>Mean</b>	1.4	1.55
<b>Low</b>	1.00	0.00
<b>No. of Samples</b>	114	1,015



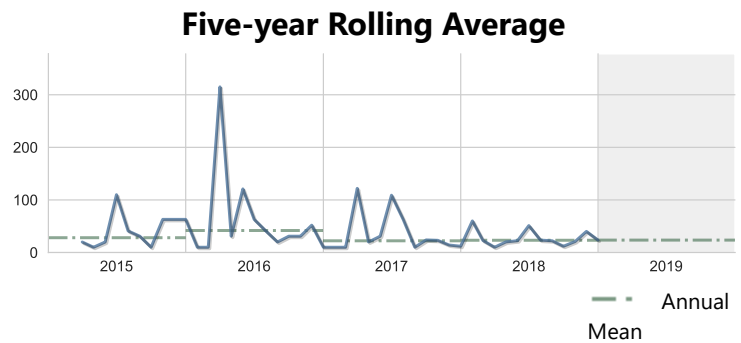
## Color

Units: PCU	Year 2019	Historical period of record
<b>High</b>		650.00
<b>Mean</b>		92.32
<b>Low</b>		10.00
<b>No. of Samples</b>	0	386



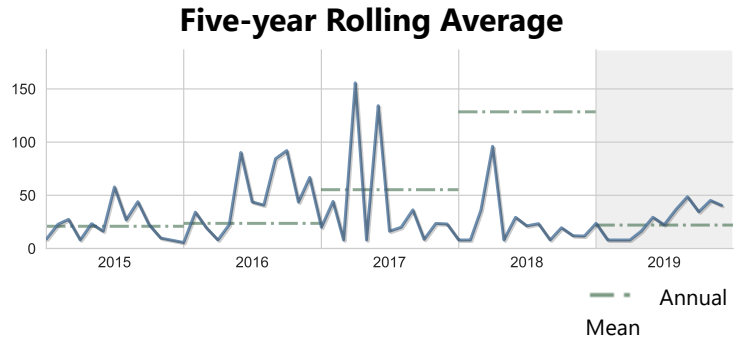
## Escherichia coli

Units: cfu/100ml	Year 2019	Historical period of record
<b>High</b>	29.50	631.00
<b>Mean</b>	23.61	26.53
<b>Low</b>	18.90	10.00
<b>No. of Samples</b>	2	97



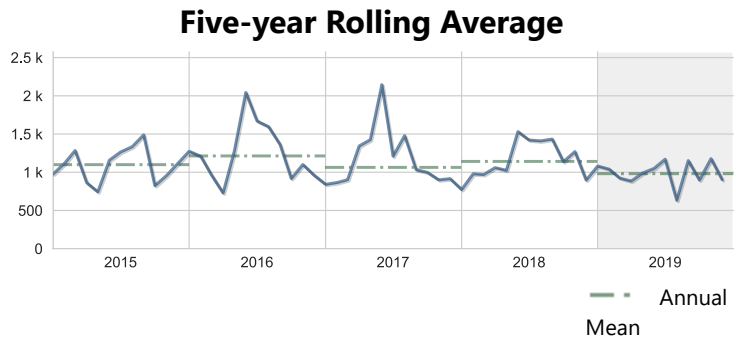
## Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2019	Historical period of record
<b>High</b>	566.00	605.00
<b>Mean</b>	22.03	17.14
<b>Low</b>	8.00	0.00
<b>No. of Samples</b>	116	1,211



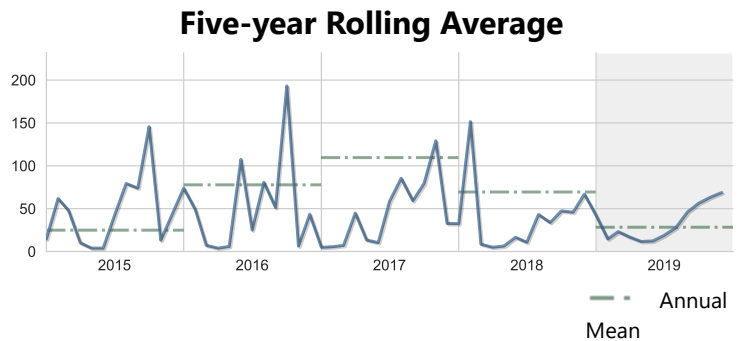
## Nitrogen, Kjeldahl

Units: ug/l	Year 2019	Historical period of record
<b>High</b>	2320.00	8400.00
<b>Mean</b>	981.33	1023.42
<b>Low</b>	65.00	0.00
<b>No. of Samples</b>	116	1,161



