



Dona/Roberts Bay Condition Report for 2017

CAUTION

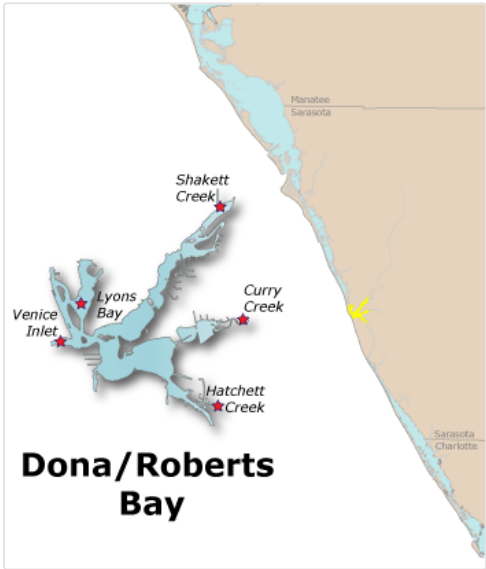
Chl-*a*

N

P

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

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



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

Summary:

The overall health of Dona/Roberts Bay was slightly improved in 2017, but chlorophyll *a* and nitrogen levels are still a cause for concern. Chlorophyll *a* decreased but is still above the threshold concentration. Nitrogen concentration also decreased, but likewise is still in the “Caution” range, exceeding threshold levels. The mean value for phosphorus concentration was already well below the target value but decreased further from its 2016 mean concentration.

Water Quality: The mean chlorophyll *a* concentration in 2017 was 0.0074 mg/l, an improvement over the previous year but still exceeding the threshold value of 0.0049 mg/l. Mean nitrogen concentration was 0.4626 mg/l; as with chlorophyll *a*, this is an improvement over the 2016 value but the concentration is higher than the threshold of 0.420 mg/l. The annual mean concentration of phosphorus was 0.0971 mg/l, well below the threshold of 0.180 mg/l. 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). In 2016, 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 2016 by the Southwest Florida Water Management District. The increase in total seagrass acreage in Dona/Roberts Bay was slight. Between 2014 and 2016 it increased from 99 to 101 acres, remaining 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.

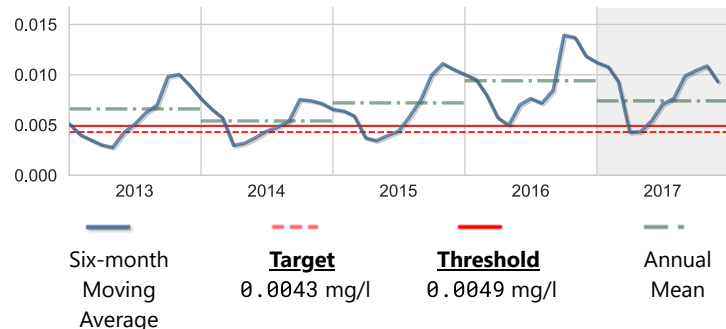
The charts below illustrate the general trend of water quality parameters. They show a six-month running average, which moderates high and low values in the data.



Chlorophyll a

Score: Caution

Units: mg/l	Year 2017	Historical period of record
High	0.033	0.061
Mean	0.007	0.005
Low	0.001	0.000
No. of Samples	49	1425

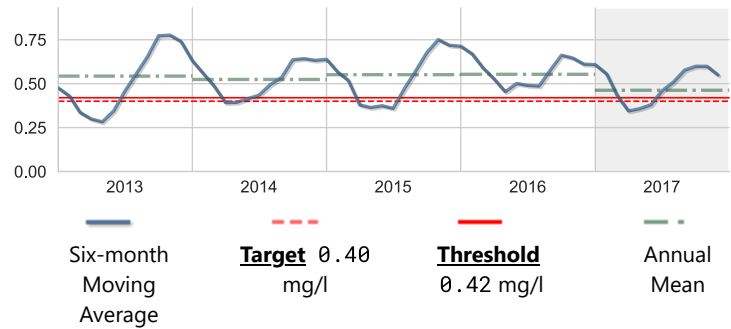


N

Nitrogen, Total

Score: Caution

Units: mg/l	Year 2017	Historical period of record
High	1.314	1.715
Mean	0.463	0.448
Low	0.195	0.055
No. of Samples	49	735

