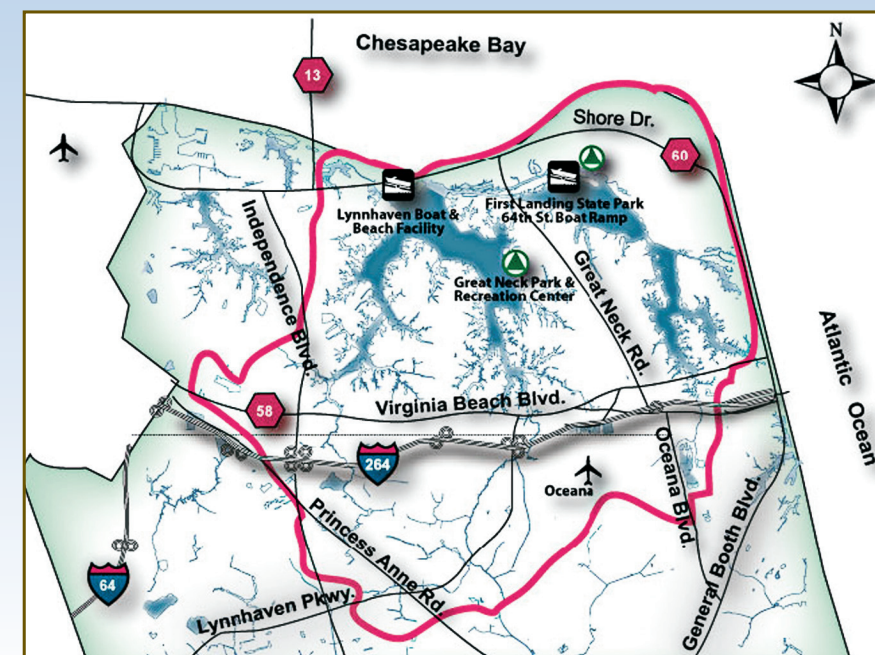


Report Card

2008 State of the River Report

	INDICATOR	2008 GRADE	2007 GRADE	WHERE WE ARE IN 2008	WHERE WE WANT TO BE
POLLUTION	Bacteria	C	C	31% of river meeting the shellfish standards	100% of river meeting the shellfish standards
	Nitrogen & Phosphorus	F	C+	Nitrogen & Phosphorus levels are too high for SAV to thrive	Nitrogen & Phosphorus levels that meet SAV habitat requirements ¹
	Dissolved Oxygen	D	D	7.9 impaired square miles (approximately 90%)	0 impaired square miles
	Water Clarity	C	D	Sediment & algae levels are too high for SAV to thrive	Sediment & algae levels that meet SAV habitat requirements ¹
POLLUTION CONTROL	Clean Boating	A-	B+	NDZ in Effect & 4 Certified "Clean Marinas"	NDZ in Effect & 8 Certified "Clean Marinas"
	New Funds for Water Quality	A+	B	\$3.8 million for retrofits	\$3 million per year for retrofits
	Sanitary Sewer	B+	B	45 sewer overflows & 276 septic tanks remaining of 11,600	0 sewer overflows per year & 0 septic tanks remaining of 11,600
	Stormwater Treatment	D	D	18% of total watershed treated with stormwater facilities	100% of total watershed treated with stormwater facilities
HABITAT	Oysters	A-	B+	839,000 spat transplanted & 58 total acres of constructed oyster habitat	250,000 per year transplanted & 100 total acres of constructed oyster habitat
	Open Space	C+	B-	Open Space: 2,991 acres Public Access: 3 formal sites	Open Space: 4,000 acres Public Access: 15 formal sites
	Wetlands	C-	B	0.68 acre of permitted loss	0 permitted losses per year
	Underwater Grass Beds	F	F	1 total acre	175 total acres
AWARENESS	Media Attention	A+	A+	30 newspaper articles & 4 TV advertisements	Coverage 18 times per year
	Educational Programs	A+	A+	107	80 per year
	Membership & Involvement	A-	A-	Membership: 3,080 Involvement: 17,527	Membership: 3,000 Involvement: 30,000 (15% of watershed population)
	School Participation	B+	B+	Exhibits in all 41 schools Participation from 18 schools	Participation from all 41 schools in the watershed



This year, our 2008 State of the River Report contains good news and bad news. First, the good news.

Our 2007 State of the River Report highlighted our astounding progress in reducing bacterial levels to the point where shellfish were safely consumable from 29% of the Lynnhaven River. The progress was attributed to the new "No Discharge Zone" designation, the reduced number of septic systems in the watershed, the diligence of citizens picking up after their pets, and a little bit (or potentially a lot) of help from the drought. With less rain in 2007, there was less stormwater runoff, thus fewer pollutants were carried from the watershed to the river by rainwater. However, we now have a demonstrable signal that it is in fact the community that has made the difference for bacteria. In 2008, a wetter year than last, we maintained and actually increased our open area to 31% of the river.