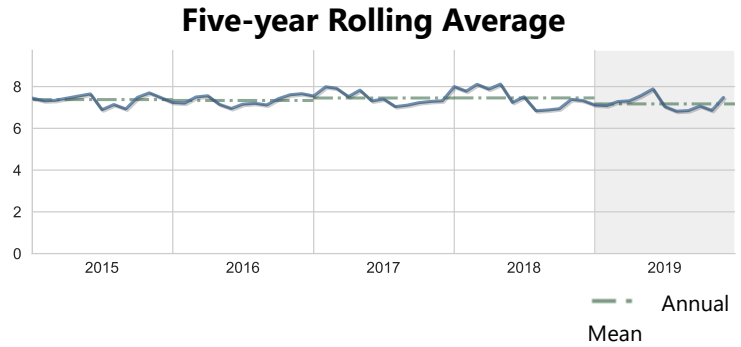
## Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2019	Historical period of record
<b>High</b>	172.00	2210.00
<b>Mean</b>	28.31	23.04
<b>Low</b>	4.00	0.00
<b>No. of Samples</b>	116	1,081



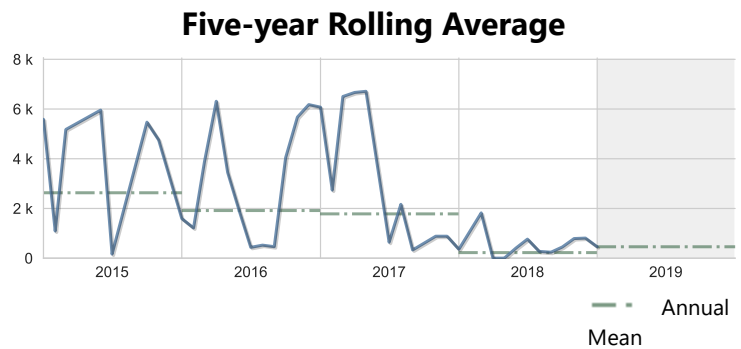
## pH

Units: None	Year 2019	Historical period of record
<b>High</b>	8.97	11.50
<b>Mean</b>	7.17	7.57
<b>Low</b>	6.34	5.80
<b>No. of Samples</b>	59	4,384



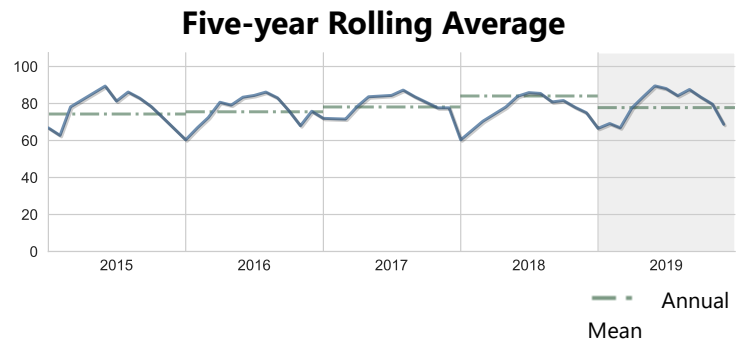
## Specific conductance

Units: umho	Year 2019	Historical period of record
<b>High</b>	483.00	59844.40
<b>Mean</b>	459.01	15881.38
<b>Low</b>	436.90	0.10
<b>No. of Samples</b>	4	4,184



## Temperature, water

Units: deg F	Year 2019	Historical period of record
<b>High</b>	91.1795	92.426
<b>Mean</b>	77.78	77.45
<b>Low</b>	61.34	47.372
<b>No. of Samples</b>	59	4,062

