PROTECTING AND RESTORING AMERICA'S ICONIC WATERS

(116–25)

HEARING

BEFORE THE

SUBCOMMITTEE ON
WATER RESOURCES AND ENVIRONMENT

OF THE

COMMITTEE ON
TRANSPORTATION AND
INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

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U.S. House of Representatives
Washington, DC 20515

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JUNE 21, 2019

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Water Resources and Environment
FROM: Staff, Subcommittee on Water Resources and Environment
RE: Subcommittee Hearing on "Protecting and Restoring America's Iconic Waters"

PURPOSE

The Subcommittee on Water Resources and Environment will meet on Tuesday, June 25, 2019, at 10:00 a.m. in Room 2167 of the Rayburn House Office Building, to receive testimony from state and local officials, and non-governmental organizations related to "Protecting and Restoring America's Iconic Waters." The purpose of this hearing is to review the successes, challenges, and need for continued funding for restoration efforts related to the Chesapeake Bay, Great Lakes, San Francisco Bay, Puget Sound, Lake Pontchartrain Basin, and the National Estuary Program (NEP).

BACKGROUND

This memorandum summarizes the National Estuary Program and efforts to protect and restore the Great Lakes, San Francisco Bay, Puget Sound, Chesapeake Bay, and Lake Pontchartrain Basin, as well as the need to continue funding these initiatives. These programs are overseen by the Environmental Protection Agency (EPA) under the Clean Water Act (CWA).

NATIONAL ESTUARY PROGRAM (NEP)

Estuaries are bodies of water that receive both fresh water outflows from rivers and tidal inflows from the ocean, and are transition zones between fresh water rivers and saline water from the ocean. Estuaries contain a wide range of habitats and support a diversity of wildlife. These areas serve as natural filters for pollutants and also provide commercial value in tourism, fishing, and recreation. As part of the Clean Water Act Amendments of 1987, Congress established the NEP, a non-regulatory program to protect and restore these vital environments and their surrounding watersheds.[1]

Currently, 28 estuaries[2] nationwide are designated NEPs that receive funding, guidance, and technical assistance from EPA.[3] Each program designs its own plans and strategies (generally known as a Comprehensive Conservation and Management Plans) to address water quality and ecological challenges unique to its estuary. Community-wide engagement is met with science-based strategies to reduce pollution from urban storm water and agricultural runoff, eutrophication, habitat loss, introduced invasive species, and altered freshwater flows. These collaborative efforts across local governments, communities, businesses, and other stakeholders allow high leveraging of federal dollars with non-federal sources of funding—$19 for every $1 of federal money on average,[4] with several programs leveraging higher.

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[1] P.L. 100–4 (33 U.S.C. 1330).
[2] https://www.epa.gov/nep/local-estuary-programs (contact Subcommittee Majority staff for district overlap with programs).
[3] https://www.epa.gov/nep/overview-national-estuary-program.
[4] https://www.epa.gov/nep/financing-strategies-used-national-estuary-program.

Estuaries under the NEP have also seen great success, restoring or protecting over 2 million acres since 2000.[5] Collectively, NEP estuaries score higher than non-NEP estuaries for water quality indices, and this success has brought continued interest from 38 additional estuaries to be included in the NEP, according to EPA. This popularity comes from its collaborative non-regulatory watershed-based approach, which provides an opportunity to address environmental problems affecting communities with local participation and provides flexibility in deciding which approaches will best suit the community. The NEP has made huge strides in educating the public about environment problems, fostering better management of water resources, reducing pollution, and restoring habitats.

The National Estuary Program was reauthorized in 2016[6] to provide $26,500,000 for each of the fiscal years 2017–2021. Appropriated amounts for that time period have been above the authorized levels, at $26,723,000. For FY 2020, H.R. 3055, which includes the Interior, Environment, and Related Agencies Appropriations bill in Division C, includes $31,723,000 in funding for the program, an increase of $5,000,000.

THE GREAT LAKES

The Great Lakes Basin includes parts of the states of Minnesota, Wisconsin, Illinois, Indiana, Ohio, Pennsylvania, and New York, all of the State of Michigan, and part of Ontario, Canada. The Great Lakes Basin is home to more than 30 million people, representing one tenth of the U.S. population and nearly one third of the Canadian population.[7] The Great Lakes is the largest freshwater system in the world, holding about 21 percent of the world's fresh water supply and about 84 percent of the U.S. fresh water supply.[8]

Agriculture, industrialization, and development have impacted the Great Lakes ecosystem. The Great Lakes are particularly vulnerable to contamination because outflow rates from most of the Lakes are very slow and they do not flush pollutants out quickly. As a result, some pollutants discharged into the Great Lakes have settled into the sediments at the bottom in portions of the Lakes.

Non-indigenous species and excessive nutrients from a variety of sources have significantly impacted portions of the Great Lakes ecosystem, causing ecological and economic damage. For example, in 2014, Toledo, Ohio, implemented a drinking water ban that affected 500,000 people in response to a harmful algal bloom caused in part by excessive nutrient runoff. In addition, decades of industrial activity in the region have left a legacy of polychlorinated biphenyl (PCB) and other contamination in sediments.[9] While efforts have been made to address these problems, there remain serious concerns in numerous areas.

In 2004, Executive Order 13340 was issued, creating the Great Lakes Interagency Task Force (Task Force). The Task Force's charge is to address nationally significant environmental and natural resource issues involving the Great Lakes. In 2010, Congress established the Great Lakes Restoration Initiative (GLRI) to provide additional resources toward critical long-term goals for the Great Lakes ecosystem, and its progress is overseen by the Task Force.[10] Task Force agencies conduct work themselves or through agreements with state, local, or tribal government entities, nongovernmental organizations, academic institutions, or other entities.

The Great Lakes program is authorized by section 118 of the Federal Water Pollution Control Act (33 U.S.C. §1268; commonly referred to as the Clean Water Act). The President's FY 2020 budget originally requested $30 million for the GLRI, and then subsequently changed the request to $300 million. Congress funded this program at $300 million in FY 2019. H.R. 3055, which includes the Interior, Environment, and Related Agencies Appropriations bill in Division C, includes $320 million in FY 2020 funding for GLRI.

SAN FRANCISCO BAY ESTUARY

The San Francisco Bay Estuary is one of the largest estuaries on the west coast, encompassing roughly 1,600 square miles and draining more than 40 percent of the State of California. The San Francisco Bay is one of three major geographic areas

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[5] https://www.epa.gov/nep/national-results-national-estuary-program.
[6] P.L 114–162.
[7] https://www.epa.gov/greatlakes/facts-and-figures-about-great-lakes.
[8] *Ibid*.
[9] GAO–15–841T, *Testimony Before the Subcommittee on Water Resource and Environment, Committee on Transportation and Infrastructure, House of Representatives, Great Lakes Restoration Initiative: Some Information on Projects and Progress Made Available to Congress and the Public*.
[10] 33 U.S.C. §1268.

within the San Francisco Bay Delta watershed, which cumulatively provides drinking water to nearly 25 million Californians and irrigates over 4 million acres of farmland.[11] The Bay is located in an area that produces over $370 billion in goods and services a year and is home to more than 3.5 million jobs. The Estuary is home to an array of flora and fauna, with nearly half of the birds that migrate along the Pacific Flyway and about two-thirds of the State's salmon passing through the Estuary.[12]

The San Francisco Bay experiences exceedances in State water quality standards for pesticides, invasive species, mercury, and other metals and toxic substances. Beaches have elevated levels of bacteria because of sewage spills and crumbling sewage infrastructure. According to the EPA, the Bay has lost more than 90 percent of shoreline wetlands and 40 percent of the total San Francisco Bay aquatic ecosystem in the past 150 years due to habitat destruction.[13]

In 1993, the San Francisco Estuary entered the EPA's NEP. Through the NEP, a Comprehensive Conservation and Management Plan (CCMP) was developed and serves as the blueprint for addressing the San Francisco Bay's challenges.

In August 2018, the Government Accountability Office (GAO) published a report on the coordination of watershed restoration efforts between Federal and nonfederal entities in the San Francisco Bay Delta Watershed.[14] GAO found that "information on the status of all restoration efforts across the watershed, including their accomplishments, is unknown because information is not being fully collected or reported."[15] As a result, GAO recommended that the Department of Interior work with the Council on Environmental Quality to update or revise the Interim Federal Action Plan for the California Bay-Delta to reflect different entity roles and responsibilities. Additionally, GAO also noted that the lack of sufficient federal funding is one of the biggest risks to long-term restoration efforts.[16]

The San Francisco Bay Restoration Act, H.R. 1132, has been introduced to establish a San Francisco Bay Restoration Grant Program and to authorize appropriations for Bay restoration activities. H.R. 3055, which includes the Interior, Environment, and Related Agencies Appropriations bill in Division C, includes $5,019,000 in FY 2020 funding for the San Francisco Bay.

PUGET SOUND

The Puget Sound is the nation's second largest estuary, supporting more than 4.5 million people, more than $365 million in gross domestic product, and a wide variety of species. However, according to the CCMP for the Puget Sound, development and human use have degraded its water quality and habitat, and harmed critical species like salmon and killer whales.

In July 2018, GAO published a report on numerous Federal and state efforts that support Puget Sound restoration, and the efficacy of their coordination.[17] GAO found that Federal and Washington State entities engaged in a number of activities, including habitat protection, water quality improvement, and monitoring.[18] Funding for these efforts came from a variety of sources, including the EPA, which reported spending about $142 million for activities in Puget Sound through the NEP and the Puget Sound Geographic Program from 2012 to 2016.

Federal and nonfederal entities coordinate restoration efforts through two primary interagency groups: the state-led Puget Sound Management Conference and the Puget Sound Federal Task Force. The task force complements the work of the management conference by coordinating the efforts of Federal agencies to support the CCMP.

The PUGET SOS Act, H.R. 2247, has been introduced to support Puget Sound programs and to provide funding for restoration activities. H.R. 3055, which includes the Interior, Environment, and Related Agencies Appropriations bill in Division C, includes $33 million in FY 2020 funding for the Puget Sound.

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[11] https://www.epa.gov/sfbay-delta/about-watershed#about.
[12] EPA, *National Estuary Program Coastal Condition Report*, EPA–842/B–06/001 (2006).
[13] https://www.epa.gov/sfbay-delta/what-are-challenges.
[14] GAO–18–473, *San Francisco Bay Delta Watershed: Wide Range of Restoration Efforts Need Updated federal Reporting and Coordination Roles*.
[15] GAO–18–473, *San Francisco Bay Delta Watershed: Wide Range of Restoration Efforts Need Updated federal Reporting and Coordination Roles*.
[16] *Ibid*.
[17] GAO–18–453, *Puget Sound Restoration: Additional Actions Could Improve Assessments of Progress*.
[18] *Id*.

CHESAPEAKE BAY

The Chesapeake Bay is the largest of the Nation's estuaries. Primarily located between Maryland and Virginia, it is nearly 200 miles long, 35 miles wide at its largest point, and covers more than 4,500 square miles. The watershed includes the District of Columbia and parts of six states: Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia. The Chesapeake Bay covers approximately 64,000 square miles and is a rich habitat for a wide variety of plants and animals. It is home to more than 3,700 species of plants and animals including blue crabs, ducks, herring, oysters, shad, and striped bass.

In 1983, the states of Maryland, Pennsylvania, and Virginia, the District of Columbia, the Chesapeake Bay Commission (the Bay Commission),[19] and the EPA signed an initial Chesapeake Bay Agreement (the Bay Agreement) with the aim of protecting and restoring the Bay. The Bay Agreement established the Chesapeake Executive Council and created the Bay Program, a partnership between Federal, state, and local entities, as well as academic institutions, and nonprofit organizations that direct and conduct activities towards the restoration of the Bay.

Subsequent Bay Agreements were signed by the states of Maryland, Pennsylvania, and Virginia, the District of Columbia, the Bay Commission, and the EPA in 1987, 1992, and 2000, with West Virginia adding its signature in 2002. In 2006, senior EPA managers, and in 2007, the Executive Council acknowledged that the water quality goals of Chesapeake Bay Agreement 2000 would not be achieved. As a result, in 2010, the Bay Program and EPA established a Total Maximum Daily Load (TMDL) for the bay and upstream waters in the watershed. According to the EPA, the TMDL is an allocation of allowable waste loadings to the Bay from various sources that should result in the restoration of water quality in the Chesapeake Bay watershed. The Program is authorized through section 117 of the Clean Water Act.[20] The EPA's Chesapeake Bay Program Office, based in Annapolis, Maryland, provides support to the Bay Program.

The Chesapeake Bay ecosystem, including water quality, is under stress. Sustained and elevated levels of pollution have resulted in water quality and habitat degradation and have also contributed to the decline in population of some species. According to the EPA, the key to restoring water quality in the Chesapeake Bay watershed is to achieve significant reductions in nutrients (nitrogen and phosphorus) and sediment loads. The sources of these pollutants consist of agricultural runoff, wastewater treatment facilities, land-use changes and urban stormwater runoff, and atmospheric deposition.[21]

In 2017, the EPA completed a midpoint assessment of state and Federal agency efforts to reduce nutrient and sediment pollution into the Chesapeake Bay. The EPA found that the six Chesapeake Bay watershed states and the District of Columbia have made considerable progress in reducing pollution to local waters and the Chesapeake Bay, resulting in record acreage of underwater grasses and the highest estimates of water quality standards attained in more than 30 years.[22]

The President's FY2020 budget requested $7.3 million for the Chesapeake Bay Program. Congress funded this program at $73 million in FY 2019. H.R. 3055, which includes the Interior, Environment, and Related Agencies Appropriations bill in Division C, includes $85 million in FY 2020 funding for the Chesapeake Bay Program.

LAKE PONTCHARTRAIN BASIN

The Lake Pontchartrain Basin watershed covers a 5,000 square mile area and includes 16 Louisiana parishes and four Mississippi counties. Approximately 2.2 million people live in the area of Lake Pontchartrain, the 630 square mile lake at the center of the basin, making it the most densely populated area in Louisiana. The Basin also includes Lakes Borgne and Maurepas. Together these three lakes comprise one of the largest estuaries in the U.S. The Basin supports numerous species of fish, birds, mammals, and plants, and its fisheries contribute over $35 million to the local economy by providing much of the seafood harvested in the Gulf Coast.[23]

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[19] The Bay Commission is a tristate commission representing Maryland, Pennsylvania, and Virginia.

[20] 33 U.S.C. §1267.

[21] EPA, Chesapeake Bay Compliance and Enforcement Strategy, May 2010. https://www.epa.gov/sites/production/files/2015-04/documents/chesapeake-strategy-enforcement-2.pdf

[22] EPA, Midpoint Assessment of the Chesapeake Bay Total Maximum Daily Load, July 27, 2018. https://www.epa.gov/sites/production/files/2018-07/documents/factsheet-epa-midpoint-assessment-chesapeake-bay-tmdl.pdf

[23] https://saveourlake.org/about-us/our-basin/basin-issues.

Although Lake Pontchartrain and its surrounding area continue to face environmental challenges, the Basin and its resources have made a significant comeback. Much of this success is due to a collaborative effort between Federal, state, and local entities who share an interest in a clean, healthy Lake and Basin.

The Lake Pontchartrain Basin Restoration Program was created in 2000 as part of the Estuaries and Clean Waters Act.[24] H.R. 3055, which includes the Interior, Environment, and Related Agencies Appropriations bill in Division C, includes $948,000 in FY 2020 funding for the Lake Pontchartrain Basin.

WITNESSES

- Preston D. Cole, Secretary, Wisconsin Department of Natural Resources
- Dave Pine, Supervisor, District 1, San Mateo County Board of Supervisors, Chair of the San Francisco Bay Restoration Authority Governing Board
- Laura Blackmore, Executive Director, Puget Sound Partnership
- William C. Baker, President, Chesapeake Bay Foundation
- Kristi Trail, Executive Director, Lake Pontchartrain Basin Foundation
- Tom Ford, Director, Santa Monica Bay National Estuary Program, The Bay Foundation

[24] P.L. 106–457.

PROTECTING AND RESTORING AMERICA'S ICONIC WATERS

TUESDAY, JUNE 25, 2019

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10 a.m., in room 2167 Rayburn House Office Building, Hon. Grace F. Napolitano (Chairwoman of the subcommittee) presiding.

Mrs. NAPOLITANO. Good morning, everybody. It is good to have you here today.

I am calling this meeting to order.

Today we will discuss the importance of the Environmental Protection Agency's, EPA's, geographic programs and National Estuary Program, the NEP.

EPA's geographic programs help to identify and assist specific areas across a region, often across multiple States. Funding for these programs has been key to protecting and restoring some of the most cherished waterways in the Nation.

The National Estuary Program focuses on restoring and protecting 28 estuaries of national significance across the country.

Estuaries and coastal areas are major economic drivers, accounting for some 28 million jobs, and these areas are locations for ports and harbors. They need protection since impaired estuaries can actually impact fishing and tourism revenues, cause costly damage from flooding, shoreline erosion, and damaged infrastructure.

The Trump administration has proposed drastically cutting funding for the geographic programs and the NEP. Fortunately, Congress has restored funding for these important efforts.

However, we need to renew our commitment to these programs and the protection of our Nation's waters. Despite efforts by the States, and in some places, voluntary efforts, progress has been slow, and we need to do more to protect and restore our Nation's iconic waters.

Congress needs to step up and provide funding and the appropriate authorities to EPA to restore these watersheds. That is why I appreciate the efforts of my colleagues to prioritize and fund these programs.

Congresswoman Luria has legislation to reauthorize and increase funding for the Chesapeake Bay Program. Congressman Heck has legislation to authorize a program for Puget Sound.

Congresswoman Speier has legislation to address pollution issues in the San Francisco Bay, and I expect that we will see later this Congress legislation to address the Great Lakes Restoration Initiative and the National Estuary Program.

I thank my colleagues for stepping up to deal with this important water quality issue. Today's hearing will be an opportunity to hear about the current impairments, challenges, and recommendations for improving these waters.

I look forward to hearing from our witnesses today on the value of our Nation's water and estuaries to our country.

Thank you to the witnesses for being here today, and to all of you, I am pleased to see you.

Thank you especially to Mr. Tom Ford, executive director of The Bay Foundation who is here today to talk about the Santa Monica National Estuary Program in southern California, my area.

I look forward to everybody's testimony.

[Mrs. Napolitano's prepared statement follows:]

Prepared Statement of Hon. Grace F. Napolitano, a Representative in Congress from the State of California, and Chairwoman, Subcommittee on Water Resources and Environment

Today, we will discuss the importance of the Environmental Protection Agency's (EPA's) Geographic Programs and the National Estuary Program (NEP).

EPA's Geographic Programs help to identify and assist specific areas across a region, often across multiple states. Funding for these programs has been key to protecting and restoring some of the most cherished waterways in the nation. The National Estuary Program (NEP) focuses on restoring and protecting 28 estuaries of national significance across the country.

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Thank you witnesses for being here today. Thank you especially to Tom Ford, Executive Director of The Bay Foundation, who is here today to talk about the Santa Monica National Estuary Program in Southern California.

I look forward to everyone's testimony.

Mrs. NAPOLITANO. At this time I am pleased to yield to my colleague, the ranking member of our subcommittee, Mr. Westerman, for any thoughts he may have.

Mr. WESTERMAN. Thank you, Chairwoman Napolitano.

And thank you all for being here today.

This subcommittee is meeting today to hear testimony on regional watershed programs and water bodies in areas that are part of EPA's National Estuary Program.

Estuaries are unique and highly productive waters that are important to the ecological and economic basis of our Nation. Fisheries, wildlife, recreation, and tourism are heavily dependent on healthy estuarine systems.

For example, the Lake Pontchartrain Basin in Louisiana is home to 22 essential habitats, and its fisheries provide much of the seafood harvested along the gulf coast. Yet despite their value, most estuaries in the United States have experienced stress from physical alteration and pollution, often resulting from development and rapid population growth in coastal areas.

EPA's estuary program identifies nationally significant estuaries that are threatened by pollution, land development, and overuse, and provides grants that support development of management plans to protect and restore them.

This program is designed to resolve issues at the watershed level, integrate science into the decisionmaking process, foster collaborative problem solving, and involve the public.

Unlike many other EPA and State programs that rely on conventional top-down regulatory measures to achieve environmental goals, the estuary program uses a framework that focuses on stakeholder involvement and interaction in tailoring solutions for problems that are specific to that region.

This approach helps achieve protection and restoration goals. We need to be sure that the individual estuary programs continue to effectively implement their management plans for protecting and restoring estuaries.

We also need to be careful not to add new layers of programmatic bureaucracy on any of the programs that could divert valuable resources away from actually implementing their plans.

I look forward to the testimony of our witnesses today and learning about the progress that is being made in these estuaries and watersheds.

[Mr. Westerman's prepared statement follows:]

Prepared Statement of Hon. Bruce Westerman, a Representative in Congress from the State of Arkansas, and Ranking Member, Subcommittee on Water Resources and Environment

The Subcommittee is meeting today to hear testimony on regional watershed programs and water bodies and areas that are part of EPA's National Estuary Program.

Estuaries are unique and highly productive waters that are important to the ecological and economic bases of our nation. Fisheries, wildlife, recreation, and tourism are heavily dependent on healthy estuarine systems. For example, the Lake Pontchartrain Basin in Louisiana is home to 22 essential habitats, and its fisheries provide much of the seafood harvested along the Gulf Coast.

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I look forward to the testimony of our witnesses today and learning about the progress made in these estuaries and watersheds.

Mr. WESTERMAN. And I yield back.

Mrs. NAPOLITANO. Thank you, sir.

The Chair now recognizes Mr. DeFazio, for any statement he may have.

Mr. DEFAZIO. I thank the chair. Thank you for holding this extraordinarily important hearing.

We can approach the issue from one of many ways. If you are really hard-hearted and you really do not believe in protecting the environment and the cost of protecting the environment or enhancing and restoring the environment, you can just look at the economic impact.

In coastal States, the estuaries contribute $116 billion annually to the economy. Two million people are employed by ocean estuary-based tourism and recreation. Eighty percent of the commercial and recreational fish caught depend on estuaries for part of their lives.

So those are just a few of the reasons why we need to support these programs.

There is a lot of talk about tropical forests as the lungs of the world. Well, the estuary is the beating heart of a healthy marine ocean system.

And so, I am pleased that we are here today. The Chesapeake has made scant progress, unfortunately, and needs more attention.

The Great Lakes, we have ongoing issues. The Puget Sound, in particular, down in the southern part of the sound, has issues. I was up there for some meetings. I think it was the year before last. They made me an honorary member of the Puget Sound Caucus.

Of course, I represent Oregon. I have critical estuaries in my district which are in much better shape, much less known, and of course, we did add the Columbia River Basin to the list of geographic programs in 2016.

So we have at least begun to focus on the problems, but a heck of a lot more work needs to be done, and that is why we are here today.

[Mr. DeFazio's prepared statement follows:]

Prepared Statement of Hon. Peter A. DeFazio, a Representative in Congress from the State of Oregon, and Chairman, Committee on Transportation and Infrastructure

Estuaries are critical water bodies for the ecological and economic health of our communities, and there is a national interest in their protection and enhancement.

These waters are economic centers in coastal states, delivering more than 80 percent to U.S. employment and contributing $116 billion annually to the economy. More than two million people are employed by ocean and estuary-based tourism and recreation. Almost 80 percent of the commercial and recreational fish caught depend on estuaries for part of their lives. These are just a few of the reasons why we need to protect and restore these waters.

As we know, healthy coastal areas are also important to ameliorate the impacts of extreme weather events and ensure the resiliency of our communities. By restoring and protecting our coasts, we can lessen the impacts of hurricanes and other storm events that cause physical and economic damage to our communities.

Today, we will be hearing from stakeholders from different parts of the country about the importance of the Environmental Protection Agency's (EPAs) Geographic Programs and the National Estuary Program (NEP). I look forward to learning about the successes of and challenges to these programs and hearing recommendations on how to ensure continued restoration and protection of these important watersheds.

We have seen results when we invest in our national, natural treasures. The Geographic Programs have made great strides in improving the health of places like the Chesapeake Bay and the Great Lakes, and in 2016, we were successful in adding the Columbia River Basin to the list of Geographic Programs. Similarly, EPA's National Estuary Program has made strides towards improving our nation's estuaries.

NEPs support local stakeholders as partners to develop solutions and fund local priorities. NEPs engage industries, businesses, and other community members to develop solutions that everyone can support. The strength of the National Estuary Program is the 28 unique, voluntary programs established under the Clean Water Act to protect and restore estuaries of national significance.

Each NEP marshals its local community in a non-regulatory, collaborative, and science-based strategy that strengthens the overall success of our national response. For each dollar the Federal government provides, NEPs leverage their response with $19 in local funds. These funds are used to protect and improve coastal environments, communities, and assets of national significance, and economies.

Investing in these programs is an investment in America's future. Protecting our estuaries, regional watersheds, and coastal areas is necessary to protecting our economy, fish and wildlife, and the homes and jobs of millions of people.

Unfortunately, the Trump administration does not seem to understand the importance of these programs and continues to propose cutting severely or altogether eliminating programs focused on protecting our nation's important waters—unless, of course, there is a political advantage for supporting these programs. For example, the Trump administration recently decided to support $300 million in funding for the Great Lakes after initially proposing only $30 million in the President's budget.

This is short-sighted given the economic importance of estuaries and coastal areas, investing in their health will result in more economic benefits.

We need to set a better example than the current administration and use our Congressional authority to continue these programs and to fund the restoration of geographically-important regions and estuaries.

Mr. DEFAZIO. And I thank the gentlelady for holding the hearing.

Mrs. NAPOLITANO. Thank you, Mr. DeFazio.

Next, I will recognize Mr. Garret Graves.

Mr. GRAVES OF LOUISIANA. Thank you, Madam Chair.

Madam Chair, I appreciate the opportunity to be here today, and I want to thank you all for hosting this hearing. These are some of the most important estuaries that our Nation has to offer that are represented here on the panel today, but I am especially excited to introduce Ms. Kristi Trail from Lake Pontchartrain Basin Foundation.

She is a great asset to the State of Louisiana. The Lake Pontchartrain Basin Foundation is a critical organization. I remind this committee often that we drain from Montana to New York to three Canadian Provinces and all drain down through our area.

Right now we are seeing record time of flood stage in the Mississippi River system. We normally open the Bonnet Carré spillway

that flows through Lake Pontchartrain once every 10 years. We have opened it four times in the last 4 years.

Congressman Rodney Davis from Illinois calls Louisiana his sewage treatment plant. I am not sure that is a compliment, but the bottom line is that all of this development and everything that happens in the upper basin comes down and affects our State.

And while I know that everyone has their challenges in managing these estuaries, Ms. Trail, environmental engineer, LSU grad, and much corporate work experience in the engineering field is, again, a great asset to the organization. It is fantastic and they have some incredible challenges dealing with the complexity of the ecosystem.

So I appreciate you inviting her and allowing her to be here today.

Mrs. NAPOLITANO. Thank you, Mr. Graves.

I ask unanimous consent that the following statements be made part of today's hearing record:

Representative Jackie Speier in support of the San Francisco Bay Restoration Act;

Representative Elaine Luria, in support of the Chesapeake Bay Program Reauthorization Act;

Michigan Governor Whitmer; Sheboygan County, Wisconsin; the Great Lakes Commission; and Healing Our Waters-Great Lakes Coalition, in support of the Great Lakes Restoration Initiative.

Any objection?

[No response.]

Mrs. NAPOLITANO. So ordered.

[The information is on pages 69–82.]

Mrs. NAPOLITANO. We will proceed to hear from our witnesses who are going to be testifying today. Thank you for being here, and welcome.

We have Secretary Preston Cole with the Wisconsin Department of Natural Resources.

Supervisor Dave Pine with the San Mateo County Board of Supervisors.

Ms. Laura Blackmore, executive director of the Puget Sound Partnership.

Mr. William C. Baker, president of the Chesapeake Bay Foundation.

Since Mr. Graves already introduced Ms. Kristi Trail, I will turn it over to my colleague, Mr. Rouda, to introduce the witness, Mr. Tom Ford, director of the Santa Monica Bay National Estuary Program.

Mr. ROUDA. Thank you, Chairwoman.

I am pleased to introduce Tom Ford, the director of the Santa Monica Bay National Estuary Program and executive director of The Bay Foundation.

Tom has been engaged in the study and restoration of kelp forests since he first moved to L.A. in the 1990s, and his efforts to promote fisheries and increase coastal resilience has been internationally recognized.

His work helps ensure that residents and visitors from around the world are able to enjoy and benefit from the Santa Monica

Bay's over 55 miles of coastline that contains some of the world's most loved beaches.

Estuaries like the Santa Monica Bay play an important role in coastal economies, habitat protection, and as key buffer zones for coastal communities and inland waterways, especially in the wake of continued sea level rise, increasingly severe storm surges, and dangerous flooding.

I commend Tom's longstanding commitment to restoring, preserving, protecting, and enhancing the Santa Monica Bay National Estuary, and I appreciate the many hours that he has dedicated to ensuring the high quality of life with the approximately 5,000 species and over 4 million people that call the Santa Monica Bay and its watershed home.

Southern California is better off for his continued research, critical pollution and ecological monitoring, and advocacy work, and I am grateful for his participation in today's hearing.

Thank you. I yield back.

Mrs. NAPOLITANO. Thank you, Mr. Rouda.

Without objection, your prepared statements will be entered into the record, and our witnesses are asked to limit your remarks to 5 minutes.

Mr. Cole, you may proceed.

TESTIMONY OF PRESTON D. COLE, SECRETARY, WISCONSIN DEPARTMENT OF NATURAL RESOURCES; DAVE PINE, SUPERVISOR, FIRST DISTRICT, SAN MATEO COUNTY BOARD OF SUPERVISORS, AND CHAIR, SAN FRANCISCO BAY RESTORATION AUTHORITY; LAURA L. BLACKMORE, EXECUTIVE DIRECTOR, PUGET SOUND PARTNERSHIP; WILLIAM C. BAKER, PRESIDENT, CHESAPEAKE BAY FOUNDATION; KRISTI TRAIL, EXECUTIVE DIRECTOR, LAKE PONTCHARTRAIN BASIN FOUNDATION; AND TOM FORD, DIRECTOR, SANTA MONICA BAY NATIONAL ESTUARY PROGRAM AND EXECUTIVE DIRECTOR, THE BAY FOUNDATION, ALSO ON BEHALF OF THE ASSOCIATION OF NATIONAL ESTUARY PROGRAMS

Mr. COLE. Thank you, Madam Chair.