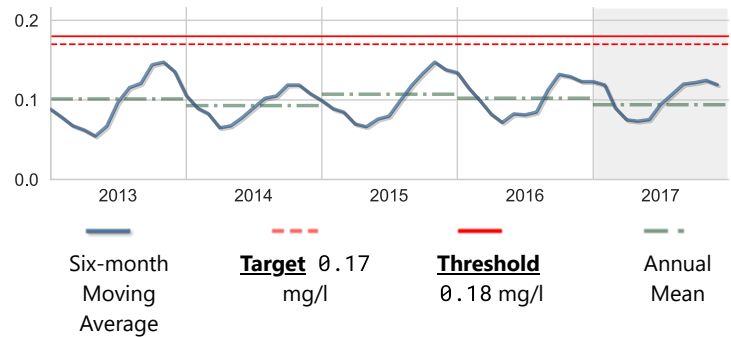


P

Phosphorus, Total

Score: Excellent

Units: mg/l	Year 2017	Historical period of record
High	0.290	0.470
Mean	0.094	0.120
Low	0.050	0.050
No. of Samples	65	762

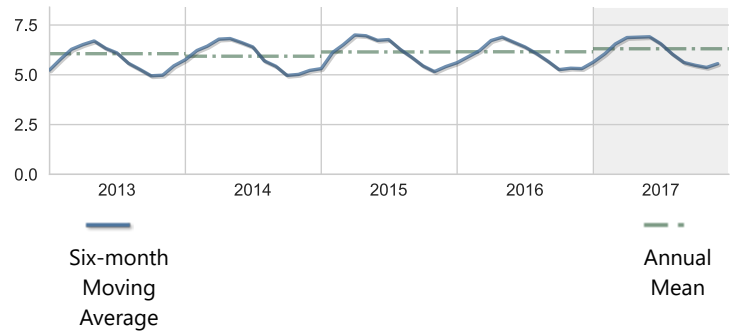


Other Measures of Bay Health

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.

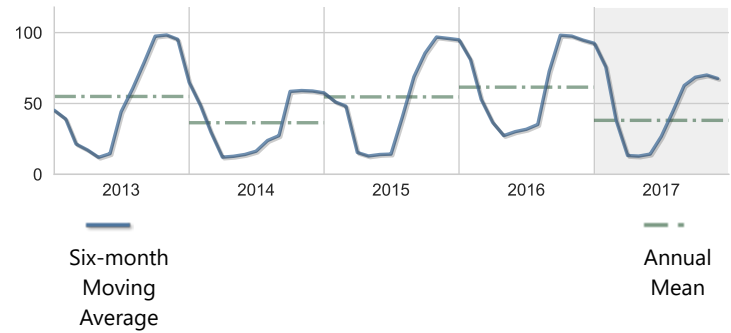
Dissolved Oxygen

Units: mg/l	Year 2017	Historical period of record
High	8.20	9.20
Mean	6.31	6.20
Low	3.38	2.10
No. of Samples	48	708



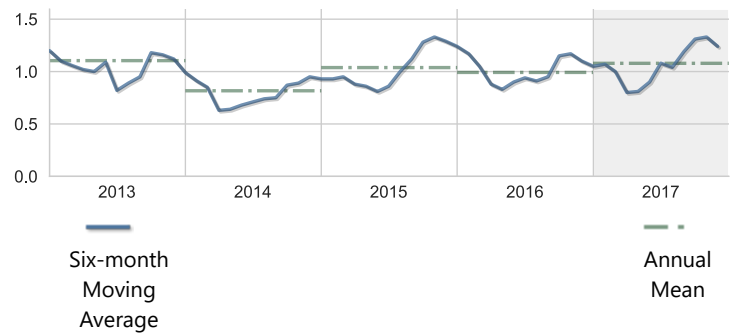
Apparent Color

Units: PCU	Year 2017	Historical period of record
High	320.00	400.00
Mean	38.10	39.44
Low	5.00	2.00
No. of Samples	61	757