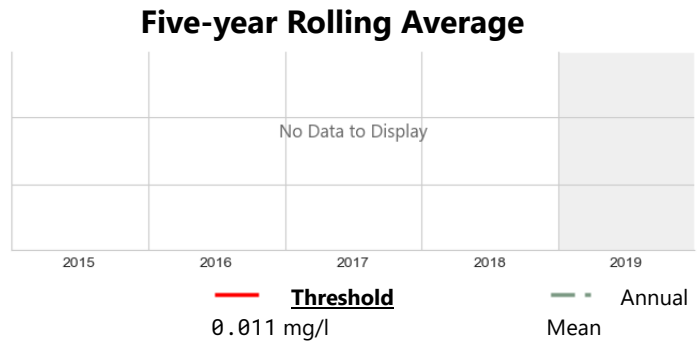


## Water Chemistry Ratings | Tidal Portion of the Creek

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.

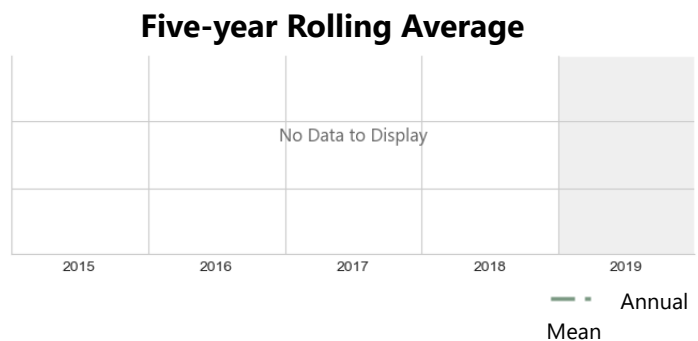
### Chlorophyll a

Units: mg/l	Year 2019	Historical period of record
<b>High</b>		0.0
<b>Mean</b>		0.0104
<b>Low</b>		0.004
<b>No. of Samples</b>	0	15



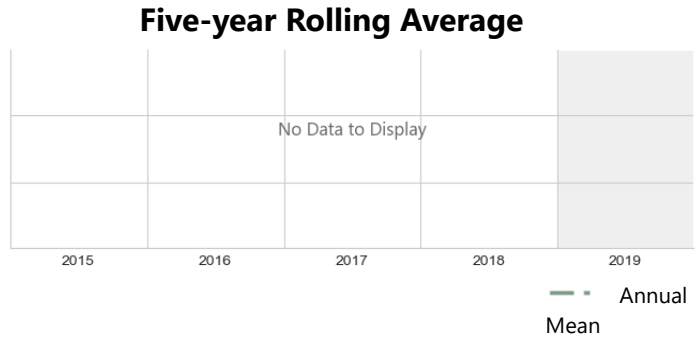
### Nitrogen, Total

Units: mg/l	Year 2019	Historical period of record
<b>High</b>		2.2
<b>Mean</b>		1.0972
<b>Low</b>		0.16
<b>No. of Samples</b>	0	42



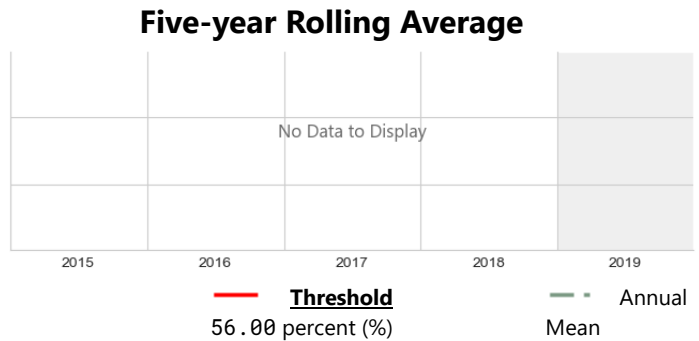
## Phosphorus, Total

Units: mg/l	Year 2019	Historical period of record
<b>High</b>		0.6
<b>Mean</b>		0.1913
<b>Low</b>		0.043
<b>No. of Samples</b>	0	39



