

# Palma Sola Bay Condition Report for 2016

## PASS

Chl-a
N
P

3 out of 3 indicators were rated as PASS.

All three indicators must pass for the bay to be rated as PASS.

### Summary:

The overall health of Palma Sola Bay was again very good in 2016. Mean values for nitrogen and chlorophyll a concentrations were below their target values, and while phosphorus concentrations rose sharply late in the year, the annual (geometric) mean value was still below the regulatory threshold.

**Water Quality:** As it did in 2015, Palma Sola Bay retained its “Pass” rating as all three water quality indicators (chlorophyll a, nitrogen, and phosphorus) were below established thresholds. The mean concentration for chlorophyll a nearly doubled from the previous year, but its mean value of 0.0072 mg/l was still well below the target value and slightly below the historical average for that water quality measure. Mean nitrogen concentration again increased, to 0.78 mg/l, due largely to a sharp increase late in the year. However, nitrogen is still below the target of 0.93 mg/l, so its rating is “Good”. Phosphorus concentration showed slight improvement, decreasing to 0.121 mg/l and bringing it below the target value so that its rating was upgraded from “Good” to “Excellent”. The mean for chlorophyll a was calculated as an arithmetic mean and the means for nitrogen and phosphorus were calculated as geometric means (per the Numeric Nutrient Criteria outlined in the Florida Administrative Code, section 62-302.532).

**Biotic Indicator:** Measurement of the biotic indicator, seagrass, was last performed in 2016 by the Southwest Florida Water Management District. The total area of seagrass in Palm Sola Bay increased very slightly from the 2014 assessment and is now estimated to be 1,569 acres, one and a half times the target acreage of 1,031 acres.



**Palma Sola Bay**

Bays included in this report: [Palma Sola Bay](#)

## Water Chemistry Ratings

Total nitrogen, total phosphorus, and chlorophyll a levels are monitored carefully by water resource managers and used by regulatory authorities to determine whether a bay meets the water quality standards mandated by the Clean Water Act. The trend graphs for these indicators are shown below, along with their target and threshold values. A target value is a desirable goal to be attained, while a threshold is an undesirable level which is to be avoided.

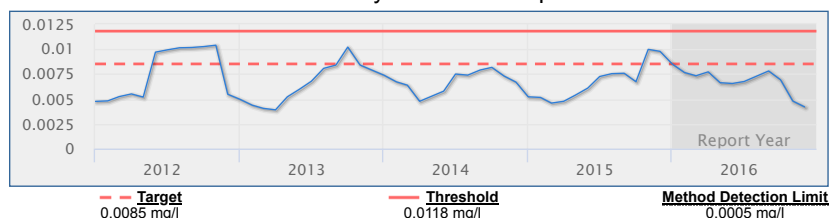
The Five-year Trend Graphs below illustrate the general trend of water quality parameters. They show a six-month running average, which moderates high and low values in the data.

### Chlorophyll a

Score: Excellent

Units: mg/l	Year 2016	Historical period of record
High	0.0794	0.0794
Mean	0.0072	0.0074
Low	0.0012	0.0009
No. of Samples	25	591

Five-year Trend Graph

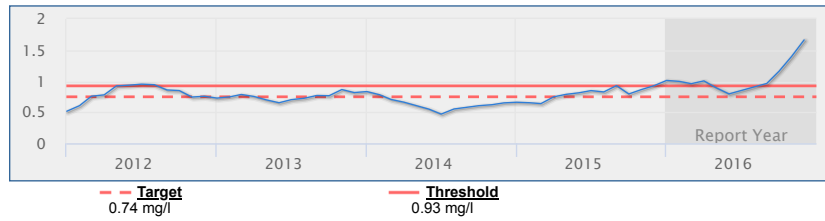


## Nitrogen, Total

Score: Good

Units: mg/l	Year 2016	Historical period of record
High	1.99	2.51
Mean	0.78	0.5789
Low	0.411	0.03
No. of Samples	23	525