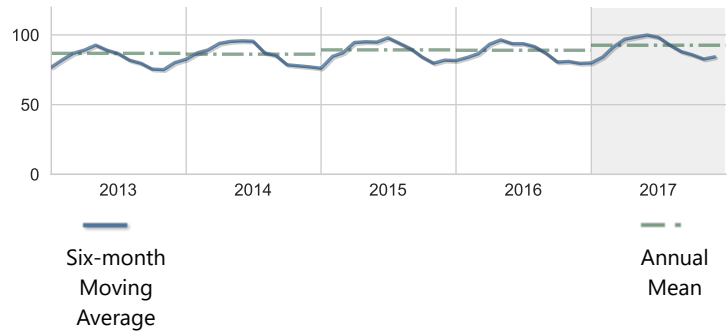
BOD, Biochemical oxygen demand

Units: mg/l	Year 2017	Historical period of record
High	2.60	8.50
Mean	1.08	1.03
Low	0.50	0.50
No. of Samples	61	654



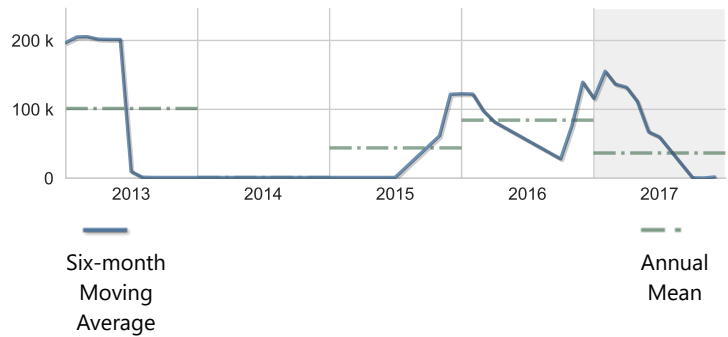
Dissolved oxygen saturation

Units: percent (%)	Year 2017	Historical period of record
High	122.00	129.00
Mean	92.61	90.38
Low	46.00	33.00
No. of Samples	64	724



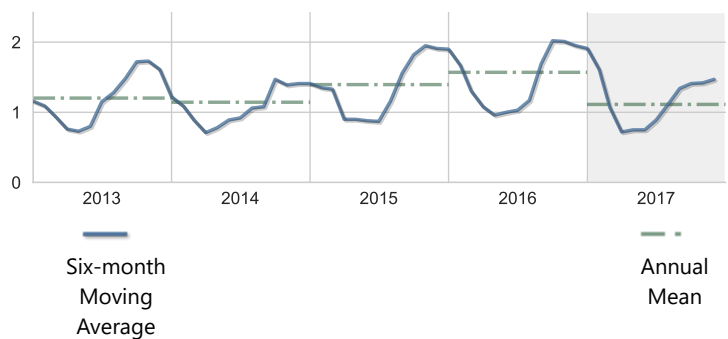
Karenia brevis ("red tide")

Units: #/l	Year 2017	Historical period of record
High	627000.00	2460000.00
Mean	36522.22	31300.88
Low	0.00	0.00
No. of Samples	45	570



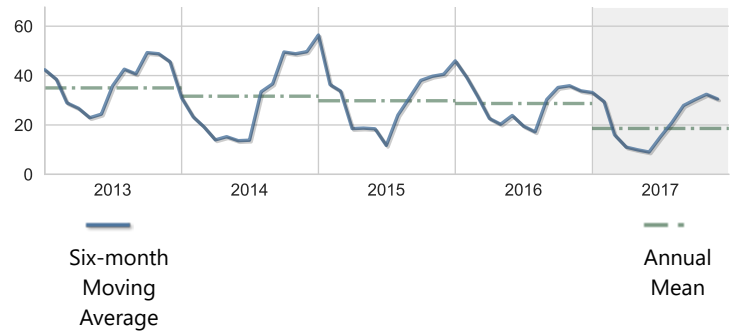
Light Attenuation

Units: K(1/m)	Year 2017	Historical period of record
High	4.32	9.04
Mean	1.11	1.13
Low	0.12	0.06
No. of Samples	48	696