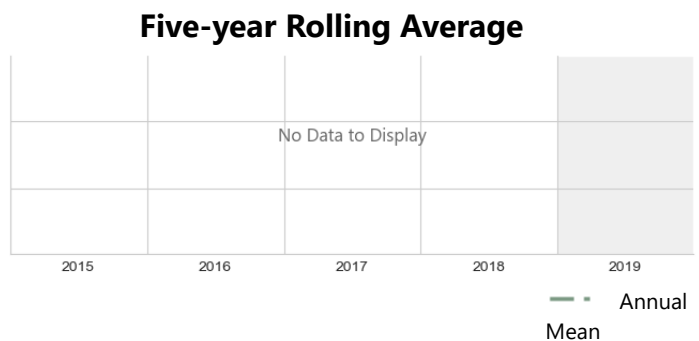
## Dissolved Oxygen Saturation

Units: percent (%)	Year 2019	Historical period of record
<b>High</b>		122.5
<b>Mean</b>		73.4
<b>Low</b>		48.1012
<b>No. of Samples</b>	0	128



## BOD, Biochemical oxygen demand

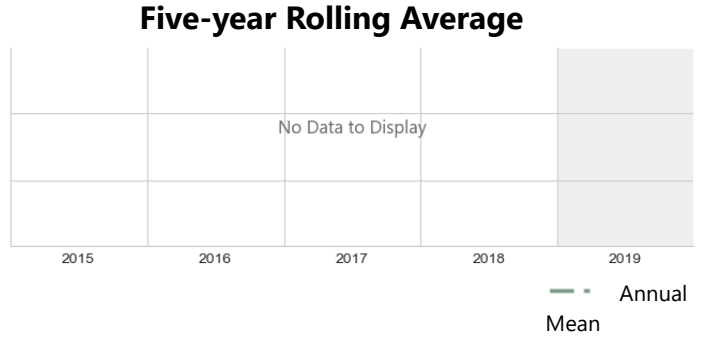
Units: mg/l	Year 2019	Historical period of record
<b>High</b>		1.2
<b>Mean</b>		1.2
<b>Low</b>		1.20
<b>No. of Samples</b>	0	1





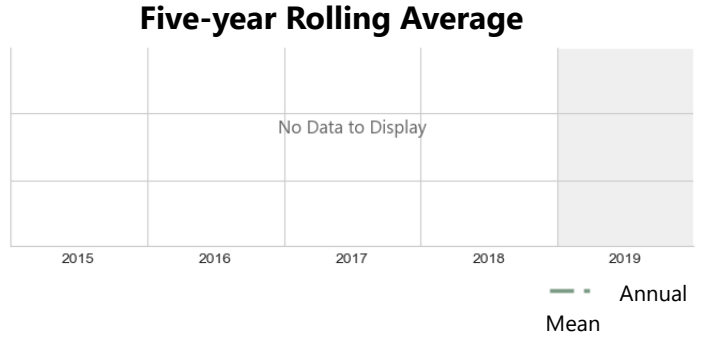
## Color

Units: PCU	Year 2019	Historical period of record
<b>High</b>		300.0
<b>Mean</b>		72.04
<b>Low</b>		10.00
<b>No. of Samples</b>	0	112



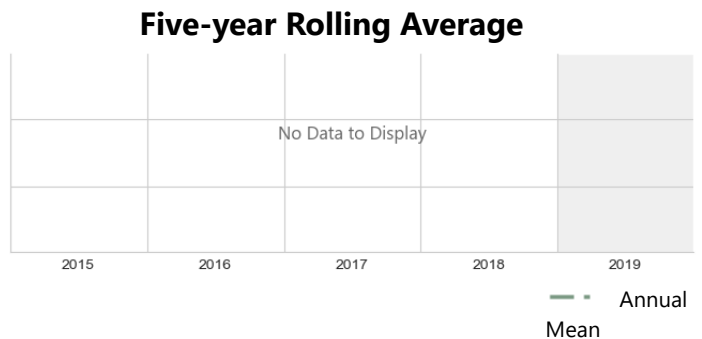
## Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2019	Historical period of record
<b>High</b>		203.0
<b>Mean</b>		1.03
<b>Low</b>		0.00
<b>No. of Samples</b>	0	85