Five-year Trend Graph

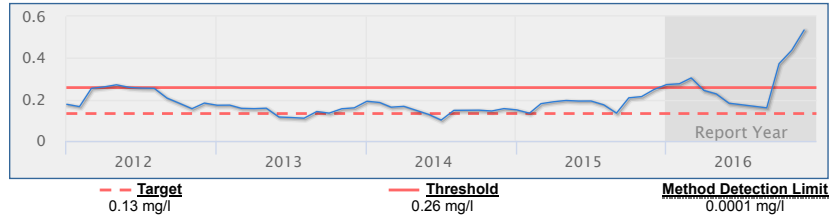


## Phosphorus, Total

Score: Excellent

Units: mg/l	Year 2016	Historical period of record
High	1.06	1.61
Mean	0.1213	0.1098
Low	0.03	0.008
No. of Samples	23	622

Five-year Trend Graph



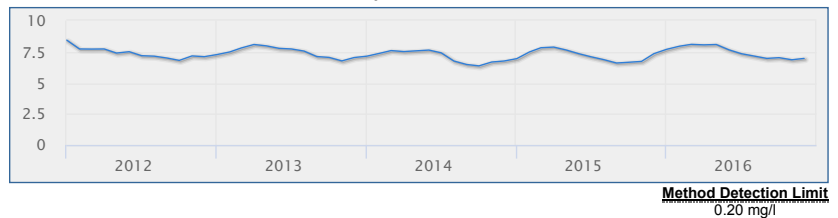
## Other Measures of Bay Health

In addition to nutrient levels and chlorophyll concentration, dissolved oxygen levels, and water clarity are also objective indicators of bay health. These have complex interactive cycles which are affected by rainfall, temperature, and tidal action, as well as other factors. High nutrient levels (nitrogen and phosphorus) can stimulate excessive growth of marine algae (indicated by chlorophyll *a* level), resulting in reduced water clarity (and increased light attenuation) and depleted oxygen levels. Both plants and animals in a bay need oxygen to survive, and the seagrasses which provide food and cover for bay creatures need light for photosynthesis.

## Dissolved Oxygen

Units: mg/l	Year 2016	Historical period of record
High	9.20	11.00
Mean	7.43	6.79
Low	5.95	2.20
No. of Samples	32	925

Five-year Trend Graph

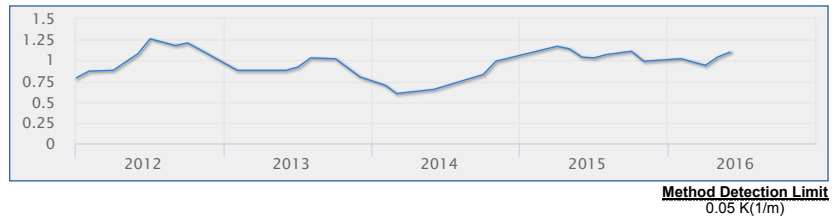


## Light Attenuation

Note: Light attenuation data collection began in 2012, prior years are not available.

Units: K(1/m)	Year 2016	Historical period of record
High	2.0266	2.0266
Mean	1.09	0.99
Low	0.4961	0.02
No. of Samples	14	82

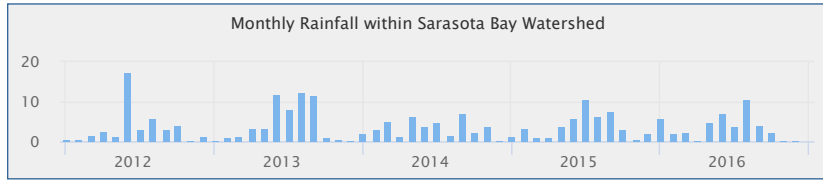
Five-year Trend Graph



## Rainfall

Units: inches/yr	Year 2016	Historical period of record
High	43.98	56.04
Mean		34.68
Low		2.99
No. of Samples	366	4,969

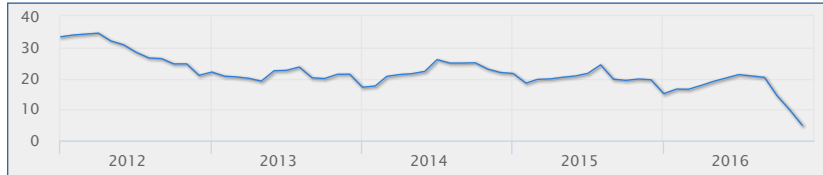
### Five-year Trend Graph



## Salinity

Units: PSS	Year 2016	Historical period of record
High	34.63	41.50
Mean	24.0	28.88
Low	0.73	0.20
No. of Samples	33	934

