Palma Sola Bay Condition Report for 2017

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.

Bays included in this report: **Palma Sola Bay**

Summary:

The overall health of Palma Sola Bay continued to be very good in 2017. Levels of chlorophyll *a* and nitrogen improved, with both being below their desired target values and earning them "Excellent" ratings. However, phosphorus concentration again rose, with high levels above the threshold early in the year, eventually dropping below the target value in late 2017. The average for the year was only slightly higher than in 2016, but enough to cause Palma Sola Bay's rating for phosphorus to be downgraded from "Excellent" to "Good".

Water Quality: Palma Sola Bay retained its 2016 “Pass” rating as all three water quality indicators (chlorophyll a, nitrogen, and phosphorus) were below established thresholds. The mean concentration for chlorophyll *a* dropped slightly, to 0.0067 mg/l, well below the target value. Mean nitrogen concentration dropped as well, to 0.6218 mg/l which is below the target value and caused the rating for nitrogen to be upgraded from "Good" to "Excellent". Phosphorus concentrations rose to 0.1422 mg/l, above the target value and downgrading the phosphorus rating to "Good". 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.

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.

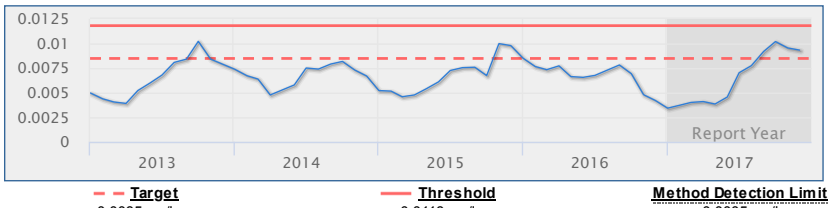
The Five-year Trend Graphs below illustrate the general trend of water quality parameters. They show a six-month running average, which moderates high and low values in the data.

Chlorophyll a

Score: Excellent

Units: mg/l	Year 2017	Historical period of record
High	0.0274	0.0794
Mean	0.0067	0.0074
Low	0.0011	0.0009
No. of Samples	36	627

Five-year Trend Graph



Target 0.0085 mg/l

Threshold 0.0118 mg/l

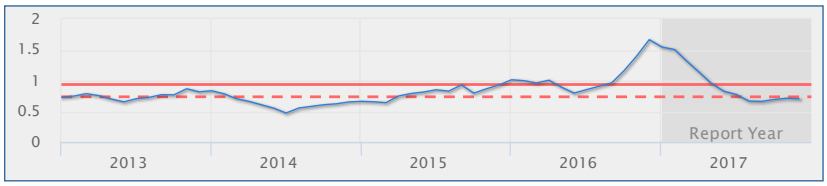
Method Detection Limit 0.0005 mg/l

Nitrogen, Total

Score: Excellent

Units: mg/l	Year 2017	Historical period of record
High	1.295	2.51
Mean	0.6218	0.5815
Low	0.186	0.03
No. of Samples	35	560

Five-year Trend Graph



Target 0.74 mg/l

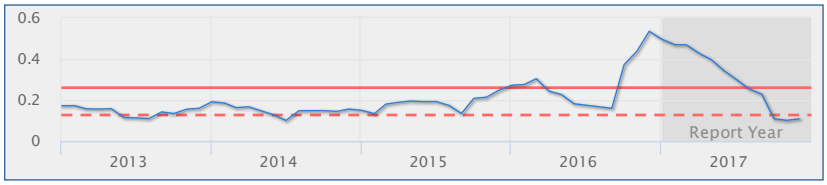
Threshold 0.93 mg/l

Phosphorus, Total

Score: Good

Units: mg/l	Year 2017	Historical period of record
High	1.12	1.61
Mean	0.1422	0.1114
Low	0.019	0.008
No. of Samples	36	658

Five-year Trend Graph



Target 0.13 mg/l

Threshold 0.26 mg/l

Method Detection Limit 0.0001 mg/l

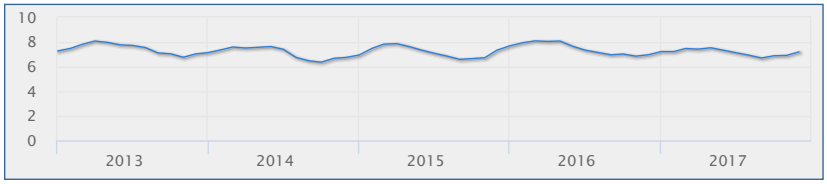
Other Measures of Bay Health

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 2017	Historical period of record
High	9.49	11.00
Mean	7.33	6.81
Low	4.49	2.20
No. of Samples	37	962

Five-year Trend Graph



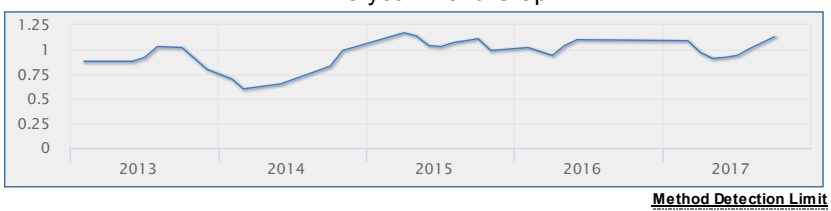
Method Detection Limit 0.20 mg/l

Light Attenuation

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

Units: K(1/m)	Year 2017	Historical period of record
High	2.3256	2.3256
Mean	1.08	1.01
Low	0.534	0.02
No. of Samples	21	103

