



Dona/Roberts Bay Condition Report for 2014

CAUTION

Chl-*a*

N

P

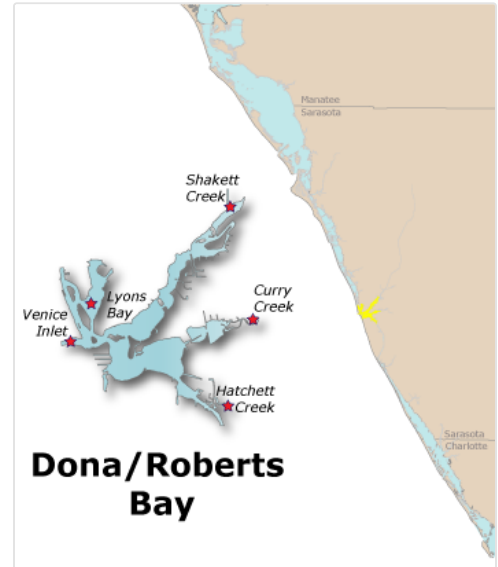
1 out of 3 indicators were rated as **PASS**.

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

Summary:

The health of Dona/Roberts Bay is better than it was in 2013, but still needs improvement. All three measures decreased in value; however, chlorophyll *a* and nitrogen are still above their respective threshold values, causing the bay to receive a "Caution" rating.

Water Quality: The concentrations of all three water quality parameters used in scoring—chlorophyll *a*, nitrogen and phosphorus—decreased in 2014, a positive sign. Seasonal increases in all three of these water quality measures are very evident in the trend graphs, implying a connection with runoff from the surrounding watershed during heavy rains in summer and fall. The mean chlorophyll *a* concentration was .0054 mg/l, lower than in 2013 but still exceeding the threshold value of 0.0049 mg/l. Mean nitrogen concentration was 0.5241 mg/l, which is higher than the threshold of 0.420 mg/l. The annual mean concentration of phosphorus remained well below the threshold of 0.180 mg/l, at 0.0929 mg/l. The means for chlorophyll *a*, nitrogen and phosphorus were calculated as arithmetic means (per the Numeric



Bays included in this report:
Dona Bay, Lyons Bay, Roberts Bay Venice

Nutrient Criteria outlined in the Florida Administrative Code, section 62-302.532). In 2014, Dona/Roberts Bay retains its "Caution" rating, with two out of three water quality measures exceeding threshold values.

Biotic Indicator: Measurement of the biotic indicator, seagrass, was performed in 2014 by the Southwest Florida Water Management District. The increase in total seagrass acreage in Dona/Roberts Bay was significant. Between 2012 and 2014 it increased from 79 to 99 acres, but is still slightly below the target level of 112 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. An individual indicator receives an "Excellent" rating if its mean value is below the target, a "Good" rating if its mean value is above the target but does not exceed the threshold, and a "Caution" rating if the mean value exceeds the threshold.

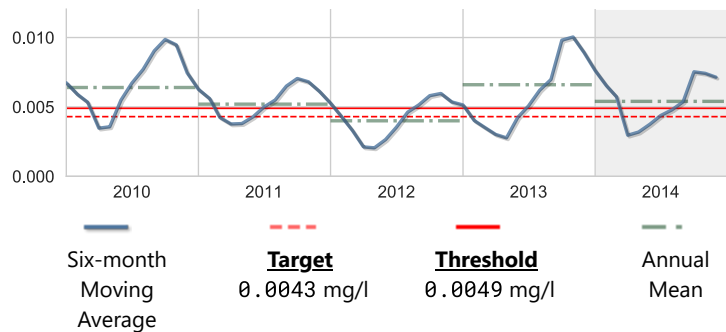
The charts below illustrate the general trend of water quality parameters. They show a six-month running average, which moderates high and low values in the data.



