

Healthy Harbor Report Card | 2015

**BALTIMORE
WATER
QUALITY
SCORES
INSIDE**

**WHAT'S
NEXT FOR
MR. TRASH
WHEEL**

**GREAT BALTIMORE
OYSTER PARTNERSHIP
TO PLANT 5,000,000
OYSTERS BY 2020**



A healthy harbor equals a healthy city.

2015 Overall Water Health

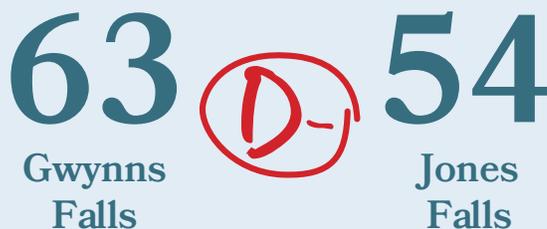
Healthy Harbor is an initiative of the Waterfront Partnership of Baltimore that brings together area businesses, nonprofits, neighborhoods and local government to support the goal of making the Baltimore Harbor safe for swimming and fishing. The report card helps us communicate this goal and track our progress.

Blue Water Baltimore conducts the monitoring for the report card program. Throughout 2015 they logged 841 volunteer hours to collect 569 samples from 49 sites resulting in 14,973 individual data points. Experts at Blue Water Baltimore then analyzed this data to produce the report card scores.

Tidal Waters



Streams

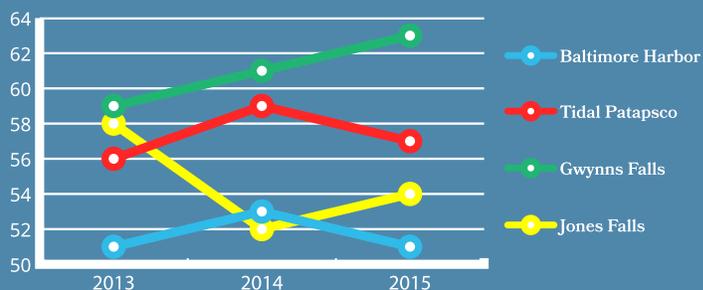


In 2015 Baltimore's streams and Harbor scored between 51% and 63%. The Baltimore Harbor and Tidal Patapsco scores both decreased somewhat from 2014, while the Jones Falls and Gwynns Falls streams both saw slight improvements. Ongoing data collection will allow us to determine if these modest fluctuations in scores are part of a larger trend in water quality.

Overall water health in Baltimore waterways continues to be very poor with the primary causes being fecal bacteria, nitrogen pollution, low water clarity and high conductivity in streams. However, water quality scores for turbidity, dissolved oxygen and phosphorus pollution all remained high or improved resulting in the highest overall stream grade since the report card program began in 2013.

Much of Baltimore's poor water quality is the result of storm-induced pollution problems. Untreated runoff carries trash and polluted

stormwater into storm drains, which flow unfiltered into our streams and Harbor. High bacteria levels are due to storm-induced sewer overflows, leaking sewer pipes and chronic dry weather sewage discharges from the storm drain system. Global climate change models indicate that Baltimore will be subject to an increasing number of intense rain storms in the coming years, making it all the more important that we repair and upgrade our pipes and as soon as possible.



What Do the Water Quality Indicators Mean?

Fecal bacteria is a human health indicator. Bacteria measurements help us determine the risk of getting sick if someone comes into contact with the water. Some common sources of bacteria are sewage overflows, broken sewer pipes and pet waste.

Chlorophyll a tells us if there is too much algae in the water. Too much algae can lead to low dissolved oxygen, which can harm organisms living in Baltimore's waters.

Conductivity tells us if there are too many salts and chemicals in the streams that could harm fish and other organisms.

Dissolved oxygen is important for all organisms that live in the water.

Total nitrogen and **total phosphorus** are nutrients that tell us how much stormwater pollution is coming from the land. Some common sources of nutrient pollution are fertilizers, waste water, urban runoff, and the burning of fossil fuels.

Turbidity and **water clarity** are important for fish and plants in the water. The water should be clear so that fish can see and find their prey and underwater plants need light to grow.