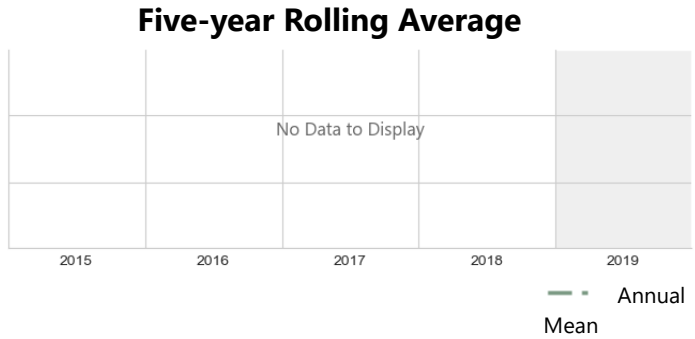
## Nitrogen, Kjeldahl

Units: ug/l	Year 2019	Historical period of record
<b>High</b>		2,163.0
<b>Mean</b>		1032.51
<b>Low</b>		50.00
<b>No. of Samples</b>	0	75



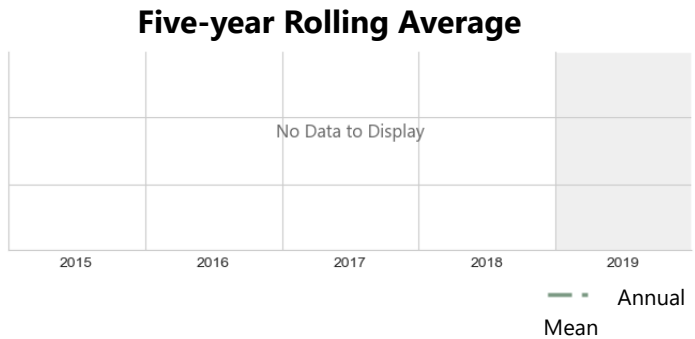
## Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2019	Historical period of record
<b>High</b>		250.0
<b>Mean</b>		46.62
<b>Low</b>		0.00
<b>No. of Samples</b>	0	45



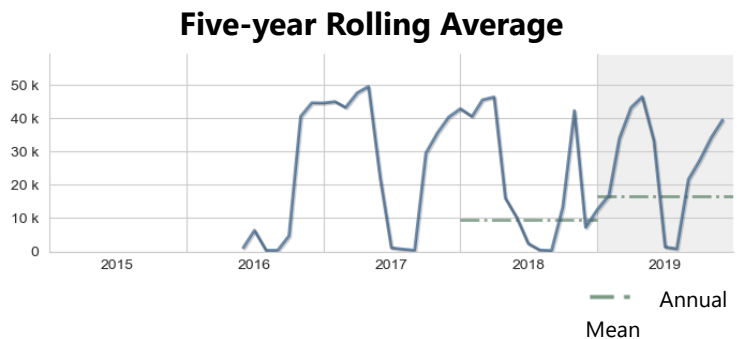
## pH

Units: None	Year 2019	Historical period of record
<b>High</b>		8.6
<b>Mean</b>		7.61
<b>Low</b>		6.80
<b>No. of Samples</b>	0	160



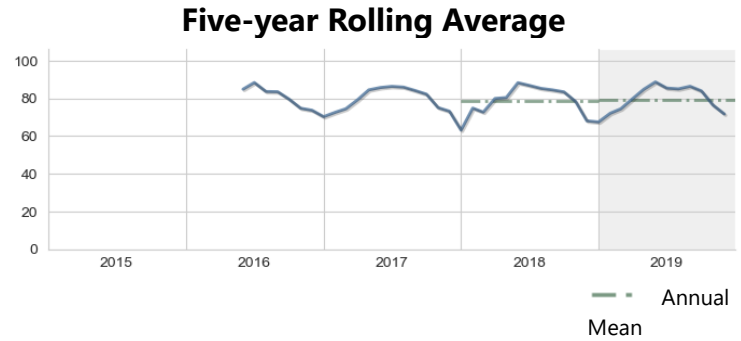
## Specific conductance

Units: umho	Year 2019	Historical period of record
<b>High</b>	48,800.0	51,500.0
<b>Mean</b>	16449.98	11364.84
<b>Low</b>	265.00	19.00
<b>No. of Samples</b>	364	1,622



## Temperature, water

Units: deg F	Year 2019	Historical period of record
<b>High</b>	91.0	93.2
<b>Mean</b>	79.39	78.75
<b>Low</b>	60.62	51.80
<b>No. of Samples</b>	364	1,533



## Impervious Features

Rain that falls on land that is in a natural state is absorbed and filtered by soils and vegetation as it makes its 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.