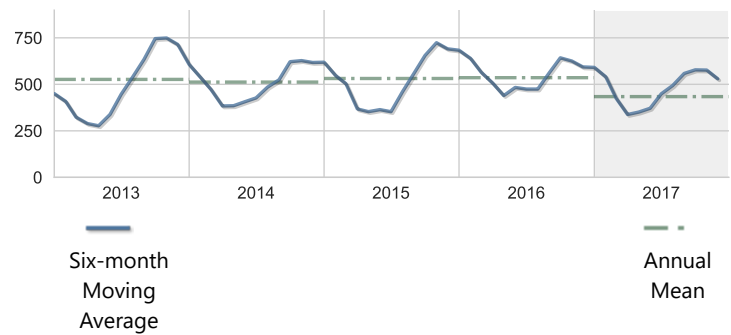
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2017	Historical period of record
High	133.00	326.00
Mean	18.59	27.13
Low	5.00	5.00
No. of Samples	61	758



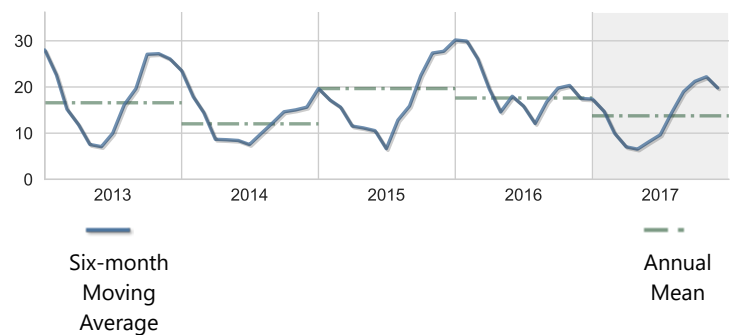
Nitrogen, Kjeldahl

Units: ug/l	Year 2017	Historical period of record
High	1240.00	1680.00
Mean	434.00	434.75
Low	190.00	50.00
No. of Samples	65	762



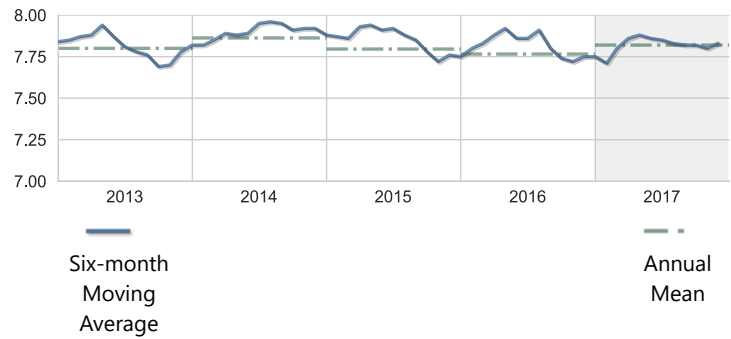
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2017	Historical period of record
High	74.00	108.00
Mean	13.75	12.88
Low	5.00	5.00
No. of Samples	65	849