Baltimore Harbor

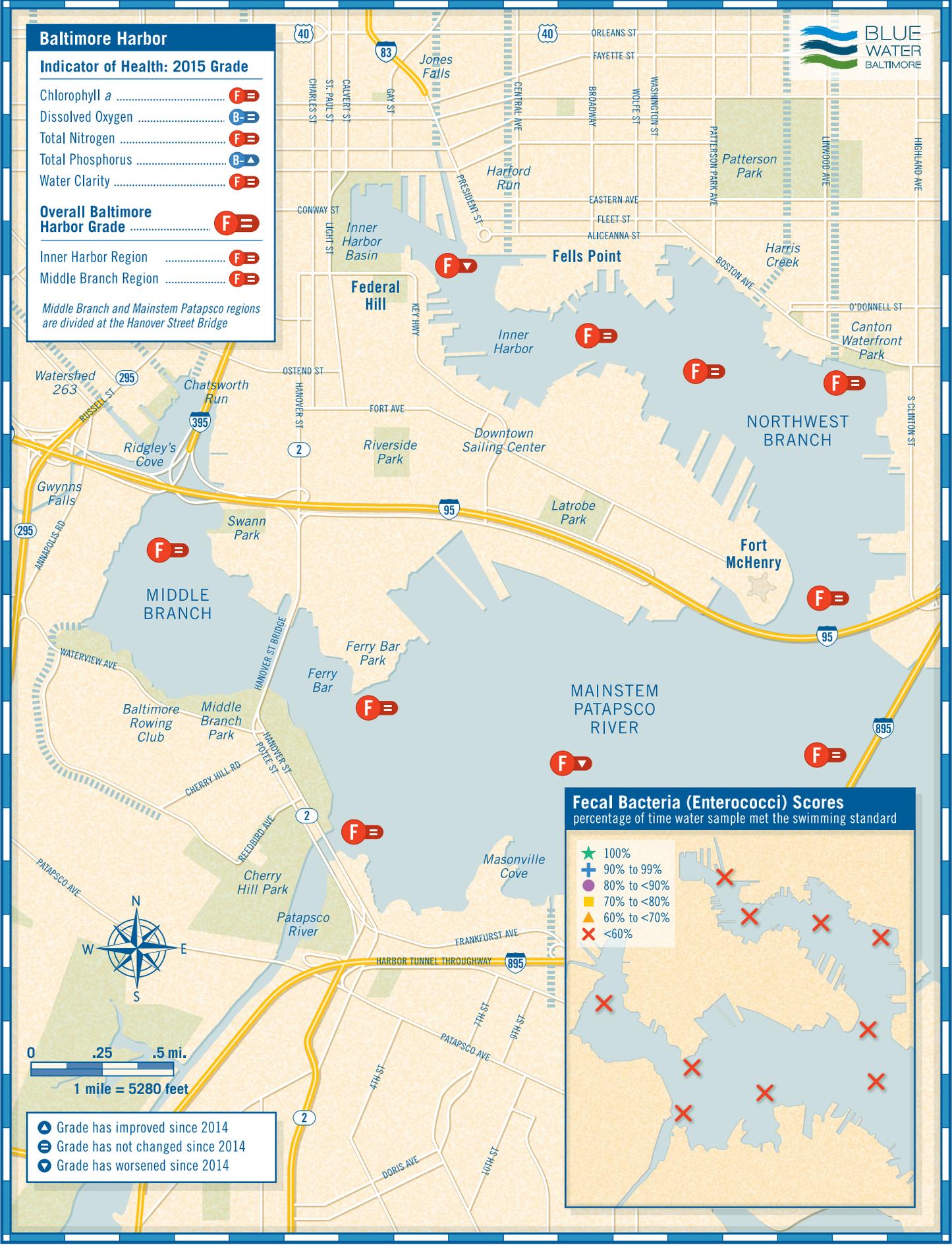
Indicator of Health: 2015 Grade

- Chlorophyll a **F =**
- Dissolved Oxygen **B =**
- Total Nitrogen **F =**
- Total Phosphorus **B =**
- Water Clarity **F =**

Overall Baltimore Harbor Grade **F =**

- Inner Harbor Region **F =**
- Middle Branch Region **F =**

Middle Branch and Mainstem Patapsco regions are divided at the Hanover Street Bridge



Fecal Bacteria (Enterococci) Scores

percentage of time water sample met the swimming standard

- ★ 100%
- + 90% to 99%
- 80% to <90%
- 70% to <80%
- ▲ 60% to <70%
- ✗ <60%



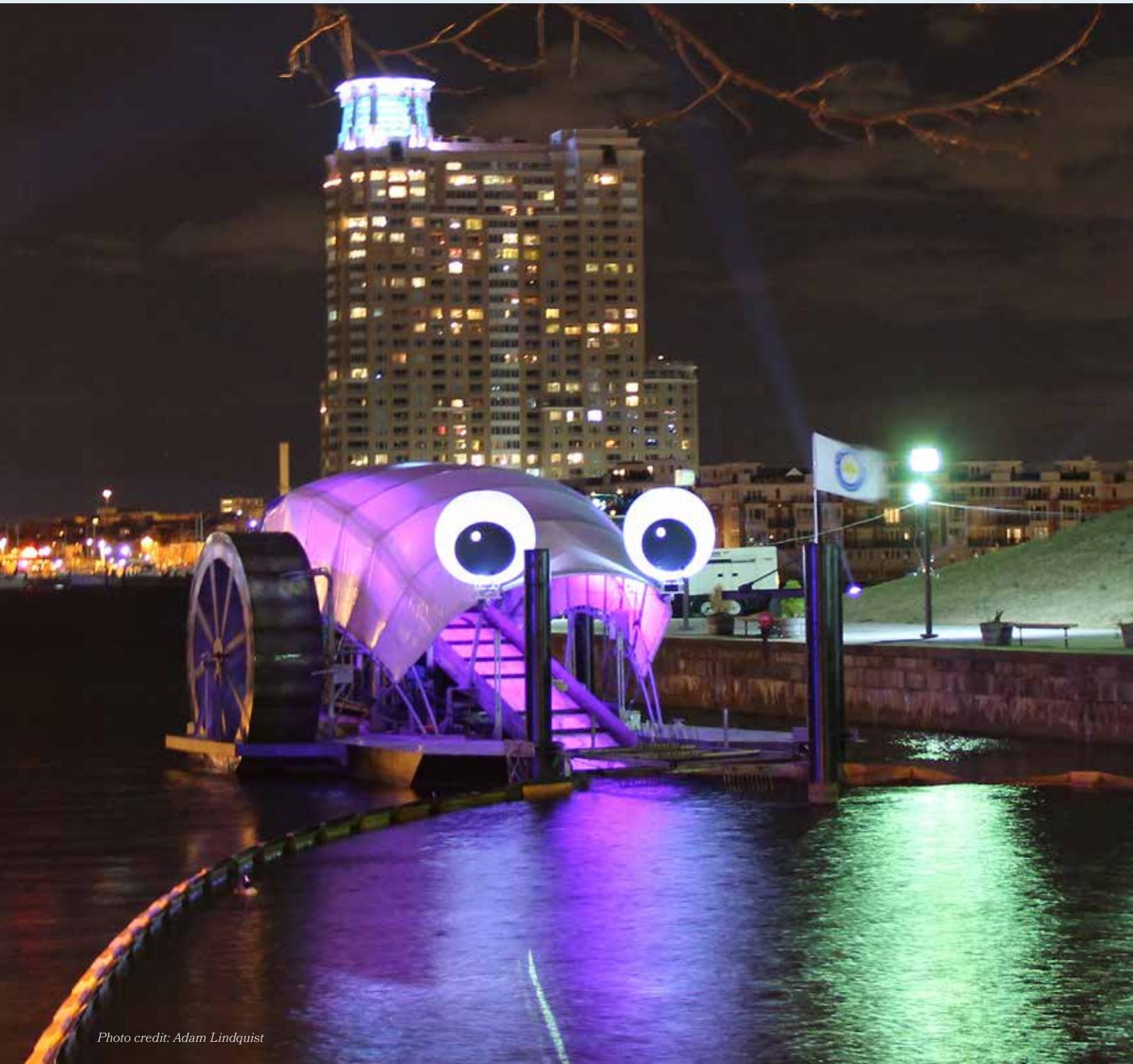
- ▲ Grade has improved since 2014
- = Grade has not changed since 2014
- ▼ Grade has worsened since 2014

Mr. Trash Wheel to the Future

By Kelly Louise Barton

Mr. Trash Wheel is a gargantuan trash-eater that devours tons of garbage and protects the Baltimore Harbor one Styrofoam cup at a time. Beloved by many for his online presence, Mr. Trash Wheel is a beacon of hope for the cleanup of Baltimore's Harbor, as well as a source of inspiration that has sparked community involvement and raised awareness about the impact that trash and litter have on our waterways.

John Kellett built and installed the world's first trash wheel at the end of the Jones Falls stream in May 2014. Since then Mr. Trash Wheel has become something of a local celebrity and generated interest from cities around the world. "Baltimore is not unique in



the fact that it has trash coming down the river,” Kellett says, citing other cities that have far greater pollution issues than Baltimore. “Baltimore’s rivers look pristine in comparison to the rivers in Brazil or Indonesia or India. Compared to them, you wouldn’t even think Baltimore needed a trash wheel.”

“*The concern for plastics in the ocean is exploding*”

“The concern for plastics in the ocean is exploding,” Kellett says. “Scientists are discovering more and more that they’re not just an eyesore—they’re causing all sorts of problems out in the oceans, bays, harbors and rivers. I think people are coming to grips with the fact that

it’s not just a visual problem, it’s an ecological problem.”