I am coming to you on the heels of the Great Lakes and St. Lawrence Governors and Premiers Conference held in Milwaukee, Wisconsin, and where Governor Tony Evers is the chair of that group, and certainly I am representing him here today from the great State of Wisconsin.

Chairwoman Napolitano, Ranking Member Bruce Westerman and Mr. DeFazio, thank you for this opportunity to speak with you today on behalf of the Governor of Wisconsin, Tony Evers, and the eight Great Lakes States.

As you have seen in my written testimony, the Great Lakes—Superior, Huron, Michigan, Ontario, and Erie—are a national treasure, with 30 million Americans depending on them for clean, fresh water.

Sometimes referred to as the "Nation's fourth coast," the Great Lakes are a breathtaking place to watch a sunrise or the perfect backdrop for making memories.

But our Great Lakes are more than just nice to look at. These are waters that are the largest source of freshwater on the planet,

a lifeline for millions of people. They provide a backbone for a $6 trillion regional economy, making it the third largest regional economy in the world.

And they generate more than 1.5 million jobs and $60 billion in wages each year, which is why protecting and restoring these irreplaceable waters is a nonpartisan priority for the people in the Great Lakes region.

Wisconsin is part of this region, and it is home to an abundance of natural resources, including our precious waters. With more than 1,000 miles of shoreline, the Great Lakes have a profound effect on Wisconsin's environment, our economy, our culture, and our quality of life.

To give you an idea of the impact on Wisconsin, consider this. More than 1.6 million Wisconsinites get their drinking water from Lake Michigan or Lake Superior.

Nearly 50 percent of the State's gross domestic product originates in coastal counties.

More than $7 billion in cargo moves through Wisconsin's ports each year, contributing to $1.1 billion of business revenue and generating $241 million in taxes.

In Wisconsin, the Great Lakes and rivers that feed them have a long history as important centers of trade and industry.

But as our cities grew, these economic hubs, rivers, and harbors were polluted. Vital fish and wildlife habitats were lost. Polluted runoff from excess nutrients has caused harmful algal blooms from Green Bay to Lake Erie.

And now, these impacts are keeping us from experiencing these waters in their fullest potential.

But all is not lost. In 2010, Congress led to establish the Great Lakes Restoration Initiative, which is providing an enormous boost for the projects that restore our waters.

For the last 8 years, more than $380 million in Federal funding through GLRI has made over 500 projects possible throughout Wisconsin and the Great Lakes Basin.

In many cases, the GLRI funds are leveraged with State funds, local units of government, and private funding. This cost sharing allows big-ticket projects to be accomplished that would be simply too expensive for any one entity to pay for alone.

In Wisconsin, the GLRI is helping protect citizens and our natural resources. For example, in the Milwaukee Estuarial Concern, more than $31 million of GLRI funds were matched with $12 million of Wisconsin State funds to remove 119,000 cubic yards of contaminated sediment from the Milwaukee Estuary near the heart of the city.

The end result was the removal of more than 11,000 pounds of toxic PCBs from rivers that flow into Lake Michigan.

It is about an hour's ride from Milwaukee along the lake to the Sheboygan River Area of Concern where more than $50 million of GLRI funds were matched by $33 million of State funds to remove 300,000 cubic yards of contaminated sediment.

As a result, 39,000 pounds of toxic PCBs were removed, and yet thousands of acres of wildlife habit were restored.

The Demonstration Farms Network in the lower Fox River Basin in northeastern Wisconsin is yet another shining example of the

important contribution that GLRI is making towards enhancing Wisconsin's environment and our economy.

Through this effort, which is led by the NRCS, with support from the State and county conservation agencies, farmers are demonstrating cutting-edge management practices and sharing valuable lessons learned with their peers, from how to improve soil health to reducing nutrient runoff into Lake Michigan.

Mrs. NAPOLITANO. Mr. Cole, your time has expired.

Mr. COLE. Yes, ma'am.

However, serious threats still remain. Cutting restoration funding will only make projects harder and more expensive.

We see the Federal Government as a partner in our shared goals of healing the lakes through the world's largest freshwater projects. Without your help, there will be trouble in the water.

To be candid, at a time when many citizens are concerned about what the Federal Government will do for them or to them, the Great Lakes Restoration Initiative is a shining example of what the Federal Government is doing for them.

Mrs. NAPOLITANO. Thank you very much, sir.

Mr. COLE. And thank you for your time.

[Mr. Cole's prepared statement follows:]

Prepared Statement of Preston D. Cole, Secretary, Wisconsin Department of Natural Resources

Members of the subcommittee. I'm honored to provide this testimony and speak with you today regarding this incredible resource that accounts for 90% of the United States' fresh surface water—the Great Lakes.

I am also happy to be here today on behalf of my boss, Wisconsin Governor Tony Evers. Governor Evers has made clean water a priority, declaring 2019 as the Year of Clean Drinking Water in Wisconsin. In addition, as chair of the Great Lakes St. Lawrence Governors and Premiers, Governor Evers is continuing to lead a regional effort that has as its hallmark, broad bipartisan support for these lakes as both an environmental and economic juggernaut for North America. In fact, nearly two decades ago, the Great Lakes Governors identified nine regional priorities that became the basis for the 2005 Great Lakes Regional Collaboration Strategy. That "blueprint for action" at the time estimated that at a minimum we would need $20 billion to address all the priorities and since then the region has moved forward with one voice, in support of significant federal investment in this strategy to protect and restore our Great Lakes.

Our Great Lakes are the largest system of fresh waters on Earth. It is a treasured system, but we need to continue to invest in our Great Lakes. The Great Lakes Restoration Initiative (GLRI) has jump started the federal commitment to implementing the 2005 collaboration strategy. The GLRI is clearly working, but much more needs to be done. Your ongoing bipartisan support of the Great Lakes is commendable and a testament to the importance of the Great Lakes to our region and nation. Over 30 million Americans rely on the Great Lakes for drinking water; and the Great Lakes region, if it was a nation, would have the world's third largest regional economy at $6 trillion annually, and directly generates more than 1.5 million jobs.

The GLRI investment of more than $3 billion to date is significant and represents a healthy down payment to protect and restore the most significant fresh, surface water resource on the planet—our Great Lakes. Protecting and restoring them is a non-partisan priority for the people of Wisconsin, Minnesota, Michigan, Illinois, Indiana, Ohio, Pennsylvania, and New York. To date, the GLRI has funded more than 4,500 projects throughout the region, cleaning up toxic hot spots, restoring critical habitat, preventing the spread of invasive species and reduce polluted runoff into the region's waterways. These investments are not only producing great environmental results, but great economic results as well.

This is why, speaking on behalf of Governor Evers and for the state of Wisconsin, I am urging Congress to reauthorize the GLRI for five years at $475 million per

year—the amount first appropriated in 2010. This increase, from the current authorization of $300 million a year will build on the important foundation built over the last decade, which has proven to be not only a tremendous ecological investment, but a wonderful economic investment as well.

ECONOMY AND ENVIRONMENT

We have made some important strides in cleaning up our Great Lakes and this work we do together has resulted in environmental benefits and economic revitalization critical to quality of life of the region and nation. Our communities have seen direct benefits with economic recovery and people are reconnecting to the water. The GLRI provides critical funding for protection and restoration efforts. Since 2010 the multi-agency GLRI has provided funding to 15 federal organizations to strategically target the biggest threats to the Great Lakes ecosystem and to accelerate progress toward achieving the following long-term goals:

- Fish safe to eat
- Water safe for recreation
- Safe source of drinking water
- All severely polluted sites, known as "Areas of Concern [1]" cleaned up
- Harmful algal blooms eliminated
- No new self-sustaining invasive species
- Existing invasive species controlled
- Native habitat protected and restored to sustain native species.

For the first year of GLRI, Congress allocated $475 million in federal fiscal year 2010. Congress has since allocated approximately $300 million for each of the following nine federal fiscal years [2].

State and local governments and nonprofit organizations are eligible to receive grants from the U.S. Environmental Protection Agency for projects addressing:

1. toxic substances;
2. invasive species;
3. nonpoint source pollution;
4. habitat protection and restoration; and
5. monitoring.

Non-governmental groups, industries, businesses, cities, states, and tribal governments are forging partnerships and working with federal agencies to clean up toxic hot spots, restore fish and wildlife habitat, and combat invasive species.

ENVIRONMENTAL AND ECONOMIC BENEFITS

Cleaning up the Great Lakes is critical for the health and quality of life of the region and nation. Here are a few examples:

- GLRI funding is accelerating cleanup of Great Lakes toxic hotspots. Work in one of these hotspots in Muskegon, Michigan, is projected to increase property values by nearly $12 million, contribute $600,000 in new tax revenues annually, and attract 65,000 new visitors, generating more than $1 million in new recreational spending.
- GLRI funding is cleaning up a legacy of toxic sediments in waterfront areas. Cleanups are ready to begin at 10 sites in five states, with 50 contaminated sediment cleanups projected over the next five years. Nearly $90 million is needed for toxic sediment cleanups in FY 2020, which are projected to leverage more nearly $60 million from non-federal partners.
- GLRI funding is helping protect drinking water for 48 million people by working with farmers to prevent nearly 800,000 pounds of phosphorous from polluting the Great Lakes and causing harmful algae blooms. In 2014, a toxic

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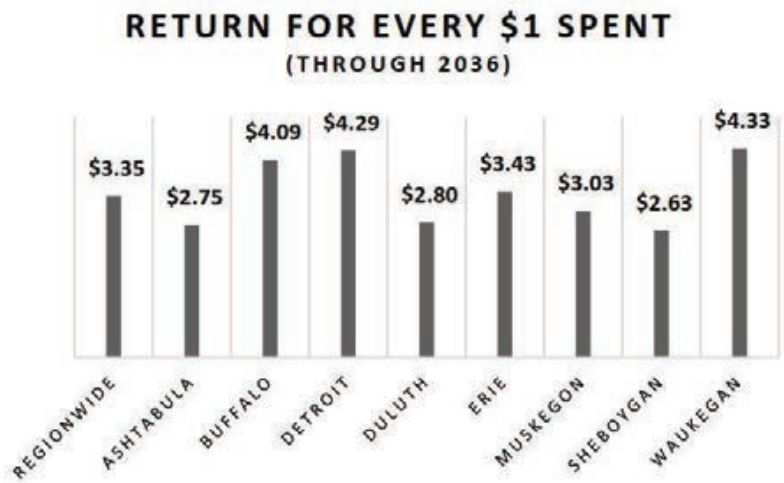
[1] Areas of Concern were designated by the International Joint Commission as geographically-defined sites in the Great Lakes Basin having severe environmental pollution. They were designated in 1987 as part of an international agreement between the U.S. and Canada known as the Great Lakes Water Quality Agreement. There are 43 Areas of Concern listed: 26 in the United States, 17 in Canada. So far, four AOCs in the U.S. and three in Canada have been cleaned up and removed from this list ("delisted"). https://www.epa.gov/great-lakes-aocs

[2] 2017. U.S. Environmental Protection Agency. Great Lakes Restoration Initiative Report to Congress and the President. Pp 26–27. https://www.glri.us/sites/default/files/fy2017-glri-report-to-congress-201902-36pp.pdf. See also: https://www.glri.us/projects#map

bloom cut off access to clean drinking water for more than 500,000 people. Blooms also threaten Lake Erie's critical $15 billion tourism industry.[3]

The Great Lakes Restoration Initiative is also creating jobs and revitalizing struggling communities across the eight-state Great Lakes region. The Great Lakes provide the backbone for a $6 trillion regional economy—the world's third largest regional economy. The Great Lakes directly generate more than 1.5 million jobs and $60 billion in wages annually.

A recent economics study, sponsored by the Great Lakes Commission and the Council of Great Lakes Industries, released in September 2018, found that every $1.00 spent on the Great Lakes Restoration Initiative from 2010 through 2016 will produce at least $3.35 of additional economic activity in the Great Lakes region through 2036. The number was even higher in some Great Lakes communities (see chart). For instance, each dollar invested in Buffalo, NY and Detroit, MI will produce more than $4.00 of additional economic activity through 2036.[4]



Other findings of this study conducted by economists at the University of Michigan, Central Michigan University, and Duke University include:

- GLRI has enhanced tourism in the Great Lakes region. Every dollar of GLRI project spending from 2010 through 2016 will generate $1.62 in economic value in tourism-related industries through 2036.
- GLRI increased the value that residents place on living in coastal areas. Every project dollar spent between 2010 and 2016 produced quality of life improvements in coastal communities worth $1.08 to residents as measured in housing values, which means that people place a higher value on living in those communities because of GLRI projects.
- The research also shows that, despite being envisioned as an environmental program, the GLRI created or supported as many jobs per dollar of investment as would be created by a conventional federal stimulus program designed to boost job growth. The GLRI created or supported an average of 5,180 jobs per year and increased personal income by an average of $250 million per year in the Great Lakes region from 2010–2016.[5]

These economic outcomes are possible because of restoration successes like these:

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[3] Great Lakes Commission. Mar. 2019. The Great Lakes Restoration Initiative: Creating Jobs and Revitalizing Communities. https://www.glc.org/wp-content/uploads/GLC-GLRI-FactSheet-March2019-FINAL.pdf

[4] 2018. University of Michigan Research Seminar in Quantitative Economics. Socioeconomic Impacts of the Great Lakes Restoration Initiative. https://lsa.umich.edu/econ/rsqe/impact-analysis/great-lakes-restoration.html. See also: 2018. Great Lakes Commission. Assessing the Investment: The Economic Impact of the Great Lakes Restoration Initiative. https://www.glc.org/work/blue-economy/GLRI-economic-impact.

[5] Ibid.

- Four of the United States' Areas of Concern have been delisted, and an additional eight have completed all management actions necessary to delist.
- Between 2010 through 2017, 73 Beneficial Use Impairments have been removed in Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin—more than six times the total number of impairments removed in the preceding 22 years. Beneficial Use Impairments are the benchmarks of environmental harm and characterize AOCs.
- Early detection and monitoring and vital support for the Asian Carp Regional Coordinating Committee has prepared the region to respond to new and existing aquatic invasive species. Also, federal agencies and partners funded work to protect over 18,000 acres from terrestrial invasive species. Since the GLRI's inception more than 134,000 acres have been protected or treated.
- Combined with other funding, farmers implemented conservation actions on more than 750,000 acres of rural lands through 2017 to reduce erosion and farm runoff that feeds toxic algal outbreaks. GLRI's supplemental funding helped double farmland under conservation around Western Lake Erie, Saginaw Bay, and Green Bay, reducing projected phosphorus runoff by nearly 770,000 pounds.
- Habitat connectivity for fish and wildlife is improving as the Fish and Wildlife Service, National Park Service, Natural Resources Conservation Service, and National Oceanic and Atmospheric Administration worked with many partners to restore, protect, or enhance over 200,000 acres of wetlands and other habitat. 4,967 river miles have also been cleared of dams and barriers resulting in fish swimming into stretches of river where they have been absent for decades.

Thanks to the GLRI, environmental cleanup in communities across the Great Lakes Basin is paving the way for regional economic recovery and re-investment.

We Must Maintain Support Until the Job is Done

Even with the tremendous results we are seeing, the Great Lakes still face serious threats. Twenty-two U.S. Areas of Concern are still contaminated with toxic sediment, threatening the health of people and stunting the development of communities. Harmful runoff from farm fields continues to pollute our waters, causing toxic algae outbreaks that threaten water systems, public health, and economic vitality. Habitat loss and aquatic invasive species continue to damage our region's outdoor way of life. And communities across the Great Lakes region continue to grapple with crumbling, antiquated drinking water and wastewater infrastructure and are faced with a staggering $179 billion over the next 20 years for needed improvements, upgrades, and repairs in the eight-state region. Most of these threats disproportionately impact people that have historically borne the brunt of environmental injustice, underscoring an urgency to address these issues for everyone in the region.

Furthermore, our changing climate is exacerbating all our region's challenges. We are seeing effects such as changes in surface water temperatures, changes in the frequency and intensity of storm events, and more dramatic swings between record-breaking high and low water levels in the Great Lakes.

Ongoing, human-induced climate changes will only bring additional changes to the lakes, making existing stresses worse. Increased storm intensity and frequency leads to increased loads of nutrients and other contaminants such as sediment, pathogens, and chemicals of emerging concern. This pollution comes from both nonpoint sources like agricultural fields and city streets, and from point sources like combined stormwater and sewage overflows in urban areas. These changes will challenge infrastructure in both rural and urban areas. The general warming of waters due to climate change will also bring both new aquatic invasive species threats (such as Asian carp) in addition to existing aquatic invasive species that will have new potential to expand their range northward. Invasive species already present in the lower lakes (such as water chestnut, European frog-bit, and flowering rush) all are poised to spread northward.

Other climate impacts include alterations to lake temperature stratification; which changes oxygen levels, internal nutrient cycling, the entire ecosystem's food webs—and ultimately the entire assemblage of species that can live in these waters. Finally, climate change has implications for flooding, water level fluctuations, and sustainable water supplies with ongoing questions about overall impacts decades into the future. How these changes impact the people living in the basin is of great concern.

The Great Lakes are also facing a new host of chemicals that were not understood just a decade ago. Nanoparticles, plastics, pharmaceuticals, personal care products, brominated flame retardants, per- and polyfluoroalkyl substances (PFAS) are being detected with increasing frequency. There are ongoing questions that remain unanswered about these new pollutants such as their sources, cycling, bioaccumulation

through the food chain, exposures and effects, including potential implications of multiple chemical exposures.

We do have solutions to these problems, but we need funding to enact them. Congress must continue to fund the Great Lakes Restoration Initiative and other fundamental restoration programs that produce results. Congressional investments will help communities replace lead pipes, address emerging contaminants like PFAS, clean up toxic sediments, end polluted stormwater runoff, fix aged sewer lines, and keep water affordable and safe for everyone. Congress must support action to stop Asian carp and other aquatic invasive species from invading the Great Lakes. Congress must support mitigating the damage from climate change to help the Great Lakes adapt to a changing climate. We also need strong clean water protections, as well as institutions that are adequately staffed and funded to enforce the protections that we all depend on.

And the region is ready for these investments. With additional GLRI funds, 10 contaminated sediment cleanup projects—in the Detroit River (MI), St. Louis River (WI and MN), Niagara River (NY), Cuyahoga River (OH), and Milwaukee River (WI)—are ready to break ground in 2020. These projects are expected to require $88 million in federal funding under the Great Lakes Legacy Act (funded through the GLRI), with another $59 million to be provided by non-federal partners. Many other site investigations are underway to prepare for cleanup projects in coming years. Without GLRI funds, some of Minnesota's $25 million in bonding money, for example, could be left on the table.

CONCLUSION

The Great Lakes Restoration Initiative is working, but much more needs to be done. When the initial regional collaboration document was developed in 2005, it was estimated that we needed $20 billion dollars to address all the needs. So while $3.1 billion appropriated to date may seem like a lot of money, it is still just a healthy down payment to protect and restore the most significant fresh, surface water resource on the planet—our Great Lakes. These investments are not only producing great environmental results, but great economic results as well. This is why we need to reauthorize the GLRI for five years at $475 million per year—the amount first promised in 2010, but only appropriated once in the first year.

Mrs. NAPOLITANO. Thank you.

The Chair now recognizes Mr. Pine.

Mr. PINE. Good morning. It is a privilege to testify before this committee today.

San Francisco Bay is an iconic water second to none. It is the west coast's largest estuary and drains water from approximately 40 percent of California.

Despite being surrounded by over 7 million people, San Francisco Bay is an ecological hot spot with more than 100 endangered species.

The bay provides an abundance of recreational opportunities, including the 365-mile San Francisco Bay Trail.

And commercially, the bay contains six ports, is a major driver of the tourism industry, and offers an inviting backdrop for some of the largest and best known companies in the world, which are located on its shoreline.

So, in short, San Francisco Bay is an ecological, commercial, and recreational marvel.

Since the Gold Rush, there have been three chapters in the bay's evolution: degradation, preservation, and now restoration. Until the early 1960s, the bay was drastically altered by urbanization, salt production, and agricultural uses that reduced the bay's size by one-third and destroyed about 80 percent of the bay's tidal wetlands.

With the birth of the environmental movement, the second chapter of the bay's evolution began as we worked to preserve the bay and reduce pollution and bay spill.

We have now embarked on a new chapter for the bay where we are enhancing and restoring this remarkable natural asset to the benefit of both people and wildlife.

In 1999, scientists published the "Baylands Ecosystem Habitat Goals," calling for the creation of 100,000 acres of healthy tidal wetlands. And tidal wetlands are vitally important to the bay's ecosystem. They trap food in runoff, and they also provide natural protection against flooding and sea level rise.

Starting from about 30,000 acres of original wetlands, we have restored or are in the process of restoring about 18,000 additional acres. But with approximately 44,000 acres yet to restore, much remains to be done.

A few notable milestones. In 2003, 15,000 acres of South Bay saltponds were purchased and are now being restored, and this is the largest restoration project in the country west of the Mississippi.

In 2008, the San Francisco Bay Restoration Authority was created to raise and allocate local funding for restoration.

In June 2016, Measure AA, a 20-year, $12 parcel tax was passed by 70 percent of the voters across all nine bay area counties. Measure AA provides about $25 million annually, or $500 million over 20 years, to fund restoration projects.

In 2018, we initiated the Bay Restoration Regulatory Integration Team to expedite and coordinate permitting across the six State and Federal agencies.

But against this positive backdrop, in 2015, scientists issued a very serious warning and wake-up call. They reported that without accelerating the pace of wetland restoration, existing sites that could be restored will be drowned by the rising bay waters. They emphasized that tidal marshes established by 2030—that is 11 years away—are more likely to flourish.

And that is because at a gradual rate of sea level rise, such as what we are experiencing now, marshes can trap sediment and keep up as sea level rise accelerates.

So it is clear we are in a race against time. While many building blocks are in place to restore the bay, we are hampered by inadequate Federal funding.

Over the last 10 years, only 28 percent of the funds spent on acquisition and restoration of the baylands were from Federal sources, and now this is despite the fact that much of the restoration has involved property owned by the Federal Government.

Traditionally, Federal funding for other major estuaries has dwarfed the amount that the San Francisco Bay has received. The EPA-administered San Francisco Bay Water Quality Improvement Fund program provides only $5 million annually.

That is why the legislation introduced by Congresswoman Jackie Speier, H.R. 1132, the San Francisco Bay Restoration Act, is so timely and important. Her bill would authorize up to $25 million annually to the EPA to award grants to bay conservation and restoration projects.

It would also establish a San Francisco Bay Program Office within the EPA.

In conclusion, to restore the bay, we have put in place a comprehensive, science-based plan, a 20-year local funding source through Measure AA and a collaborative partnership to expedite permitting.

But with sea level rise accelerating, we have limited time to complete the remaining restoration work that is needed. The missing ingredient is the necessary Federal funding to complement our local efforts.

Thank you.

[Mr. Pine's prepared statement follows:]

Prepared Statement of Dave Pine, Supervisor, First District, San Mateo County Board of Supervisors, and Chair, San Francisco Bay Restoration Authority

INTRODUCTION

As a San Mateo County Supervisor, chair of the San Francisco Bay Restoration Authority, and a member of the San Francisco Bay Conservation and Development Commission, I have worked extensively on the intersecting issues of flood control, sea level rise and tidal land restoration in San Francisco Bay. It is a privilege to testify before this committee today. In my remarks I will review the importance of San Francisco Bay, how the Bay has evolved over time, the extensive Bay restoration efforts now underway, the urgency of Bay restoration given impending sea level rise, and the critical need for more federal funding to support this important work.

WHY IS THE SAN FRANCISCO BAY AN ICONIC BODY OF WATER?

San Francisco Bay is one of our nation's greatest natural treasures and the defining feature of the Bay Area. It is the West Coast's largest estuary and its waters drain over 40 percent of the state of California. San Francisco Bay has over 275 miles of shoreline, which is half as long as the entire coast of California.

Despite being surrounded by dense urban development including some of the largest and best known companies in the world, San Francisco Bay is one of the nation's most important ecological habitats. Species such as steelhead and salmon are present in Bay waters along with California's Dungeness crab and halibut. The Bay's salt marshes, provide key ecosystem services such as filtering pollutants from creeks and stormwater runoff. The Bay is home to more than 100 endangered species.

The Bay is also a key link in the Pacific Flyway. Millions of waterfowl annually use the shallow waters of the Bay as a refuge and exposed bay muds provide important feeding areas for shorebirds.

Commercially, the Bay is critically important to trade for the Western United States. The Bay contains six major ports for the shipping industry. The Port of Oakland is the eighth busiest container port in the United States. In addition, the Bay is a critical driver of the Bay Area's tourism industry and offers an inviting backdrop for our booming technology and biotech sector.

The Bay also provides an abundance of recreational activities including sailing, kayaking, world class kite surfing, fishing, and walking, running and biking on the San Francisco Bay Trail. The Bay Trail, which just celebrated its 30th anniversary, is a planned 500-mile path around the entire San Francisco Bay which will connect all nine Bay Area counties and 47 cities. To date, 335 miles of the Bay Trail have been completed.

In short, the San Francisco Bay is an ecological, commercial and recreational marvel.

THREE CHAPTERS IN THE HISTORY OF THE SF BAY

Since the Gold Rush and the rapid growth of the Bay Area's population, there have been three chapters in the Bay's evolution: degradation, preservation and now restoration.

Until the early 1960s, the Bay was drastically altered by urbanization, salt production and agricultural uses that reduced the Bay's size by one-third. During this period, 80% of the Bay's tidal wetlands, which once totaled 200,000 acres, were lost and the Bay was reduced in size by one third. At one point, the Bay was being filled in at a rate of two square miles per year, and raw sewage and chemicals flowed into it unchecked. There were dozens of trash dumps lining the Bay, and the public had access to less than six miles of shoreline.

In 1961, the second chapter of the Bay's evolution began with the creation of Save The Bay and the movement to stop additional fill along the Bay shoreline and continued pollution of the Bay's waters. One significant outgrowth of this movement was the creation of the Bay Conservation and Development Commission (BCDC) in 1965. The mission of BCDC is to protect and enhance San Francisco Bay, minimize Bay fill, and increase public access within the Bay's 100-foot shoreline band. These efforts were remarkably successful in bringing the Bay back from the brink.

We have now embarked on a new chapter for the Bay where we are enhancing and restoring this remarkable natural asset for the benefit of both people and wildlife. In 1999, scientists published the Baylands Ecosystem Habitat Goals report calling for 100,000 acres of healthy tidal wetlands to protect the ecosystem and provide natural flood protection. That work is now underway in earnest with approximately 44,000 acres of healthy tidal wetlands in place and another 35,000 acres in public ownership and available for restoration.

RESTORATION MILESTONES TO DATE

The Bay Area has taken substantial steps to restore the Bay and is well prepared to undertake the vast amount of restoration that is still needed. Some notable milestones include the following:

- In 2003, under the leadership of U.S. Senator Dianne Feinstein, 15,000 acres of South Bay salt ponds were purchased from Cargill Inc. The purchase was funded with approximately $57 million in state funds, $35 million from four private foundations, and approximately $8 million in federal funds. The restoration of these former salt ponds, which are equal in size to Manhattan Island, is the largest restoration project in the country west of the Mississippi.
- In 2008, the California Legislature created the San Francisco Bay Restoration Authority. The Restoration Authority is a regional body with the power to raise and allocate much needed local funding for the restoration, enhancement, and protection of wetlands and wildlife habitat in the San Francisco Bay and along its shoreline.
- In 2016, the Restoration Authority placed Measure AA on the ballot in all nine Bay Area counties—the nation's first-ever regional effort to secure climate adaptation and restoration funding. The measure proposed a 20-year, $12 parcel tax to raise approximately $25 million annually, or $500 million over twenty years, to fund Bay restoration projects. The measure was backed by a broad coalition of environmental, business and labor leaders and passed with 70% approval across the region.
- The time consuming and expensive permitting process is a significant hurdles to accelerating the pace and scale of wetlands restoration in San Francisco Bay. To address this barrier, in 2018 the Restoration Authority, the State Coastal Conservancy and others funded the innovative Bay Restoration Regulatory Integration Team (BRRIT) to expedite permitting for wetland restoration projects. BRRIT is a group of dedicated, funded staff from six state and federal regulatory agencies that review Bay restoration projects and permit applications as a team to improve efficiency and timeliness. The BRRIT will enable investment in San Francisco Bay wetland restoration to go further and proceed faster.
- Another important local initiative that is supporting the restoration process is the Long Term Management Strategy for the Placement of Dredged Materials. This program is a collaborative partnership where the regulatory agencies, resource agencies and stakeholders work together to maximize beneficial reuse of dredged material in restoration projects and minimize their disposal in the Bay and the Pacific Ocean. The selection of San Francisco Bay by the US Army Corps in December of 2018 as one of ten pilot projects for the beneficial reuse of dredged materials has the potential to expand this effort.
- In 2018 and 2019, the Restoration Authority approved its first two rounds of Measure AA grants totaling $89 million. The thirteen projects receiving funding will advance a wide variety of restoration projects from landscape scale initiatives such as the South Bay Shoreline Project to smaller projects such as the San Leandro Treatment Wetlands which will test creative new techniques to combine habitat restoration with wastewater treatment.

- At two locations, the San Francisco Bay Living Shorelines Project is demonstrating the potential of establishing native eelgrass and oyster beds to protect the San Francisco Bay shoreline while creating biologically rich and diverse habitat that is resilient to changing environmental conditions.
- In May of this year, the San Francisco Estuary Institute and SPUR, an urban planning research center, released the San Francisco Bay Shoreline Adaptation Atlas. The Atlas outlines how San Francisco Bay communities can combat sea level rise with eco-friendly reefs, beaches and marshlands.