Five-year Trend Graph

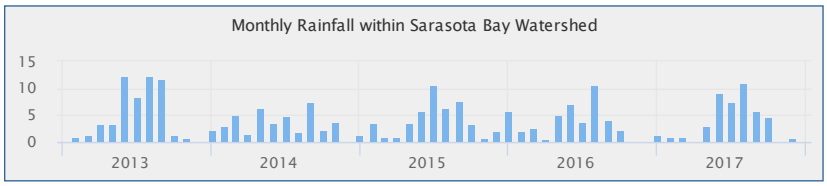


Method Detection Limit 0.05 K(1/m)

Rainfall

Units: inches/yr	Year 2017	Historical period of record
High	45.28	56.04
Mean		34.78
Low		4.43
No. of Samples	365	4,982

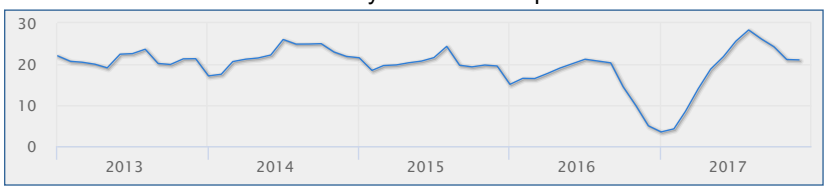
Five-year Trend Graph



Salinity

Units: PSS	Year 2017	Historical period of record
High	36.53	41.50
Mean	25.1	28.74
Low	1.23	0.20
No. of Samples	36	970

Five-year Trend Graph

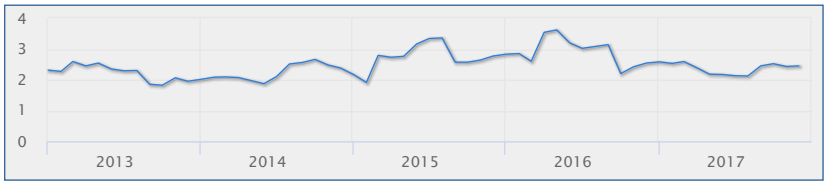


Method Detection Limit
0.10 PSS

Turbidity

Units: NTU	Year 2017	Historical period of record
High	4.90	28.60
Mean	2.16	2.5
Low	0.60	0.01
No. of Samples	35	1,000

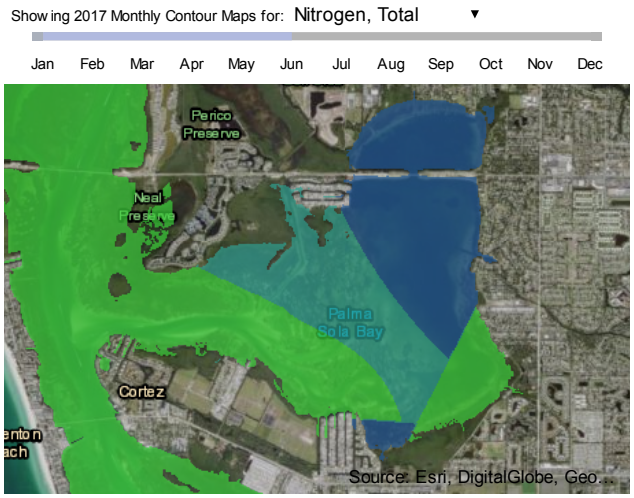
Five-year Trend Graph



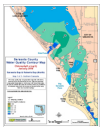
Method Detection Limit
0.20 NTU

Bay Contour Maps (2017)

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.



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.

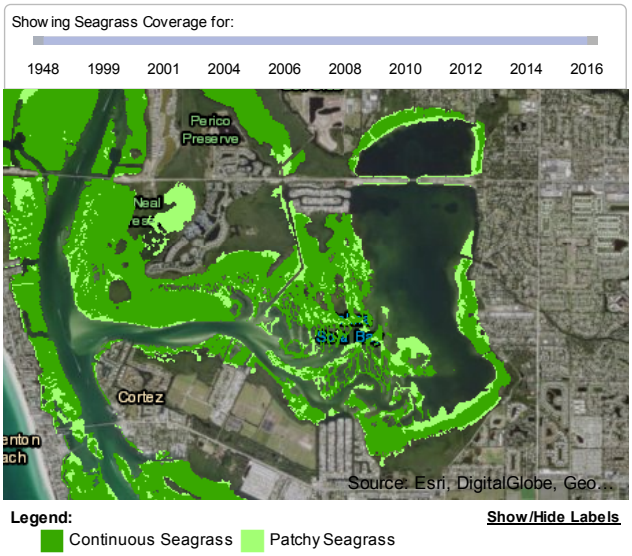


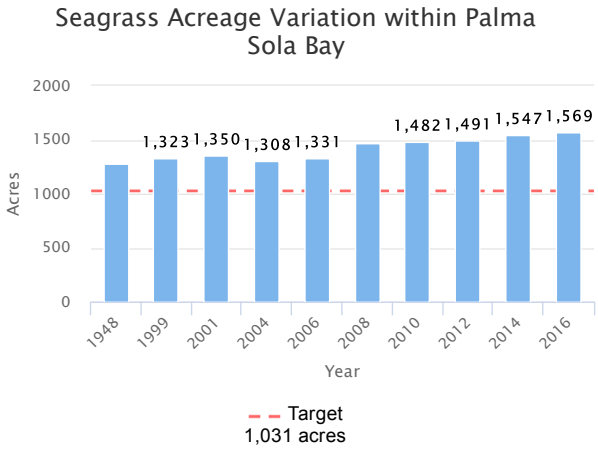
Contour Legend:

- Less than 300 ug/l
- 300 - 499 ug/l
- 500 - 699 ug/
- 700 - 899 ug/l
- 900 - 3,499 ug/l
- Greater than 3,500 ug/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 »**