As conservation becomes a more prominent concern, it’s easy to see why Mr. Trash Wheel would be considered for other cities, simply because people get it. “People gravitate towards Mr. Trash Wheel; one, because it’s cool looking and two, because it’s an idea that people can understand.”

“It shouldn’t be seen as a waste management system in and of itself,” Kellett warns. “I think you need to combine good land-side recycling and waste collection and proper disposal of the waste that we create with trying to clean it up. In our lifetime there’s not going to be a time where there isn’t some trash coming down our waterways, but we can do a lot better on land as well as make a difference by catching it before it gets out in the harbors, bays and oceans.”

So while Kellett doesn’t view the trash wheel as the only savior to our world’s pollution crisis, it’s definitely a solid start. Luckily, it seems as if Mr. Trash Wheel will not be the last of his kind; in fact Baltimore could see its second trash wheel before the end of 2016 if current fundraising efforts are successful.

“In spite of the fact that it’s our business, we’d still like to see a lot less need for it,” Kellett says, pondering the state of other waterways in the world. “Currently there’s a need for it almost anywhere there’s a river flowing to a populated area.” However, the long term goal for the Baltimore trash wheel and all future trash wheels is to put them out of business by reducing the amount of trash entering our waterways in the first place.

Follow Mr. Trash Wheel on social media!

 @MrTrashWheel

 /MrTrashWheel

Mr. Trash Wheel’s 2015 by the Numbers

238.8
tons of trash collected.



That’s 2.89 space shuttles.



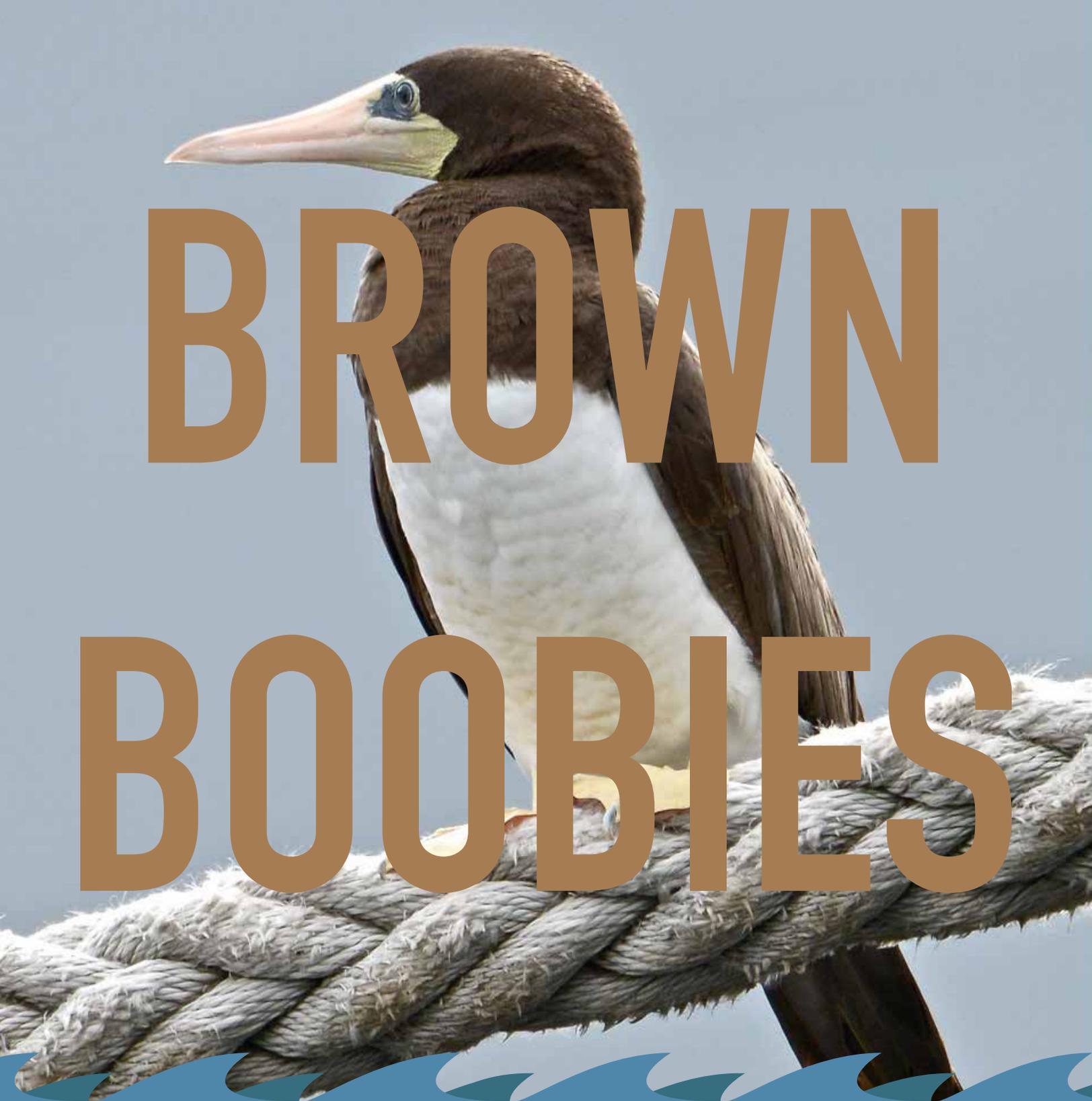
98,940
grocery bags collected.

Enough to make 18.4 hot air balloons

2.86 million
cigarette butts collected.



Lined up end to end, they’d stretch from Baltimore to Washington, DC



BROWN

BOOBIES

This year, Baltimore was visited by brown boobies. These birds are originally from more tropical climates, typically found near the Florida Keys and Hawaii. The sighting in Locust Point was only the second confirmed sighting of a brown booby in Maryland.

Photo credit: Nico Sarbanes

Bioblitz Finds Over 130 Species At Baltimore's Masonville Cove

By Kaitlin Newman

Documenting every living species in Baltimore can be quite a task, but it's well underway with The National Aquarium in Baltimore's annual event, BioBlitz. BioBlitz is an all-day activity that invites scientists, students, teachers, families and volunteers to find and identify as many different organisms as they can. Their observations are then recorded through iNaturalist, a website and smartphone app.

The second annual BioBlitz event was held in September 2015 at Masonville Cove on the south shore of the Baltimore Harbor. A team of specialists and volunteers worked together to record a total of 218 observations of 132 different species both in the Harbor and on land. Documented species ranged from snapping turtles to pipefish in the water, to white tailed deer and great egrets on land.

Maura Duffy, conservation technician at the National Aquarium, helps run the annual program. "There are hundreds of observations on those days. We've seen monarch butterflies, which is notable because of their population decline. Masonville Cove has been doing a lot of work with milkweed plants, which monarchs depend on, so this was a great sign." Other species identified include the American eel, blue crab, American bullfrog, great blue heron, downy woodpecker and red fox. "There are also two mating osprey pairs that have made nests at Masonville Cove," Duffy reports.