Chlorophyll a

Score: Caution

Units: mg/l	Year 2014	Historical period of record
High	0.038	0.061
Mean	0.005	0.005
Low	0.000	0.000
No. of Samples	48	591

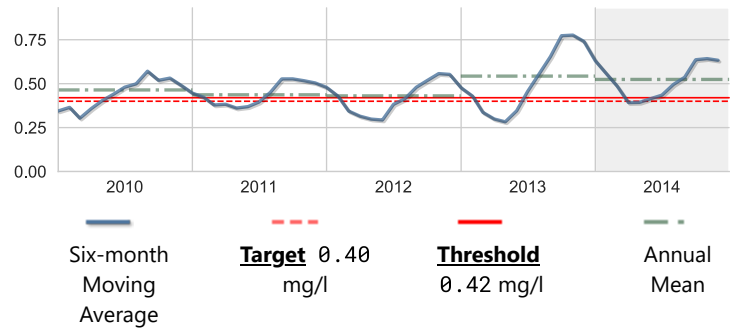




Nitrogen, Total

Score: Caution

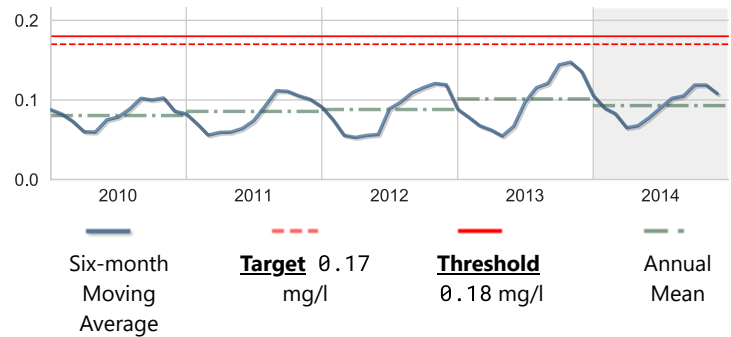
Units: mg/l	Year 2014	Historical period of record
High	1.613	1.715
Mean	0.524	0.429
Low	0.275	0.055
No. of Samples	48	587



Phosphorus, Total

Score: Excellent

Units: mg/l	Year 2014	Historical period of record
High	0.240	0.470
Mean	0.093	0.125
Low	0.050	0.050
No. of Samples	48	598

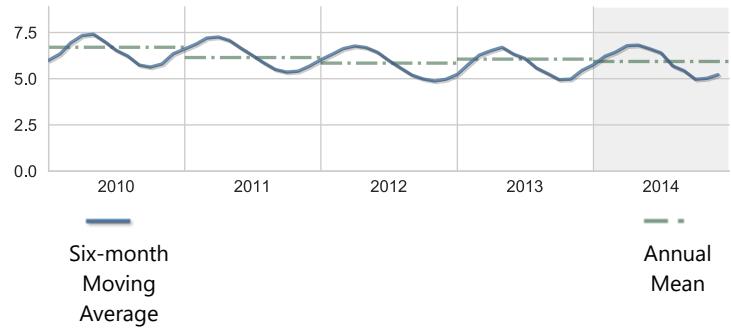


Other Measures of Bay Health

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.

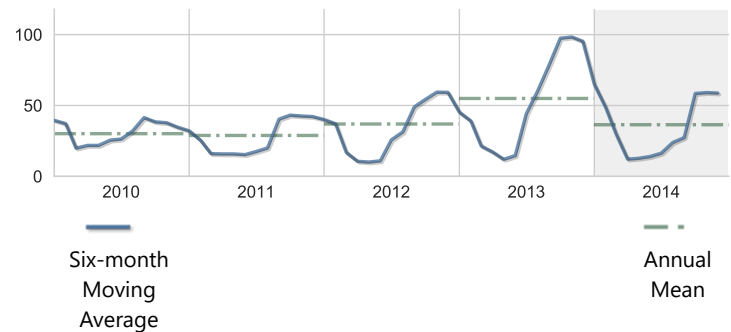
Dissolved Oxygen

Units: mg/l	Year 2014	Historical period of record
High	7.50	9.20
Mean	5.93	6.19
Low	2.10	2.10
No. of Samples	48	560



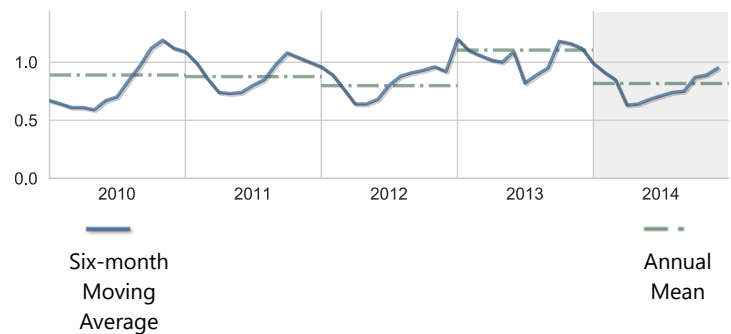
Apparent Color

Units: PCU	Year 2014	Historical period of record
High	320.00	400.00
Mean	36.42	36.49
Low	5.00	2.00
No. of Samples	48	597