THE URGENCY OF RESTORATION

In 2015, scientists released an update to the Baylands Ecosystem Habitat Goals report warning that without rapid and significant investment in wetland restoration, rising seas and greater erosion will cause wetlands to shrink. The risk we face is that existing sites that could be restored will be drowned by the rising bay waters. Tidal wetlands could eventually retract to narrow strips or disappear altogether.

Wetlands are the Bay's first line of defense—trapping polluted runoff before it reaches open water, buffering against flooding from rising sea levels and storms, preventing erosion, and capturing greenhouse gases to counter climate change. If our tidal marshes disappear, so will this vital and natural system of protection.

The report makes clear that the San Francisco Bay is in a race against time with billions of dollars of property at risk. It emphasizes that tidal marshes established by 2030 are more likely to flourish and provide ongoing benefits when sea level rise accelerates in the middle of this century. To achieve this goal, the planning, permitting, and construction of restoration projects must be accelerated.

THE CRITICAL ROLE OF FEDERAL FUNDING

While significant progress has been made to restore San Francisco Bay, much more needs to be done and time is running short. The fundamental challenge is that there is a wide gap between the funding that is needed and the funding that is available.

In the first two rounds of grants made by the Restoration Authority, funding requests exceeded the funding available by a factor of 3 to 1. Similarly, the EPA administered San Francisco Bay Water Quality Improvement Fund program, which began in 2008 and provides grants to protect and restore San Francisco Bay, has received $176 million in grant requests but has only been able to provide $50 million in funding.

There is also a significant gap between funding from state and local sources and funding provided by the federal government. The San Francisco Bay Joint Venture estimates that of the funds spent on acquisition, restoration and enhancement of bay lands between 1997 and 2018, only 28% were from federal sources. Moreover, in August 2018, the U.S. Government Accountability Office published a report on the SF Bay Delta Watershed and found that the lack of sufficient federal funding is one of the biggest risks to long-term restoration efforts.

To restore the 35,000 acres in public ownership and available for restoration is estimated to cost at least $1.4 billion. Simply put, without significant federal funding it will not be possible to restore all of this acreage, much of which is owned by the federal government.

Traditionally, federal funding for other major estuaries have dwarfed the amounts that the San Francisco Bay has received. For example, annual EPA funding for Puget Sound is approximately seven times the amount allocated for San Francisco Bay, which typically receives $5 million annually, despite the fact that the Bay Area's population is nearly twice that of Puget Sound. Similarly, EPA annual funding for San Francisco Bay falls substantially short of the $12 million in annual EPA funding for the Long Island Sound, a much smaller estuary.

This is why the legislation introduced by Congresswoman Jackie Speier this year, H.R. 1132, the San Francisco Bay Restoration Act, is so timely and important. Her bill would authorize up to $25 million each year for five years to the EPA to award grants to Bay conservation and restoration projects. It would also establish a San Francisco Bay Program Office within the EPA and authorize the EPA Administrator to appoint a Director of that Program Office to oversee federal funding.

CONCLUSION

The Bay Area's quality of life and economy depend on a healthy and vibrant San Francisco Bay. To restore the Bay we have put in place comprehensive science based restoration plans, a 20 year local funding source through Measure AA, and local col-

laborative partnerships to expedite permitting and the beneficial reuse of dredge materials. But with sea level rise accelerating, we have limited time to complete the critical restoration work that is needed. The missing ingredient is the necessary federal funding to complement our local efforts to establish 100,000 acres of healthy tidal wetlands.

Mrs. NAPOLITANO. Thank you, Mr. Pine.

Next, we have Ms. Laura Blackmore, please.

Ms. BLACKMORE. Chair Napolitano, Ranking Member Westerman, Chair DeFazio, and distinguished members of the subcommittee, thank you for inviting me here today.

On behalf of my organization and our hundreds of partners, thank you for convening this important hearing to talk about protecting and restoring America's iconic waters, including my home, Puget Sound.

Puget Sound is a beautiful place, and it is also a complex one with 16 major rivers, 20 federally recognized Tribes, 4½ million people, and the headquarters of 11 Fortune 500 companies. Our economy is roaring, and the natural beauty of Puget Sound and the recreational opportunities it offers help our businesses attract top talent.

I would welcome the opportunity to host you or your staff for an up-close look at this breathtaking and energizing place.

Unfortunately, Puget Sound is also slowly dying. Southern Resident orcas, Chinook salmon, and steelhead are all listed under the Endangered Species Act.

We continue to pollute our waterways and our shellfish beds, and habitat degradation outpaces restoration. The people of Washington State realized something was wrong in the early 2000s. A groundswell of public support led then-Governor Gregoire to establish a task force which recommended the creation of Puget Sound Partnership as a State agency in 2007.

Congress at that time also included Puget Sound in the National Estuary Program. This highly effective program, which we will hear more about in a few moments from my counterpart, Tom Ford, charges us with developing and implementing a collaborative, nonregulatory blueprint for restoring and protecting this iconic water body.

In Puget Sound, we call this blueprint the Action Agenda.

Nothing tells the story of Puget Sound more profoundly than last summer's tragic loss of the newborn calf of Tahlequah, or J35, a Southern Resident orca. She grieved over the body of her dead calf for 17 days, and her pod accompanied her as she swam, 1,000 miles through Canadian and U.S. waters of the Salish Sea with her calf's body.

We watched Tahlequah suffer, and now the world watches us.

This year, Washington State legislators passed significant policy and budget bills aimed at orca recovery. Because of their bold actions, we have hope that we will stave off extinction for the Southern Resident orcas. But State resources alone are not enough.

Federal funding and cooperation are crucial. Here is why. Scientists say that we can still recover Puget Sound, but only if we act boldly now.

We know what we need to do. The primary barriers between us and more food for orcas, clean and sufficient water for people and

fish, sustainable working lands and harvestable shellfish are funding and political fortitude.

Our data show that the funding received to recover Puget Sound and its salmon falls woefully short of the need. The funding gap for the 2016–2018 Action Agenda was 73 percent, and the funding gap for salmon recovery is 84 percent.

Our monitoring shows that the funding levels were barely holding our ground, if not managing decline of the ecosystem. We cannot wait any longer to fully fund habitat restoration and salmon recovery in Puget Sound.

The single greatest step we could take to ensure a durable, systematic, and science-based effort for Puget Sound recovery is to fully fund the implementation of these programs.

H.R. 2247, the Promoting United Government Efforts to Save our Sound Act, or PUGET SOS, introduced by Congressmen Heck and Kilmer this year, would authorize up to $50 million in funding for Puget Sound recovery, a significant and very welcome jump from the $28 million we have been appropriated over the last several years.

It also would align Federal agency brain power and resources. These are tremendous assets. Ensuring they are coordinated, setting goals, and holding each other accountable will help increase their effectiveness and provide yet another boost to Puget Sound recovery.

Establishing the Puget Sound Program Office at EPA and requiring a Federal task force promises that these goals will be met.

Passing the PUGET SOS bill would demonstrate to the Nation that Puget Sound is vital to the economic, cultural, and environmental security of the United States. By investing significantly in the health and well-being of Puget Sound, Federal decisionmakers demonstrate that Puget Sound is worth saving and is of critical importance to the national well-being.

Washington State, our Tribes, local governments, nonprofits, and the private sector are committed to success. We greatly appreciate the commitment of this subcommittee to ensuring that the Federal Government is a viable, willing partner in this race against time.

Thank you again for the opportunity to appear before you today, and I look forward to your questions.

[Ms. Blackmore's prepared statement follows:]

Prepared Statement of Laura L. Blackmore, Executive Director, Puget Sound Partnership

Chair Napolitano, Ranking Member Westerman, and distinguished members of the subcommittee, thank you for inviting me here today. On behalf of the Puget Sound Partnership and our hundreds of partners, I want to thank you for convening this important hearing today.

PUGET SOUND—AN ECONOMIC ENGINE, A SCENIC TREASURE, A NATIONAL DRAW

Puget Sound is a deep fjord estuary that lies within the broader Salish Sea. Considered the largest estuary by volume in the United States, Puget Sound is a complex ecosystem encompassing mountains, farmlands, cities, rivers, forests, and wetlands. Sixteen major rivers flow to Puget Sound and 20 treaty tribes call the region home.

Four and a half million people live in the Puget Sound area with another 1.3 million expected to live there by 2040. Last month the Seattle Times reported[i] that Seattle was the second fastest growing city in the nation in 2018, and the fastest in 2017. We are a region of innovators and entrepreneurs: eleven Fortune 500 companies are headquartered in the Puget Sound area, many of which have shaped 21st century life. Our economy is roaring and our natural beauty and recreation opportunities help businesses and companies attract top talent.

On the surface, Puget Sound looks beautiful, but the fact is Puget Sound is slowly dying. Southern Resident orcas, Chinook salmon, and steelhead are all listed under the Endangered Species Act. Toxic chemicals and pharmaceuticals continue to pollute our waterways, and shellfish beds are routinely closed to commercial and recreational harvest. Despite a significant investment of energy and resources from federal, tribal, state, and local governments, habitat degradation outpaces restoration. While this situation at times seems impossibly gloomy, the hundreds of passionate people who are devoted to seeing the return of a healthy and resilient Puget Sound give us hope.

About the Puget Sound Partnership

The Puget Sound Partnership grew out of a groundswell of support from citizens concerned about the health of Puget Sound, its many culturally and ecologically significant species, and the well-being of the humans who also call this region home. Based on the recommendation of a task force headed by former EPA Administrator Bill Ruckelshaus, the Washington State Legislature formed the Partnership in 2007. On behalf of the people of Washington State, the Legislature charged us with recovering Puget Sound and achieving six goals:

- Healthy human population
- Vibrant quality of life
- Thriving species and food web
- Protected and restored habitat
- Abundant water quantity
- Healthy water quality

Congress designated Puget Sound as an Estuary of National Significance in 1988. The Puget Sound Partnership participates in the EPA's National Estuary Program (NEP), created by Congress in 1987. This highly effective program, which incorporates 28 estuaries from every coast, charges us with developing and implementing a collaborative, non-regulatory blueprint for restoring and protecting this iconic water body.

We fulfill these responsibilities in three primary ways:

Chart the course—Action Agenda and Puget Sound Salmon Recovery Plan

The 2018–2022 Action Agenda for Puget Sound, which serves as the Sound's Comprehensive Conservation & Management Plan as authorized by the NEP, charts the course to achieving a resilient Puget Sound. It outlines regional strategies and specific actions required to make progress toward recovery. The actions proposed for funding in the Action Agenda offer the promise of effective investment in Puget Sound protection and restoration. As required under the NEP, the Partnership convenes a Management Conference composed of federal, tribal, state and local government agencies, businesses, the environmental community, the agricultural and timber industries, academic institutions, fishermen, shellfish growers, and other partners to develop and manage the implementation of the Action Agenda.

The Partnership's Leadership Council also oversees the implementation of the Puget Sound Salmon Recovery Plan, approved by NOAA in 2007 as the region's recovery plan for Chinook salmon under the Endangered Species Act. The Salmon Recovery Plan includes strategies for recovering Chinook salmon populations in each watershed of Puget Sound. With federal and state funding, the Partnership supports local councils that manage each of these watershed-scale strategies.

Promote shared measures—State of the Sound report

The biennial State of the Sound report improves understanding across the Management Conference and among decision-makers about how well the recovery effort is going. The State of the Sound answers the following questions:

- How is the ecosystem doing?
- What are the outstanding examples of recovery projects?

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[i] https://www.seattletimes.com/seattle-news/data/big-city-growth-slows-across-u-s-but-seattle-still-ranks-no-2-in-2018/

- How is management of recovery going?
- Who funds Puget Sound recovery?
- What is needed to see more progress in Puget Sound recovery?

Support partners—mobilize funding, communicate effectively, remove barriers

The Partnership supports the collective effort of our partners by advocating for enhanced and diversified funding sources, funding science and monitoring work to answer pressing questions, evaluating the effectiveness of recovery actions, convening forums to confront difficult issues, and ensuring effective communication throughout our partner network.

FUNDING SHORTFALLS THREATEN PUGET SOUND RECOVERY

Nothing tells the story of Puget Sound more profoundly than last summer's tragic loss of the newborn calf of Tahlequah, a member of the endangered Southern Resident orca J pod. She grieved over the body of her dead calf for 17 days, and her pod accompanied her as she swam 1,000 miles through Canadian and U.S. waters of the Salish Sea with the body of that calf. The world watched Tahlequah suffer, and now the world watches us.

This year, Washington State legislators listened to their constituents and to Governor Inslee, to the pleas of the Governor's Southern Resident Orca Task Force, and to our Leadership Council and the multitude of Management Conference members. They passed significant policy and budget bills aimed at orca recovery. Because of the bold actions on the part of our state elected officials, we have hope that we will stave off extinction for the Southern Residents. But state resources alone are not enough. Federal funding is crucial. Here's why:

Scientists say that we can still recover Puget Sound, but only if we act boldly now. We know what we need to do. The primary barrier between us and more food for orcas, clean and sufficient water for people and fish, sustainable working lands, and harvestable shellfish is funding. We cannot wait any longer to fully fund the Action Agenda and the Puget Sound Salmon Recovery Plan.

The primary source of funding to implement the Action Agenda is the Puget Sound Geographic Program. Over the past several fiscal years, Congress has appropriated $28 million annually into this fund, managed by the EPA. National Estuary Programs nationwide leverage $19 for every $1 in federal funding,[ii] and we are no exception. While this funding is significant and appreciated, estimates of the actual need to fully implement the Action Agenda show that the funding received falls far short of the need: the funding gap for the 2014–2015 Action Agenda was 68 percent, and for the 2016–2018 Action Agenda it was 73 percent[iii]. The funding gap for salmon recovery is about 84 percent[iv]. Our monitoring shows that at these funding levels, we are barely holding our ground against further degradation, if not managing decline of the ecosystem.

The single greatest step we could take to ensure a durable, systematic, and science-based effort for Puget Sound recovery is to fully fund the implementation of the Action Agenda and Salmon Recovery Plan on an on-going basis.

The Promoting United Government Efforts To Save Our Sound (PUGET SOS) Act (H.R. 2247), introduced by Congressmen Heck and Kilmer this year, would authorize up to $50 million in funding for Puget Sound recovery, a significant and very welcome jump from the $28 million per year that Congress has appropriated for the last several fiscal years.

WHY PASSAGE OF THE PUGET SOS ACT IS CRITICAL TO PUGET SOUND RECOVERY

Puget Sound is a national treasure, as long as it is healthy. A dying Puget Sound is a national disgrace. Our Governor, state Legislature, local elected officials, Tribes, and network of organizations and individuals have proven their commitment to recovering Puget Sound. We need commensurate investment at the federal level. Passage of the PUGET SOS Act would demonstrate that federal commitment. Here's why this bill would be such a boon to Puget Sound:

PUGET SOS aligns federal agency brainpower and resources. These are tremendous assets. Ensuring they are coordinated, setting goals, and holding each other

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[ii] US Environmental Protection Agency, 2018. National Estuary Program website, Financing Strategies Used by the National Estuary Program. Last updated June 4, 2018. Accessed June 20, 2019. https://www.epa.gov/nep/financing-strategies-used-national-estuary-program

[iii] Puget Sound Partnership, 2017. 2017 State of the Sound. Olympia, Washington, November 2017. 84pp. www.psp.wa.gov/sos

[iv] Governor's Salmon Recovery Office, 2018. *State of the Salmon Report*, Executive Summary, page 9. Accessed June 20, 2019. https://stateofsalmon.wa.gov/exec-summary/

accountable will help increase their effectiveness and provide yet another boost to Puget Sound recovery. Establishing the Puget Sound Program Office at EPA and requiring a Federal Task Force promises that these goals will be met.

PUGET SOS protects and sustains a cherished resource and a cherished way of life. The investment of up to $50 million authorized in the PUGET SOS bill will enable us and our partners to more effectivelyplan and implement the projects that will recover Puget Sound.

PUGET SOS demonstrates to the nation that Puget Sound is vital to the economic, cultural, and environmental security of the United States. By investing significantly in the health and well-being of Puget Sound, on par with other great waters like the Great Lakes and Chesapeake Bay, federal decisionmakers demonstrate that Puget Sound is worth saving. They affirm that it is of critical importance to national well-being, and that they too are concerned for the future of their children and grandchildren. They demonstrate that recovering an ecosystem is more than a one-time effort, that our fates are interlinked with the environment we live in, and that we must stay ever vigilant and ever active in protecting and restoring our home.

Thank you again for the opportunity to appear before you today, and I look forward to your questions.

Mrs. NAPOLITANO. Thank you, Ms. Blackmore, and thank you for staying within the limit.

Mr. Baker, you are on.

Mr. BAKER. Good morning. Thank you, Chairwoman Napolitano, Ranking Member Westerman, and members of the subcommittee.

I am Will Baker. I have been president of the Chesapeake Bay Foundation for 37 years of the organization's 52-year history. Our mission is to protect and restore the bay and its rivers.

The Chesapeake is America's largest estuary. When colonial settlers arrived more than 400 years ago, the water was pristine. Forty-four hundred Native Americans had little impact on the 64,000-square-mile watershed.

Today, there are 19 million of us, and we have had a significant and, sadly, negative impact.

By 1980, the bay was on life support. In a 1982 banner headline in the Baltimore Sun, it read in its entirety, "Bay Is Dying Scientists Warn."

A bipartisan groundswell of concern arose, and in 1984 in his State of the Union Message, Ronald Reagan called for the Federal Government to help save this national treasure.

Congress did its part. In 1987, the Chesapeake Bay Program was created. It includes multiple Federal agencies and EPA is the lead.

Most basically, it helps to ensure that the six States and the District of Columbia, all in the watershed, work together.

Also in that year, 1987, the States and Federal agencies signed an agreement to cut nitrogen and phosphorus pollution by 40 percent by the year 2000. That goal was missed by a lot. So the deadline was simply extended 10 years to 2010.

And yet by 2008, it was obvious to all involved that it, too, would be missed. The Chesapeake Bay Foundation sued EPA in a last-ditch effort to achieve an enforceable plan.

Fortunately, Administrator Lisa Jackson negotiated a settlement with us. EPA agreed to develop what is now known as the landmark Chesapeake Clean Water Blueprint. It has been a game changer.

Each jurisdiction has agreed to reduce its share of the pollution and to do it in 2-year incremental and reportable increments, "milestones" they are called, toward the 2025 deadline. And EPA

agreed to be the referee and to impose penalties if a State failed to meet its milestone targets.

Here is the good news. It is working. Thirty-six years after that headline I just referenced, the same paper wrote a new headline, quote, "Scientists Say They Are Confident Chesapeake Health Is Significantly Improving in 36 Years."

The Chesapeake Bay Program is the glue that holds this multistate restoration effort together. The Federal Government is the one jurisdiction which can do what science says must be done to treat the bay and all of its rivers as a single ecological system.

Experts agree around the world—and believe me, it is around the world—that this is perhaps our best and last chance to save the bay. The bay program uses science proactively. It provides grants to reduce pollution, and it monitors progress.

But we are not done. The recovery is fragile. Last year we had 80 inches of rain, twice the normal, and it delivered so much pollution that scientists believe we may see some of the worst levels of low dissolved oxygen this year in decades.

Let's hope that such intense storm events are not the new normal under climate change, especially as regulatory rollbacks threaten progress. While most of the bay States are on track, I am sorry to report that Pennsylvania is way behind, and it is a critically important State.

If the bay is to be saved, EPA must hold Pennsylvania accountable.

I will conclude. The Chesapeake Clean Water Blueprint is an international model. The bay program is essential, and it must be fully funded.

We thank you for the bipartisan support here in the House to do just that. Now it is on to the Senate.

Thank you very much.

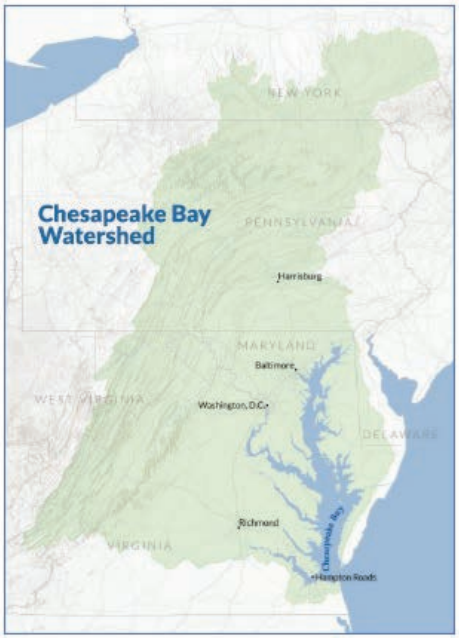
[Mr. Baker's prepared statement follows:]

Prepared Statement of William C. Baker, President, Chesapeake Bay Foundation

INTRODUCTION

Good morning Chairwoman Napolitano, Ranking Member Westerman, and members of the subcommittee, I am Will Baker, President of the Chesapeake Bay Foundation (CBF). Thank you for inviting me, on behalf of CBF's Board of Trustees, staff, and more than 275,000 members, to participate in today's hearing.

For more than 50 years, the CBF has been working to protect and restore the Chesapeake Bay and its rivers and streams. The Chesapeake Bay is America's largest estuary and a unique and critical ecosystem. Its 64,000 square mile watershed—from Cooperstown, New York to Cape Henry, Virginia and westward to the Allegheny Mountains—is a large part of the Mid-Atlantic states. More than 18 million people live in the Chesapeake Bay watershed, a number that is increasing by roughly 150,000 each year.



The Chesapeake Bay is a national treasure, a resource of worldwide significance, and an economic resource for the region. The Chesapeake Bay produces approximately 500 million pounds of seafood a year.[1] The Bay's iconic blue crabs and oysters are immensely important to the economy and culture of the Bay region. In 2016, Maryland and Virginia brought in $299.5 million in landings revenue, supported just over 30,000 jobs, and generated approximately $726,391,000 dollars in sales.[2] Recreational fishing supported 13,501 jobs, and generated $1.368 billion dollars in sales.[3]

Unfortunately, due to decades of pollution, those numbers are only a fraction of what they once were. Historically every summer, excessive nitrogen and phosphorus pollution from human activities would plague the Chesapeake Bay and its tributaries with dead zones—areas with low amounts of oxygen in the Bay. With little or no oxygen, fish, crabs, oysters, and other aquatic animals literally suffocate. The decline of oysters over the last 30 years, for example, has meant a loss of more than $4 billion for Maryland and Virginia.[4] Further, excess nitrogen and phosphorous fuels deadly algae blooms that block sunlight from reaching the critical underwater grasses habitat that crabs and fish rely on.

Fortunately, we have a plan to save this critical natural resource: The Chesapeake Clean Water Blueprint. And the plan is working. Underwater grasses are growing, dead zones are getting smaller, and blue crab populations are rebounding. Studies estimate that a fully restored Bay is worth $22 billion per year.[5]

HISTORY OF CHESAPEAKE BAY CLEANUP

The Bay cleanup has a long and storied history, but the road to get to this point has not been easy. The Chesapeake Bay is one of the most complex ecosystems in the world.

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[1] Chesapeake Bay Program, *Facts and Figures*, https://www.chesapeakebay.net/discover/facts

[2] NOAA, *Fisheries Economics of the United States*, 106, 2017, https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2016

[3] *Id.*

[4] Chesapeake Bay Foundation, *On the Brink: Chesapeake's Native Oysters*, July 2010, https://www.cbf.org/document-library/cbf-reports/Oyster__Report__for__Release02a3.pdf

[5] https://www.cbf.org/document-library/cbf-reports/the-economic-benefits-of-cleaning-up-the-chesapeake.pdf

The cleanup effort began in 1976 when Congress directed EPA to undertake a comprehensive study of the Bay focused on its water quality and living resources. Six years later, the U.S. Environmental Protection Agency (EPA) report identified nutrient pollution as the greatest threat to the Bay and recognized that the problem would need to be addressed by all of the watershed states, not just Maryland and Virginia. The report provided an innovative intergovernmental and inter-jurisdictional solution. The "Chesapeake Bay Program" was formed that December—with the governors of Maryland, Pennsylvania and Virginia, the Mayor of the District of Columbia, the Administrator of the EPA and the Chair of the Chesapeake Bay Commission signing the Chesapeake Bay Agreement of 1983.

In February 1987, Congress passed the reauthorization of the Water Quality Act of 1987 (Clean Water Act), which included a provision, known as Section 117, that codified the Chesapeake Bay Program and authorized Congress to continue funding the important restoration effort at $13 million annually.[6]

This led to the *1987 Chesapeake Bay Agreement*, which for the first time included specific quantitative goals and commitments; the centerpiece of which was to reduce nutrient pollution to the Bay by 40% by 2000.

When the Chesapeake Bay partners missed their 40% nutrient reduction goal, the state governors, the mayor of DC, the EPA and the Chesapeake Bay Commission signed the *Chesapeake 2000* agreement, which included more than a hundred ambitious commitments, including a re-affirmation of the 40% nutrient reduction goal and a commitment to reduce sediment and nutrient loads sufficient to remove the Bay and its tidal rivers from the impaired waters list by a 2010 deadline. Also, in 2000, both Delaware and New York signed a Memorandum of Understanding with the other Chesapeake Bay Program partners and agreed to adopt the Water Quality goals of the *Chesapeake 2000* agreement. West Virginia followed suit in 2002.

When the Chesapeake Bay Program failed to meet its water quality goals again in 2007, CBF along with several signatories to the Chesapeake Bay Agreements, and local partners sued the EPA for failure to comply with the Clean Water Act and the terms of the Chesapeake Bay Agreements. A settlement was finalized in May 2010 that explicitly incorporated the TMDL process, providing a legally binding, enforceable commitment that EPA would take specific actions to ensure that pollution to rivers, streams, and the Chesapeake Bay is reduced sufficiently to remove the Bay from the federal "impaired waters" list.

In December 2010, the EPA and the Bay jurisdictions finalized the Chesapeake Bay total maximum daily load (TMDL), which sets limits on nitrogen, phosphorus and sediment pollution necessary to meet water quality standards.[7] It also formed jurisdiction-specific plans to achieve those pollution limits—together known as the Chesapeake Clean Water Blueprint. EPA and the Bay jurisdictions agreed to implement 60 percent of their Bay cleanup practices by 2017 and 100 percent by 2025. To develop these plans, Bay jurisdictions worked with local governments to take advantage of their knowledge about sources so that the pollution reduction requirements were equitably distributed and one sector was not burdened at the expense of another.

In June of 2014, representatives from the entire watershed signed the Chesapeake Bay Watershed Agreement.[8] For the first time, Delaware, New York, and West Virginia committed to full partnership in the Bay Program. The agreement includes the Chesapeake Clean Water Blueprint goals for 2017 and 2025, but also established goals for habitat restoration and conservation, improving fisheries, increasing public access public access, and environmental literacy, to name a few.

THE CHESAPEAKE BAY BLUEPRINT IS AN INTERNATIONAL MODEL

The Chesapeake Bay Blueprint is an international model for environmental improvement. The partnership between state, federal, and local governments has been central to the Bay's improving health. And organizations like the Chesapeake Bay Foundation have played a key role in holding all parties to their commitments. But, I cannot understate the importance of federal leadership.

Even after the Bay Agreement was signed and the Chesapeake Bay Program formed, the states recognized that they were going to miss their 2010 cleanup goals, and they requested federal leadership. On June 19, 2008 at the Chesapeake Bay

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[6] In 2000, Congress passed a reauthorization of Section 117 of the Clean Water Act, which did not substantially alter the approach or make up of the Chesapeake Bay Program but did increase the authorization level to $40 million annually. For the last several years, funding for the Bay Program has been around $73 million annually.

[7] The "Chesapeake Bay TMDL" actually applies to 92 impaired segments, *See* http://www.epa.gov/chesapeakebaytmdl/

[8] https://www.chesapeakebay.net/what/what__guides__us/watershed__agreement

Program's Principal's Staff Committee, Virginia Secretary of Natural Resources L. Preston Bryant made a motion to develop a TMDL by the end of 2010. The motion to develop the TMDL was approved without dissent. Simply put, Bay states recognized that setting the Bay total maximum daily load for nitrogen, phosphorus and sediment was a job that only EPA—with its cross-state jurisdiction and team of scientists—could do.

This federal leadership, with its heightened level of commitment and accountability, has proved to be the vital ingredient necessary to get the cleanup on track and create what Dr. Donald Boesch, President Emeritus of the University of Maryland Center for Environmental Science, called "The Moment in Time" to save the Bay. When the Blueprint was established, he wrote, " . . . this is not just a moment in time, but the only moment our society will ever have to restore the Bay. As a scientist, I am trained to rely on empirical evidence rather than wishful thinking. There is just no evidence for concluding that we will have another chance after 2025 given the record of performance and additional mounting pressures that will result from population growth and climate change."[9]

How We are Doing—the State of the Bay and the Blueprint

For decades, CBF's biennial *State of the Bay* report has tracked the Bay's health.[10] Over the last ten years it has improved, but the slow improvements to water quality and impact on the living resources of the Chesapeake Bay system continues to be a concern.

Since the Blueprint's beginning in 2010, the Bay has been improving. But as this year's State of the Bay shows, progress is never a straight line.

Simply put, the Bay suffered a massive assault in 2018. Extraordinary weather flushed enormous amounts of nitrogen, phosphorous, and debris—mostly from Pennsylvania, but also from other regions—off our lands and into the Bay. As a result, the *State of the Bay* score fell one point to a 33.

Still, there are heartening signs that the Bay is building resiliency. Bay grasses remain intact and recent studies indicate an improving trend in underwater dead zones over the long term. But the system remains dangerously out of balance. And new challenges like climate change and a federal administration attempting to roll back fundamental environmental protections are threatening success.