Masonville Cove is a 70-acre restored saltwater tidal wetland and environmental education center in Baltimore City. Previously a large dump site, it is now the first urban refuge partnership in the US and wildlife is thriving.

This year's BioBlitz findings will be shared with the Maryland Biodiversity Project, which aims to document every living species in Maryland. Currently, they have over sixteen thousand species recorded. This data will help contribute to the overall understanding of not only Maryland biodiversity, but of urban biodiversity as well. This is crucial in creating a positive and clean environment in Baltimore.

Curtis Bennett, Conservation Project Manager, says, "BioBlitz really opens people's eyes to the wildlife around them. Its all about connection and exposure at the end of the day."

2015 Baltimore BioBlitz Results:





Baltimore Streams

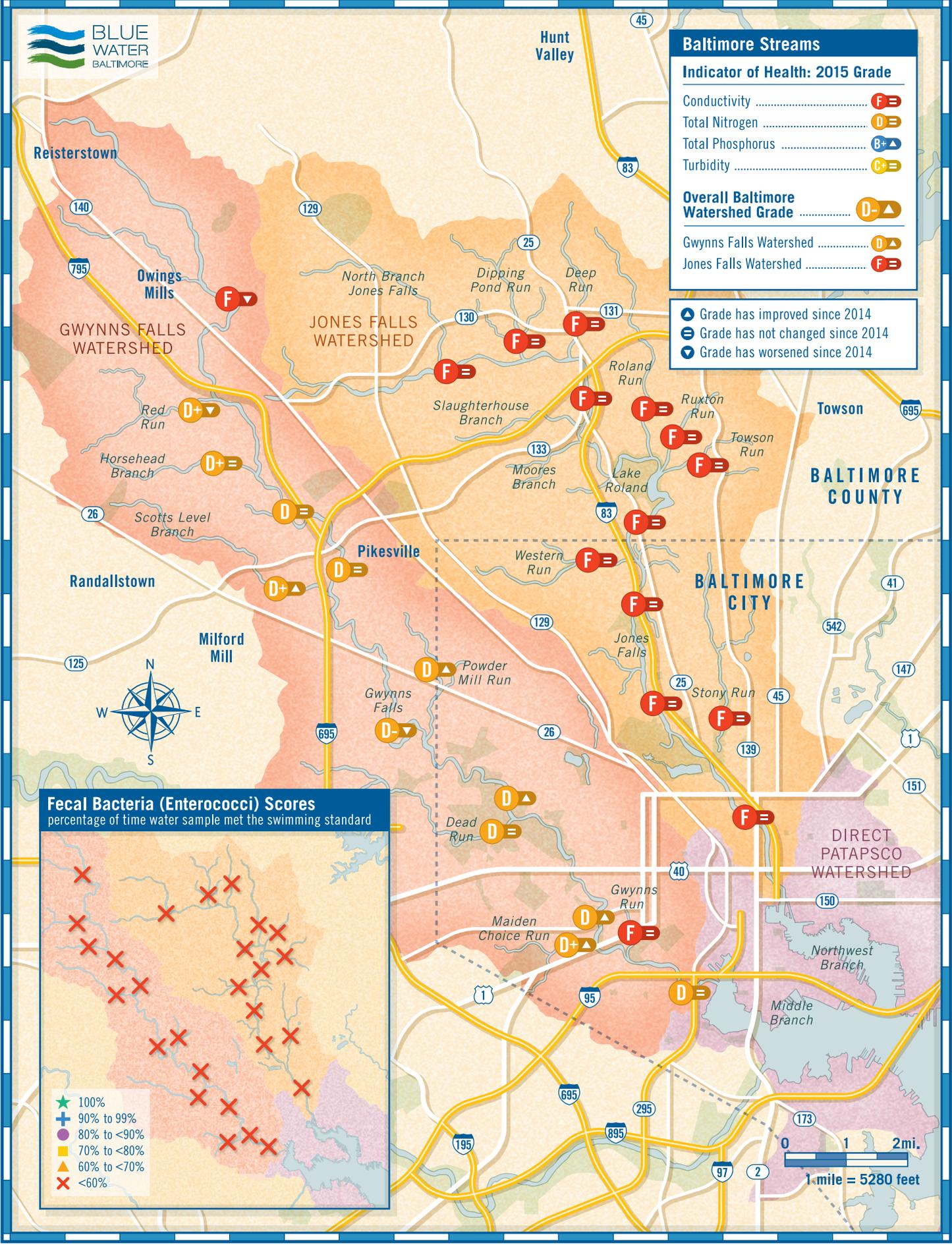
Indicator of Health: 2015 Grade

Conductivity	F=
Total Nitrogen	D=
Total Phosphorus	B+▲
Turbidity	C+▲

Overall Baltimore Watershed Grade

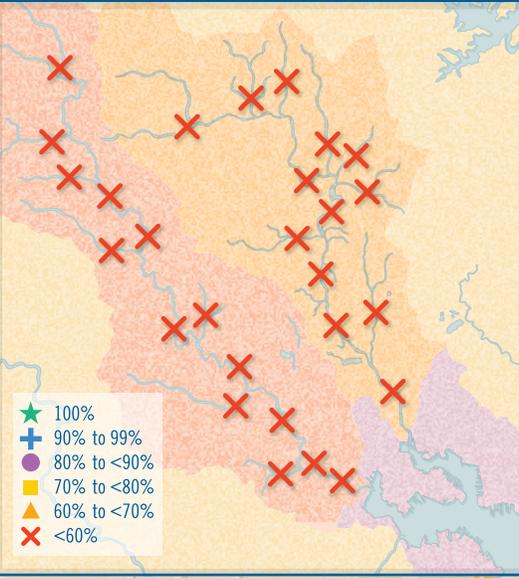
Overall Baltimore Watershed Grade	D-▲
Gwynns Falls Watershed	D▲
Jones Falls Watershed	F=

- ▲ Grade has improved since 2014
- = Grade has not changed since 2014
- ▼ Grade has worsened since 2014