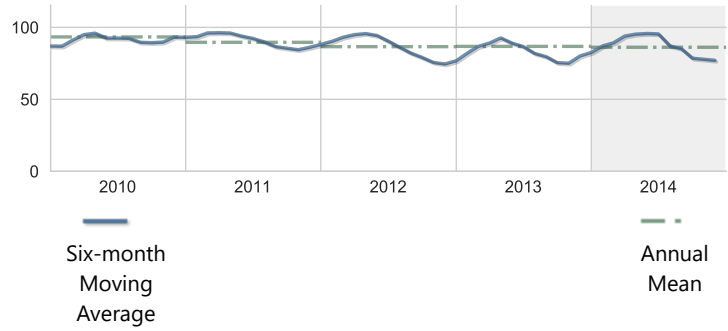
BOD, Biochemical oxygen demand

Units: mg/l	Year 2014	Historical period of record
High	2.40	8.50
Mean	0.82	1.03
Low	0.50	0.50
No. of Samples	48	494



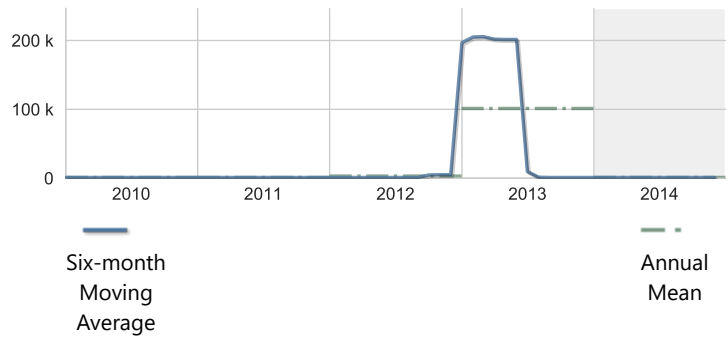
Dissolved oxygen saturation

Units: percent (%)	Year 2014	Historical period of record
High	107.00	129.00
Mean	86.19	90.35
Low	33.00	33.00
No. of Samples	48	560



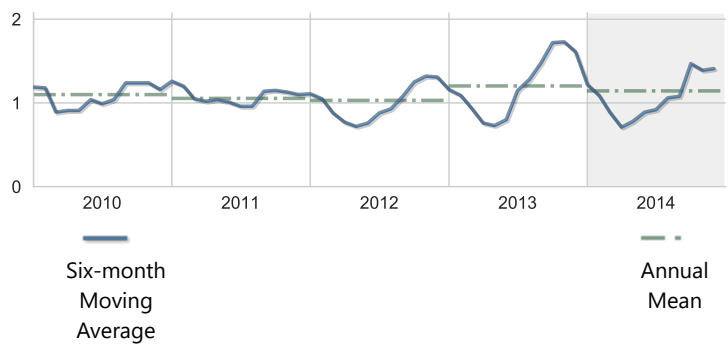
Karenia brevis ("red tide")

Units: #/l	Year 2014	Historical period of record
High	1000.00	2460000.00
Mean	1000.00	26384.28
Low	1000.00	1000.00
No. of Samples	48	458



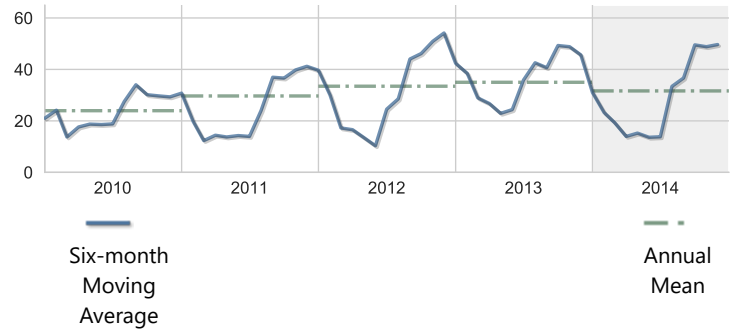
Light Attenuation

Units: K(1/m)	Year 2014	Historical period of record
High	5.42	9.04
Mean	1.14	1.08
Low	0.30	0.06
No. of Samples	48	552