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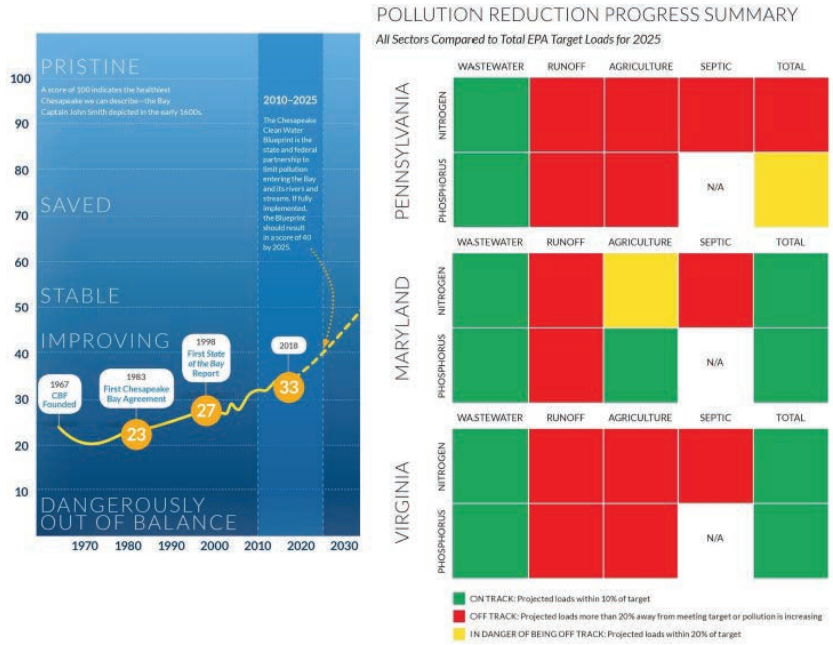
[9] http://www.capitalgazette.com/cg2-arc-ce7685b2-dfe6-5489-929f-b81e5cd86754-20120211-story.html

[10] https://www.cbf.org/about-the-bay/state-of-the-bay-report/



With a little less than seven years to go until the 2025 deadline set for achieving the commitments of the Blueprint, we can see that while we have made great strides, we have a long way to go. CBF recently issued our State of the Blueprint. While no state is completely on track, Maryland [http://www.cbf.org/how-we-save-the-bay/chesapeake-clean-water-blueprint/state-watershed-implementation-plans/maryland/] and Virginia [http://www.cbf.org/how-we-save-the-bay/chesapeake-clean-water-blueprint/state-watershed-implementation-plans/virginia/] are close to having the programs and practices in place to restore water quality and meet the 2025 goal. Pennsylvania is not on track.

Virginia is on track to achieve its 2025 goals, provided it accelerates efforts to reduce pollution from agricultural [http://www.cbf.org/issues/agriculture/] sources and growing urban and suburban areas, while continuing progress in the wastewater [http://www.cbf.org/issues/sewage-septic-systems/] sector. Virginia has a strong roadmap for success; the key is implementation.

Maryland is on-track to meet its overall nutrient reduction targets by 2025, due in large part to investments to upgrade sewage treatment plants [http://www.cbf.org/issues/sewage-septic-systems/], which have exceeded goals, and in farm management practices [http://www.cbf.org/issues/agriculture/best-management-practices.html]. Pollution from developed lands and septic systems continues to increase, challenging the long-term health of Maryland's waterways. While the Blueprint provides a path to the 2025 goals, it is short on strategies to maintain them. The plan relies on annual practices that are less cost effective and don't provide as many benefits for our climate and our communities as permanent natural filters.

Pennsylvania is significantly behind in implementing the pollution reducing practices necessary to achieve the 2025 goals, particularly from the agricultural and the urban/suburban stormwater sectors. Wastewater treatment plants have met and exceeded goals and targets for making reductions by 2025. But agriculture and stormwater efforts have fallen significantly behind. While most farmers embrace conservation, a lack of financial and technical support has stifled progress. Keeping soils, nitrogen, and phosphorus on the land instead of in the water is good for soil health, farm profitability, and life downstream.

CHALLENGES

A healthy Bay is in sight—but the Blueprint to save the Chesapeake Bay is at a critical juncture. There are four main challenges: Pennsylvania, regulatory rollbacks, climate change, and federal funding.

1. Pennsylvania

A chain is only as strong as its weakest link, and that is also true for the partnership between the six Bay states, the District of Columbia, and the Environmental Protection Agency (EPA) to restore water quality across the region. Unfortunately, Pennsylvania's leaders have failed to uphold their promise to reduce pollution to its surface and groundwaters since the partnership was launched in 2009.

Pennsylvania has never met its nitrogen reduction targets and its current plan to achieve the 2025 goal is woefully inadequate, detailing only two-thirds of actions necessary to achieve its goal. Furthermore, the resources to implement the plan do not currently exist. There is a shortfall in funding of nearly $257 million a year.

Continued failure by Pennsylvania legislators to support those working for cleaner waters with technical and financial assistance means failure for the entire partnership.

Second, recent deregulatory efforts could be devastating to the Chesapeake's recovery, in particular weakened Corporate Average Fuel Economy (CAFE) and the proposed Clean Power Plan replacement.

2. Proposed Regulatory Rollbacks

Maintaining strong protections for streams and wetlands is essential to the health and restoration of the Chesapeake Bay. Wetlands act as buffers that absorb pollution, reduce storm surges, and help control flooding, and the Bay receives half of its water from an intricate network of creeks, streams, and 1.7 million acres of wetlands. Repealing the 2015 Clean Water rule and changing the definition of "Waters of the United States" rule would limit Clean Water Act protections for many streams and wetlands.

Air pollution not only poisons our lungs and heats our planet but eventually ends up in our water. Approximately one-third of the nitrogen entering the Chesapeake Bay comes from air pollution. Much of it is in the form of nitrogen oxides from power plants, cars and trucks, and industrial sources, which can drift hundreds of miles before falling to the ground and into local waterways. In crafting the Chesapeake Bay Blueprint, the EPA relied on pollution reductions from air regulations, but the Trump administration's air rollbacks put the health of the Bay and its residents at risk. The Safer Affordable Fuel-Efficient Vehicle Rule will relax fuel efficiency standards for cars and light-duty trucks that produce greenhouse gas emissions and nitrogen oxides. And, the Affordable Clean Energy Rule (ACE) announced on Wednesday, June 19th falls short of the reductions in nitrogen oxides that were anticipated under the Clean Power Plan and relied upon to meet the commitments of the Chesapeake Bay Blueprint. Furthermore, both will worsen the impacts of climate change—another key challenge to Bay restoration efforts.

3. Climate Change

Healthy estuaries are the first line of defense for coastal areas worldwide, providing protection from climate change impacts. Estuarine systems capture and sequester carbon. Forested buffers along our streams hold soil in place during heavy storms, cool waters and trap additional carbon.

Unfortunately, the Bay—and its surrounding states—are also negatively impacted by the effects of climate change including sea-level rise, extreme weather, warming temperatures, and ocean acidification.[11]

EPA has noted that average temperatures have risen between 1895 and 2011 by almost two degrees Fahrenheit and projections indicate warming of 4.5 to 10 degrees by the 2080s.[12] Average U.S. precipitation has increased since the 1990s, and the frequency and intensity of heavy precipitation events is increasing due to climate change.[13] Within 20 years, nearly 170 U.S. communities will be chronically inundated with flooding[14] and more than 70% of these communities will be in Louisiana and Maryland: the "canaries in the coal mine" for sea level rise.[15] Sea level rise threatens to inundate small coastal communities and major cities alike in the Chesapeake Bay region. In Maryland alone, it threatens to flood over 61,000 homes

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[11] EPA, Chesapeake Bay Program, *Climate Change*, https://www.chesapeakebay.net/issues/climate_change

[12] *Id.*

[13] U.S. Global Change Research Program, *Climate Science Special Report: Fourth National Climate Assessment*, 19, 20, 2017.

[14] Erika Spanger-Siegfried, *et. al*, *When Rising Seas Hit Home: Hard Choices Ahead for Hundreds of US Coastal Communities*, Union of Concerned Scientists 2, 2017.

[15] *Id.*

by 2100, valued at $19 billion.[16] Entire inhabited islands are now underwater in the Chesapeake Bay, with more likely to follow if greenhouse gas (GHG) emissions do not decrease substantially.[17] In Norfolk, Virginia, sea level rise poses significant risk to the public and military infrastructure and operations.[18]

Wetlands can help to mitigate some of those effects, but they are also threatened by sea level rise. As we have noted, these important filters reduce the level of pollutants entering the Bay,[19] help protect against flooding by absorbing stormwater and protect coastal communities from storm surge and erosion,[20] but they can also serve as sites of carbon sequestration.[21] Wetlands inundated with saltwater from sea level rise, however, begin to disappear.[22] They are typically some of the first areas to be exposed to chronic flooding and while they can migrate in response to changes in water levels provided they have the space and time to do so,[23] the pace of sea level rise and changes in land use in coastal communities have weakened the ability of wetlands to migrate.[24] A decrease in the overall acreage of wetlands will lead to a decrease in the natural environment's ability to deal with increased rainfall. Forested buffers along creeks, tidal rivers, and the Bay are also impacted by sea level rise as saltwater seeps into the soil, killing trees and creating "ghost forests."[25]

In addition, warming waters—that have already been recorded in 92 percent of the Bay—deplete the level of available oxygen in the Bay.[26] This will have major repercussions as the Bay struggles with dead zones of hypoxic water from nitrogen and phosphorus pollution (these nutrients fuel algal blooms, creating hypoxic and anoxic areas in the Bay).[27] Warming ocean temperatures will only exacerbate the dead zone in the Bay because warmer water molecules hold less oxygen than colder water molecules.[28]

Finally, GHG emissions cause ocean waters to acidify. Our oceans are a sink for atmospheric carbon, absorbing about a quarter of the CO2 released into the atmos-

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[16] Catherine Rentz, *Rising sea levels threaten $19 billion in real estate across Maryland*, study says, The Baltimore Sun, Oct. 28, 2017, https://www.baltimoresun.com/news/investigations/bs-md-suninvestigates-sea-level-20171026-story.html.

[17] Erik Ortiz, *How to Save A Sinking Island*, NBC NEWS, November 13, 2017, https://www.nbcnews.com/specials/deal-island; David Fahrenthold, *Last house on sinking Chesapeake Bay island collapses*, Washington Post, October 26, 2010, http://www.washingtonpost.com/wp-dyn/content/article/2010/10/24/AR2010102402996.html; Jon Gertner, *Should the United States Save Tangier Island From Oblivion?*, New York Times Magazine, July 6, 2016, https://www.nytimes.com/2016/07/10/magazine/should-the-united-states-save-tangier-island-from-oblivion.html.

[18] "Sea level rise at just one site can have a significant impact on [both military policy and] strategy. Hampton Roads, Virginia, dubbed 'the greatest concentration of military might in the world' for former Secretary of Defense Leon Panetta, is by itself an invaluable operational and strategic hub for both the United States and its allies. It . . . is the backbone of the U.S. Atlantic Fleet. It is also a low-lying site and very exposed to sea level rise and storm surge. If significant portions of the Hampton Roads infrastructure we regularly inundated, as is projected under a number of scenarios for the years 2023–2100, the impediment to force deployments for critical Atlantic, Mediterranean and Pacific war-fighting and humanitarian operations—many of which are tied to core strategic goals of the United States—would be significant." The Center for Climate and Security, Military Expert Panel Report: *Sea Level Rise and the U.S. Military's Missions, 23–24, 2016*, https://climateandsecurity.files.wordpress.com/2016/09/center-for-climate-and-security__military-expert-panel-report2.pdf.

[19] Chesapeake Bay Program, *Wetlands*, https://www.chesapeakebay.net/issues/wetlands

[20] *Id*.

[21] Kevin D. Kroeger, *et al*., Scientific Reports, *Restoring Tides to Reduce Methane Emissions in Impounded Wetlands: A New and Potent Blue Carbon climate Change Intervention*, September 20, 2017, www.nature.com/scientificreports.

[22] Joseph Kurt and Victor Unnone, *Climate Change and the Chesapeake Bay Total Maximum Daily Load: Policy Priorities and Options*, Virginia Coastal Policy Center, 4, 2016.

[23] Erika Spanger-Siegfried, *et. al*, *When Rising Seas Hit Home: Hard Choices Ahead for Hundreds of US Coastal Communities*, Union of Concerned Scientists, 10, 2017.

[24] *Id*.

[25] *Id. See also* John Upton, *'Ghost Forests' Appear as Rising Seas Kill Trees, Climate Central*, Sept. 15, 2016, http://www.climatecentral.org/news/ghost-forests-appear-as-rising-tides-kill-trees-20701.

[26] *See Army Corps of Engineers and City of Norfolk Draft Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study/Environmental Impact Statement*, October 2017, http://www.nao.usace.army.mil/NCSRM/

[27] EPA, Chesapeake Bay Program, *The Dead Zone*, https://www.chesapeakebay.net/state/dead__zone

[28] Chris Mooney, *Global warming could deplete the oceans' oxygen—with severe consequences*, Washington Post, April 28, 2016, https://www.washingtonpost.com/news/energy-environment/wp/2016/04/28/global-warming-could-deplete-the-oceans-oxygen-levels-with-severe-consequences/?utm__term=.00aa4517aaef.

phere each year.[29] This absorption is not without consequence: excess CO2 is changing the saltwater chemistry.[30] A chemical reaction occurs between carbon dioxide, water, and carbonate ions that reduces seawater pH depleting the concentration of carbonate ions and calcium carbonate minerals.[31] This negatively affects calcifying species by impairing their shell making ability. Ocean acidification threatens the growth and reproduction of oysters, clams, and other creatures with calcium shells.[32] The Chesapeake Bay blue crab population may be particularly susceptible to acidification because larval crabs spend a portion of their life offshore in the ocean. Blue crabs are a particularly important commercial species in the region's multi-billion-dollar seafood industry.[33]

Taken together, the effects of GHG emissions will impact the complex ecosystem—including water quality and habitat—needed for species survival in the Bay region. Indeed, these impacts are identified and reflected through various sections of the Chesapeake Bay Watershed Agreement.[34]

4. Federal Funding

As mentioned, funding remains a challenge for implementing the Blueprint. Full or increased funding is needed in a variety of programs that support the implementation of the Blueprint including:

U.S. ARMY CORPS OF ENGINEERS (USACE) PROGRAMS

The U.S. Army Corps of Engineers (USACE) is a key partner in the Chesapeake Bay Watershed Agreement goal to restore oyster populations in 10 Bay tributaries in Maryland and Virginia by 2025. It provides significant technical expertise, logistical coordination, and funding for the construction and long-term monitoring of oyster restoration projects. USACE also completed a Chesapeake Bay Comprehensive Plan in 2018 that identified more than 300 restoration projects throughout the watershed in need of funding.

U.S. DEPARTMENT OF AGRICULTURE (USDA) PROGRAMS

Through several conservation programs, the U.S. Department of Agriculture works with farmers to plan and install voluntary practices that protect water quality by reducing the flow of valuable nutrients and sediments from agricultural lands into rivers and streams. The programs are funded through the Federal Farm Bill [http://www.cbf.org/about-cbf/locations/washington-dc/issues/federal-farm-bill.html] and support every state in the Chesapeake Bay watershed. They include:

- Environmental Quality and Incentives Program (EQIP)
- Conservation Stewardship Program (CSP)
- Regional Conservation Partnership Program (RCPP)
- Conservation Reserve/Conservation Reserve Enhancement Program (CREP) *See how CREP and other programs are helping farmers* [http://www.cbf.org/blogs/save-the-bay/farmer-success-stories.html] *reduce the amount of pollution entering local waterways and the Bay*.

Congress passed the Agriculture Improvement Act of 2018, or 2018 Farm Bill, into law on December 20, 2018. To ensure that these programs are put to the best use in the Chesapeake Bay region, *the maximum amount of funding contemplated by Congress should be appropriated*.

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[29] NOAA Pacific Marine Environmental Laboratory Carbon Program, *Ocean Acidification: the Other Carbon Dioxide Problem*, https://www.pmel.noaa.gov/co2/story/Ocean+Acidification

[30] NOAA Pacific Marine Environmental Laboratory Carbon Program, *What is Ocean Acidification?* https://www.pmel.noaa.gov/co2/story/What+is+Ocean+Acidification%3F

[31] *Id.*

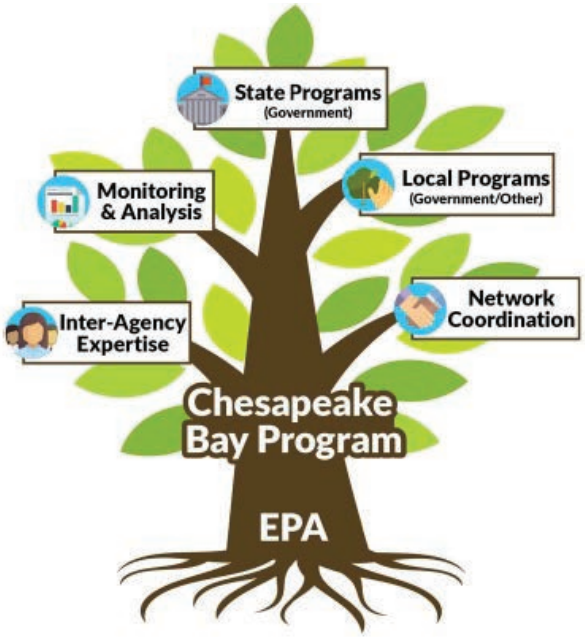
[32] Sarah M. Giltz and Caz M. Taylor, *Reduced Growth and Survival in the Larval Blue Crab Callinectes sapidus Under Predicted Ocean Acidification*, 36, J. of Shellfish Research, 481, 2017.

[33] Chesapeake Bay Foundation, *The Economic Importance of the Bay*, http://www.cbf.org/issues/what-we-have-to-lose/economic-importance-of-the-bay/

[34] One of the purposes of the Chesapeake Bay Restoration Act of 2000 was to "expand and strengthen cooperative efforts to restore and protect the Chesapeake Bay; and to achieve the goals established in the Chesapeake Bay Agreement." 33 U.S.C. § 1267. The Chesapeake Bay Agreement is an interstate compact as Congress developed and authorized the joint state action. *See Cuyler v. Adams*, 449 U.S. 433; 101 S. Ct. 703 (1981); *Seattle Master Builders Assoc. v. Pacific Northwest Electric Power & Conservation Planning Council*, 786 F.2d 1359 (9th Cir. 1986).; *Chesapeake Bay Watershed Agreement*, 2014, https://www.chesapeakebay.net/documents/FINAL__Ches__Bay__Watershed__Agreement.withsignatures-HIres.pdf

CHESAPEAKE BAY PROGRAM

Perhaps one of the most important aspects of funding is the federal funding that supports the Chesapeake Bay Program. The Chesapeake Bay Program (CWA 117) provides targeted support to watershed states to meet their Blueprint goals. The Chesapeake Bay Program Office in Annapolis, Maryland coordinates the science, research, modeling, support services, monitoring, data collection, and other activities essential to Blueprint implementation. As a single cross-state ecological system, the Bay watershed requires this sophisticated level of attention. For example, the Bay Program is coordinating the development of trading and offset programs that both ensure pollution reduction requirements are met and create cost-effective options for states to meet their goals. But the lion's share of program funds go directly to grants and cooperative agreements that enable nonprofit organizations, state and local governments, colleges, universities, and interstate agencies to assist with Blueprint implementation.



Originally created under President Ronald Reagan, this supports complex cross-state collaboration and excellent stewardship of taxpayer dollars by providing states access to the watershed-wide science, research, modeling, monitoring, and data they need to efficiently plan, track, and adapt their restoration activities. Over 60 percent of program funds go to states, primarily through matching grant programs that drive local investment in state restoration priorities. *Increasing federal support for the program is an important step to save the Bay and repair some of the most damaged waterways in Virginia, Pennsylvania, and Maryland*. CBF recommends that additional funds be used to:

- Expand two grant programs—one that improves water quality and habitat in small, local waterways, and a second that supports innovative and market-based approaches to reducing pollution.
- Assist local governments in reducing pollution.
- Increase assistance to priority watersheds that will provide the most cost-effective pollution reductions.

Simply stated, the Chesapeake Bay Program is the glue that holds together the Blueprint. It is therefore important to not only increase funding to the program through the appropriations process, but to reauthorize the program as well. CBF

supports the current proposals that have been introduced in the House and Senate that do just that.[35]

It is impossible to overstate how important robust and consistent federal funding for grants and loans and funding the Chesapeake Bay Program is for successful implementation of the Chesapeake Bay Blueprint.

CONCLUSION

The Chesapeake Clean Water Blueprint has infused new life into the Bay clean-up. We are seeing accelerated implementation of practices that scientists agree will lead to improved water quality and ultimately a healing of the Bay. However, what is undone far exceeds what has been done to date. Now is not the time to rest, now is "The Moment in Time" that must be seized to accelerate Bay restoration to gain sufficient ground to overcome the continuing crush of population growth. The Bay has suffered centuries of degradation. But we do not have the luxury of time to save it. Now, in the final and most important phase of the clean-up effort, the Bay partnership must finish the job.

The science is clear about what needs to be done, and the Blueprint is working. Underwater grasses are recovering. Blue crab populations are rebounding. The Bay's dead zone is shrinking. Communities are seeing cleaner streams, greener urban landscapes, and increased resilience. But the recovery is fragile. We are facing a variety of ongoing—as well as some emerging—challenges. Pennsylvania's leaders must live up to their commitments.

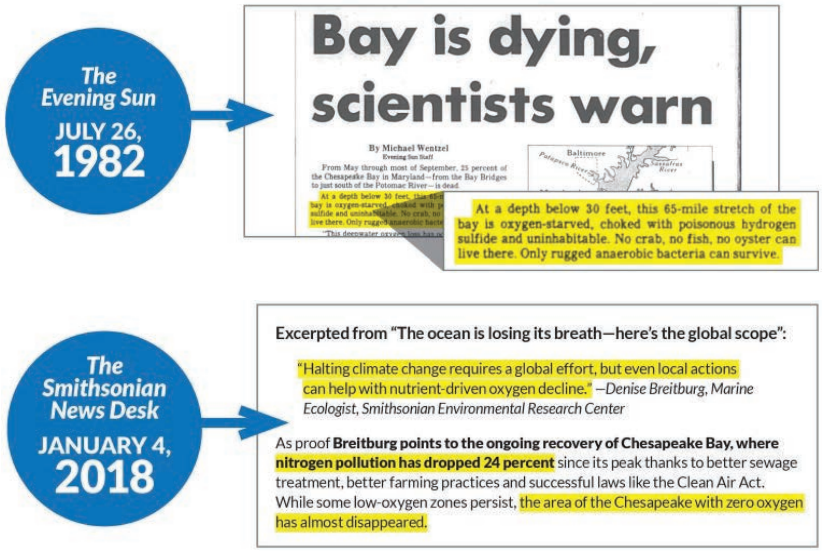
Climate change is an imminent threat. Regulatory rollbacks threaten progress toward clean water and air. And funding is at risk for programs key to the Bay's health.

As President Reagan said in his 1984 State of the Union, "Let us remember our responsibility to preserve our older resources here on Earth. Preservation of our environment is not a liberal or conservative challenge, it's common sense."

Clean water is our responsibility, our legacy to leave our children and grandchildren. We must succeed.

FROM ROCK BOTTOM TO REAL HOPE IN 36 YEARS

A POSITIVE TRAJECTORY FOR THE CHESAPEAKE BAY



[35] H.R. 1620 (116), *Chesapeake Bay Program Reauthorization Act*, S. 701 (116), *Chesapeake Bay Program Reauthorization Act*.

Mrs. NAPOLITANO. Thank you for your testimony, Mr. Baker.

I do not know if you are aware, but yesterday there was an article in the Washington Times that stated scientists predict a record dead zone in the Chesapeake Bay. Some ecologists at the University of Maryland are worried that a large spot of low oxygen in the Chesapeake Bay could harm the State's seafood industry. Scientists from Maryland and the University of Michigan said they are predicting a 2-mile swath of low to no oxygen in the bay, making it one of the largest dead zones in nearly 20 years. That was yesterday.

Mr. BAKER. Yes.

Mrs. NAPOLITANO. So I think you were right.

Mr. BAKER. And this is after 5 or 6 years of that dead zone going down to almost zero.

Mrs. NAPOLITANO. Thank you.

Mr. BAKER. Fragile.

Mrs. NAPOLITANO. Ms. Kristi Trail, please proceed.

Ms. TRAIL. Thank you.

I want to thank you for the opportunity to provide testimony to you today as well.

This testimony describes some history on our environmental organization and why funding for the Lake Pontchartrain Basin Restoration Program, or PRP for short, is vital to maintaining the successes we have had.

It is worth noting that the results achieved and long-term impact of our work have been largely based on the continuity of effort, which is why programmatic funding is so important.

For those of you not familiar with Lake Pontchartrain, here are a few details. The lake forms the northern boundary of the Greater New Orleans area and is crossed by the longest continuous bridge over open water in the world, more than 24 miles in length.

Lake Pontchartrain and its surrounding lands and waters encompass 10,000 square miles. It is part of one of the largest estuaries in the country, and it interacts directly with the Gulf of Mexico.

When the Mississippi River approaches flood stage, as it has been this year for several months, part of its flow is diverted across a flood-controlled structure operated by the Army Corps of Engineers called the Bonnet Carré spillway. Thus, fresh river water flows into Lake Pontchartrain when it is opened.

In 2019, for the first time ever, the spillway has been opened twice, with the second opening continuing now.

The Lake Pontchartrain Basin Foundation was established 30 years ago in 1989 in response to environmental concerns voiced across southeast Louisiana. In 2000, Congress established the Lake Pontchartrain Basin Restoration Program to restore the ecological health of the basin by developing and funding restoration projects and related scientific and public education programs.

Shortly after PRP was authorized, LPBF established our indepth water quality monitoring program. Within just a few years of the PRP funding, LPBF worked with the State of Louisiana and the U.S. EPA to have the lake removed from the impaired water bodies list under the Clean Water Act 303(d).

Southeast Louisiana's natural resources and built infrastructure are of national importance. We know from past hurricanes and major oil spills that interruptions to our State's workforce altered the Nation's economy.

Conditions in southeast Louisiana affect our State's pivotal roles in energy supply for the New England States; for tourism, $47 million in 2017; the estuary that supports the seafood industry and "Sportsmen's Paradise," and waterborne commerce through the Port of New Orleans.

All of these systems hinge on continued and increased preservation, restoration, and protection efforts benefitting Lake Pontchartrain, its estuary, and the coastal ecosystem in southeast Louisiana.

With our funding in 2013, LPBF established a small museum inside the restored New Basin Canal Lighthouse in New Orleans. Tourists, school children, lighthouse aficionados, and others can visit to learn about the region's history and ecology and LPBF's successes.

Since the lighthouse opened, more than 50,000 youth and adults have toured its exhibits.

Our water quality monitoring program has provided timely scientific analysis and broad dissemination of results to allow citizens to make informed decisions about enjoying the lake for fishing, swimming, and other recreational activities.

The most important component of this effort is maintaining a continuous data set. We have been sampling the basin continuously every week for 18 years, and we do not want to interrupt that data set due to a lag in funding.

Additionally, to address the need posed by episodic problems concerning water quality and public health, we conduct needed analyses and provide information for situations such as the Mississippi River flows into the lake from the Bonnet Carré spillway; potentially toxic algal blooms; oil rig explosions; sewage spills; or tropical storms or hurricanes.

In 2006, LPBR created the multiple lines of defense strategy. The lines of defense are both manmade and natural and include barrier islands, sounds, marshes, natural ridges, manmade ridges, floodgates, levees, pump stations, elevated homes and businesses, and evacuation routes.

Restoring targeted habitat sites, such as swamps and marshes, is integral to recreating a self-sustaining coast and permanent storm protection for coastal communities.

PRP funding comprises a critical portion of our total budget, though it has decreased significantly over the years, and reauthorization allows us to continue our many restoration efforts.

Although the lake and its resources have made a tremendous comeback, Lake Pontchartrain and its surrounding area continue to face environmental challenges. All across the United States the protection of rivers, streams, lakes, bays, and adjacent lands can create jobs, protect fisheries relied upon by the fishing industry, protect food sources, enhance property values, decrease local government expenditures, and provide recreational opportunities.

With congressional support, we can continue this great work for years to come, leaving behind a legacy of clean water, a strong economy, and a prosperous region. It is for this reason we ask for reauthorization of the program.

Thank you.

[Ms. Trail's prepared statement follows:]

Prepared Statement of Kristi Trail, Executive Director, Lake Pontchartrain Basin Foundation

Thank you for the opportunity to provide testimony. This testimony describes some history on our environmental organization, and why funding for the Lake Pontchartrain Basin Restoration Program (PRP) is vital maintaining the successes we've had. The work that has been supported by PRP awards to the Lake Pontchartrain Basin Foundation over the years is of a uniquely continuous nature. The results achieved and long term impact of that work have been largely based on the continuity of effort. We also leverage matching funds and in-kind services of up to 25% from a wide array of partners.

The Lake Pontchartrain Basin Foundation (LPBF) was established in response to environmental concerns voiced across SE Louisiana. The lake forms the northern boundary of New Orleans and the lake is crossed by the longest continuous bridge over open water in the world: more than 24 miles in length. It is a shallow lake, yet larger than Lake Mead, Lake Powell, and Lake Tahoe, in terms of surface area.

Although Lake Pontchartrain and its surrounding area continue to face environmental challenges, the Lake and its resources have made a tremendous comeback. Much of this success is due to interested and concerned citizens who want a clean, healthy Lake and Basin for this and future generations, all of which would not be possible with your support of this funding.

Again, I thank you for this opportunity.

GEOGRAPHY & HABITAT

Lake Pontchartrain and its surrounding lands and waters encompass 16 parishes (counties): 25% are highly urbanized and 75% are rural. Lake Pontchartrain is part of one of the largest estuaries in the country, interacting with the Gulf of Mexico through the Rigolets Strait, Chef Menteur Pass, Lake Catherine and Lake Borgne. The lake experiences tidal changes and varying mixes of salt and freshwater, with complex mixtures of herbaceous wetlands, including fresh, intermediate and brackish marsh. Five rivers, 20 to 65 miles in length, and two bayous flow into the lake and, when the Mississippi River approaches flood stage, part of its flow is diverted across the Bonnet Carré spillway and into Lake Pontchartrain. In 2019, for the first time ever, the spillway has been opened twice, with the second opening continuing now.