The Lynnhaven River native oyster restoration effort provides us with even more good news. In 2008, 22 additional acres of oyster habitat were constructed, LR NOW built our first oyster reef in the river, the community again stocked hundreds of thousands of oysters to the

river, and our oyster population is continuing to increase. After substantial progress with bacterial reductions and oysters, scientists and the press have noticed. In 2008, LR NOW has enjoyed tremendous media attention, which is an invaluable vehicle for educating the public and generating their interest in helping to address the river's problems.

But now the bad news. In 2008, our State of the River grade has declined, from a B last year to a B- this year. The decline is mainly attributable to two indicators. First, our permitted wetland losses in 2008 roughly equal the permitted losses in the previous three years combined. Wetlands are critical to buffering the river from pollutant run-off and we have to vigilantly protect them for the benefit of the river. Second, nutrient levels in the Lynnhaven have dramatically increased this year. This increase is largely due to fertilizer entering the river from property in the watershed (outlined in red above), which is mainly residential property.

Now, more than ever, we need for property owners to commit to reducing pollution from their properties so that our exciting restoration progress doesn't slip away.

¹ Dennison et al. (1993) Assessing water quality with submerged aquatic vegetation: Habitat requirements as barometers of Chesapeake Bay Health. Bioscience 43(2): 86-94.
² Although our numbers have gone up from 2006 to 2007, our letter grade appears to have decreased because we have made our goal more rigorous for these two indicators.

Stormwater runoff is the main vector that brings **POLLUTION** to the Lynnhaven River. During rain events, pollutants are washed from the watershed and carried by rain water into storm drains that dump directly into the river.

Bacteria: C

Bacterial tests indicate that water in the Lynnhaven River is contaminated by fecal matter from humans, pets and wildlife. This fecal contamination has the potential to cause serious illness and disease, especially when people consume shellfish that filter water containing high levels of bacteria. In partnership with the City, with boaters and with dog owners, we are reducing fecal pollution and improving river water quality. In 2008, 1574 acres of the river (31%) meet the stringent water quality standards that support safe shellfish consumption. This is an increase over last year's astounding opening of 1462 acres.

Nitrogen & Phosphorus: F

Nitrogen & phosphorus are the main nutrients in lawn and garden fertilizer because they promote plant growth. During rain storms, fertilizer is washed off of lawns in the watershed and carried to the Lynnhaven River via storm water. Once in the river, excess levels of nitrogen and phosphorus negatively impact water quality because they fertilize tremendous algae blooms, which reduce water clarity and ultimately remove dissolved oxygen from the water. In 2008, nitrogen and phosphorus concentrations in the Lynnhaven increased substantially from last year and now far exceed healthy levels¹.

Dissolved Oxygen: D

Marine animals require dissolved oxygen for survival, like humans require atmospheric oxygen. Crabs, fish and other aquatic animals suffocate without sufficient levels of dissolved oxygen. Dissolved oxygen is produced when underwater plants photosynthesize and it is removed from the water when living organisms breathe and when aquatic bacteria decompose dead algae, plants, and animals. In 2008, 7.9 mi² (approximately 90%) of the Lynnhaven is classified as impaired for dissolved oxygen.

Water Clarity: C

Water clarity is diminished by algae blooms and by high concentrations of suspended sediment, or dirt, that enters the river in stormwater. Sunlight penetrates deeper into clear water than into cloudy water. Underwater grasses, which provide critical water filtration and animal habitat in a healthy aquatic ecosystem, depend on clear water for adequate sunlight penetration. In 2008, water clarity improved in the Lynnhaven, but remains at levels of algae and suspended sediment that prevent seagrass from thriving¹.

Water quality can be improved through **POLLUTION CONTROL** measures that treat or reduce the sources of sediment, nutrients and bacteria before these pollutants reach the river.

Clean Boating: A-

Most boaters value clean water and responsibly dispose of their holding tank contents. However, illicit discharge of sanitary waste by even one recreational vessel may release enough bacteria to contaminate an entire square mile of water. Since the Lynnhaven's No Discharge Zone designation last year, which eliminated vessel discharge as a source of bacterial and nutrient pollution to the river, our water quality has improved. In 2008, we also have 4 certified "Clean Marinas" helping to protect the river.

New Funds for Water Quality: A+

In 2003, the City Council named the Lynnhaven River one of their highest priorities. Since that time, there have been great improvements in our stormwater system. The City has spent \$6 million expanding our stormwater system and increasing public awareness about stormwater pollutants. In 2008, the City allocated another \$3.8 million to "retrofit" more of the 800+ untreated stormwater outfalls in the watershed with stormwater management devices that intercept and remove pollutants before they enter the river.