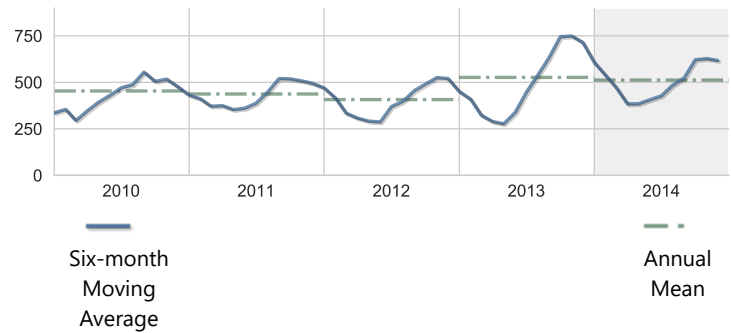
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2014	Historical period of record
High	181.00	326.00
Mean	31.65	27.65
Low	5.00	5.00
No. of Samples	48	598



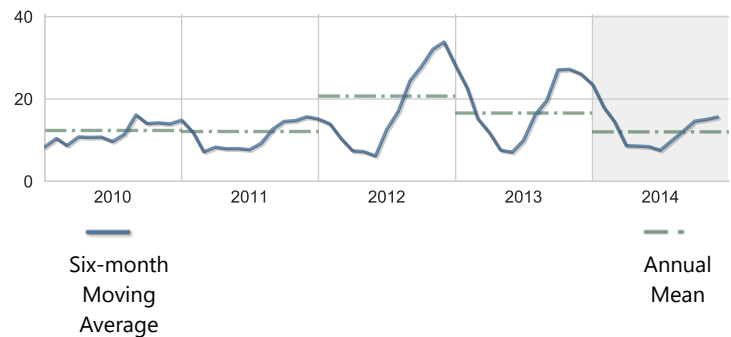
Nitrogen, Kjeldahl

Units: ug/l	Year 2014	Historical period of record
High	1570.00	1680.00
Mean	512.08	418.48
Low	270.00	50.00
No. of Samples	48	598



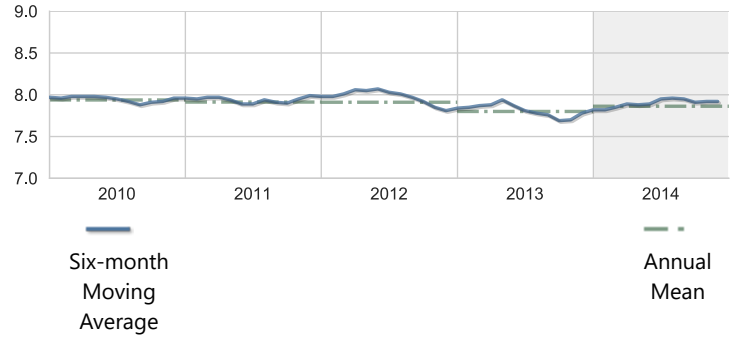
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2014	Historical period of record
High	47.00	108.00
Mean	12.02	11.96
Low	5.00	5.00
No. of Samples	48	685



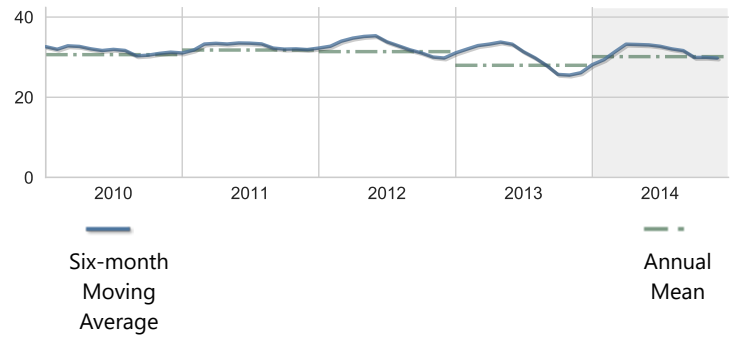
pH

Units: None	Year 2014	Historical period of record
High	8.20	8.30
Mean	7.86	7.83
Low	7.30	6.70
No. of Samples	48	560