Louisiana swamps are an integral part of the wetland ecosystem of the Gulf coast. Swamps provide habitat, spawning and nursery grounds, and food sources essential to millions of migratory songbirds and waterfowl, wildlife such as deer, otter, osprey, swamp rabbits, wood ducks, squirrel, muskrat, snakes and turtles, and 18 species of concern, including bald eagle, prothonotary warbler, mottled duck, swallow-tailed kite, Louisiana black bear, American alligator, alligator snapping turtle, and southern dusky salamander. Swamps also provide flood water storage and storm surge protection during hurricanes. Due mostly to extensive logging around the turn

of the 20th century, subsidence, nutria, saltwater intrusion, and levee construction, there is only an estimated 464,000 acres of swamp remaining.

HISTORY OF THE LAKE PONTCHARTRAIN BASIN FOUNDATION (LPBF)

Most of the environmental problems that challenge the Basin were well recognized by the mid-1970s, yet there was no common effort towards restoration. In the spring of 1989, the Greater New Orleans Expressway Commission (aka, "Causeway Commission") authorized a $30,000 study that culminated in a 300-page report, a blueprint for cleaning and restoring the ecological balance of the lake. It recommended formation of a state agency to lead the effort. Later that year, the Louisiana Legislature created the Lake Pontchartrain Basin Foundation (LPBF) to carry out that mandate.

In 2000, Congress stepped in and passed Senate Bill 835, adding Lake Pontchartrain Basin, Louisiana and Mississippi, to the list of estuaries to be given priority consideration for inclusion in the National Estuary Program. Included in this legislation is the Lake Pontchartrain Basin Restoration Act of 2000, which requires the Administrator to establish the Lake Pontchartrain Basin Restoration Program to restore the ecological health of the Basin by developing and funding restoration projects and related scientific and public education projects. The bill authorized the Administrator to make grants for such purposes, and authorized appropriations for FY 2001 through 2005. The Program received $6 million in Fiscal year 2002.

The purpose of the Lake Pontchartrain Basin Restoration Program (PRP) is to restore the ecological health of the Basin by developing and funding restoration projects and related scientific and public education projects. Since 2001, the University of New Orleans Research and Technology Foundation, Inc. (UNO RTF) has managed the multiple grants for the Lake Pontchartrain Basin Restoration Program. Historically, eligible applicants have included the Parishes and Cities within the Lake Pontchartrain Basin Watershed and LPBF. Shortly after PRP was authorized, LPBF established the in-depth water quality monitoring program.

Within a decade of the PRP program's funding, LPBF was able to construct nine artificial reefs for fish habitat, work with the State of Louisiana and the USEPA to have the Lake removed from the impaired water bodies list (under Clean Water Act Section 303(d)), & restore a former US Coast Guard Rescue Station post-Katrina for educational use. While not an active Coast Guard station any longer, the Coast Guard regularly uses the facility for promotion and retirement ceremonies.

The reauthorization of the PRP Program in 2012 allowed LPBF to grow many programs throughout the community and expand our educational capacity greatly. In 2013, we rebuilt and repurposed a lighthouse that has seen more than 50,000 youth and adults tour its exhibits. In addition, the reauthorization allowed us to focus state funds and private donations funds into other initiatives, including the planting of 56,000 cypress trees to the west & south of the lake. In 2014, we finished construction of the Bayou St. John Urban Marsh—an urban wetland habitat. The Bayou St. John Urban Marsh is a success, with vegetation flourishing and animals rapidly moving in. Anglers have noted increased fish numbers and diversity, and shorebirds, waders and ducks are feeding in the new habitat. It is a living classroom and a laboratory for restoration, and puts regional problems in a local perspective: the half-acre marsh is the area lost every half hour in south Louisiana.

FY	Total PRP Amount	Amount Awarded to UNO RTF (15%)	Amount Awarded to LPBF	% of Total awarded to LPBF
10	$1,343,760	$201,564	$568,000	42%
11	$1,835,520	$275,328	$590,000	32%
12	$1,700,000	$255,000	$780,000	46%
13	$948,000	$142,200	$335,080	35%
14	$910,000	$136,500	$246,080	27%
15	$961,074	$144,161	$327,680	34%
16	$961,075	$144,161	$327,680	34%
17	$948,000	$135,973	$300,000	31%

FY	Total PRP Amount	Amount Awarded to UNO RTF (15%)	Amount Awarded to LPBF	% of Total awarded to LPBF
18	$948,000	$135,973	$346,323.75	36%

LPBF'S OUTREACH PROGRAM

LPBF's Outreach Program benefits the communities of southeast Louisiana, the State of Louisiana, and ultimately the U.S. economy. The economic emphasis is due to the national importance of SE Louisiana's natural resources and built infrastructure. We know from past hurricanes and the major oil spills that interruptions to our state's workforce alter the nation's economy. Conditions in southeast Louisiana affect our state's pivotal roles in energy supply for New England states, tourism ($47 million in 2017), the estuary that supports the seafood industry and "Sportsmen's Paradise," and waterborne commerce through the Port of New Orleans. All of these systems hinge on continued and increased preservation, restoration, and protection efforts benefiting Lake Pontchartrain, its estuary, and the coastal ecosystem in southeast Louisiana. Consequently, increasing the public's understanding at the local, state, and national levels of our scientific research findings and strategies to benefit our fragile natural resources—to then catalyze their stewardship actions—is the top priority in our communications and outreach efforts. The basin's needs are being addressed through multiple activities working at different scales.

LPBF'S EDUCATION PROGRAM

LPBF established a small museum and its headquarter inside the restored New Basin Canal Lighthouse in New Orleans. Tourists, schoolchildren, lighthouse aficionados and others can visit to learn about the region's history and ecology, and LPBF's successes. LPBF continues to provide many programs throughout the community, and since the reauthorization in 2012, the funding has allowed the organization to expand our educational capacity greatly. Since the lighthouse opened in April 2013, more than 50,000 youth and adults have toured its exhibits. Often, schools send more than 100 students at one time, who can rotate through several learning stations, in groups of 20, across the lighthouse grounds.

WATER QUALITY

LPBF's Water Quality Program benefits the waters of the Pontchartrain Basin, the public, and the local economy through maintaining favorable conditions in the lake and improving the condition of tributaries. Overall, the goals and objectives in this program are to understand the current and always changing water quality conditions, identify remedies and reduce impairments as needed, and keep the public informed about all activities. Both local, state and federal entities use our semi-annual results, trends, and other statistical evaluation of the data collected within the basin. The results of this work are transferable to many estuaries throughout the United States, and we have been recognized for our work with EPA and other federal entities to share with communities with impaired water bodies. Here is one recent fact sheet: https://www.epa.gov/sites/production/files/2018-01/documents/la_natalbanyriver_1622_508.pdf

LPBF has a weekly Recreational Water Quality Monitoring (Basin Wide Monitoring Program) that has provided timely, scientific analysis and broad dissemination of results to allow citizens to make informed decisions about enjoying the lake for fishing, swimming, and other recreational activities. Initially, this program provided a background database for the removal of Lake Pontchartrain from the 303(d)/305(b) Impaired Waters list (as described on page 36). This Basin Wide Monitoring Program will continue monitoring efforts in the basin at its ten current sites sampled for *in situ* parameters and microbial indicators, though with additional funding we will be able to add two monitoring sites and new water quality parameters.

In water bodies (e.g., lakes, rivers and beaches), EPA develops criteria for exposure to bacteria that may indicate viruses that cause illness in humans. LPBF monitors water in southeast Louisiana in terms of criteria set by EPA for fecal coliform and enterococci as indicators of fecal contamination. EPA is also considering criteria for coliphages, which are viral particles associated with E. coli and are better indicators of viruses in treated wastewater than bacteria. This continued funding will allow LPBF to gather data about coliphages and their usefulness as a viral indicator for the protection of public health in recreational waters. This funding also allows LPBF to advocate for changes to water management practices or issues within the basin by sharing our many successes throughout our basin and the entire state.

Primary and secondary benefits include LPBF's education, advocacy, and training to owners of homes and businesses has improved water quality so that eight water bodies (Lake Pontchartrain and other tributaries) have been removed from the Clean Water Act's Section 303(d) list of "impaired waterbodies," confirming the improved environmental conditions.

Additionally, to address the need posed by episodic problems concerning water quality and public health, LPBF aims to conduct needed analyses and provide information for situations such as Mississippi River flows into the lake from the Bonnet Carré Spillway, potentially toxic algal blooms, oil rig explosions, sewage spills, or tropical storms and hurricanes. Over the course of 2017, LPBF received 24 calls related to illicit discharges (either fuel or sewage in composition) into waterways that drained to Lake Pontchartrain. Being responsive to the public's concern is an imperative, yet it is very challenging to have such unbudgeted and time-consuming events occur. LPBF then seeks to document, capture and report to the EPA spills or discharges that concern citizens. Because of LPBF's active engagement as a resource to the public, LPBF was invited to participate in the State of Louisiana Sanitary Sewer Systems Overflows Commission, study and make recommendations on actions necessary to timely report, reduce, and eliminate sewage overflows.

Algal blooms have been a prominent concern this spring, due to the possible presence of toxin-generating bacteria associated with the certain species of algae, and appearance of a bloom both before and after the 2018 opening of the Bonnet Carré Spillway, which has opened as a result of unprecedented flooding throughout the United States. The Mississippi River drains 41% of the United States, and this is now flowing though the Pontchartrain estuary with the opening of the spillway flood control structure. Phytoplankton and cyanobacterial blooms are increasing worldwide due to eutrophication of aquatic environments, much of the occurrence a result of anthropogenic nutrient enrichment of freshwater rivers and lakes. The influx of nitrogen and phosphorus can have a direct impact on algal species composition and the formation of noxious and toxic blooms as well as surface scums. LPBF has become a partner in EPA's CyAN program, a multi-agency project among the National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), U.S. Geological Survey (USGS), and led by EPA to develop an early warning indicator system using historical and current satellite data to detect algal blooms in U.S. freshwater systems. EPA enabled LPBF to collect and ship water/algae samples to Golden, Colorado for analyses to identify microcystins that generate the toxins. LPBF's expertise has been in high demand at this time, responding to inquiries from government officials, news media, area residents, as well as film crew managers for NCIS New Orleans, who chose to abort a water-based scene planned for the actors, after contracting with LPBF to collect and analyze water samples.

LPBF also engages municipal, parish, and state officials in water quality task forces aimed at coordinating activities to reduce pollution in target areas. The water quality issues of these areas are dependent on the development and environmental conditions. These learnings have been transferred to municipalities throughout the region, state and country.

COASTAL SUSTAINABILITY:

LPBF's Coastal Sustainability Program activities benefit the communities of southeast Louisiana and aquatic and terrestrial wildlife in the Pontchartrain Basin estuary. The program needs are being addressed through multiple types of science and restoration activities, providing extensive research for all parishes in the entire Pontchartrain Basin estuary.

LPBF's comprehensive scientific monitoring is released in real-time through Hydrocoast maps produced by GIS specialists and released bi-weekly since 2013. These maps are a snapshot of the basin's ecologic condition and water quality. Every two weeks five maps are released, including salinity, habitat, biology, precipitation and water quality. The maps are used extensively by professional scientists, regulators, commercial and recreational fishers. Fishers use them to guide fishing activity. State officials use them for guidance on diversion operations. On LPBF's website, more than 500 Hydrocoast Maps are archived online providing a continuous inventory of basin conditions since 2012. In 2018, LPBF released its first an annual atlas of the Pontchartrain Basin Estuary. This will represent an annual synthesis of the prior year of data collection on hydrocoast maps. The Hydrocoast maps have drawn particular interest by the Corps of Engineers, and LPBF has a joint project underway as a technology transfer.

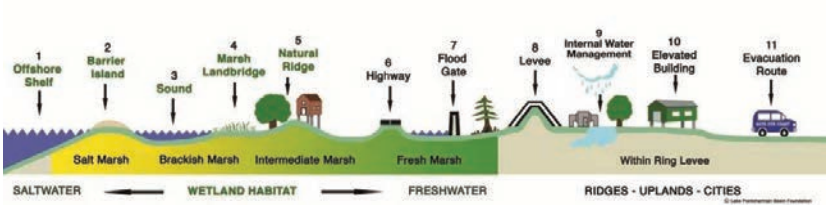
LPBF has a goal to restore Natural Habitats along Lake Pontchartrain's armored Southshore. Armored shorelines of concrete provide poor habitat for lake organisms,

especially juveniles which would otherwise use natural marsh edge to hide from larger predators. Creating little pockets of marsh will provide small oases for important estuarine animals. To restore natural habitats along the otherwise armored south shore of Lake Pontchartrain, LPBF has undertaken two projects: LPBF created the Bayou St. John Urban Marsh (mentioned on page 36) and a new area known as "Lake Vista" in Jefferson Parish.

LPBF led the creation of half an acre of marsh where Bayou St. John meets the lake with this funding. Included in this project was a flood gate operation plan with the Orleans Levee Board that benefits aquatic and terrestrial wildlife and improves water quality along the entire Bayou. A short pier over the marsh is planned to accommodate multiple user groups: fishers, educators, birders, and neighborhood residents.

SAVING OUR COAST

Most recently, LPBF created the Multiple Lines of Defense Program. The "lines of defense" are both man-made and natural and include barrier islands, sounds, marshes, natural ridges, man-made ridges, floodgates, levees, pump stations, elevated homes and businesses, and evacuation routes. Restoring targeted habitat sites, such as swamps and marshes, is integral to recreating a self-sustaining coast and permanent storm protection for coastal communities. The Army Corps of Engineers has incorporated the strategy in upgrading its hurricane protection system for the region. The Multiple Lines of Defense Strategy was developed in 2006 by LPBF. It describes the various features on the landscape that reduce the risk of damage from storm surge to local communities, infrastructure, and economy.



CONCLUSION

Reauthorization of the PRP Program is comprises a critical portion of our total budget—though it has decreased significantly over the years—and allows us to continue our many restoration efforts including:

- Weekly lake/river testing for quality assurance, all made publicly available
- Science-based advocacy to improve quality of life in Louisiana's urban center
- Leadership role in restoring Louisiana's nationally significant coastal ecosystem
- More than 100,000 citizens educated each year about stewardship for current and future generations
- More public access to waterfront recreation in underserved areas
- Data sharing with municipal, parish, state & federal government agencies

Although the Lake and its resources have made a tremendous comeback, Lake Pontchartrain and its surrounding area continue to face environmental challenges. All across the United States, the protection of rivers, streams, lakes, bays, and adjacent lands can create jobs, protect fisheries relied upon by the fishing industry, protect food and drinking water sources, protect and create tourism opportunities, enhance property values, decrease local government expenditures and provide recreational opportunities, including those associated with the multi-billion dollar fishing industry. Because so many rely on the services provided by waterways, when they are not protected, governments must undertake costly projects to restore them or to replace the services they provide.

With Congressional support we can continue this great work for years to come, leaving behind a legacy of clean water, a strong economy, and a prosperous region. It is for this reason we ask for the reauthorization of the Program for another 5 years with increased funding.

Thank you for the opportunity to submit this testimony.

Mrs. NAPOLITANO. Thank you, Ms. Trail.

We move on to Mr. Ford.

Mr. FORD. Thank you very much.

Mrs. NAPOLITANO. Is your mic on?

Mr. FORD. Sorry. Try that again.

Good morning. Thank you for the invitation to be here this morning.

Thank you, Chairwoman Napolitano, Ranking Member Westerman, Representative DeFazio, and, Mr. Rouda, thank you for the invitation to be here today.

I want to thank you all in addition for so capably contextualizing exactly what we are looking at here today, the livelihood of many of coastal America's regions, the importance of the health and rights of clean water and clean air with which I do not know how we can proceed forward.

I think when I reflect on this because we have heard many stats and numbers that what this comes down to is that decades ago leadership within the United States House of Representatives said we needed to take on these issues. They are of national importance. It is our responsibility.

And I can tell you and I think that the five folks that spoke right here before me today understand that without the Federal Government's involvement, we cannot effectively make this work on the local or State level, and that we do this not with regulations and that top-down approach that Mr. Westerman spoke to, but we do that with cooperation, sitting around a table.

I like to say that our interaction with our folks starts with, "Hello. How are you? My name is Tom Ford, and I am here to help."

And because we are locally based and we work with these people, we are trusted. We have those relationships, and we will also be there for the long run. So they turn to us for leadership. They turn to us for a steady hand and support at a time when things seem quite unsteady for many of us.

So it is time again for you to display that leadership, and although I am very proud of all of the accomplishments that come around this table, I am very thankful that Will Baker is here today to speak about the Chesapeake Bay Program, which I think became the model for how we should move forward as an NEP program.

And albeit he has had his successes, he recognizes that there is no end day where you ring the bell and you walk home. The planet is dynamic. Our needs of it are dynamic. The challenges that we face are ongoing.

So thank you for the support that we have received over these many decades. That said, the challenges we face are a bit daunting at times, and the funding that we receive right now, albeit very helpful, it is insufficient, I think, for us to face the challenges of our growing population, to protect our shorelines, to protect our coasts, to protect our economies, to protect all of those iconic animals and ecosystems that we all cherish and that provide tourism opportunities, recreational opportunities, and a quality of life that I think we recognize attracts roughly 40 percent of the population of this United States to those shores.

So what do we face? We face erosion, sea level rise, increased storminess. We have an opportunity to preserve our fisheries, our

tourism, our public and our private infrastructure, and all along the way what we do is create a more resilient and robust economy and ecosystem that serves us all in the future.

So to quote Ronald Reagan's 1984 State of the Union Address: "preservation of our environment is not a liberal or conservative challenge, it's common sense." So I will take his lead on that one.

I think I could sit here and tell you in detail about all of the challenges, and I would love to brag about all of the progress we have made in southern California, but to summarize this, I am on the Atlantic seaboard. I am in the Gulf of Mexico. I am on the west coast or I am in Puerto Rico and every single one of the 28 National Estuary Programs could come in here and fill a day's worth of your time, explaining to you the successes and the challenges that we have had and that we continue to face.

The wonderful thing that I think we find is that we have leveraged the financial contributions from the Federal Government 19 to 1, on average. When my program has had an especially banner year, we were up at 58 to 1. So we know how to put that money to effective use.

The efficiencies that we find therein are because of this, again, local program, locally based from the community up so that when the money finally arrives and the project and the shovels are ready to go, everybody is engaged. They have informed it. Our leadership are informed, and our programs move forward with very little resistance.

I think that that right there is perhaps one of the greatest assets that we can provide to you today.

I thank you for your time, once again, and I am here to answer any questions that I may be able to.

[Mr. Ford's prepared statement follows:]

Prepared Statement of Tom Ford, Director, Santa Monica Bay National Estuary Program and Executive Director, The Bay Foundation, also on behalf of the Association of National Estuary Programs

Dear Chairwoman Napolitano and Ranking Member Westerman:

Thank you for holding this important and timely hearing. The Committee's attention to sustaining inter-governmental efforts to preserve and improve the health of our iconic coastal waters is of great value to the nation.

My name is Tom Ford, and I am the Executive Director of the Santa Monica Bay National Estuary Program and The Bay Foundation (TBF), part of the SMBNEP. TBF is the non-profit partner of the Santa Monica Bay Restoration Authority, and is focused on research, planning, cleanup efforts, and other priorities identified in the SMBNEP's Bay Restoration Plan, a publicly adopted, federally approved comprehensive plan of action for protecting and restoring Santa Monica Bay. Each NEP has adopted a similar plan specific to their estuary.

I am also representing the Association of National Estuary Programs (ANEP). We are comprised of the Directors of the 28 NEPs and dedicated to promoting responsible stewardship of our nation's bays, lagoons, and harbors. We share lessons learned by NEPs with others who might benefit from a similar consensus-based, stakeholder-driven process in resource management.

Before describing the National Estuary Program's role in this work, I would like to especially thank one of the Committee's newest members, Representative Harley Rouda from my home state, for inviting me today. Congressman Rouda has already established a record in providing much-needed assistance to California coastal communities struggling with the very real impacts of a changing climate, including extreme weather events.

Our estuaries and bays represent immense value to our nation's economy. Fishing and shipping, tourism and recreation, minerals and energy are important contribu-

tions. These places—where more than 40% of the U.S. population lives and works—are treasured by all of the American people because of the opportunities for recreation and connection to nature they offer.

While we as a nation treasure these water resources, however, we also change their chemistry with pollution, drive salmon and whales to the edge of extinction, and reduce the ability of coastal habitat to protect us from storms and flooding.

The Santa Monica Bay National Estuary Program is one of 28 National Estuary Programs created by Congress in 1987 as Section 320 of the Clean Water Act to restore and protect some of our most threatened bays, rivers and watersheds. These include places like San Francisco Bay, Tampa Bay, New York/New Jersey Harbor, my own Santa Monica Bay, and as you have just heard from Laura Blackmore, the iconic Puget Sound. Our job, as set out by statute, is to assess and reduce human impacts on coastal habitats.

In the 32 years since its establishment, the community-based, non-regulatory National Estuary Program has gained a reputation for effective engagement of all manner of stakeholders for decisionmaking. Each site-based National Estuary Program convenes multi-sector advisory committees to develop their yearly workplans, building consensus to direct local, state, and federal actions to improve the health of our estuaries.

As a non-regulatory program, the National Estuary Program can build the trust necessary to drive toward a consensus on actions to restore estuaries. We provide consistent assistance to all types of partners, with a friendly "hello, how are you" that is truly a case of "we're here to help."

The National Estuary Programs have continued to meet Congress' challenge to document the State of the Bays as well. As part of those efforts we conduct research, compile and analyze data, and provide technical advice to state and local agencies.

The National Estuary Program is also expert at marshalling resources from all levels of government, foundations, and the corporate sector for on-the-ground actions. Collectively, and on average over the last 14 years, the Program has tallied up leveraged resources of $19 for every $1 invested by Congress. The Santa Monica Bay NEP that I direct leveraged $29 for every $1 over the past 5 years.

Congress' vision of a community- and incentive-driven program, supported by scientific data and significant investment from partners, has proven to be an ideal way to prompt local action through local buy-in. Because our consensus-based planning processes are supported by the community, informed by local data, and broadly funded, when we're ready to put the shovels into the ground our communities are engaged, our leaders involved, and our programs and projects successful.

This level of success is the same whether I am at a National Estuary Program in the Gulf of Mexico, in Puerto Rico, or on the West Coast or the Atlantic seaboard. And I should add that we share our good ideas and best practices with our colleagues who are not designated Estuaries of National Significance. You can see our fingerprints on every coast.

If Congress sees fit to reauthorize the NEP, the National Estuary Programs are ready to continue the work you set in motion 32 years ago. With additional funding, each program would be able to increase its ability to have a significant local impact; with the competitive grant in place we can direct resources to address particularly vexing problems afflicting our coastal waters, including algal bloom, ocean acidification, and lack of preparedness for major storm events. These approaches can serve as modeal for the country.

Thank you for your attention to the challenges we are confronting in protecting our iconic waters. I am glad to provide any additional information or answer any questions you may have.

Mrs. NAPOLITANO. Thank you so very much for your testimony.

And we welcome all of your testimony. We will move on to questions that Members may have for the witnesses, and we will use the timer to allow 5 minutes of questions for each Member.

If there are additional questions, we might have a second round, if necessary. And I will start with the questioning.

And to all witnesses, it sounds like most of you have your partnerships working very well. And that is admirable. I wish we could do that here.

But some contend that a bureaucracy leads to inefficiency in managing and implementing restoration, and it creates duplicative effort across the watershed.

Do you find this as a challenge having multiple jurisdictions to the different priorities?

And how do you create and implement a comprehensive ecosystem restoration plan for the entire watershed?

Anybody?

Mr. COLE. Well, I will jump in, and thank you for the question.

You had mentioned the notion that—the "Wisconsin way." We get past this notion of the right, the left, the middle. It is recognition that there is a problem. Once that recognition has been realized, it is rolling up your sleeves and those partnerships become vital.

We have learned through a series of ups and downs and wrong paths as to how to go about leveraging the money from local jurisdictions, county jurisdictions, State jurisdictions, as well as Federal monies as well.

And the emphasis certainly is environment, but I would be remiss not to tell you that the economic impact of all of this is very important for the folks who live there.

Mr. PINE. As I mentioned briefly in my testimony, we have put in place a new approach to deal with what can be extremely time-consuming and expensive and often onerous regulatory processes to allow restoration work to go forward. It is not uncommon for the permitting process to take over 3 years, and that drives up cost and hampers our ability to do restoration.

So we have found funding of about $1.2 million a year to actually employ staff from six agencies that are committed to working together and actually sitting in the same room a couple of days a week so that permits can be looked at in a more coordinated way and expedite that process.

They are also charged with looking at the regulatory landscape and looking for areas that can be updated because many of our processes and regulations were put in place, of course, long before climate change and need to reflect the new reality.

Mr. FORD. Perhaps I could respond to that as well.

I do not find duplicative efforts, and the benefit of our Federal link through the U.S. EPA helps us interact with those sister agencies, all of which provide very discernable services to us in southern California, from the U.S. Geological Survey to National Parks, to NOAA, to National Marine Fisheries Service, Army Corps of Engineers.

There are talents and charges resident in all of that, and we need the information from them in order to actually enable and inform our plans, and then to actually monitor and evaluate our success from all of them.

I would think that for many of these programs also, and we heard it from Will; we heard from Laura. These folks are working in multiple States. I do not think that anybody wants a different endpoint, but without that Federal lens on this, there is very little way a State, I think, or a local government could even try to approach it. So it is intrinsic that we need it.

Mrs. NAPOLITANO. Thank you very much.

To all the witnesses. I have a concern with invasive species. You have mentioned that is part of the problem and how is your region addressing it?

I know there was a big push to eradicate the quagga mussels, and of course the carp, but I was wondering if any of you have found a way to deal with it.

Mr. COLE. Certainly, Madam Chair. Again, on the heels of the Great Lakes Governors and the Canadian Premiers, this was item number one on the list, the associated problems with the electronic fence to allow and stop the—I am on? Hello?

Mrs. NAPOLITANO. Yes.

Mr. COLE [continuing]. To stop the Asian carp, again, it was sheer recognition that we all had skin in the game, and the States of Michigan, Ohio, and Wisconsin will all be teeing up dollars and funding to ensure that the Asian carp stays in its place.

Again, the sheer recognition that that is a problem and you have the Governors, the leaders of each State, recognizing.

Mrs. NAPOLITANO. Working together.

Mr. COLE. Working together.

Ms. BLACKMORE. And I would say in Puget Sound, we have discovered an invasion of European green crabs, but we are just at the very beginning of that. So the State of Washington is working with the local Tribes and the local governments and citizen volunteers to go out and actually find all the baby crabs and get rid of them before they can breed.

Mrs. NAPOLITANO. Very fine. Thank you very much to you all.

And I recognize Mr. Westerman for his questions.

Mr. WESTERMAN. Thank you, Madam Chairwoman.

And, again, thank you to the witnesses.

I have visited many of the estuaries that are represented at the table today, truly remarkable places. Ms. Trail, my friend from Louisiana introduced you. I believe he said you were an engineer, and he had to make sure that he put in a graduate of LSU.

But I am an engineer as well. And I know that throughout history we have tried to tame the outdoors, if you will, using concrete and levees and floodgates, and all of those things.

And I am often reminded of a quote by Mark Twain who said, "One who knows the Mississippi will promptly aver—not aloud, but to himself—that 10,000 river commissions, with the mines of the world at their back, cannot tame that lawless stream, cannot curb it or confine it, cannot say to it, 'Go here,' or, 'Go there,' and make it obey; cannot save a shore which it has sentenced; cannot bar its path with an obstruction which it will not tear down, dance over, and laugh at."

So I find it interesting that you are an engineer doing the work that you are doing, and I know what I read, you know, and instead of trying to just brute force contain nature, we are starting to use more natural designs to help work with nature.

And could you talk a little bit about what is happening in Lake Pontchartrain with natural designs?

And I would really like to open that up to the rest of the panel, too.

I know with the record flooding we are having now from my State in Arkansas and all areas of the Mississippi River, there is a lot of Mississippi River water being diverted into Lake Pontchartrain that could upset the ecosystem there for quite a whole.

But can you elaborate on natural designs a little bit more?

Ms. TRAIL. Absolutely. Thank you.

And I am a proud LSU graduate of civil engineering. So thank you for reaffirming that.

As I talked about in my testimony, we created the multiple lines of defense strategy shortly after Hurricane Katrina, and what we like to do is communicate storm surge protection for communities as a system; that we need both the natural barriers and the manmade barriers to work together.

So in south Louisiana, we talk a lot about levees, but it is important to remind folks that we are not just going to build a bigger levee our way out of the situation with some signs in sea level rise, that we absolutely have to have those natural barriers ahead of the manmade barriers to make the system all work together, all components together.

And a big component of that is not just barrier islands, but also having marshes and swamps with those trees that buffer wave action and wind action to protect those manmade barriers.

Mr. WESTERMAN. There has been a lot of work with cypress swamps, reestablishing cypress swamps. Are there things that could be done upstream in the watershed that would possibly help you out from having to take all of that excess flow from the Mississippi River in the future?

Are there projects we could do maybe out of the estuary that would benefit the estuary?

Ms. TRAIL. Oh, and thank you for asking that.

You know, we were successful in 2009 in closing a manmade structure that entered into Lake Pontchartrain. It was called the Mississippi River Gulf Outlet. It was constructed for navigation purposes, but what it did at the time was allow extra saltwater to enter our estuary, which prevented trees from growing all around the perimeter of the lake.

With the closure of that in 2009, we have seen great success in the growth of trees all around Lake Pontchartrain. So we have planted trees all around the area to restore a lot of the land bridges surrounding south Louisiana.

We have planted about 60,000 trees in the past 5 years, and with our work, we do not just go plant the trees. We monitor them every year, and we have had a great success rate of those trees staying in place.

This is an unprecedented situation though with the Mississippi River flowing into Lake Pontchartrain for such a long period of time this year, but we will be out there monitoring to see what effects it does have on the trees.

We do not yet know if it will have a negative effect. It is short term. The lake tends to be pretty resilient, and it will bounce back. So we will be monitoring to see the effects of those trees.