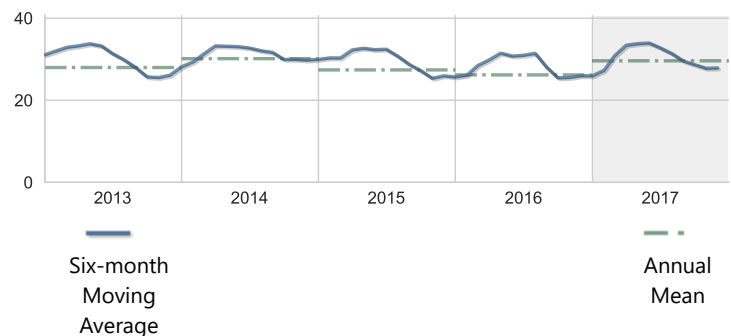
pH

Units: None	Year 2017	Historical period of record
High	8.10	8.30
Mean	7.82	7.82
Low	7.20	6.70
No. of Samples	64	724



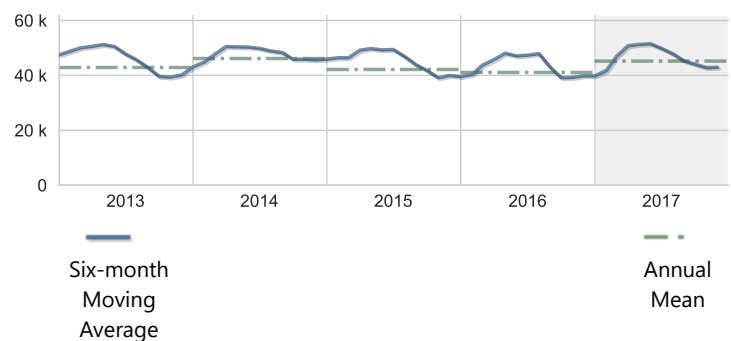
Salinity

Units: PSS	Year 2017	Historical period of record
High	36.00	38.50
Mean	29.61	30.21
Low	3.19	0.10
No. of Samples	48	708



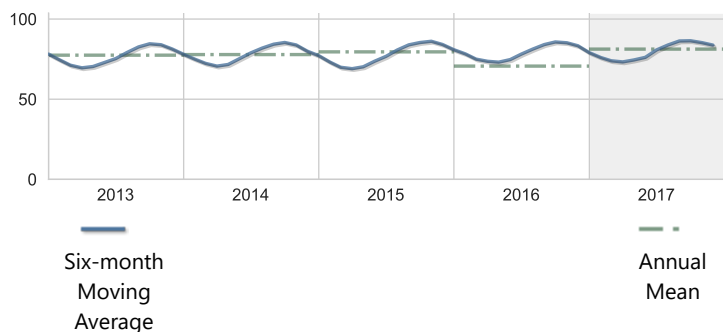
Specific conductance

Units: umho	Year 2017	Historical period of record
High	54300.00	57710.00
Mean	45203.44	46134.11
Low	5770.00	280.00
No. of Samples	64	724



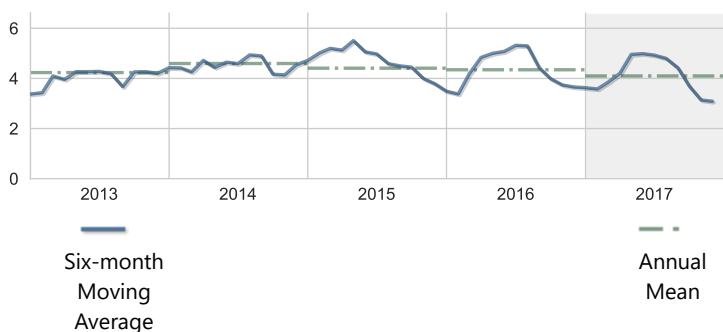
Temperature, water

Units: deg F	Year 2017	Historical period of record
High	92.84	94.46
Mean	81.25	78.12
Low	70.70	50.90
No. of Samples	60	676



Turbidity

Units: NTU	Year 2017	Historical period of record
High	11.00	23.00
Mean	4.10	4.24
Low	1.80	0.35
No. of Samples	49	745