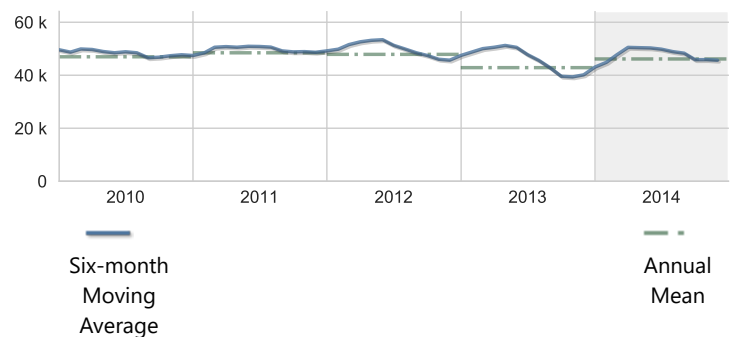
Salinity

Units: PSS	Year 2014	Historical period of record
High	35.20	38.50
Mean	30.13	30.83
Low	1.20	0.10
No. of Samples	48	560



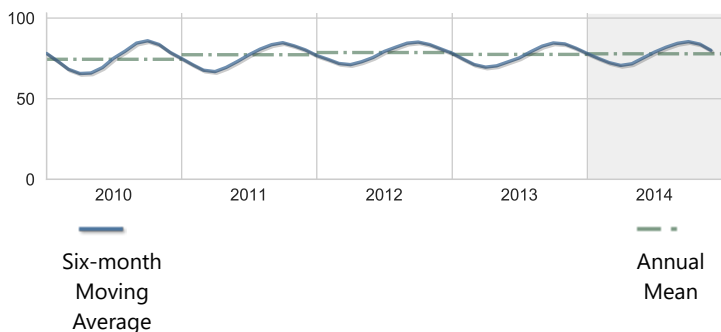
Specific conductance

Units: umho	Year 2014	Historical period of record
High	53170.00	57710.00
Mean	46141.67	47051.87
Low	2280.00	280.00
No. of Samples	48	560



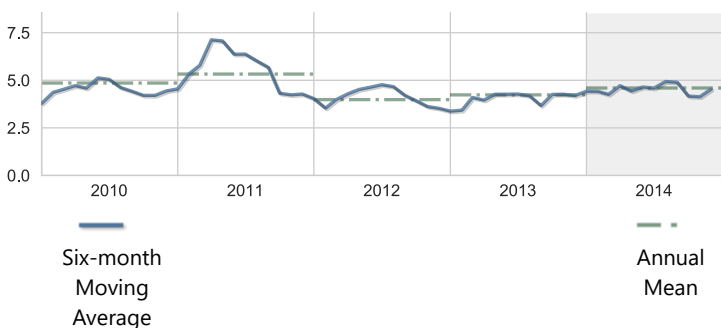
Temperature, water

Units: deg F	Year 2014	Historical period of record
High	92.84	94.46
Mean	77.85	77.77
Low	65.30	50.90
No. of Samples	48	560



Turbidity

Units: NTU	Year 2014	Historical period of record
High	16.00	23.00
Mean	4.59	4.22
Low	0.75	0.35
No. of Samples	48	590