Sanitary Sewer: B+

Fecal coliform and enterococci bacteria in the river provide a reliable indication of human fecal contamination in the Lynnhaven. To reduce the sources of human waste, the City of Virginia Beach has spent \$45 million reducing the number of sanitary sewer leaks and overflows into the river, and they have aggressively pursued the elimination of septic tanks within the watershed. In 2008, only 276 septic tanks remain in the watershed.

Stormwater Treatment: D

When it rains, stormwater from most of the watershed flumes into stormdrains that dump directly into the Lynnhaven. Stormwater can be treated to remove bacteria, sediment, nutrients, and trash before the stormwater carries the pollutants into the river. Currently, stormwater run-off from only 18% of the watershed is treated. In 2008, Green Ribbon Committee recommendations, which will increase stormwater treatment, are being planned and implemented.

Protection and restoration of beneficial natural **HABITAT** is critical for a healthy Lynnhaven River. These natural habitats improve water quality in the river by filtering out pollutants and they provide homes for the river's marine life.

Oysters: A-

The famed Lynnhaven oyster is a keystone species in the river because (1) oysters filter sediment and algae from tremendous volumes of water, and (2) oyster reefs provide critical habitat and food for animals in the river. Oyster reef restoration has been underway since 1997 to revitalize our oyster population, which had declined by 99% since 1607. In 2008, the Army Corps created 22 new acres of oyster habitat, the community stocked thousands of oysters into the river, and we built our first oyster reef.

Open Space: C+

The vast majority of the Lynnhaven River's watershed is developed with residences, roads, and buildings. This infra-structure is necessary for humans, but undeveloped Open Space acreage cannot be completely compromised because it contains vegetation that provides natural protection for the river. In 2008, 2,991 acres (7%) of the watershed are open space, mostly in First Landing SP. Open space may also provide public access to the river. Currently, we have 3 formal access sites to the river for canoe and kayak launch.

Wetlands: C-

Wetlands grow at the interface between the river and the land. They protect the river's water quality by intercepting and removing sediment and nutrients from stormwater run-off before it enters the river. Wetlands also provide key habitat for animals, especially juveniles. Wetland areas are destroyed because they grow in desirable areas for shoreline development. While there is a "no net loss" policy in place to protect wetlands from destruction, this year, 0.68 ac of Lynnhaven River wetland were destroyed.

Underwater Grass Beds: F

Historically, underwater grass, or Submerged Aquatic Vegetation (SAV), grew in dense beds in the river. Healthy SAV beds provide critical habitat for crabs, fish and other aquatic animals, and SAV beds improve water quality by taking up nutrients, stabilizing sediment, and producing dissolved oxygen in the river. SAV acreage has declined drastically in recent years, to a mere remnant of historical levels, due to poor water clarity which blocks sunlight from reaching the plants.

Lynnhaven River Now is raising environmental **AWARENESS** in the watershed because community education is one of the only strategies for reducing pollution from private residential properties in the Lynnhaven watershed.

Media Attention: A+

Radio, newspaper and television media reach a very large and diverse audience. Media coverage about the condition of the Lynnhaven River is an invaluable vehicle for educating the public and generating their interest in helping to address the river's problems. In 2008, there have been 30 newspaper articles focusing on Lynnhaven River water quality, and we ran 4 television ads about pet waste and fertilizer. In addition, we published an Oyster Restoration publication, a Landscaping Guide and our 2009 Calendar.

Educational Programs: A+

Lynnhaven River NOW is working with several partners to execute a comprehensive community education program that supports our mission of improving water quality in the river. Our programs are designed to increase the community's awareness and stimulate involvement in restoring the Lynnhaven River. In 2008, we provided 107 educational programs, including 2 Taylor Float and 4 Rain Barrel construction workshops, 6 clean-ups at our Adopt-a-Waterway, and 27 presentations to community groups.

Membership & Involvement: A-

Lynnhaven River NOW is a rapidly growing organization. We greatly appreciate the financial support and river stewardship that our members provide. We encourage members to take advantage of our educational programs, special events, volunteer opportunities, and our quarterly newsletter and publications that bring important news about the Lynnhaven River right to their doorsteps. In 2008, we increased our goal for this indicator again and now aspire to obtain membership and involvement from 15% of the watershed population, up from 10% last year.

School Participation: B+

Teachers and schools reach thousands of students in our watershed each year, and students in turn educate their families about environmental issues. Over the summer, LR NOW partnered with the City to provide 8 summer teacher training courses focusing on oyster restoration, watershed awareness, rain garden construction and "going green." In 2008, we also engaged over 500 students in "Restoring Wetlands in the Classroom" and we recognized 10 schools as "Pearl Schools" to honor their environmental education and river stewardship.