Another program that we are looking to do to increase the number of trees that we can plant each year is that we recognize manually planting trees is labor intensive. We get a lot of great volunteers out there to do it. We work with the community to do it, but it takes us a long time to get those trees in the ground.

So if we keep doing it at the pace that we are doing it, it is going to take us 1,000 years to plant the trees we need to plant. So we

are looking at innovative technologies to get more trees in the ground with things like aerial seeding.

Mr. WESTERMAN. Would anybody else like to?

Mr. BAKER. Mr. Westerman, I just want to thank you so much for that question and acknowledging the value of looking at what is called green infrastructure as a way to supplement hard infrastructure.

It is happening I think I can confidently say across all of our various systems. It really is important because it is less expensive, more effective, and it is putting back what we have taken away over the centuries.

So thank you very much. You hit the nail on the head.

Mr. COLE. Ditto.

Mr. FORD. And I would be happy to speak to that as well because I think this is an interesting and new transformation in the Los Angeles region where I work, and that is that our beaches, which we love, and I think that is like imagining New York without pizza. You cannot have L.A. without a beach.

And what we have now said is, "You know what? The beach that we have had there is not the beach that used to be there."

We are putting that beach back. It is affordable. We are engaging the community and the stakeholders.

A woman that showed up at a public meeting said, "I do not like this. I do not want you messing around in front of my house." By the time we were done talking, she was like, "I want you to put that ribbon of life in front of my home so that I can sleep here knowing that I am not going to face a storm that is going to come up and flood my property."

So the opportunities are many, but again, to reinforce, I think, where we have been earlier today, you know, we are receiving $26.5 million right now for the National Estuary Program. You guys and your predecessors reauthorized us not too many years ago to get us up to around $35 million. We would love to see that hit the support and those dollar values come out of the proceedings this year.

Mr. PINE. And if I might just add, in San Francisco Bay just a few weeks ago, the San Francisco Estuary Institute in a planning group called SPUR released a San Francisco Bay EcoAtlas, and it looked at all of the shorelines around San Francisco Bay and examined nature-based solutions, tidal wetlands, of course, being a major one, but also things like oyster reefs and planting of eelgrass.

Mrs. NAPOLITANO. Thank you, Mr. Westerman.

Mr. WESTERMAN. Is that my time?

Mrs. NAPOLITANO. Yes, your time was expired. They did not run the clock until about 1 minute after you started. No problem.

Yes, Mr. Carbajal, you are next.

Mr. CARBAJAL. Thank you, Madam Chair.

And thank you to all of the witnesses for being here today, and especially to you, Mr. Ford, for your leadership and work on behalf of our National Estuary Program.

I am lucky to be able to represent the central coast of California, probably one of the most beautiful districts in California, if not the Nation, which includes the Morro Bay Estuary.

I say that lightly to not insult the rest of my colleagues, but I think it is the best district in the Nation.

The National Estuary Program has been immensely helpful to providing environmental restoration and protections to our tributaries and watersheds.

Estuaries are also a huge economic driver for tourism dollars and commercial fishing. The Morro Bay Estuary Program alone off of San Luis Obispo County had an estimated economic impact of nearly $50 million in the region.

Between 2014 and 2015, there were almost 1.5 million visitors to the area, with an average of 4,000 visitors a day.

As the Transportation and Infrastructure Committee continues to look at the National Estuary Program, what are some of the recommendations that you would propose to maintain or increase the success of this program?

And, two, why is it critical that we continue to fund and support this very important program?

Mr. FORD. Thank you for the opportunity and the question, sir.

I think we have well explored the value of these systems and the importance that they have in the lives of millions of Americans. That situation is not going to change. If anything, there will just be millions of more Americans relying on these systems.

We have illustrated, I think, through the dialogue today that there are these historical impairments to today's systems. They are not what they once were. What I recognize is that, and more and more folks that I work with, is that we need to increase the production of these areas. We need to increase the resilience of these areas for them to be able to manage the challenges that they face in the future.

There are opportunities to do that. The cost effectiveness of doing that today rather than waiting 10 years or 20 years down the line are real opportunities that really make those dollars that we have to spend on these practices effective.

And some of the urgency associated with making sure that we do not delay and that we make that move.

I think on behalf of the 28 National Estuary Programs, we value the leadership that this body has demonstrated in the past, and we are just looking for that opportunity to have the current reauthorization package move through at its full reauthorization.

That was a well thought out, good, deliberative process. So those additional millions make a lot of difference for the millions of people that are out there and would make a difference up and down this coast and up and down this table.

So in summary I would say that is about where I see it.

Mr. CARBAJAL. Are there opportunities to expand the program?

Mr. FORD. Well, certainly there are many estuaries in the United States of America that are not part of the estuary program.

The estuaries of national significance are what was the determination and the process that was put into place.

The lessons that we have learned are being applied elsewhere. There are lessons that we have learned from other folks here and model programs that are not part of the NEP, but again, I think that that interest that we have and the ability to draw from mul-

tiple levels of Government and from the private sector and from academia to inform all of this help.

No doubt, I think that there is plenty of opportunity for the National Estuary Program to become much bigger. I would like to start where it currently exists, and then I would like to see how we could make those expansions happen smartly, all of that with concordant funding.

And I think the Gulf of Mexico might prove to be the latest testing ground for that in response to the issues and the mitigations associated with the *Deepwater Horizon* oil spill.

Mr. CARBAJAL. Thank you very much.

Madam Chair, I yield back.

Mrs. NAPOLITANO. Thank you.

Mr. Webster.

Mr. WEBSTER. Thank you, Madam Chair, for holding this.

First of all, I have some testimony by Dr. Jim Murdaugh, who is the president of Tallahassee Community College in Tallahassee, Florida, that I would like to enter into the record.

Mrs. NAPOLITANO. No objection.

[The information is on pages 82–86.]

Mr. WEBSTER. They have done some great things in the area of oyster farming, and they have done some awesome things covered in this document.

I do not have anyone in particular. Mr. Ford, what do you think the importance of local government involvement in the cleaning up of estuaries is?

Mr. FORD. The importance of having the local government involved, I think, is it reinforces that buy-in and the inclusiveness of our local communities and trying to make these things happen.

I think the top-down perspective or the top-down regulatory approach then dilutes what the local community wants to see happen. So when you are standing there with your boots on, standing next to the folks that you live with and you are looking at a body of water that has these iconic characteristics and you say, "OK. So what should we do here? What do we want to see?" you run that back through the mill to make sure that the science that is available to us is informing those determinations.

And you end up with everybody sitting around the table at the end of the day going, "All right. That sounds like a great path forward," rather than something prescriptive and remote coming down from somewhere else.

And I think that for us that has been the added value of having the local government, the State government, and the local communities involved.

Mr. WEBSTER. Do you think they have pulled their weight?

Mr. FORD. I am sorry. One more time, sir.

Mr. WEBSTER. Do you think they have pulled their weight?

Mr. FORD. Do they pull their weight? They certainly do pull their weight in my area, and I can think of numerous examples from stories and communications amongst the other programs that I work with.

Certainly some regions are able to lead more capably than others, but I have not found anybody that has got a local government that is disinterested in having these types of benefits manifest.

Mr. WEBSTER. Anyone else on that issue?

Ms. BLACKMORE. Yes, if I could add, in Puget Sound, there are a couple of watersheds in King County near Seattle where the local governments have banded together and signed an MOA, memorandum of agreement, where they are all contributing funds to fund six staff to create a local plan, and then each of those local governments implement it through their land use decisions, through their wastewater treatment decisions.

Local government is where the rubber hits the road. So we cannot do this without them.

Mr. WEBSTER. Do you think they should do more?

Ms. BLACKMORE. Can they do more? You know, I have tremendous respect for my local government partners. They are sitting in front of folks, their constituents, listening, trying to balance mental health issues, homelessness, public safety with the environment.

I think they are doing a tremendous job. Can we all do more? Yes, and I hope we will.

Mr. PINE. And in San Francisco Bay, we are very proud of our Measure AA, nine-county parcel tax. It was really a historic measure, first time in the history of the bay area where all nine counties came together around one funding measure to raise the $25 million a year, really the first climate adaptation measure locally passed, I think, in the country.

Mr. WEBSTER. So you think they can do more or they have done enough?

Mr. PINE. The State of California has been investing significantly in our work, and again complemented with local money, a lot is being invested at that level.

Mr. WEBSTER. So do you just think we could just block grant our money and send it to you or the others?

Mr. PINE. I am sorry. I did not hear your question.

Mr. WEBSTER. Do you think we should block grant our money and just send it to you or to the locals or through the State?

Mr. PINE. I think the benefit of the Federal program, of course, is having a guaranteed stream of funding, which allows the longer term planning process.

You know, we compete for funding through the Army Corps, but again, our only guaranteed funding today is the $5 million from the EPA. So compared to the other watersheds, it is very modestly funded, and that ongoing Federal funding can, again, really help the planning effort.

Mr. WEBSTER. Thank you very much.

I yield back.

Mrs. NAPOLITANO. Thank you, Mr. Webster.

Mrs. Craig, your turn.

Mrs. CRAIG. Thank you so much, Madam Chair.

I am proud to hail from Minnesota where we take our more than 10,000 lakes very, very seriously. In fact, we have got 11,842 lakes that are more than 10 acres in size.

And, Mr. Cole, you know why I am bringing this up here today. We recently got a little controversy in Minnesota where Wisconsin claimed to have more lakes than Minnesota. So I enjoy your cute, little ponds in Wisconsin.

[Laughter.]

Mrs. CRAIG. So thank you.

Although my district is quite a way from Lake Superior, I am proud of the work that has been done to restore Minnesota's ecosystems and grow economies along its waterfronts.

In your testimony, Mr. Cole, you mentioned the very positive results of the Great Lakes Restoration Initiative in both your written and oral testimony.

You also voiced successes across the larger region. The GLRI represents substantial American investment and elbow grease to get our iconic Great Lakes back to pristine condition.

Can you share some key lessons or take-aways about this important initiative that is brought to light?

Mr. COLE. Thank you for that question.

Fifteen thousand two hundred seventy-one cute, little lakes in the State of Wisconsin. Thank you for that.

[Laughter.]

Mr. COLE. Key take-aways is as the regulator in the State of Wisconsin, we began to use, first of all, commonsense regulatory frameworks to address some of the substantive issues that impact local government, regional government, and certainly the States.

Some of those key take-aways are to leverage that money that you have. In recognition that most often that money trickles down to the engineering company, the folks who dredge, but also that the economic impact that they have in towns like Sheboygan, who has cleaned up their estuary, certainly in Milwaukee where they have cleaned up their estuary. It is a robust economy now that you can walk along the boardwalk in Milwaukee, and we no longer turn our backs on these estuaries.

The local governments have skin in the game from the standpoint they want to be just like the Chesapeake Bay and some of these other places that we have talked about because they have been successful. They want their piece of the American dream through cleaning up properties and toxic hot spots that still reside in many of these towns.

They are driven by environmental protection, but they know they have to put their people to work. So the jobs associated with this kind of thing and what we are doing, what the GLRI does is certainly recognized, and the continuation of talking about local level jobs, and that question has been talked about today, jobs, jobs, jobs, and the economy around doing this work.

Once we reconcile a commonsense regulatory framework, we roll our sleeves up, and then we just get to work. We do not overthink it. We get to work.

My responsibility is to remove some of the barriers out of their way and make sure that we can have a collaborative effort.

Mrs. CRAIG. Thank you so much, Mr. Cole. I like to hear a little Midwest common sense. Roll up your sleeves and get to work.

The financial benefits of the restoration and where you think we can expand those benefits even further if the program is expanded, anything beyond the jobs?

Mr. COLE. Many of us at this table are not done. We have a lot more work to do. It is, as you heard in my testimony, a significant downpayment on reconciling, you know, where we still have toxic hot spots. There are still folks in the State of Wisconsin that still

have to worry about turning on their water and getting fresh drinking water.

We have talked about this being the year of clean, fresh drinking water. You cannot overthink the health implications. Our Governor recognizes the health implications of clean, fresh drinking water.

And so we have to go that fresh—we have to take our fresh coasts and make sure that they continue to provide the safe, fresh drinking water that we all deserve.

And that, again, we are able to leverage what we do in these toxic hot spots that flow through the rivers into the Great Lakes that we're all subject to human harm if we do not get ahead of it.

So we are not done. We still have a lot more work to do, and that is where that additional funding, that continued funding will help us. We are just not done.

Mrs. CRAIG. Thank you so much.

Madam Chair, I yield the remainder of my time.

Mrs. NAPOLITANO. Thank you very much, Mrs. Craig.

And now we recognize Mr. Woodall.

Mr. WOODALL. I wanted to focus on the east coast a little bit. So, Mr. Baker, that focuses on you.

I was watching your poker face as the chairman was giving his opening remarks. Here you are with 37 years of leadership with the Chesapeake Bay Foundation, and I believe the chairman's comment was that Chesapeake has made scant progress here.

I prefer Mr. Ford's comment that the Chesapeake Bay Program is a model program that we can learn from, and I appreciated the inclusion in your handout about where we have been from 1982 to 2018.

That is my frustration as a Southeastern Republican. I do not think anybody plays outside more than I do. I do not think anybody wants natural resources preserved more than I do, but there is this constant drum beat of you are never doing enough.

And, yes, we can always do more, to Mr. Webster's point, but we need to celebrate our successes when we have them because I know if I am living in a community that is just failure after failure after failure, I am thinking, "What is the point? What is the point of doing more?"

Tell me about that from the Chesapeake Bay Foundation perspective. You led in your comments talking about the importance. You led with the seafood industry.

Now, I have a lot of constituents back home in Metro Atlanta who do not know anything about the seafood industry, except how good it is to eat, who might assume that because you are leading in the environmental preservation and improvement side, that you might be at odds with the watermen and the seafood industry.

Can you talk to me about that, that partnership, how we really are all in this together?

Mr. BAKER. You put a lot on the table, sir. Thank you.

Mr. WOODALL. You have 3½ minutes, Mr. Baker.

Mr. BAKER. First of all, I could not agree with you more that people cannot take bad news after bad news after bad news, and when you see progress, you have got to identify it.

We in the Chesapeake Bay have had progress. That does not mean we are done, obviously. But you know, when you go back 42

years, what I saw in the bay when I started as an intern at the Chesapeake Bay Foundation was a system that was, in fact, dying. It is no longer dying.

The resilience which has built up in the system makes the scientists believe that even with the hit we took last year with all of that rainfall, it may not be anywhere nearly as bad as it could have been.

I will give you one example. There is an enormous area of underwater grasses up near the mouth of the Susquehanna River at the top of the Chesapeake tidal bay. That underwater grass bed, even with last year's amount of rain and sediment coming down the Susquehanna River, still had almost crystal clear water in the middle of the grass bed. Around the edges it was terribly murky, opaque, but in the grass bed which survived, it still was very clear.

The blue crab population, Chesapeake Bay has been called a crab factory by H.L. Mencken, an immense protein factory; starting to come back to levels that could be seen as sustainable.

Oysters, which are called the coral reefs of an estuary, are being restored, and they are being restored using science as the basis for where it goes, where they should be rebuilt.

Now, to the commercial fisherman and those who are working on restoration, of course, there is some tension. One example is putting oyster reefs into sanctuary status to let them build back up. The watermen, the commercial fishermen would like to get in there and harvest them.

We understand that, but in the long run, we both see eye to eye. It is sustainability of fisheries. It is good for the economy, good for the community, and good for the environment.

Mr. WOODALL. Let's talk about that oysterman issue. Yes, if I am counting on the water to feed my family, I would like to be in there every day. I know seasons are going to get longer and shorter, but as a nonbiologist, I would have said rotational harvesting has ecological value.

And so now we start to get on the same page, a waterman family and a sanctuary family. Is that the experience the bay is finding?

Mr. BAKER. Yes, it is. It is being practiced on the Chesapeake Bay just like rotational grazing for cattle.

Mr. WOODALL. And when we look at those supporters of the bay, because folks talked about funding streams, and I appreciated the comment, Mr. Pine, that you thought Federal funding streams were reliable. That encouraged me because I do not hear that all the time back home.

Who is supporting the Chesapeake Bay Foundation?

Am I a property owner with marsh grass in my front yard?

Do I live in the West Virginia mountains and I just want to find a place to vacation?

Am I a waterman family who is depending on the next six generations of crab harvests to keep the family alive?

Mr. BAKER. All of the above. Ninety percent of our funding, and we are at about a $25 million organization, is from private citizens and foundations.

We have members in every State in the Union. We have 275,000 members across the country, most in the mid-Atlantic region. So it

is from young people to older people and everything in between, all walks of life.

Mr. WOODALL. Thank you, Mr. Baker.

Thank you, Madam Chair.

Mrs. NAPOLITANO. Thank you, sir.

Ms. Mucarsel-Powell.

Ms. MUCARSEL-POWELL. Thank you, Madam Chair.

Thank you so much for coming this morning.

I think that the most important issue we have facing our Nation is clean water, and I happen to disagree with Congressman Carbajal who left already, but I think I represent the most beautiful district in the country. I have the beautiful Everglades National Park as part of my district.

And as you know, the Everglades provides clean drinking water for about one-third of Floridians, and we depend on a healthy Everglades. It is necessary for tourism, for our economy, for the fishing industry, for the livelihood of the families that live in that southern area.

And the water that we receive to the Everglades flows east, west and south, from Lake Okeechobee, and as you can imagine, the quality of the lake, and I am sure you have all heard, is in such terrible shape that it is filled with phosphorus, nitrogen, other toxins from runoff.

Then add those hotter summers that we are seeing, and it is the perfect recipe for cyanobacteria, which leads to disgusting and dangerous algal blooms.

And I just want to remind what we went through to everyone. Last summer, this is what we saw in the coast of Florida, and as a result, we saw thousands of tons of dead fish wash ashore. We have lost dolphins. We have lost manatees.

It is a situation that we cannot continue to live through, and we must find a solution as quickly as possible.

So my first question, Mr. Baker, I wanted to see and ask you if reducing the pollution in the water that is already in the bay, if you have found any solutions on dealing with the water that is polluted right now in the bay and if you can elaborate on that a little bit.

Mr. BAKER. Nature is remarkably resilient. If you meet her halfway, she will be resilient. So our emphasis and that of the scientists working in the Chesapeake Bay region is to slow the amount of pollution coming in.

And for just about every aspect of society, that is saving money because polluting is very expensive. The major vector for pollution from agricultural areas, for instance, is topsoil. And if you keep topsoil on the farm, you are doing better agronomically.

So while there is some emphasis in certain hot spots for dredging and things like that, the cost of that would be so vast that really the emphasis has been on reducing future pollution, more pollution. And what we are seeing is that nature is bouncing back.

Ms. MUCARSEL-POWELL. And what lessons have you learned from balancing local and Federal authorities on dealing with the pollution in the bay?

Mr. BAKER. Well, you know, it takes a family. So it really requires local, State, and Federal Governments to work together with

the scientific community. Without that, you are going to miss an important ingredient.

So it is critical you have all three.

Ms. MUCARSEL-POWELL. And do you think it is appropriate then to give the EPA full regulatory authority?

Mr. BAKER. Well, the States have a lot of regulatory authority, and EPA is the umbrella over them.

What I mentioned in my oral testimony is that science says the Chesapeake Bay and other bodies like we are seeing must be treated as a single system. The State of Maryland cannot do anything in Pennsylvania. Pennsylvania cannot do anything in New York.

The Federal Government is the one jurisdiction which can view and manage the Chesapeake Bay system the way science tells us we must.

Ms. MUCARSEL-POWELL. Thank you, Mr. Baker.

Secretary Cole, can you describe in more detail what actions you have taken?

What agreements have you reached with regulators and farmers to achieve the significant reduction in the Great Lakes, which have caused the harmful algal blooms?

Mr. COLE. Farmer-led initiatives is the key framework whether we are in the Green Bay area, where NEW Water, the sewage treatment plant, works with local farmers to create these grassy waste ways, takes some of that property out of tillage, and then harvests the phosphorus on the backend and resell the phosphorus pellets.

So farmers, as an FFA kid, farmers are often to blame for algal bloom, and a lot of it is whether it is nitrogen that they are putting on for cornfields or a complex mixture of, you know, chemicals and ingredients. It is the timing of all of this where they are in the soil protection business. Without the soil, without good quality soil, farmers will not be able to bring their products to market.

These generations of farmers that we have entrusted this with in the State of Wisconsin recognize the sheer fact that they cannot do what they used to do; that these cover crops in the winter to reduce the soil erosion and the perfect application of the right types of nutrients at the right time is critical to the watershed.

So they have become champions in terms of, at least in my eyes, in the sheer recognition that they have skin in the game if they want to stay in that business.

We celebrated earlier this week the Cuyahoga River being caught on fire 50 years ago. We have come a long way, baby. Was that not an ad back in the day? We have come a long way, and we have.

But the sheer recognition with the farming community in the State of Wisconsin is awesome, and that is what we have learned over time.

Ms. MUCARSEL-POWELL. Thank you so much.

Mr. HUFFMAN [presiding]. Thank you, Mr. Cole.

The Chair now recognizes Mr. Babin for 5 minutes.

Dr. BABIN. Thank you. I appreciate it, Mr. Chairman.

I appreciate all of the witnesses being here. Thank you for your expertise.

This will be to the whole panel, and if you could keep your answers short, I would appreciate it.

I have the distinct pleasure of representing southeast Texas, from Houston to Louisiana, including the estuarine waters of Galveston Bay and Sabine Lake. This is where I have lived my entire life, born and raised down there.

I remember well when excessive pollutants were deterrents from enjoying many of the great outdoor advantages that are home to southeast Texas, but over the years we have made great strides in restoring our land and water in the area and allowing so many, including my own children and grandchildren, to enjoy the fishing and hunting and hiking and boating available to us there.

Making these sorts of outdoor activities possible are the National Estuary Programs, such as the Galveston Bay Estuary Program. As a matter of fact, the Galveston Bay Estuary Program is headquartered in my district in Clear Lake.

But some of the many other projects that I am proud to have in my district include Armand Bayou, Marsh Mania, Garden Marsh Conservation Project, Turtle Bayou, Shipe Woods Habitat Protection, and Anahuac National Wildlife Refuge.

These projects have been collaborative and nonoverregulative successes. They have continued to showcase the environmental beauty of southeast Texas. With that being said, no Government-run program is perfect. At least I have not found one yet.

How can we improve upon the National Estuary Program?

We will start down here. Mr. Cole?

Mr. COLE. Well, again, the short answer is collaborate, collaborate, collaborate. Leverage the money at the local, State and Federal levels. Partners in the room; shared recognition of, continued recognition of that we are not done. There is a lot more work to do.

Again, the leveraging part of using Federal dollars and key partners in this, that shared vision moving forward has worked in Wisconsin for a long time.

Dr. BABIN. Thank you very much.

Mr. Pine?

Mr. PINE. I would agree that the collaboration is critical, and the investment of those Federal dollars will be leveraged tremendously. So particularly in the bay area those dollars are very much in need.

Dr. BABIN. Thank you.

Ms. Blackmore.

Ms. BLACKMORE. I agree with my colleagues, and also I would add I believe the current House appropriations bill includes an increase in funding for each of the National Estuary Programs, which would be very, very welcome, as well as the creation of a competitive grant program.

So those of us with projects that we are really excited about can apply for that, and you can direct funding to the places that it is most needed.

Dr. BABIN. Thank you.

Mr. BAKER. All of my mother's side of the family are from Houston, and I helped get the Galveston Bay Foundation started. They are doing great work.

Dr. BABIN. Absolutely. Thank you. Thanks to her.

Mr. BAKER. Thank you for your support.

My simple answer is science. Make sure science is at the table. Sometimes scientists will disagree. Bring them together. Tell them to hash it out and give the best recommendation they can come up with.

Dr. BABIN. That is good.

I would like to also add that I used to work for the Texas Parks and Wildlife Department between college years. I was a wildlife technician and worked in inland and marine fisheries, both.

Yes, ma'am.

Ms. TRAIL. The Lake Pontchartrain region is actually not part of the National Estuary Program, although we do function very similarly to one.

So we partner with not only the State government, but also local government, and it is just important that we collaborate, as my colleagues have mentioned.

And I would also like to reiterate what Mr. Baker mentioned about science. Our organization is grounded in science, and integrity in science is everything we do.

Dr. BABIN. Great. Thank you.

Yes, sir, Mr. Ford.

Mr. FORD. Yes, sir. I think the additional aspect that really comes to my mind is the effectiveness of communication, and I think Mr. Woodall brought that up, that, you know, hey, yeah, sounds like things are great. Well, they are not that great.

Well, how do I evaluate that? I work with people where some algae is good and other algae is bad or too much algae or the algae in the wrong place.

So our ability to effectively communicate and manage these partnerships collaboratively, make sure that science is nested in that communication is a key element in our success, and it is one of those places where I think we could all do some more work.

Dr. BABIN. Thank you.

And I do not have much time left, but just talking about the money, the science, the partnerships, moving forward, do you believe that we can create and incentivize more public-private partnerships that will allow us to be responsible stewards of this land and the taxpayers' dollar?

And why should someone, say, from Iowa be footing the bill for land and water conservation in Texas?

Would somebody like to take a stab at that before our time runs out, which it already has, but does somebody want to take a stab at that?

Mr. BAKER. Sure.

Dr. BABIN. Go ahead, Mr. Baker.

Mr. HUFFMAN. A quick stab.

Mr. BAKER. The answer is yes. But ask the folks in Iowa did they like the seafood that comes out of the Galveston Bay.

Dr. BABIN. Absolutely. Thank you.

Mr. HUFFMAN. All right. The chair, I now recognize myself for 5 minutes.

And I want to thank this excellent panel. It is great to hear witnesses from some of the great estuaries around our country and the communities that depend on them.

We know and we are being reminded today that estuaries provide a wide range of ecosystems services. Those of us in the San Francisco Bay area—welcome, Supervisor—we get that. We take great pride in our outdoor recreation, our commercial and recreational fishing, as well as the benefits of coastal resiliency that our wetlands provide buffers against rising sea levels.

And let's not forget also the role of blue carbon, the potential for healthy wetlands to help sequester the carbon emissions that are imperiling our planet. So lots to consider here.

Supervisor Pine, thanks especially to you for coming out and helping talk about the importance of San Francisco Bay as an estuary that is truly of national importance. In your testimony you discussed the important role that our bay provides to waterfowl in the Pacific flyway; of course, our iconic California salmonid species, and Dungeness crab.

Species like salmon are not just iconic for California though, and we need to remind people that. They are truly west coast-wide, and I appreciate the testimony of Ms. Blackmore reminding us about the importance that salmon provide to the declining orca population. And so there are many reasons to work together to protect these resources.

Californians, I think, definitely recognize the importance of San Francisco Bay, and that is why in 2016, the nine bay area counties came together, actually taxed themselves, passed Measure AA, to support climate adaptation and restoration funding.

And Supervisor Pine, I wanted to ask you to just speak a little more about that. I think it is important that Members of Congress know that the Federal support that this estuary provides a place like San Francisco Bay is matched many times over with really unique and important local support. Could you speak to that, please?

Mr. PINE. I would be happy to. The Measure AA process really started with the creation of what is called the San Francisco Bay Restoration Authority in 2008, and this is a special district encompassing all the bay. And we were chartered with the task of finding a local funding mechanism to accelerate the bay restoration.

So between 2008 and 2016, we looked at a variety of approaches and waited for the economy to improve, and then went forward across all nine counties with a $12 parcel tax for every parcel in the bay area.

And the effort had a remarkable coalition behind it, with strong backing from the business community, who of course recognized the flood protection elements of restoration; strong backing from labor; strong backing from the environmental community.

And when we polled, we found that our residents care deeply about the bay and its ecosystem and want to be sure it is passed on to the next generation in a better place than it is today. So a 70-percent positive vote was the remarkable outcome, and we have had two rounds of grant funding through Measure AA that have kicked off or helped supplement 13 different projects, and is really a linchpin of our restoration efforts now.

Mr. HUFFMAN. Yes. Seventy percent support is remarkable. I mean, just the fact that these counties all did come together to tax themselves is impressive, but that level of support really speaks to

the imperative that the people of the bay area see to protect the bay.

Now, obviously we have done some harmful things to the San Francisco Bay Estuary over the years, going all the way back to the Gold Rush but certainly including the dam-building period of the previous century, and the loss of sediments. I know one of the imperatives that weigh on the mind of voters was the fact—projections—that we may be only a decade away from losing many of the salt marshes and mudflats that make up the bay.

Can you speak to that and how that played into the minds of voters?

Mr. PINE. Yes. That is a big concern because with sea level rise accelerating, we do run the risk of losing the opportunities to do this restoration. The last thing we want, I want, for the San Francisco Bay is just to surround it by infrastructure and flood walls. Former saltponds, which of course were a very industrial use, were really kind of a blessing in disguise because the land is at least there to be restored. But if we don't act, those lands will be flooded.

Mr. HUFFMAN. Thanks, Supervisor. In my final few seconds, I want to just say how proud I am to be a cosponsor of Congresswoman Jackie Speier's bill. You mentioned it earlier, H.R. 1132, establishing authorization of $25 million a year annually for EPA grants to bay conservation and restoration. I hope that is something that we can work on together in this Congress.

And with that, I will yield. And Mr. Garamendi for 5 minutes.

Mr. GARAMENDI. Thank you, Mr. Chairman, Acting Chair.

I want to just really commend all of you for the work you do. It is extremely important. Back in the 1990s, when I was at the Department of the Interior, where we started working on the Everglades program—not there yet; working on the Chesapeake program—not there yet; San Francisco Bay, and on and on. The NEP is extremely important.

The support of the Federal Government is critical here. Much of this started with the Clean Water Act, foundational. And some States were ahead of it; other States followed along after the Clean Water Act went in place, providing the foundational law for cleaning up our estuaries and our rivers. And we have got more to do.

I notice that this particular NEP expires in 2021. I would hope that we have a reauthorization effort this year so that by the end of 2020, we are ready to go. And I suspect all of you support that; you can nod your heads yes. I noticed you all nodding. There is more to do.

The role of the Federal Government here is critically important. It provides the foundation. It also provides support in many, many different ways—not just with the small amount of funding in the estuary program, but with all of the other programs.