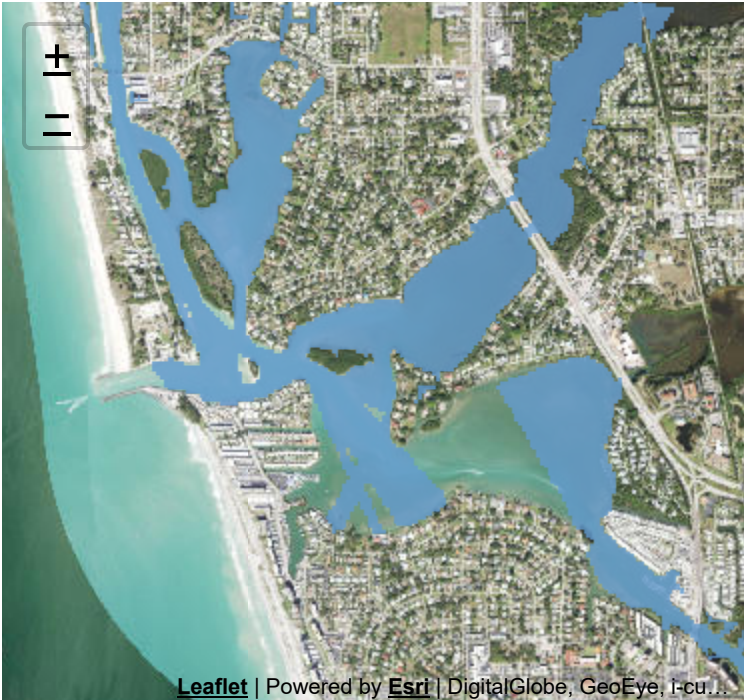
Annual Averages

Indicator	Units	2013	2014	2015	2016	2017	Trend
Dissolved Oxygen	mg/l	6.06	5.93	6.15	6.16	6.31	
Dissolved oxygen saturation	percent (%)	86.79	86.19	89.27	89.00	92.61	
Light Attenuation	K(1/m)	1.20	1.14	1.39	1.57	1.11	
Salinity	PSS	27.97	30.13	27.39	26.18	29.61	
Turbidity	NTU	4.23	4.59	4.41	4.34	4.10	

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.

Showing 2017 Monthly Contour Maps for: Chlorophyll a ▼
January



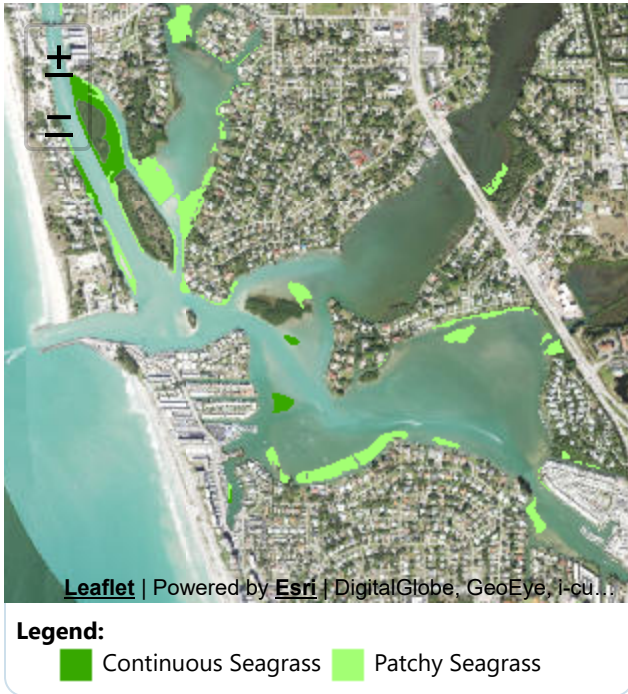
Contour Legend:

- 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

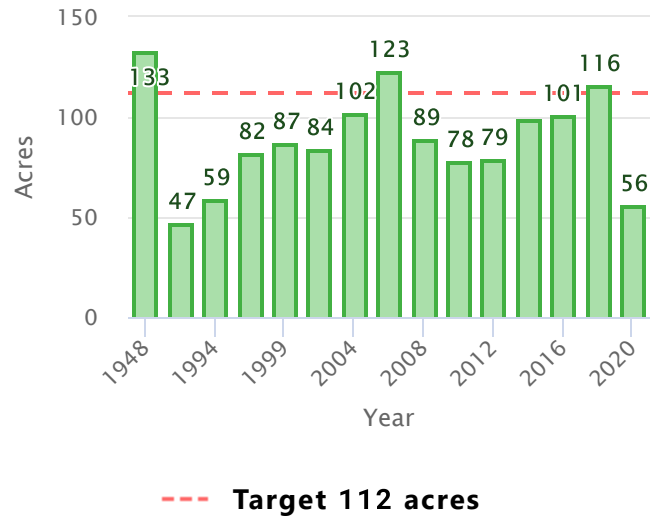
Seagrasses

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.

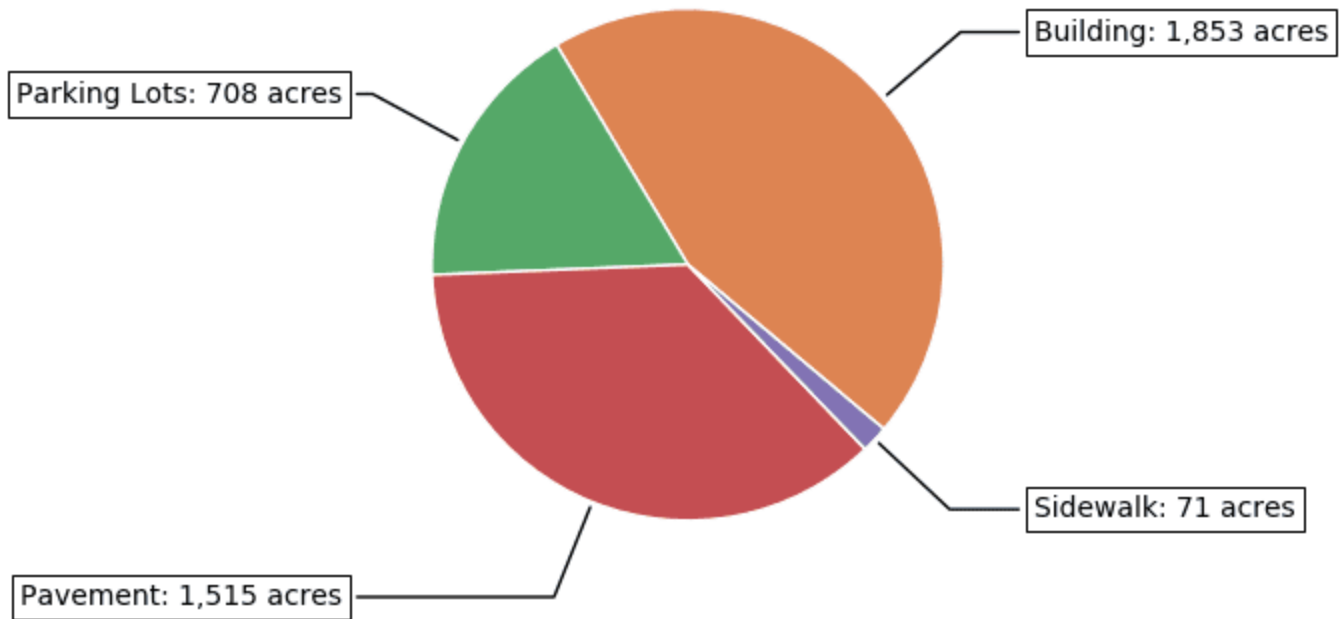


7% of the land area within the **Dona and Roberts Bay Watershed** is covered by

impervious surfaces

2014 Impervious Surface Coverage by Type

in acres, within the Dona and Roberts Bay Watershed







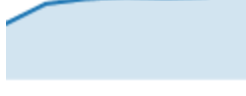
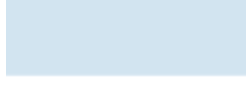


Land Use / Land Cover

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

2017 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