### Five-year Trend Graph

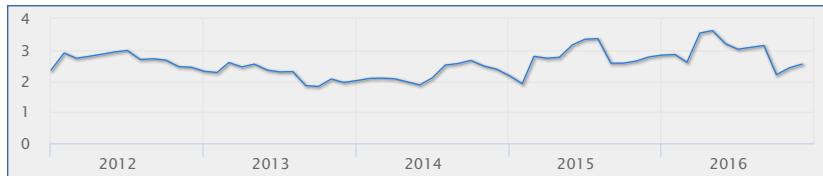


Method Detection Limit  
0.10 PSS

## Turbidity

Units: NTU	Year 2016	Historical period of record
High	18.80	28.60
Mean	3.33	2.51
Low	1.10	0.01
No. of Samples	25	965

### Five-year Trend Graph

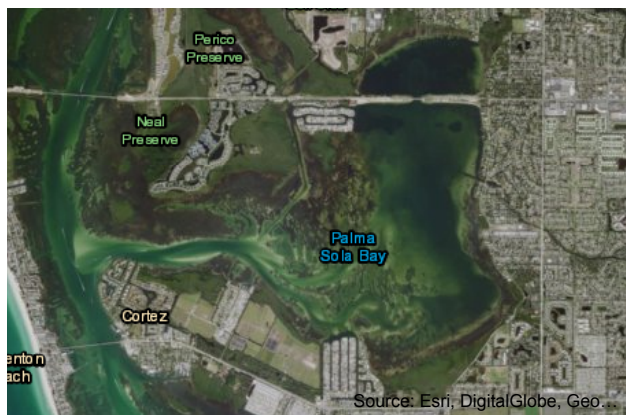


Method Detection Limit  
0.20 NTU

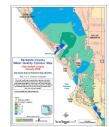
## Bay Contour Maps (2016)

Contour mapping is one of the best ways to visualize spatial differences in coastal water quality. The interactive map shown below presents monthly data for one selected water quality indicator atop an aerial view of the bay. Choose a different water quality parameter from the list at the top to change the map.

Showing 2016 Monthly Contour Maps for: Chlorophyll a ▼  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec



Visit the [Water Quality Contour Mapping Tool](#) to view and compare monthly water quality contour maps for ten different water quality indicators. In addition, you can generate your own custom maps.

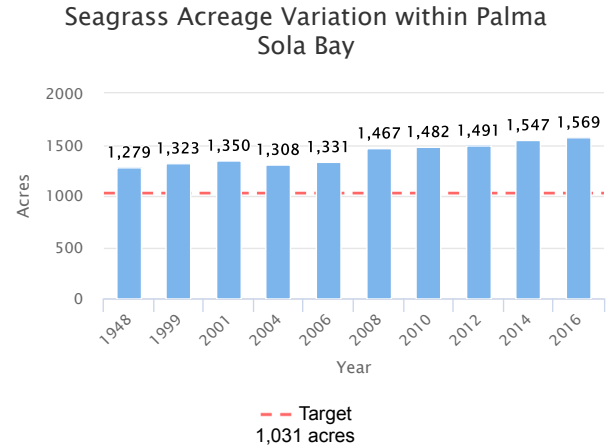


### Contour Legend:

- Less than 1 mg/l
- 1.0 - 5.9 mg/l
- 6.0 - 10.9 mg/l
- 11.0 - 17.9 mg/l
- Greater than 18 mg/l

## Seagrasses

Among the most important habitats in Florida's estuarine environments, seagrass beds are indispensable for the role they play in cycling nutrients, supplying food for wildlife, stabilizing sediments, and providing habitat for juvenile and adult finfish and shellfish. Use the interactive map below to observe the size, density and location of seagrass beds from year to year. The graph shows how the total amount of seagrass in the bay has changed over time.



## Land Use / Land Cover

Land use within a bay'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 (upland or wetland, e.g.), 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.

Palma Sola Bay is located within the Sarasota Bay Watershed. The chart below shows the land use / land cover characteristics for Sarasota Bay Watershed within the boundary of this Water Atlas. [View details about the Sarasota Bay Watershed »](#)

### 2011 Land Use / Land Cover for Sarasota Bay Watershed

as a percentage of land area for this watershed