I think it was—I forget which one of you—were talking about the length of time that it takes. Mr. Ford, I believe you were the one. You talked about the length of time it takes to get a project underway. And you want to claim credit for that comment, Mr. Pine; that is fine.

But it does take forever. And the coordination between the various agencies is really something we need to work on here and to

pull that together. I would really appreciate your specific suggestions on how that might be done.

So let's run quickly through, right to left, my right to your left. That would be you, Mr. Ford, first. Thank you for the work you have done on Santa Monica Bay.

Mr. FORD. Thank you, sir.

Mr. GARAMENDI. I have been involved in that for more than 40 years myself, so let's go.

Mr. FORD. Right.

Mr. GARAMENDI. How do we coordinate? What do we need to do?

Mr. FORD. Yes. I think what we are able to provide now, and arguably with continued support we would be able to continue to provide it and increase it, which is simply that we get folks working to get on the ground early so that when these projects manifest, sir, they are not a surprise.

I have certainly heard from various leadership in the State of California or here in the District of trying to figure out how to help streamline and fast-track some of these programs that have these environmental benefits because we need them and we need them now. So I think there is plenty of opportunity to explore it.

Mr. GARAMENDI. Early on. Get together early.

Ms. TRAIL. Thank you for this great question. I think we have a lot of great work that goes on, and it is continuous. As I have mentioned, we have been around for 30 years. And a lot of the decisions that we make are driven by the data that we have collected continuously for 30 years. And so it is really important for us to maintain that continuous data set to drive smart decisions.

So to keep this program going and to ensure that that funding continues on a regular basis would really help us to continue that science-driven work.

Mr. BAKER. On the Chesapeake, there is something called the Executive Council, which meets annually—the Governors of all six States, the mayor of the District of Columbia, and the Federal lead agency, EPA, bringing the leadership together to discuss and decide and plan how to move forward new projects. I think it has been critical for us, and I would suggest it is a good model.

Ms. BLACKMORE. The National Estuary Program requires us to pull together the Federal Government, the State government, local government, Tribes, the agricultural community, the environmental community, business community. We do that now in all 28——

Mr. GARAMENDI. You are doing—excuse me. I am going to interrupt. We are almost out of time here.

Ms. BLACKMORE. Oh, sorry.

Mr. GARAMENDI. You are doing it. Do we need to go into the various Federal agencies that are involved—Corps of Engineers, EPA, so forth—and require them to coordinate with the local agencies?

Ms. BLACKMORE. It is a great question, and actually, in Puget Sound, so Congressmen Heck and Kilmer, have introduced H.R. 2247, the PUGET SOS Act, which would require the creation of a Federal task force in the program office at EPA. And that would help coordinate, bring them together, hold them accountable, require all the Federal agencies to work together to create their own action plan, working with us.

Mr. PINE. Congressman Garamendi, in the bay area, we have taken this challenge on in earnest in creating what we've called the Bay Restoration Regulatory Integration Team, where we are requiring and helping to fund, the regulators to look at our applications in a more comprehensive and collaborative way. And we have put in place timelines——

Mr. GARAMENDI. I am going to have to interrupt. I am out of time. Excuse me for interrupting. The question is really one directed to the Federal Government and to a Federal law or requirement that the Federal agencies must coordinate and come together early on in an issue, whatever that issue might be.

And I would like to hear from all of you with a little memo following up on that. Thank you very much.

Mrs. NAPOLITANO [presiding]. Thank you, Mr. Garamendi.

I believe we will go into a brief second round of questions, if you do not mind. And I guess I will start off with all of you.

If Congress does not reauthorize the NEP and increase funding for the programs, will our coasts suffer, and will you enjoy economic growth? Will you be able to restore those areas? From any of you.

Mr. BAKER. The Chesapeake Bay is not part of the National Estuary Program. It was really the model that the NEP was formed, based on. But I would like to take the opportunity to thank Congresswoman Elaine Luria for introducing legislation to restore the authorization for the Chesapeake Bay Program.

And I might also just mention one notion. Estuaries are the first line of defense for the impacts of climate change on coastal areas.

Mrs. NAPOLITANO. But they do not believe in climate change.

Mr. BAKER. Just if you are concerned about increased storms, sea level rise, warmer water, estuaries are the first line of defense, call it whatever. Estuaries are too important not to protect for the benefit of people living in coastal areas. Thank you.

Mrs. NAPOLITANO. Mr. Ford?

Mr. FORD. If I may, and Will said it earlier, the glue is much of what a lot of this funding provides. And I have no doubt that our estuaries of national significance amongst those 28 programs that are out there working day in and day out, if this funding were to go away, they would be greatly diminished and the services that they provide would also be greatly diminished.

Mr. COLE. We think we have a model program in Wisconsin, and we get to go back and tell the Wisconsinites that we have a partnership with Federal Government. They care about clean drinking water. They know that adaptation is important for climate change, that they recognize that people in Wisconsin often have challenges turning on their drinking water to get clean drinking water.

Economic development aside, the human health implications about what we are doing with this funding is part and parcel to saving babies' lives, saving communities, and reducing the harm. So our commercial, where Governor Evers and I said, "Congress gets it." Thank you.

Mrs. NAPOLITANO. Thank you very much.

There is a problem sometimes, and I have heard that topsoil has been part of the contamination problem. Is there a problem with

the farmers or the agricultural industry not participating or being slow in participating in cleanup?

Mr. COLE. I have certainly gone on record to say that farmers in the State of Wisconsin are part of the heavy lift in changing their own practices to preserve the soil that is already there, beginning to use cover crops and using different management practices to reduce harm in our estuaries.

Mrs. NAPOLITANO. Good.

Ms. BLACKMORE. In Puget Sound, we're working on a really interesting initiative called Flood Plains by Design, where we work with the farm community, the flood community, and the salmon habitat community to come up with projects that actually benefit all three. So we are reducing flood risk, improving salmon habitat, and maintaining sustainable working lands at the same time. So farmers have definitely been part of the solution.

Mr. PINE. In the bay area, farming is not really the issue, but storm runoff is a significant concern. So we are investing in considerable green infrastructure to retain and allow waters to go back into the ground before they reach the bay to reduce the pollutants.

Mrs. NAPOLITANO. Thank you.

Ms. TRAIL. In south Louisiana in the Pontchartrain Basin, we are the recipient of the waters from 41 percent of the United States. And a lot of that is America's heartland and the farming country. And we cannot achieve any successes without the cooperation of farmers.

We have seen great successes. It has come a long way over the past several years, and especially in south Louisiana. We have a great working relationship with the farmers in south Louisiana. We have a lot of dairy farms in our basin, and we have not been able to achieve those successes without their cooperation. So we really appreciate their support.

Mrs. NAPOLITANO. Great. Anybody else?

Mr. BAKER. Farmers put a lot of their own money into conservation. But they need technical assistance and they need cost-share dollars——

Mrs. NAPOLITANO. Are they getting it?

Mr. BAKER [continuing]. And they are getting much of it through the Federal farm bill, the conservation article. Critically important for Congress to continue that conservation funding in the farm bill. So farmers want to do the right thing. They, like municipalities and even corporations, need some help in getting the job done.

Mrs. NAPOLITANO. Thank you, sir. Thank you.

Mr. Westerman.

Mr. WESTERMAN. Thank you, Madam Chair. I will try to be brief here.

I talked in the last set of questions about how I am an engineer, but I am also a forester, maybe the more gentle side of me. But I think we face a lot of similar issues across the spectrum in managing our natural resources. It has often been said that forests are the lungs of the Earth, but a lot of people do not realize they are also kind of the kidneys of the Earth. They do a lot to clean water and protect estuaries and waterways.

Most of our drinking water in this country comes from a forest. And I get frustrated sometimes working on the forestry side of it,

on how do we streamline the management of our forests so that we get cleaner air and cleaner water.

And Mr. Pine, I noticed in your testimony you felt some of this frustration as well. You talked about: "The time-consuming and expensive permitting process is a significant hurdle to accelerating the pace and scale of wetlands restoration in San Francisco Bay."

You talked about forming that Bay Restoration Regulatory Integration Team to expedite permitting for wetland restoration projects. It seems like sometimes we trip over our own feet. We know the right thing to do, and we put obstacles in our way to keep us from doing the right thing.

Would you like to comment on that more, about what we can do to streamline the process? And does anybody else have issues in their area where the permitting process sometimes gets in the way of doing the good work that you are all trying to do?

Mr. PINE. Yes. We are just kicking off this new regulatory integration effort and have high hopes for it. It has been discouraging because when we are working on this restoration work and we are doing projects for the benefit of the environment, and then to see the process sometimes takes 3 years, is definitely concerning.

And each of the agencies has important missions and important goals. But the lack of coordination and the lack of early involvement in some of the applications has led to these delays. And we are hopeful that this will be a model that other areas in the country can look to.

Now, we are actually providing funding for this staff so that they will be dedicated to these projects, and they will follow certain rules and procedures that have been agreed to. So it is not without an incremental cost. But we think that cost is warranted given that the delays that have been caused are causing us to fall behind and causing our projects to cost more.

Ms. BLACKMORE. In Puget Sound, the Federal agencies are working together to streamline permitting for shoreline restoration projects, particularly for shoreline property owners, landowners, who have a seawall or a bulkhead. And we want them to take those out and replace it with green shoreline infrastructure.

But the permitting process is incredibly expensive and time-consuming and discouraging for them. So the EPA, NOAA, and the Corps are working together on that right now in Puget Sound.

Mr. FORD. And I would submit that, again, the local, State, Federal angles on this—and Mr. Garamendi can speak to this from his leadership when he was in Sacramento—that the State of California's response to much of this was the formation of the Ocean Protection Council, bringing together some of the lead agencies within the State so that they were in harmony on their priorities to make these processes move through the systems much faster so that elements like that, in conjunction with what I just heard from Laura, are heartening. And I think that they are a very good roadmap forward.

Mr. COLE. Time is money, whether it is regulatory permitting for wetlands. We have statutory timelines to meet. It is open and it is clear. We have dual authority with the U.S. Corps in the permitting process so it is one-stop shopping. In the State of Wisconsin,

when you are trying to get projects done, it is open. It is clear. And if we do not meet those timelines, then we are held accountable.

There can be hiccups, but that's when we again all roll up our sleeves to see whether problems exist. And quite often, it is just the early stages of not having enough information to fulfill the permit. So we will not start the clock until they have everything ready for us.

Mr. WESTERMAN. And I am glad that it is not just the forestry world that suffers in the regulatory burden sometimes. I know there are parts of environmental work and restoration where the well-intended guidelines often become an impediment to doing good work.

I hope we can learn lessons from that as we work on policy to come up with policy that actually allows good things to happen on the ground and does not delay it, costing time, does not become a hurdle within itself.

You have to be quick.

Mr. COLE. As a Missouri-trained forester, the State of Wisconsin performs the timber sales on behalf of the Chequamegon and the Nicolet to get past the burdensome bureaucracy associated with timber sales in the State of Wisconsin. So the mills are humming in the State of Wisconsin.

Mrs. NAPOLITANO. Thank you very much.

Ms. Mucarsel-Powell.

Ms. MUCARSEL-POWELL. Thank you, Madam Chair, for granting me a few more moments here since I truly believe this is one of the most important issues facing our country.

I wanted to ask Mr. Baker, you had mentioned in your testimony that the health of the Chesapeake Bay saw a setback in 2018 due to the extraordinary rains and the associated polluted runoff that contaminated the bay. We saw the same thing in Lake Okeechobee after Hurricane Irma.

But it seems that 2019 is in many ways following that same pattern that we saw in 2018 in precipitation. So how can we continue to make the bay more resilient to the changes in climate and extreme weather events that seem to be happening with more regularity, and yet continue to make progress in improving the overall health of the bay and other areas like Lake Okeechobee as well?

Mr. BAKER. We do not give up, is the simple answer. And I do not mean to be glib, but that is it. We are nowhere near the end. We have to keep working.

One interesting thing, in this region about 2018 we had double the amount of rain, but in significantly less number of storms. Do the math. That means the storms were far more intense. Nature abhors extremes. That was adding to the impact as well.

We are seeing a lot of rain this year, but it is not coming in quite the same intensity. So I like to keep my fingers crossed. And I am an optimist by heart.

Ms. MUCARSEL-POWELL. Good. Me, too. That is why I am here. If not—and one last question. You mentioned the role of wetlands in protecting our communities from climate change. But as you know, wetlands are also threatened by sea level rise, and we have seen that in south Florida.

What role can the Federal Government play in protecting and restoring our wetlands through programs like the Chesapeake Bay Program or other regulatory efforts?

Mr. BAKER. I think the chairwoman talked about blue carbon. Wetlands are incredibly important, for any number of reasons. We have got a lot of areas to develop, and we just have got to stop destroying wetlands. The concept of mitigating destruction two to one, three to one, with manmade wetlands, human-made wetlands, just does not work anywhere near as well as the original wetland.

The only other last thought is that wetlands with sea level rise can be destroyed. They need room to migrate inland. That has happened throughout the millennia, but very slowly. Now it is happening much more quickly, and that is a critical need, to allow wetlands to migrate inland as the seas rise.

Ms. MUCARSEL-POWELL. Thank you so much. I yield back my time.

Mrs. NAPOLITANO. Thank you, ma'am.

Mr. Garamendi.

Mr. GARAMENDI. Thank you, Madam Chair.

I want to continue on what I was talking about earlier, and that has to do with the way in which we regulate or don't at the Federal level, the need to pull together the various Federal agencies so that they are all working together early on in the process.

Just for a heads up, the U.S. military has a lot of bases around. They are required by law to reach out to the Native American communities, which they usually do at the end of process, which then creates lawsuits and other kinds of delays.

So I am looking at ways in which we can have the Federal Government engage earlier in a coordinated way. I ran out of time last time, so if you could come back with your best ideas about how that could be done across the board—Army Corps of Engineers, military, EPA, and the like.

Also, one of you early on in your testimony indicated the length of time it takes to process any application. Unfortunately, right now it is a 5-year period of time that an applicant, once approved, stands. We are looking at extending that to a 10-year period of time. So if you are able to obtain a permit, that permit is good for 10 years, considering that it takes 5 years just to get started on the next project.

So we are looking at that. I draw that to the attention of the committee and for your review of it—and if you like it let us know; we hope to move that. We would hope that we could authorize, reauthorize, the NEP this year, at least no later than next year, so that when 2021 arrives, we are good to go and more money.

So just a couple of questions for you that you might respond to. How could we better coordinate? I think I ended—I cut you off. Whose sound got cut off in the middle that we never got to San Francisco or beyond.

Ms. BLACKMORE. Sure. So H.R. 2247, introduced by Congressmen Heck and Kilmer, includes an idea I think aimed at exactly what you are saying, sir. It would require the creation of a Federal task force that includes the military as well as EPA, NOAA, the Corps, the usual suspects.

It requires them to come together, create an action plan working with us, the State, and with our Tribes early in the process to identify actions that the Federal Government will undertake. And it also requires regular reporting on their progress and outcomes. So I am very excited about that possibility.

Mr. GARAMENDI. I think that was done early on in the Everglades, like in the 1990s, that task force.

Ms. BLACKMORE. Oh, really? OK. Yes.

Mr. GARAMENDI. That would apply across the Nation, or just for——

Ms. BLACKMORE. This bill just applies to Puget Sound. But I could imagine it having benefit across the Nation.

Mr. GARAMENDI. Well, it's back to San Francisco.

Mr. PINE. Yes. So I have had the opportunity to talk about our regulatory integration team. And just to make one further point there, what we of course often see is that regulators have timelines, but those timelines commence when the application is deemed "complete." And often that's where the delay occurs, with back and forth until that completion is deemed ready.

So in our new efforts, we are hoping that the regulators will work to make sure the application is complete to get those clocks running, and we are putting timelines in place that measure performance from the submission of the application, not necessarily from the date of completion. So that is an area where we want to see improvement.

Mr. COLE. As I had mentioned earlier, we have some dual responsibilities as it relates to permitting. The State of Wisconsin and the U.S. Corps of Engineers have a dual permitting process so it is one-stop shopping. When you put your permit in, we act as the agent and coordinate with the U.S. Corps of Engineers, EPA.

That region is in Chicago. We hold quarterly meetings on enforcement issues related to actions that we are taking, actions that they are taking, where they are there in the State in Wisconsin. And so we collaborate. I am blessed to have the previous Secretary for the DNR being the Regional Administrator in Chicago for the EPA. So we spend a lot of time having conversations as well.

Mr. GARAMENDI. Another thing I draw attention to is the nationwide process rather than a regional Corps of Engineers issue here. It is really important, particularly with regard to Native American sites. There would be a nationwide program. That is in—that was in process. It has now been delayed. We will see if we can move that along.

Thank you very much. I draw your attention once again to H.R. 1764 that extends the deadline or the permit from 5 to 10 years.

Thank you very much. I yield back.

Mrs. NAPOLITANO. Thank you, Mr. Garamendi.

Mr. Lowenthal, would you have any additional questions, sir?

Mr. LOWENTHAL. I might have one.

Mr. Pine, first I want to congratulate the San Francisco Bay Restoration Authority on its selection as 1 of the 10 pilot projects for the beneficial use, or beneficial reuse, of dredge materials by the U.S. Army Corps in I believe it was December of 2018.

I understand that since the Gold Rush, San Francisco Bay has lost over 90 percent of its wetlands due to development, but that

this pilot project is part of a larger regional effort to restore thousands of acres of wetlands and aquatic habitat.

Can you expand on this initiative and tell us how your region has been able to forge a multi-agency partnership to restore these tidal wetlands? Be very——

Mr. PINE. Yes. I would be happy to. One of the big challenges we face in restoring wetlands is finding sufficient dirt and mud to build up former agricultural lands or former salt production lands, which over time have subsided. So in order to restore them, tremendous amounts of soil need to be brought in. And the beneficial reuse of dredge materials will be critical if we are to restore the properties that we want to.

Historically, oftentimes those materials were brought out under the Golden Gate and dumped in the ocean. So under this pilot program, we are trying to change the direction towards the reuse and restoration. One challenge we face is although we are one of the pilots, as the other nine, the funding from the U.S. Army Corps has not yet emerged to fund those pilots. And that is something that needs yet to be straightened out. But we desperately need the beneficial reuse of dredge material.

Mr. LOWENTHAL. Well, I think it is great that you are doing it, and I can just imagine how that can be used. Recently I spent a weekend with Congressman Graves from Louisiana—I do not think the congressman is here—and from southern Louisiana on the importance also of using the sediment that comes down from the Mississippi because they have lost thousands and thousands of acres.

And so he showed me what was going on. So my question is: How come is it taking so long, and what has been the Army Corps' issue? Why are we talking about a pilot project rather than a regular project, and what has happened in the past?

Mr. PINE. Well, the Army Corps has always taken the view that it is less expensive and more economical to simply dump the materials in the ocean. But that is really not correct when you think about the project as a whole. To bring in those soils from a land-based source is extraordinarily expensive. So it has really been an argument with the Corps about the economics of the reuse of dredging material.

Mr. LOWENTHAL. Does anyone else want to comment on this, the reuse, beneficial reuse, and what some of the issues are? If not——

Mr. FORD. Very quickly, sir, for us in our region, the Los Angeles River, as you are very familiar with——

Mr. LOWENTHAL. Very familiar. I am on the receiving end——

Mr. FORD. Yes, you are.

Mr. LOWENTHAL [continuing]. Or lack of receiving end.

Mr. FORD. So the very good news from the Army Corps of Engineers is that the sediment sampling in the Los Angeles-Long Beach Harbor, due to getting rid of the pollutant loading, is that those sediments are now approaching a point where they could be beneficially reused.

Mr. LOWENTHAL. OK. That is a very——

Mr. FORD. So the obstacle that we found in the past was that, yes, the water was polluted. The sediments were polluted. And so there were very few options with what to do with the sediment.

We certainly need it. We need to put it in smart places. And at this point in time, because of all the work we have done, we are approaching sediments that are clean enough to do that work.

Mr. LOWENTHAL. Thank you.

Yes?

Ms. TRAIL. Mr. Lowenthal, I'm with the Lake Pontchartrain Basin Foundation in south Louisiana. So we were happy to host you on your visit to south Louisiana to see some of the amazing projects we have.

Mr. LOWENTHAL. And they are amazing.

Ms. TRAIL. Yes. Yes. And so we view the Mississippi River as a tool, and we look forward to being able to use that sediment to rebuild our wetlands. And of course we are dependent upon that permitting process to be expedited, get those sediment diversion projects constructed so that we can restore our coast.

Mr. LOWENTHAL. I am just so glad to have this discussion about the beneficial reuse. I think it is just critically, critically important, and I know it has been a difficult issue to deal with in the past. But because of all the work, both the one I am aware of in L.A. County and cleaning up and the permitting that has kept the dumping out and the cleaning of our waterway, and working with the Army Corps now to begin to figure out, how do we use this beneficial reuse? And it is a beneficial reuse, critically important.

And with that, I thank the chair, and I yield back.

Mrs. NAPOLITANO. Thank you, Mr. Lowenthal. It is funny that you mention the Army Corps. I understand Brigadier General Toy is going to be in charge of the Mississippi River. So maybe we could schedule a meeting to be able to give him our concerns over the dredging material and other things.

With that, I ask unanimous consent that the record of today's hearing remain open until such time as our witnesses have provided answers to any of the questions that may be submitted to them in writing; and unanimous consent that the record remain open for 15 days for any additional comments and information submitted by Members or witnesses to be included in the record of today's hearing. And without objection, so ordered.

And I would like to thank all of you for being here so long and for providing testimony to this committee. And if no other Members have anything to add, the committee stands adjourned.

[Whereupon, at 12:06 p.m., the subcommittee was adjourned.]

SUBMISSIONS FOR THE RECORD

Prepared Statement of Hon. Sam Graves, a Representative in Congress from the State of Missouri, and Ranking Member, Committee on Transportation and Infrastructure

Thank you to our witnesses for being here today to discuss regional watershed programs and areas that are part of EPA's National Estuary Program.

These critical areas contribute to the health of regional ecosystems and are responsible for local and national economic benefits, supporting commercial and recreational fisheries, wildlife, and tourism.

Unfortunately, some of these estuaries and watersheds are in need of restoration.

Cooperative programs like EPA's National Estuary Program and EPA's regional watershed initiatives are important to those efforts.

I look forward to the testimony of our witnesses today and learning about successes and challenges these estuaries and watersheds face. I yield back.

Statement of Hon. Jackie Speier, a Representative in Congress from the State of California, Submitted for the Record by Hon. Napolitano

Thank you, Chairwoman Napolitano and Ranking Member Westerman, for convening this hearing on how to protect our historic waterways, and for your consideration of H.R 1132, the San Francisco Bay Restoration Act. I have introduced this legislation every Congress since the 111th Congress in 2010, and the need for action to protect the Bay has been increasing ever since. With climate change and rising tides threatening to cause serious damage in the coming decades, the urgency could not be greater. The degradation of San Francisco Bay would be an enormous loss for the residents of the Bay Area and our Nation. San Francisco Bay is the heart of the region, which generates more than $370 billion in goods and services annually and is home to more than three and a half million jobs. And, it is a natural treasure to the Nation, with a vibrant ecosystem that is home to the largest estuary on the West Coast.

It is so important that we provide more federal funding to protect and restore the Bay. Not only does the Bay strongly contribute to federal, state, and local public health and economic strength but it is also a home to more than 100 endangered and threatened species. Similarly, the region's tidal and seasonal wetlands are a significant part of the coastal resources of the United States. Forty percent of the land in the State of California drains to the estuary, so its restoration is essential to a healthy ocean ecosystem.

Over the last 200 years, an alarming 90% of the Bay's wetlands have been destroyed by human activity. The increase in pollution from cars, homes and communities in the burgeoning Bay Area has flowed into the creeks, rivers, and streams that pass into San Francisco Bay and eventually the Pacific Ocean, further damaging the Bay and the coastline. In August 2010, the Government Accountability Office published a sobering report on the San Francisco Bay Delta Watershed, finding that a lack of sufficient federal funding is one of the biggest risks to long-term restoration. We must protect the San Francisco Bay, and it is obvious that we cannot do so without steady and robust federal funding.

The urgency could not be greater. Rising tides due to climate change are threatening to irreversibly drown the Bay's wetlands unless we take immediate action. Studies have shown that by 2030 the expected sea level rise in San Francisco Bay will exceed the rate at which the marshes can elevate and grow into higher ground. If we don't step in now to accelerate the pace of Bay wetland restoration, the marshes will drown and the Bay Area's shoreline communities will lose the crucial flood protection that restored wetlands would provide.

Additional federal funding, as proposed in HR 1132, will create huge benefits for Bay restoration and pollution mitigation. The funding will buttress ongoing efforts by state and local authorities, who have already invested significantly in the Bay. In fact, Bay Area voters decided to tax themselves to restore their treasured wetlands, passing Measure AA with 70 percent support in all 9 Bay Area counties in 2016 to pay for tidal marsh restoration grants through the San Francisco Bay Restoration Authority. The Measure AA parcel tax is generating $25 million each year, and over 20 years will generate $500 million in local funding for the Bay, but that is still less than one third of the funding estimated to be needed to restore 36,000 acres of tidal marsh and maintain it—mostly on federal government property in the San Francisco Bay National Wildlife Refuge. In fact, the State of California has invested more than the Federal Government to acquire retired salt evaporation ponds and diked hayfields to add to this federal refuge, so they can be restored to tidal marsh habitat.

The San Francisco Estuary Partnership's Comprehensive Conservation and Management Policy (CCMP) found an enormous gap between funding needed for a healthy Bay and what is available from current local, state and federal funds for San Francisco Bay. Local citizens and community organizations are striving to fill the gap left by inadequate federal efforts. Save The Bay mobilizes 5,000 volunteers annually to help restore the Bay's shoreline habitat and remove trash and invasive species; San Francisco Baykeeper patrols the Bay to spot pollution from ships and sewage treatment plants; and many neighborhood groups have adopted creeks that flow into the Bay to try to restore them to health. But we need more resources to support the federal agencies that are failing to meet their current legal obligations—to manage tens of thousands of acres of national wildlife refuges and marine sanctuaries, to prevent pollution and preserve habitat in the Bay as required by the Clean Water Act, and to protect fish and wildlife as required by the Endangered Species Act.

There is additional evidence that current federal funding is insufficient. Recent demand for grant funding from the U.S. Environmental Protection Agency's (EPA) small San Francisco Bay Water Quality Improvement Fund (WQIF) has been more than three times what is available in that program to restore wetlands and reduce water pollution. Over the last 11 years, the WQIF has received $176 million in grant requests for the $50 million available to grant—that's 350 percent more project funding requested than available over those 11 fiscal years. The WQIF lacks statutory authorization and has not grown to meet the need for resources.

Increased funding through H.R. 1132 would also restore some balance to our federal investment in our Nation's iconic waterways. Between 2008 and 2016, EPA geographic programs invested only 45 million dollars into San Francisco Bay, while Puget Sound received over 260 million dollars and Chesapeake Bay 490 million dollars—over ten times as much, and a fraction of the ecological needs established in the CCMP. Looking at the relative size of the populations served by these bodies of water, a mere 6 dollars was spent on the Bay for each resident of the San Francisco Bay Area, while almost 30 dollars were spent for each resident living near Chesapeake Bay and almost 60 dollars spent for each resident living near Puget Sound. And in the most recent round of appropriations in early 2018, the SF Bay's WQIF appropriations remained at $4,819,000, while smaller geographic programs received substantially more, including Lake Champlain ($8,399,000) and Long Island Sound ($12,000,000). These disparities underscore how the federal government has been under-investing in the San Francisco Bay, compared to more substantial efforts for other waterways.

My bill, H.R. 1132, the San Francisco Bay Restoration Act, would fill the gap and provide the federal investment needed to protect the Bay. This legislation will authorize $25 million annually for five years to the EPA to fund projects, programs, and studies that implement priority objectives of the CCMP. The priority objectives for the funding would include water quality improvement, wetland and estuary restoration, endangered species recovery, and adaption to climate change. It will also establish a San Francisco Bay Program Office within Region 9 of the EPA, and it will authorize the EPA Administrator to appoint a Director of that Program Office to oversee that funding. The bill will require that the President's annual budget submission to Congress provide information on federal agency expenditures for the protection and restoration of the San Francisco Bay, so that we can better monitor federal investments in the Bay.

This bill has enormous support from the local community. It is co-sponsored by the entire California Bay Area Congressional delegation, including Speaker Nancy Pelosi and Representatives Anna Eshoo, John Garamendi, Ro Khanna, Jared Huffman, Barbara Lee, Zoe Lofgren, Jerry McNerney, Mark DeSaulnier, Eric Swalwell, and Mike Thompson.

It is clear that we cannot save San Francisco Bay without federal funds. We know that by 2030 the damage to the Bay will be irreversible, and Californians and Americans nationwide will suffer as a result. Chairwoman Napolitano and Ranking Member Westerman, I thank you again for convening this hearing, and I urge you to please take action to move H.R. 1132 expeditiously through committee so that we can begin to make the full efforts necessary to save the San Francisco Bay Estuary for people today and in future generations.

Letter of June 25, 2019, from Hon. Elaine G. Luria, a Representative in Congress from the State of Virginia, Submitted for the Record by Hon. Napolitano

JUNE 25, 2019.

Hon. GRACE NAPOLITANO
Chairwoman
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, 1610 Longworth House Office Building, Washington, DC 20515

Hon. BRUCE WESTERMAN
Ranking Member
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, 209 Cannon House Office Building, Washington, DC 20515

DEAR CHAIRWOMAN NAPOLITANO AND RANKING MEMBER WESTERMAN,

Thank you for holding this hearing on "Protecting and Restoring America's Iconic Waters." Keeping our waterways healthy and safe must be a top priority. I want to additionally thank you for inviting Will Baker of the Chesapeake Bay Foundation and drawing attention to the urgent need to reauthorize the Chesapeake Bay Program.

The Chesapeake Bay is one of our nation's greatest natural resources. It generates $33 billion in economic value annually and hosts one of the most important sites for ecological diversity in North America. Thanks to innovative partnerships across the state and federal level, great progress has been made in preserving, protecting, and restoring this crucial ecosystem.