Fecal Bacteria (Enterococci) Scores

percentage of time water sample met the swimming standard



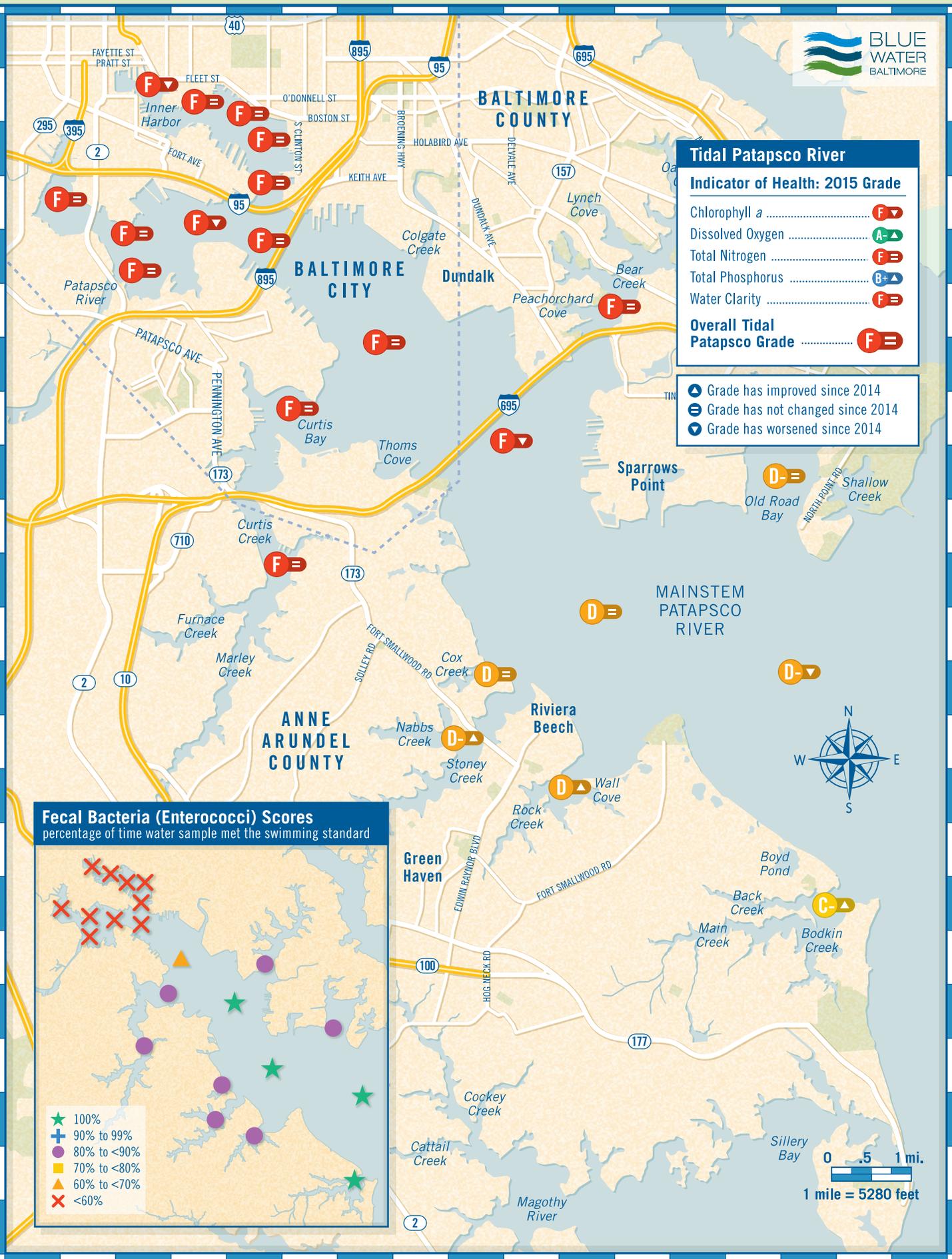
For real time water quality updates, visit HarborAlert.org

Tidal Patapsco River

Indicator of Health: 2015 Grade

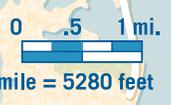
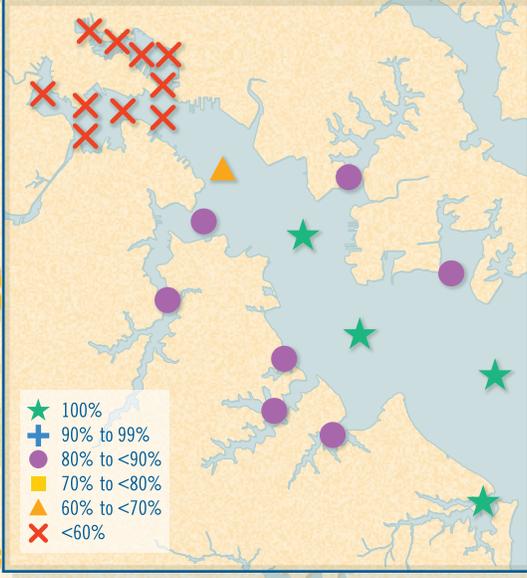
Chlorophyll a	F ▾
Dissolved Oxygen	A- ▲
Total Nitrogen	F =
Total Phosphorus	B+ ▲
Water Clarity	F =
Overall Tidal Patapsco Grade	F =

▲ Grade has improved since 2014
 = Grade has not changed since 2014
 ▾ Grade has worsened since 2014