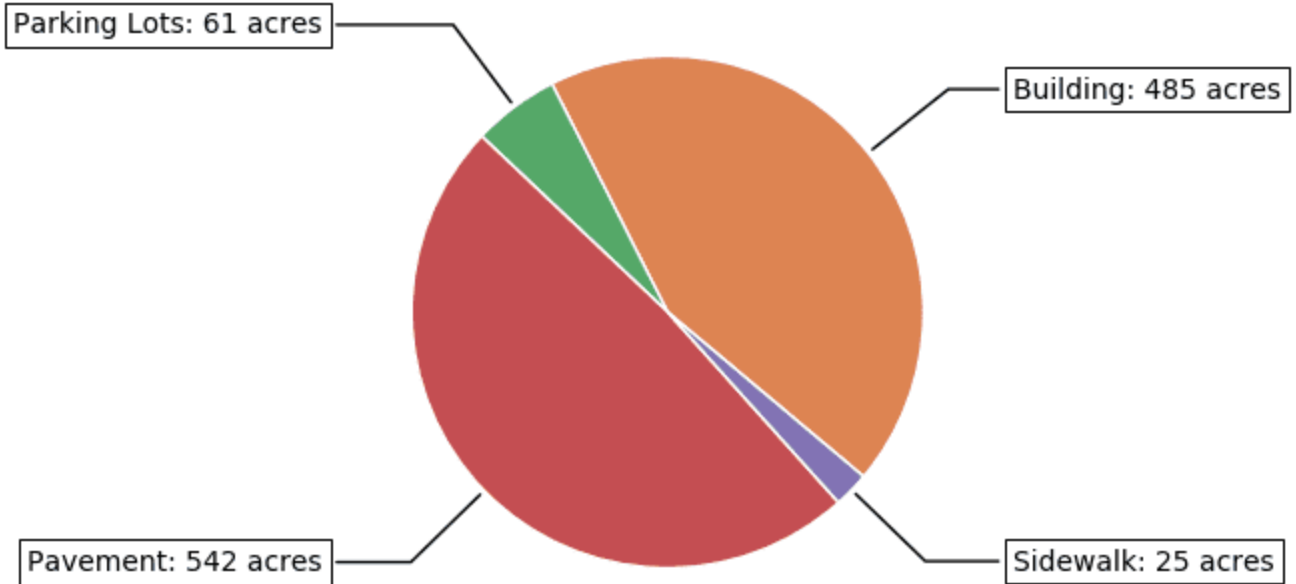


**2%** of the land area within the **Cow Pen Slough Basin** is covered by impervious

surfaces

## 2014 Impervious Surface Coverage by Type









in acres, within the Cow Pen Slough Basin



### 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.

#### **Acreege and Percentage within each Land Use / Land Cover Category for Cow Pen Slough Basin**

Land Use Classification	1990	2011	2014	Trend
<b>Urban &amp; Built-up</b>	4,508 9.5%	11,730 24.7%	11,974 25.2%	
<b>Agriculture</b>	13,320 28%	13,512 28.4%	13,227 27.8%	
<b>Rangeland</b>	7,041 14.8%	2,307 4.9%	2,488 5.2%	
<b>Upland Forests</b>	11,445 24.1%	7,376 15.5%	7,309 15.4%	
<b>Water</b>	816 1.7%	1,763 3.7%	1,817 3.8%	
<b>Wetlands</b>	10,035 21.1%	9,507 20%	9,397 19.8%	
<b>Barren Land</b>	16 0%	110 0.2%	77 0.2%	
<b>Transportation and Utilities</b>	337 0.7%	1,213 2.6%	1,230 2.6%	

### 2014 Land Use / Land Cover for Cow Pen Slough Basin

as a percentage of land area for this basin