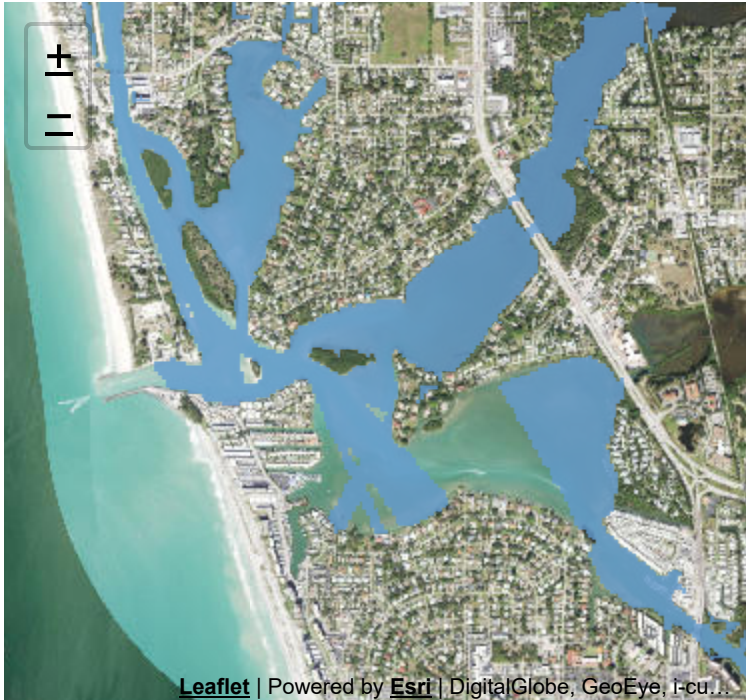
Annual Averages

Indicator	Units	2010	2011	2012	2013	2014	Trend
Dissolved Oxygen	mg/l	6.70	6.15	5.84	6.06	5.93	
Dissolved oxygen saturation	percent (%)	93.35	89.63	86.58	86.79	86.19	
Light Attenuation	K(1/m)	1.10	1.05	1.03	1.20	1.14	
Salinity	PSS	30.63	31.78	31.38	27.97	30.13	
Turbidity	NTU	4.86	5.33	3.98	4.23	4.59	

Bay Contour Maps (2014)

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 2014 Monthly Contour Maps for: Chlorophyll a ▼
 January



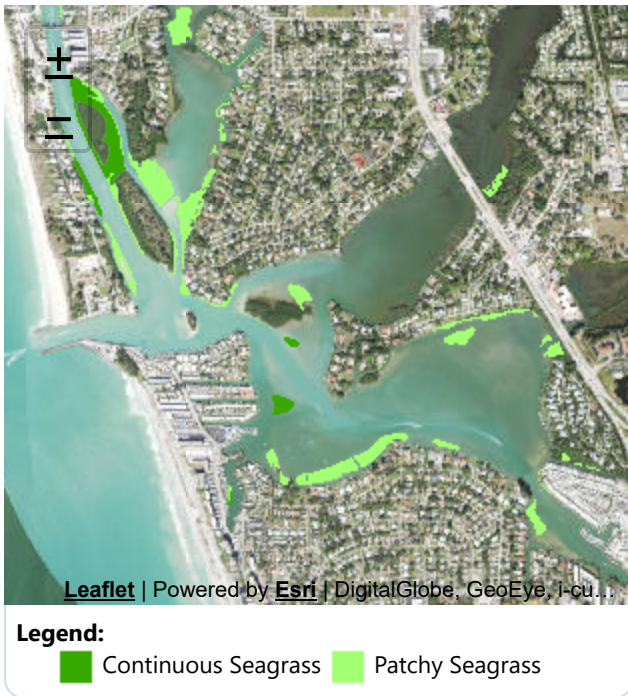
Contour Legend:

- 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

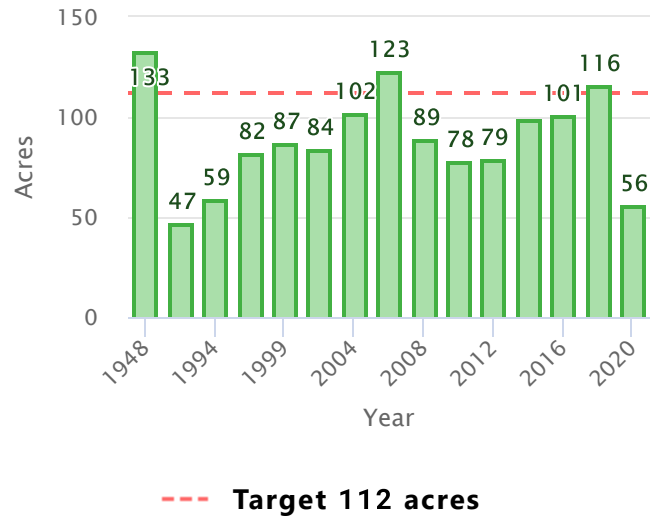
Seagrasses

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. Seagrass calculations are aggregates of patchy and continuous seagrass measurements only. Recordings of attached algae are not included in these summaries.

Showing Seagrass Coverage for 2020:



Seagrass Acreage Variation within Dona/Roberts Bay



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.