Fecal Bacteria (Enterococci) Scores

percentage of time water sample met the swimming standard



The City's Plan to Address Ten-Mile Sewage Backup

By Peter Meacham

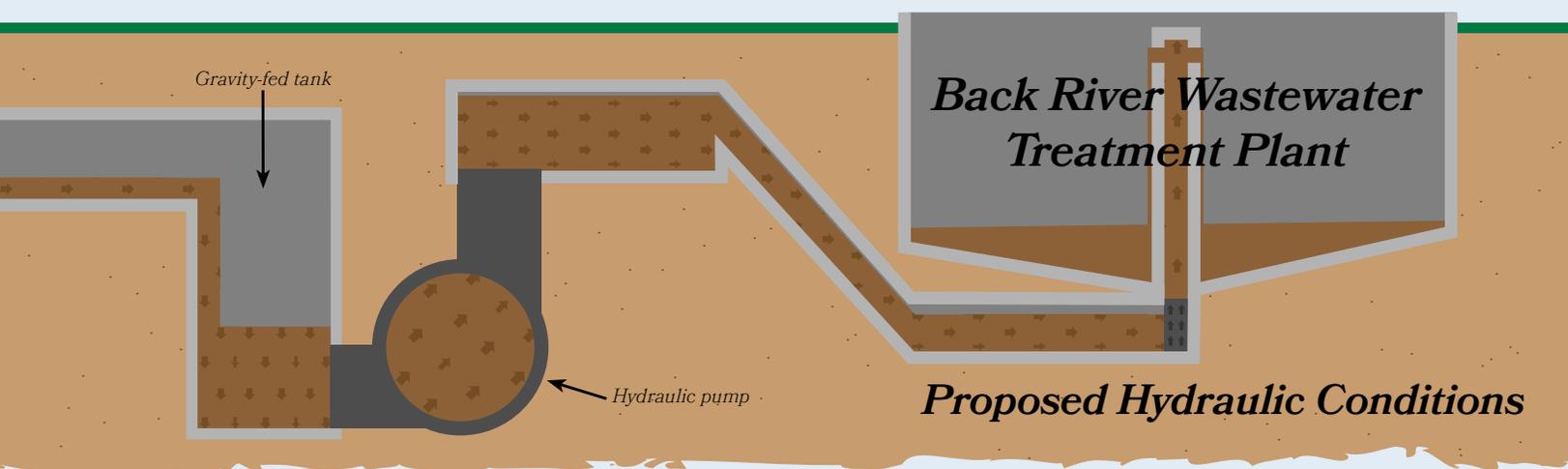
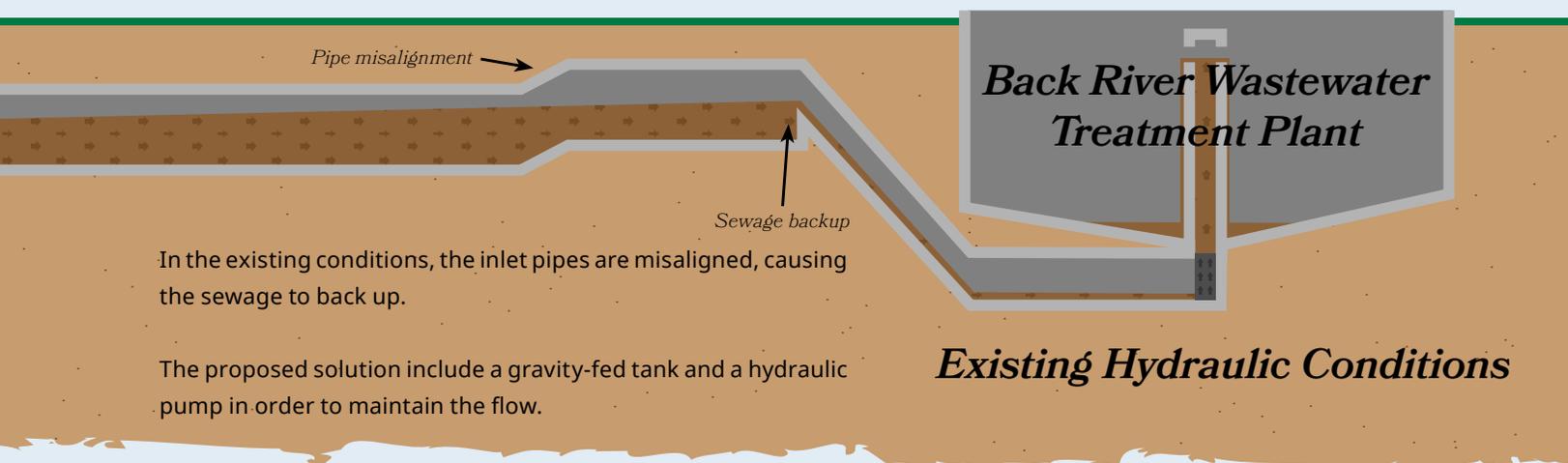
The City of Baltimore is making progress on a project impacting the health of the Harbor, the preservation of the local environment and the wellbeing of Baltimore communities.

The problem is a ten-mile backup of human sewage that sits idly in the pipes beneath the neighborhoods of east Baltimore year round. As the sewage sits, unmoving, it reduces the capacity of the pipes to transport sewage from Baltimore homes to the Back River Wastewater Treatment Plant. This reduced capacity has contributed to over 335 million gallons of sewage overflowing into the Jones Falls in the last five years.

The problem is that a 12-foot diameter pipe responsible for carrying the City's wastewater to the treatment plant is chronically

misaligned, preventing sewage from flowing freely into tanks at the treatment plant. The pipe, known as an outfall interceptor, relies on gravity to keep wastewater moving and the misalignment acts like a dam at the end of the pipe. The result is like trying to pour water into a glass that is already full.

Correcting this issue has become an urgent priority for the Department of Public Works, which is now contracting a firm with engineering and construction expertise to fix the problem. Since digging up and replacing the massive pipe would be too difficult, the plan is to use a series of hydraulic pumps and tanks to keep the wastewater flowing at all times. These new facilities have already been designed and will include three 260-foot (in diameter) storage tanks with a capacity of 36 million gallons of storage for excess wet weather flows.



“This project is an important part of solving the enormous problem of sewage contaminating our waterways,” says Halle Van der Gaag, Executive Director of Blue Water Baltimore. “Our Report Card data have shown that all of Baltimore’s waterways are contaminated with fecal bacteria a majority of the time and eliminating sewage overflows must remain the City’s highest priority.”

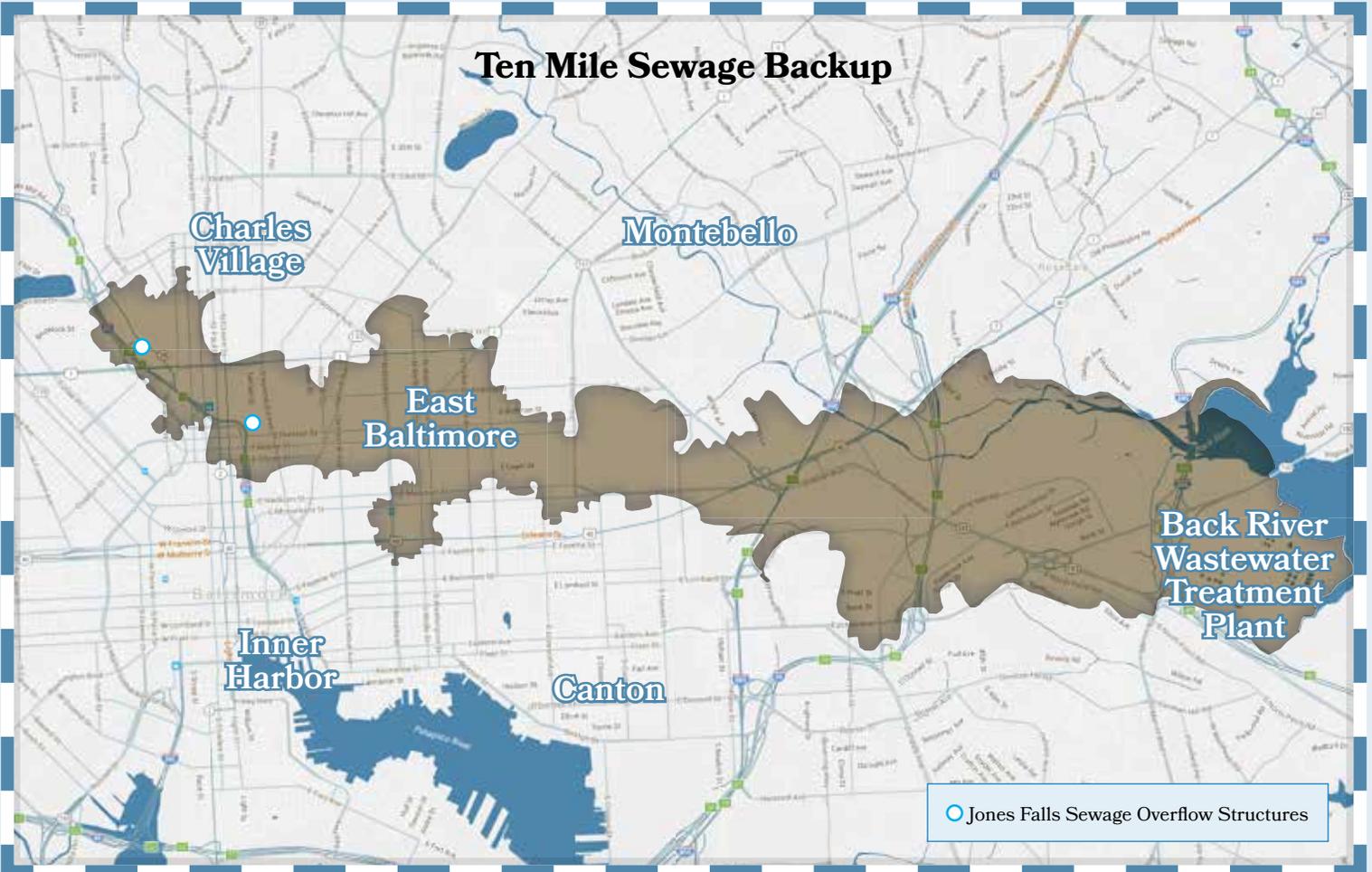
The enormous scope of the project—approaching \$500 million—speaks to the city’s commitment to improving wastewater infrastructure and minimizing the harmful ecological effects from sanitary sewer overflows to neighborhoods and waterways. Rather than implementing “band-aid” fixes, this project is a long-term solution aimed at sustainability.

“This project happens to be a massive, expensive undertaking,” says Department of Public Works Director Rudy S. Chow, P.E., “but every action we take – from reducing the litter that enters our storm water system to keeping grease, ‘flushable’ wipes, and other objects out of sewer lines – helps keep our neighborhoods and our waterways clean.”

The project is scheduled for completion by the end of 2020.

What is Microbial Source Tracking?

Blue Water Baltimore, the University of Maryland Center for Environmental Science – Institute for Marine and Environmental Technology, and the University of Baltimore are currently conducting research using Microbial Source Tracking to paint a clearer picture of the causes of pollution in the Jones Falls watershed. This technique uses DNA markers or ‘finger-prints’ to determine the source of fecal bacteria. It detects the difference between fecal contamination from pets, humans and wildlife. In another collaborative study researchers have found over 900 microbes in the Jones Falls watershed at twelve monitoring stations. Understanding where bacterial contamination is coming from can help us to better assess and monitor our waterways and will help focus advocacy and outreach efforts.



The Great Baltimore Oyster Partnership

By Daniel Stuelpnägel

Photo credit: Adam Lindquist

“ I would love to be able to swim in the same waterways where I sail ”

In October, 2015, over a hundred volunteers came together for year three of the Great Baltimore Oyster Partnership, a partnership between Healthy Harbor, the Chesapeake Bay Foundation, and downtown businesses and residents. Volunteers grow baby oysters (known as spat) in Baltimore’s Inner Harbor until they are old enough to be transplanted to the Fort Carroll oyster sanctuary in the Chesapeake Bay. The oysters filter pollution from the water and provide habitat for wildlife.

Volunteers receive training and deploy the oysters in cages at locations around the Inner Harbor, cleaning the cages each month until June when the Chesapeake Bay Foundation provides transportation by boat to bring the mature oysters to their permanent home.

“As a waterfront resident and sailor, I have a special connection to the Harbor,” says volunteer Donna Colaco, who moved to Baltimore last year and is a member of the Downtown Sailing Center. “As a big fan of oysters, the Harbor, and clean waterways, I thought this would be a great opportunity.”

“Oyster gardening can help restore fauna to the Chesapeake Bay while cleaning it up at the same time. It is a unique way of making a positive impact while giving us an educational opportunity on how oysters grow,” says Colaco. “Sailing is a great way to get in touch with nature, you experience an intimate interaction with the water. Ideally I would love to be able to swim in the same waterways where I sail. I hope to do that in Baltimore some day.”

The oyster cages, which are maintained by Colaco and other volunteers, hang from piers and the bulkhead of the seawall. Being close to the surface is a perfect location for access to food and oxygen, and the cages provide protection from predators.

In addition to the volunteer program, the Chesapeake Bay Foundation has also pledged to use their oyster restoration boat, the Patricia Campbell, to plant five million more oysters at the sanctuary reef by 2020 (1 million per year beginning this summer). This additional one-acre oyster reef will function as a separate research project for the Port of Baltimore, for scientific and educational purposes.

These educational opportunities provide real value in rebuilding connections between the people of Baltimore and the stewardship of their Harbor in meaningful and substantial ways. Terry Cummings, director of the Chesapeake Bay Foundation’s Baltimore Initiative says, “there were skeptics when we first started growing oysters in the Baltimore Harbor, but over last two years we transplanted over 100,000 oysters from Baltimore to the oyster sanctuary at Fort Carroll, so it can be done,”

The Great Baltimore Oyster Partnership also hosts an annual oyster festival at the Inner Harbor each October where participants are invited to taste oysters from around the Chesapeake Bay and learn more about this incredible keystone species.

Protecting Recreation in the Jones Falls

By Abby Higgs

There's a duality about the Jones Falls as it makes its way from Baltimore County through the heart of the City and empties into the Inner Harbor. It is both the most polluted stream in Baltimore and a highly valued habitat for cold-water fishing. Speaking with Brenda Foster for all of twenty minutes about fly-fishing on the Jones Falls will make you want to take up the sport yourself. Her love for her angling pastime is infectious, as is her passion to protect the wildlife that make her sport possible. Yet Brenda's relaxing days of fly-fishing are under threat from pollution and development.

"Fly fishers generally fish for trout," Foster explains, "and trout demand cold water." Unfortunately, because of suburbanization over the years, particularly around the Jones Falls stream, the water has heated up, killing off the area's coveted trout population. "If the water gets any warmer than sixty-eight degrees, the trout die," Foster warns. "This is already happening."

She set out to do something about the problem. Working with Trout Unlimited and Blue Water Baltimore, she embarked on a project to restore a section of the Jones Falls Stream just north of

Lake Roland. Over time portions of the stream have been divided into concrete channels, says Foster, "and what does concrete do when the sun hits it? It heats up." So the plan is to redesign these concrete channels in order to restore the natural streambed, so that it can once again provide habitat for trout and their insect prey.

The Jones Falls is already a recreational resource to people like Brenda, who find opportunities to enjoy Baltimore's waterways in spite of their degraded condition. A cleaner stream could mean more opportunities for everyone to get outside and enjoy nature. It is an important step of improving the health of our water and our city.

“If the water gets any warmer than sixty-eight degrees, the trout die”

"One of the key connections that this project addresses is that improving our local waterways will improve the health of aquatic species, fish, crabs and oysters," says Carl Simon, Director of Programs with Blue Water Baltimore. "These are key to Baltimore's culture, recreational opportunities and economy, and we need many more projects like this one to provide additional habitat."