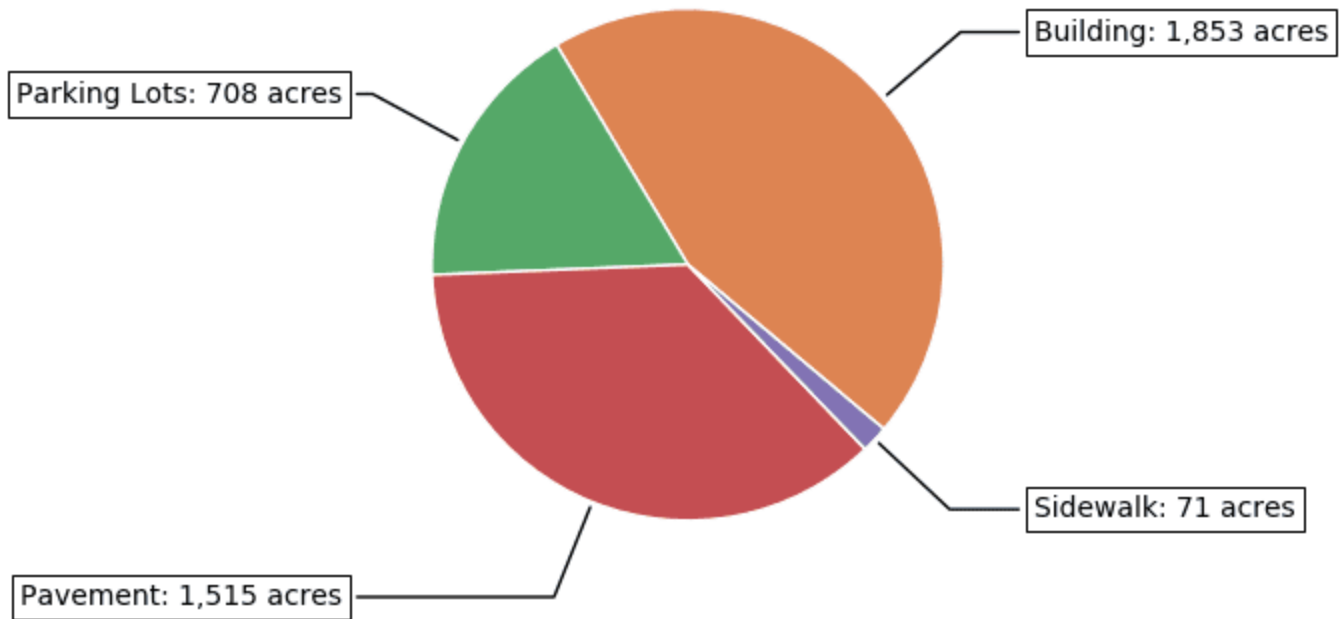


7% of the land area within the **Dona and Roberts Bay Watershed** is covered by

impervious surfaces

2014 Impervious Surface Coverage by Type

in acres, within the Dona and Roberts Bay Watershed







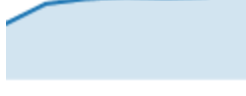
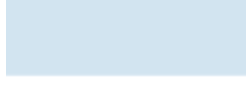

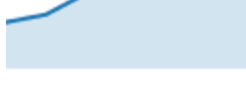
Land Use / Land Cover

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.

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

Acreeage and Percentage within each Land Use / Land Cover Category for Dona and Roberts Bay Watershed

2014 Bay Conditions Report for Dona/Roberts Bay

Land Use Classification	1990	2005	2011	2014	2017	Trend
Urban & Built-up	11,519 20.6%	17,101 30.6%	17,697 31.6%	17,841 31.9%	18,538 33.1%	
Agriculture	14,257 25.5%	14,438 25.8%	13,410 24%	13,170 23.5%	12,994 23.2%	
Rangeland	3,989 7.1%	1,715 3.1%	2,104 3.8%	2,309 4.1%	1,792 3.2%	
Upland Forests	12,688 22.7%	7,906 14.1%	7,742 13.8%	7,701 13.8%	7,480 13.4%	
Water	1,931 3.5%	2,865 5.1%	2,813 5%	2,866 5.1%	3,009 5.4%	
Wetlands	10,349 18.5%	9,808 17.5%	9,907 17.7%	9,795 17.5%	9,839 17.6%	
Barren Land	22 0%	10 0%	84 0.2%	51 0.1%	46 0.1%	
Transportation and Utilities	1,202 2.1%	2,099 3.8%	2,185 3.9%	2,209 3.9%	2,262 4%	

2017 Land Use / Land Cover for Dona and Roberts Bay Watershed

as a percentage of land area for this watershed