The \$600,000 project is funded by the Maryland Department of Natural Resources and expected to break ground in spring 2016. It will have tremendous water quality benefits that will significantly improve local habitat and ultimately water quality in the Inner Harbor and the Chesapeake Bay.

Photo credit: Domenica Genovese





Alley Makeovers Help Residents Reclaim Neglected Spaces

By Amanda Fortner

Throughout 2015 the Waterfront Partnership's Healthy Harbor Initiative worked with community organizations and the Department of Public Works to give twenty unloved alleys in six neighborhoods (Waverly, Baltimore Highlands, Patterson Park, Reservoir Hill, Greenmount West, and McElderry Park) a major facelift. When tackling the issue of educating residents about water quality, Healthy Harbor Community Coordinator Leanna Wetmore says she found the best way to connect with residents was to first talk about trash. "Trash is something folks can see every day and it's really frustrating. The trash in the street blows around and goes into the alleys, down the storm drains and travels through the watershed and into the harbor," Wetmore said.

Funded by a grant from the Rauch Foundation, Waterfront Partnership worked with neighborhood associations to throw block parties centered around clearing the garbage and debris out of the alleys, to turn these former eyesores into spaces neighbors can enjoy. With waste and recycling receptacles provided free of charge, project block captains worked to get their respective neighbors aware of and excited about the concept of an alley makeover. "We were trying to think of a lighter, more fun way to work in neighborhoods. One of the major things that seemed to be effective was using art as a tool for organizing and thinking of these cleanups more as block parties. So we'd have a barbecue, make fun flyers and clean the block together, while connecting folks to resources to be able to keep it clean," Wetmore explained.

But while residents now had cleaner alleys, the makeover wasn't yet complete. "Alley Makeover Projects have had a remarkable effect on Baltimore's neighborhoods, mainly because they give residents the opportunity to take ownership over their alleys and redefine how that space is used," said Natasha Neale, a Recycling Program Associate with the Department of Public Works. Local

artists and community members were invited to see their alleys as blank canvases, on which important messages of community pride could be inscribed. Because of each location's uniqueness, no one alley looks completely the same—which is exactly how the program intended it to be. "Each neighborhood had a completely different approach. What they had in common was the opportunity to work and get to know each other better while re-setting the standards of how an alley can look," Wetmore said.

“ *Kids have started playing in the alley* ”

Rachel Timmons, a resident of Baltimore Highlands participated in the program and was thrilled with the impact it had on her community. "Since our alley makeover kids have started playing in the alley and have even helped to keep it clean," she said. "This has been fantastic for our block."

The Department of Public Works will expand the work begun by the Alley Makeover Project through the Clean Corps Baltimore initiative announced by Mayor Stephanie Rawlings-Blake last October. This network of residents collaborates with Waterfront Partnership and the city's Bureau of Solid Waste to help Baltimore's neighborhoods stay clean and get cleaner. Natasha Neale spoke to the project's future impact on Baltimoreans: "The distribution of the municipal trash cans to city households will make storage and collection of trash more efficient, so when residents begin to see a decrease in the amount of loose litter and rats, they are going to look for new ways to redefine their alleys." The Alley Makeover Project can then step in and offer exactly that opportunity.

Project Clean Stream

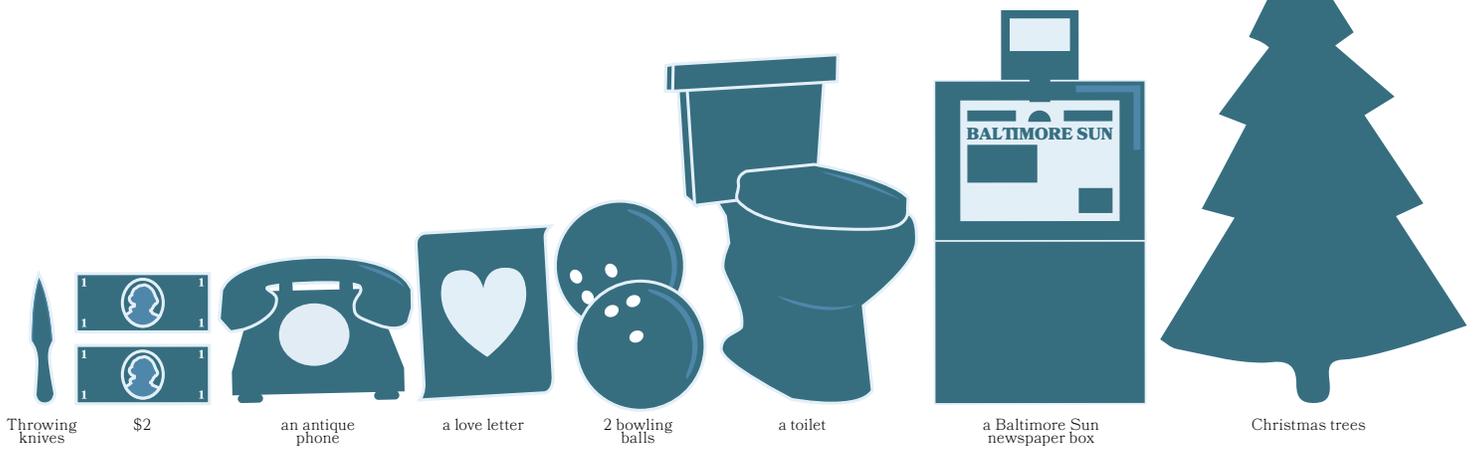
Project Clean Stream is a Chesapeake Bay-wide cleanup effort hosted by the Alliance for the Chesapeake Bay and Blue Water Baltimore focusing public attention on trash pollution. In 2015 we broke our previous records with 93 sites, 1,826 volunteers participating, and 93,000 pounds of trash removed.

On August 28 2015, Blue Water Baltimore hosted nearly 500 students, faculty and staff from Goucher College for a day of service in South Baltimore as part of the Goucher Connects program. Four Baltimore City park sites were selected for pollution reduction and community forestry activities. By the end of the day, volunteers removed over 12,000 pounds of trash, recycled a quarter of that trash, and watered, fenced and mulched more than 85 trees.

Photo credit: Alice Volpitta



Notable items found include:





**WATERFRONT
PARTNERSHIP**
OF BALTIMORE

HealthyHarbor

A cleaner, greener future for our neighborhoods, streams, harbor and Bay.

**BLUE
WATER
BALTIMORE**

Above: George Williams took the winning photo for the 2015 Healthy Harbor wildlife photo contest. His photo shows a mother yellow crowned night heron protecting her young in a tree along the Jones Falls near Falls Road in Baltimore City.

Right: Charlie Murphy took the second place photo for the 2015 Healthy Harbor wildlife photo contest. His photo shows an egret and paddlers enjoying a beautiful day in the Middle Branch of the Baltimore Harbor.

All stories edited by Adam Lindquist, Director, Healthy Harbor Initiative

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