The Chesapeake Bay Program Reauthorization Act (H.R. 1620) would fully fund the Chesapeake Bay Program for the next five years, ensuring that states get the resources they need to comply with their obligations to protect the Bay. The vast majority of funding for this Program would go directly toward states within the Chesapeake Bay Watershed to help them control pollution and manage runoff into the tributaries that feed into the Bay. This bipartisan bill will help ensure that the Bay remains a vibrant and beautiful destination for future generations.

I again thank you for holding a hearing on this crucial topic and urge you to pass H.R. 1620 out of Committee before the end of July.

Sincerely,

ELAINE G. LURIA
Member of Congress

Letter of June 24, 2019, from Hon. Gretchen Whitmer, Governor of Michigan, Submitted for the Record by Hon. Napolitano

JUNE 24, 2019.

Hon. GRACE F. NAPOLITANO
Chairwoman
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives

Hon. BRUCE WESTERMAN
Ranking Member
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives

DEAR CHAIRWOMAN NAPOLITANO, RANKING MEMBER WESTERMAN, AND MEMBERS OF THE SUBCOMMITTEE:

On behalf of the State of Michigan, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), and the Michigan Department of Natural Re-

sources (DNR), I ask you to reauthorize the Environmental Protection Agency's Great Lakes Restoration Initiative.

The subject of Tuesday's hearing is to protect and restore America's iconic waters. As Governor of The Great Lakes State, I believe there are no more iconic waters in our country than The Great Lakes. These bodies of water hold 21 percent of the world's freshwater, 84 percent of the country's fresh surface water, and generate over one million jobs. In addition to offering unique, pristine beauty, The Great Lakes are among the most vital ecological and economic resources in America.

Congress has long recognized the importance of The Great Lakes and has taken action to protect and restore this precious resource. The Great Lakes Restoration Initiative (GLRI), created by Congress in 2010, is a key means by which the Federal Government demonstrates its commitment to The Great Lakes. The GLRI is a multi-agency collaboration that provides funding to 16 federal organizations to strategically target the biggest threats to The Great Lakes ecosystem and to accelerate progress toward achieving long term goals, including ensuring safe sources of drinking water; providing safe water for recreation, including the catching and consumption of fish; delisting of federal Areas of Concern (AOCs); and protecting habitats and native populations from harmful algal blooms and invasive species. Since 2010, the GLRI has provided nearly $3 billion to federal organizations to work toward these goals. Over the past nine years, one-third of the region's most toxic hotspots have been cleaned up, sparking redevelopment and business opportunities on waterfronts; conservation practices on area farms have doubled, reducing harmful nutrient runoff; and habitat and wildlife connectivity continue to improve, with nearly 5,000 miles of rivers cleared of darns and other barriers.

In Michigan, there are many demonstrable positive impacts of the GLRI to our economy, our people, and our environment. A wide variety of programs in Michigan's EGLE and DNR are supported by the GLRI, including infrastructure related to The Great Lakes and the Aquatic Invasive Species program. Local communities have received millions of dollars of GLRI funding, enabling the creation of programs to address AOCs that have been identified as showing severe environmental degradation, combat invasive species that threaten tourism and the economy, and improve conditions across parks, lakes, and riverfronts.

Among many examples of the impact of GLRI funds on Michigan communities and the health of The Great Lakes:

- Two of Michigan's fourteen Areas of Concern, White Lake in West Michigan and Deer Lake in the Upper Peninsula, have been cleaned up and removed from the list of Great Lakes toxic hotspots;
- The GLRI funds a Michigan Grass carp response team that is responsible for leading the implementation of control actions in Michigan waters of Lake Erie. Grass carp, one of four invasive Asian carp species, have the potential to disrupt The Great Lakes' ecosystems by consuming large amounts of vegetation and reducing habitat for native fish and wildlife. Crews are conducting work to address critical uncertainties that are limiting the effectiveness of removal actions. These actions will lead to more effective control strategies, with the goal of eradicating Grass carp from The Great Lakes;
- GLRI-funded restoration work in Lake Michigan and Lake Huron is restoring historically important reef complexes to support the recovery of native fish species, such as Lake Trout and Whitefish, which are vitally important to our recreational and commercial fisheries. For example, with $980,000 in GLRI funding, The Saginaw Bay Rock Reef Restoration Project will restore approximately 2 acres of rock reef habitat to support the bay's recreational fishery; and
- In 2015 and 2016, $9 million in GLRI funding was used to construct the Little Rapids GLRI habitat restoration project on the St. Marys River. The project removed a causeway and replaced it with approximately 600 feet of open-span bridge, restoring unrestricted flow of the St. Marys River through the Little Rapids to improve fish spawning habitat for several important game species, such as salmon, trout, bass, perch, and smelt.

But there is much more to be done. The spread of new and existing aquatic invasive species continues to be exacerbated by warming waters due to climate change. Our residents' health is still at risk due to toxic sediment in the remaining twenty-two AOCs. Harmful algal blooms caused by runoff from farm fields threaten our water systems and economy. Communities across The Great Lakes region face aging, crumbling drinking water and wastewater infrastructure, while lead, copper, and emerging contaminants such as per- and polyfluoroalkyl substances (PFAS) pose risks to the safety of our drinking water.

The Great Lakes have benefited immeasurably from the GLRI, and we must neither slow nor halt the progress that has been made in protecting and restoring

these iconic waters. Knowing of its importance, I respectfully ask Congress to reauthorize the GLRI for five years at $475 million per year, the amount first appropriated in 2010. The Great Lakes region's economy, environment, and public health all rely on this important program.

Sincerely,

GRETCHEN WHITMER
Governor of Michigan

Letter of June 24, 2019, from Thomas Wegner, Board Chairman, and Adam Payne, County Administrator, Sheboygan County, Wisconsin, Submitted for the Record by Hon. Napolitano

JUNE 24, 2019.

Hon. PETER A. DEFAZIO
Chair
Committee on Transportation and Infrastructure, U.S. House of Representatives
Hon. GRACE F. NAPOLITANO
Chair
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives
Hon. SAM GRAVES
Ranking Member
Committee on Transportation and Infrastructure, U.S. House of Representatives
Hon. BRUCE WESTERMAN
Ranking Member
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives

DEAR HONORABLE MEMBERS OF THE HOUSE TRANSPORTATION AND INFRASTRUCTURE COMMITTEE AND WATER RESOURCES AND ENVIRONMENT SUBCOMMITTEE,

Due to decades of industrial pollution and its neglect, the Sheboygan River was named a Great Lakes Area of Concern (AOC) and Superfund site in 1986. For over thirty years the community dealt with the stigma associated with having one of the nation's dirtiest rivers. What should have been promoted as an asset to our region was frankly a black eye that was limiting investment and redevelopment in the area. For years, the community worked tirelessly to produce a solution and progress was painfully slow. Fortunately, thanks to tremendous teamwork and persistence, we were finally able to begin the necessary dredging, clean-up and habitat restoration work to begin the long process of delisting our river from the list of AOC's. This work would not have taken place without the Great Lakes Restoration Initiative (GLRI) funding.

Sheboygan County passionately encourages you to continue to fund the program and recommends increasing the funding available as costs have undoubtedly risen since its inception.

The GLRI invested over $50 million in cleaning up the Sheboygan River. Without that investment, the community would still be hanging on to hope that something might one day happen. Instead, our riverfront is going through a renaissance. Since 2013 when the dredging and habitat restoration work concluded, well over $60 million in redevelopment activities have taken place directly adjacent to, or very near, the Sheboygan River. In addition, many more development projects are in the planning stages, and charter fishing, recreational use and tourism are all on the rise.

Thanks to the Great Lakes Restoration Initiative, the Sheboygan River is no longer a polluted, wretched body of water. This work is critical for health and safety, economic development, and is simply the right thing to do for our children and generations to come. We urge you to continue to support the Great Lakes Restoration Initiative. Thank you for your consideration and leadership.

Respectfully,

THOMAS WEGNER
Sheboygan County Board Chairman

ADAM PAYNE
Sheboygan County Administrator

Letter of June 21, 2019, from Darren J. Nichols, Executive Director, Great Lakes Commission, Submitted for the Record by Hon. Napolitano

JUNE 21, 2019.

Hon. PETER A. DEFAZIO
Chair
Committee on Transportation and Infrastructure, U.S. House of Representatives
Hon. GRACE F. NAPOLITANO
Chair
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives
Hon. SAM GRAVES
Ranking Member
Committee on Transportation and Infrastructure, U.S. House of Representatives
Hon. BRUCE WESTERMAN
Ranking Member
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives

DEAR CHAIRMAN DEFAZIO, CHAIRWOMAN NAPOLITANO, AND RANKING MEMBERS GRAVES AND WESTERMAN:

I am writing on behalf of the Great Lakes Commission (GLC) to urge Congress's continued investment in restoring the Great Lakes under the Great Lakes Restoration Initiative (GLRI).

The GLC appreciates the Subcommittee on Water Resources and Environment convening a hearing on a topic of such importance to the Commission and to the eight party states to the Great Lakes Basin Compact.

THE GREAT LAKES: A VITAL ASSET FOR THE GREAT LAKES STATES

The Great Lakes are a vital environmental and economic asset for the United States and Canada, and for the eight states and two provinces of the Great Lakes Basin. With 90 percent of the U.S. supply of fresh surface water, the Great Lakes provide abundant fresh water for communities and industries; an efficient transportation system for raw materials and finished goods; unparalleled recreational opportunities for residents and tourists; and extensive habitat for valuable fish and wildlife resources. The Lakes provide the social and cultural foundation for millions of citizens and visitors, indigenous communities, cities and shorelines.

The Great Lakes are a significant component of our national and regional economy. Michigan Sea Grant estimates that more than 1.5 million jobs are directly connected to the Great Lakes, generating $62 billion in wages. NOAA's 2019 *Report on the U.S. Ocean and Great Lakes Economy* shows that our nation's water-dependent economy grew much faster than other sectors of the economy and, in 2016, employed more people than the national crop production, telecommunications and building construction sectors *combined*.

The Great Lakes and St. Lawrence River form the longest deep-draft inland navigation system in the world, stretching 2,300 miles to the geographic center of North America and the North American heartland. The Great Lakes maritime system links more than 100 U.S. and Canadian ports to the global economy, moves 200 million tons of cargo annually, generates more than 325,000 jobs and $45 billion in business revenue, and supports industries such as manufacturing, steel production, agriculture and energy generation.

The binational Great Lakes-St. Lawrence River Basin *hosts a $6 trillion economy and nearly one-third of U.S. and Canadian economic activity*. The maritime transportation system is a vital component of our region's economic infrastructure. These figures—and the growing value of abundant fresh water—illustrate the Great Lakes' unique competitive advantage. Restoring, protecting and wisely using the lakes is a key component of a broader binational strategy to create jobs, stimulate economic development, and strengthen communities. An environmentally healthy Great Lakes and economically vibrant regional economy are in our national interest.

RESTORING THE GREAT LAKES: A BIPARTISAN PRIORITY

Restoring and caring for the Great Lakes is a longstanding and bipartisan priority for federal, state and local leaders in the region. The current Great Lakes restoration program is based on a comprehensive strategy initiated by a set of priorities identified by the region's Governors and developed with active input from more than

1,500 stakeholders across the eight-state region. Completed in 2005, the strategy was put into action under the Great Lakes Restoration Initiative (GLRI).

Since 2010, the GLRI continues to enjoy enthusiastic and bipartisan support among Great Lakes leaders, regional organizations, and the Great Lakes Congressional delegation. Each year the GLC collaborates with a coalition representing state, tribal and local governments, conservation groups, business and industries, and Great Lakes ports on a suite of priorities for the Great Lakes, and the GLRI is consistently at the top of the list. Sustaining Great Lakes restoration has been an ongoing priority for the House and Senate Great Lakes Task Forces, and earlier this year a bipartisan group of 59 members of the House delegation wrote to the appropriations committee supporting at least $300 million for the GLRI in FY 2020.

The GLC and Great Lakes states have been actively engaged with the GLRI since its inception and find it to be a strong and valuable program. GLRI has administered funding through programs and authorities from a range of federal agencies and projects that address the most serious problems facing the Great Lakes. While U.S. EPA manages the overall program, the Great Lakes Interagency Task Force ensures engagement across the federal government and leverages specific areas of expertise in each agency. This process has evolved to include multi-agency subgroups focused on specific priorities with the goal being to improve efficiency in identifying and targeting resources to priority projects. The GLRI is supported by sound science and is guided by an Action Plan with detailed performance goals. An updated Action Plan III is currently being finalized and appears to provide continued, sound direction and accountability for the GLRI program.

HIGHLIGHTS OF PROGRESS UNDER THE GLRI

The latest *Great Lakes Restoration Initiative Report to Congress and the President* provides a comprehensive summary of progress under the program. The GLC believes the GLRI has demonstrated strong performance and has achieved a majority of the measures of progress established in the GLRI Action Plan. The latest report to Congress aptly summarizes the program's impact, stating that "GLRI investments have spread across almost 300,000 square miles and have supported more than 4,000 projects within the Great Lakes basin. These investments have made a monumental difference in repairing and protecting one of the United States most unique and significant natural resources for the more than 24 million U.S. citizens who rely on the Lakes' recreational and economic value."

From the GLC's perspective, the following are some highlights of the GLRI's impact:

Cleaning up the most heavily degraded Areas of Concern

Perhaps the most striking impacts from the GLRI are being seen in the Areas of Concern (AOC), where cleanup and restoration enables communities to revitalize once-degraded waterfront areas, provide new recreational opportunities, enhance fishing, maintain commercial and recreational boating, and stimulate business development in under-utilized urban areas. Approximately one-third of annual GLRI funding has been allocated to cleanup work in the AOCs, making this a major focus of the program. While much work remains, the progress has been significant: four AOCs have been formally delisted; all cleanup work has been completed in eight additional AOCs; 85 Beneficial Use Impairments (key benchmarks of environmental degradation) have been removed (out of 255 total); and approximately three million cubic yards of contaminated sediments have been remediated, with $330 million leveraged from non-federal partners. This work is taking place in the 31 U.S. and binational AOCs spread across all eight of the Great Lakes states, making this a highly visible component of the GLRI that is generating significant impacts at the community level. While environmental restoration is the primary focus of AOC cleanup work, it is having a real economic impact by catalyzing and creating "enabling conditions" for new development in waterfront areas, facilitating new recreational opportunities, and supporting tourism. Ultimately, the GLRI will generate multiple benefits beyond the ecosystem improvements that are its primary focus. The economic impact of the GLRI is discussed further below.

Reducing nutrient pollution to prevent harmful algal blooms and protect drinking water

The Great Lakes continue to suffer from the effects of nutrient pollution, which include risks to drinking water for over 48 million people that depend on the lakes. Driven primarily by nonpoint source losses from agricultural land, solutions are proving to be complex. Support from the GLRI is accelerating progress, both in the research needed to understand how phosphorus moves from farm fields to the lakes and the social science needed to better understand changes in farmer behavior. Re-

cent attention has also been giving to the economics of conservation, with GLRI supporting "soil health" initiatives to demonstrate that healthier soil can lead to improved water quality and resiliency during storm events, but also higher yields. The GLRI is also continuing to support Great Lakes communities and researchers seeking to better understand the formation of harmful algal blooms and take action to prevent or minimize impacts to drinking water safety, recreation, and tourism.

Restoring and protecting habitat for valuable native species

Since 2010, the GLRI has enabled federal and state agencies, tribes, municipalities, and numerous local and regional partners to implement a significant number of habitat restoration projects across the Great Lakes Basin. Nearly 5,000 miles of rivers and streams have been opened to fish passage and over 225,000 acres of fish and wildlife habitat have been improved or restored. Dozens of projects have focused on enhancing habitat for federal trust species, while additional work has accelerated restoration of fisheries that generate billions in annual economic benefits and provide outdoor recreation opportunities on private and public lands for millions of people. While many of these projects have focused on habitat improvement, a common side benefit is addressing aging infrastructure such as failing dams or dilapidated bridges. Substantial investments have gone into improving Great Lakes coastal wetlands where the water meets the land. These areas are hotspots of biodiversity and have outsized economic benefits due to their ability to remove excess nutrients that cause harmful algal blooms, protect property from the impacts of high water levels, and provide important habitat for fish and waterfowl.

Preventing and controlling harmful aquatic invasive species

Aquatic invasive species (AIS) represent a serious threat to the Great Lakes, which currently contain more than 180 non-native aquatic species, many of which are invasive and are causing ecological and/or economic damage. The Great Lakes food webs are now dominated by invasive species that change how the ecosystem functions and result in substantial economic costs to the region by limiting access to clean water, interfering with recreation, disrupting native fish populations and hurting tourism. Preventing new species introductions and managing existing harmful species is a top priority for the GLC. GLRI investments in invasive species prevention and control have totaled more than $443 million in eight years, providing vital support for

- actions to prevent the introduction of Asian carp into the Great Lakes;
- development of new ballast water treatment technologies to prevent new AIS introductions through commercial shipping;
- implementation of advanced early-detection methods to identify new species early in the invasion process;
- increased capacity to detect and contain or eradicate new invasions before they can do damage to the environment or economy;
- research and manage to respond to priority species such as zebra and quagga mussels, Phragmites, invasive crayfish, and hydrilla; and
- implementation of control activities to reduce populations of established species and minimize their harmful impacts.

ECONOMIC IMPACT OF THE GREAT LAKES RESTORATION INITIATIVE

In 2018 the GLC and the Council of Great Lakes Industries released the first-ever comprehensive study of the overall impact of the GLRI on the Great Lakes regional economy. Conducted by a team of economists with the University of Michigan's Research Seminar in Quantitative Economics, the study analyzed the economic impacts of GLRI project spending between 2010 and 2016; the amount of region-wide economic activity that will be generated through 2036; the growth in regional tourism that has resulted from the GLRI; and the program's impact on the region's quality of life as reflected in increased home values. The study's key findings are that

- Every dollar of GLRI project spending from 2010 through 2016 will produce $3.35 of additional economic activity in the Great Lakes region through 2036. The number was even higher in some Great Lakes communities: each dollar invested in Buffalo, New York, and Detroit will produce more than $4 of additional economic activity.
- The GLRI has enhanced tourism in the Great Lakes region. Every dollar of GLRI project spending from 2010 through 2016 will generate $1.62 in economic value in tourism-related industries through 2036.
- The GLRI increased the value that residents place on living coastal areas: every project dollar spent between 2010 and 2016 produced quality of life improve-

ments in coastal communities worth $1.08 to residents as measured in housing values, which means that people place a higher value on living in those communities because of GLRI projects.
- Despite its primary focus on environmental restoration, the GLRI created or supported as many jobs per dollar of investment that would be created by a conventional federal stimulus program.

To provide local context for the results, the study developed case studies that demonstrated how the GLRI's regional impacts have translated into real improvements in eight Great Lakes coastal communities: Duluth, MN, Superior, WI; Sheboygan, WI; Waukegan, IL; Muskegon, MI; Detroit, MI; Ashtabula, OH; Erie, PA; and Buffalo, NY. Key, local impacts from GLRI investments include:

- Millions of dollars of new real estate and commercial development, particularly in waterfront areas;
- Resurgence in traditional recreational activities and the emergence of new opportunities such as kayaking, kitesurfing, and paddle-boarding;
- Increased tourist visits and growth in revenues earned by tourism-related businesses; and
- Improved quality of life as shown by new residential housing, growing numbers of young people choosing to stay in or relocate to Great Lakes communities, and the marketing of water-related amenities as a recruiting tool for employers.

LEGISLATIVE PRIORITIES FOR CONGRESS

The GLC offers two priorities for Congress to sustain progress under the GLRI:

- *Sustain funding for the GLRI*: Continued funding for the GLRI of at least $300 million annually, together with ongoing program reviews and accountability, will build on planning, investments and progress underway at the federal, state, tribal and local levels. This will help maintain progress toward achieving goals outlined in the new GLRI Action Plan, which focuses on cleaning up AOCs, reducing phosphorus runoff that causes harmful algal blooms, controlling invasive species, and restoring habitat for native species. As just one important example, work is still underway in 19 AOCs, including the largest and most complex areas with the costliest cleanup needs. In FY 2020 alone, U.S. EPA is prepared to begin implementation of ten contaminated sediment cleanups in five states that require an estimated $88 million in federal funding and will leverage nearly $60 million from nonfederal partners. Over the course of the next five-year GLRI Action Plan III, U.S. EPA projects that up to 50 additional contaminated sediment sites will be ready for remediation, requiring substantial continued GLRI funding. This is just one component of our region's ongoing Great Lakes restoration needs, with continued support also needed to prevent nutrient pollution that causes harmful algal bloom and halt the threatened invasion of Asian carp into Great Lakes, among other priorities.
- *Reauthorize the GLRI*: The GLRI was formally authorized in 2016, providing a more secure legal foundation for continued appropriations and Congressional oversight. The GLC calls on Congress to reauthorize the program in 2020 to sustain this legal authority and provide Congress with an opportunity to provide additional legislative direction on the GLRI's management and priorities. The GLC will consult with its members states on opportunities to improve the program's effectiveness and looks forward to conveying its recommendation to the committee as the authorization process moves forward.

CONCLUSION

Great Lake restoration is a complex, long-term investment in a national asset. While achievements to date are substantial, they reflect the "low-hanging fruit." Looking ahead, we face daunting challenges, including cleaning up the largest and most complex AOCs, such as the Detroit, Rouge, Cuyahoga, Fox, St. Louis and Grand Calumet Rivers—rivers that were heavily used and, in many cases, severely degraded during the latter half of the 20th century; further implementing a long-term solution to prevent the introduction of Asian carp into the Great Lakes; and preventing harmful algal blooms in Lake Erie and other vulnerable areas of the Great Lakes.

Successfully confronting these challenges will require sustained, focused investment, collaboration, science-based solutions, and long-term monitoring and adaptive management. The GLRI provides a necessary framework and capacities for continued progress. The GLC urges Congress to support and continue successful federal-state-tribal-local investments to restore the Great Lakes.

The GLC appreciates the Committee's interest and oversight and looks forward to providing input on how to best advance the Great Lakes Basin's regional goals for a healthy environment and strong economy. If you have questions, please contact me at [redacted] or [redacted].

Sincerely,

DARREN J. NICHOLS
Executive Director

cc: Great Lakes Commission Board of Directors

Letter of June 25, 2019, from Chad Lord, Policy Director, Healing Our Waters-Great Lakes Coalition, Submitted for the Record by Hon. Napolitano

JUNE 25, 2019.

Hon. GRACE F. NAPOLITANO
Chairwoman
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives

Hon. BRUCE WESTERMAN
Ranking Member
Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, U.S. House of Representatives

DEAR CHAIRWOMAN NAPOLITANO AND RANKING MEMBER WESTERMAN:

On behalf of the Healing Our Waters-Great Lakes Coalition, thank you for holding the hearing on "Protecting and Restoring America's Iconic Waters." Because of the Great Lakes Restoration Initiative, we are seeing incredible results in protecting and restoring the drinking water for 30 million Americans. Even with these results, however, we still have a tremendous amount of work to do. I write today to offer our views on the GLRI and ask that this letter be included in the hearing record.

The Healing Our Waters-Great Lakes Coalition is comprised of more than 160 environmental, conservation, hunting, and fishing organizations; museums, zoos, and aquariums; and businesses representing millions of people whose goal is to restore and protect North America's greatest freshwater resource. Millions depend on the Great Lakes for their drinking water, and more benefit from the business, industry, and commerce that is connected to them. But the Lakes have long suffered from a legacy of toxic pollution, the introduction and spread of invasive species, and the loss and degradation of habitat.

In 2004, the Great Lakes community and policy makers recognized the growing burden of these challenges and the lack of progress being made up to address them. The Great Lakes Regional Collaboration was initiated under President George W. Bush to develop a strategic blueprint for restoration and protection.[1] After a yearlong process involving 1500 stakeholders, a plan was finalized that identified a list of actions necessary for restoration and protection of the Great Lakes, including stopping sewage contamination that closes beaches and harms recreational opportunities; cleaning up toxic sediments that threaten the health of people and wildlife; preventing polluted runoff from cities and farms that cause harmful algal blooms which poison drinking water; restoring and protecting wetlands and wildlife habitat that filter pollutants, provide a home for fish and wildlife, and support the region's outdoor recreation economy; and preventing the introduction of invasive species, such as Asian carp, that threaten the economy and quality of life for millions of people. It was out of a need to implement activities that achieved the collaboration strategy's goals that President Barack Obama created the Great Lakes Restoration Initiative in 2010.

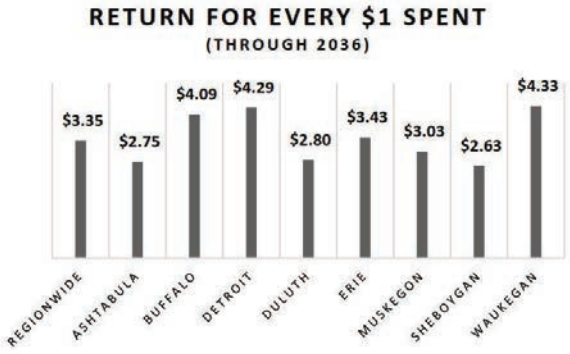
Today, the GLRI is working as intended and producing dramatic results. The program allows the region to undertake one of the world's largest freshwater ecosystem restoration projects. Non-governmental groups, industries, cities, states, and federal agencies forge public-private partnerships to clean up toxic hot spots, restore fish and wildlife habitat, and combat invasive species—partnerships that may never have come together had it not been for the GLRI. The GLRI's size and scope means it plays a central role in successfully restoring and protecting the Great Lakes. Rather than just accelerating progress, it catalyzes critical restoration action that

[1] GLRC. 2005. "Great Lakes Regional Collaboration Strategy to Restore and Protect the Great Lakes."

would have never happened otherwise. The GLRI organizes an enormous region of the country to protect one-fifth of the world's surface drinking water.

ENVIRONMENTAL AND ECONOMIC BENEFITS

The GLRI is critical to the health and quality of life of the region and nation. It drives economic development—and jobs—in communities across the eight states, which supports the broader U.S. economy. A report last fall from economists at the University of Michigan, Central Michigan University, and Duke University demonstrated that the Great Lakes Restoration Initiative's (GLRI) ecological investments are resulting in significant economic benefits. The study showed that for every $1 the GLRIinvested through 2016 to clean up toxic hot spots in Areas of Concern (AOC), control invasive species, restore wildlife habitat, protect wetlands, and reduce harmful algae the investment will produce more than $3 in additional economic activity regionwide through 2036 (more in some cities; see chart).



This research demonstrated that the GLRI is creating new real estate and commercial development—particularly in waterfront areas. This development has resulted in a resurgence in water-based, outdoor recreation and increasing tourism across the region, increasing housing options and home values, and an increasing number of young people staying in or relocating to Great Lakes communities. In addition, this research showed that restoration investments created or supported jobs. GLRI projects through 2016 are responsible for more than 9 percent total job growth in Ashtabula County, Ohio; 4.2 percent total job growth in Duluth, Minn.; and 3.2 percent total job growth in Sheboygan, Wis. Specific examples include:

- Twenty-seven new businesses opened to serve growing numbers of waterfront visitors in Ashtabula, Ohio, since 2010.
- Buffalo, N.Y. opened a multi-million-dollar entertainment complex in 2015 on an old industrial site, offering a restaurant, ziplining, a climbing wall, kayak and paddleboard rentals, a hockey rink, and roller derby facilities.
- Business at Detroit Outpost (a kayak outfitter and tour company) has increased 500 percent since 2013 and business at Detroit River Sports has doubled since 2015.
- Bay Marine Chicago Yachting Center opened in Waukegan, Ill. in 2018. The $5-million development serves pleasure boaters.

These economic outcomes are possible because of restoration successes like these:

- Four Areas of Concern have been delisted (one prior to the GLRI) and an additional eight have completed all management actions necessary to delist.
- Between 2010 through 2019, 80 beneficial use impairments (BUIs) have been removed in Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin, nearly seven times the total number of BUIs removed in the preceding 22 years. BUIs are the benchmarks of environmental harm that characterize AOCs.
- Additional early detection and monitoring exercises and vital support for the Asian Carp Regional Coordinating Committee prepared the region to respond to new and existing aquatic invasive species, while federal agencies and partners in one year funded work to protect over 18,000 acres from aquatic and terrestrial invasive species. Since the GLRI's inception more than 153,000 acres have been protected or treated.

- Combined with other funding, farmers implemented conservation action on more than 700,000 acres of rural lands through 2018 to reduce erosion and farm runoff that feeds toxic algal outbreaks. GLRI's supplemental funding helped double farmland under conservation around Western Lake Erie, Saginaw Bay, and Green Bay, reducing projected phosphorus runoff by more than 880,000 pounds.
- Habitat and wildlife connectivity continued to improve as the Fish and Wildlife Service, National Park Service, Natural Resources Conservation Service, and National Oceanic and Atmospheric Administration worked with partners to restore, protect, or enhance over 370,000 acres of wetlands and other habitat. 5,289 river miles have also been cleared of dams and barriers resulting in fish swimming into stretches of river where they have been absent for decades.

While these numbers are impressive, the stories behind them are more illuminating:

- At the Ashtabula River in Ohio, a sediment cleanup and habitat restoration project has restored the lower two miles of the river and advanced efforts to get it de-listed as a Great Lakes Area of Concern. The project has improved water quality and deepened the river channel, making the lower Ashtabula suitable again for maritime commerce, fishing, and recreational boating.
- The iconic Two-Hearted River in Michigan has seen increased opportunities for recreation and fishing thanks to restoration that stabilized the riverbanks. In addition, 23 road crossings over the river were repaired and culverts were replaced. The combination of this work connected 35 miles of river and reduced sediment pollution by more than 625 tons per year.
- In Duluth, Minn., a conservation corps project has improved stream health and habitat while providing jobs for 14 unemployed or underemployed Duluth residents. The Stream Corps project worked with 175 landowners to plant more than 18,000 trees and shrubs, which improved water quality as well as property values.
- North Point Marina Beach in the Chicagoland area is safe for residents to swim at once more, thanks to an increase in native plants. In 2007, prior to restoration, the beach was closed for 82 percent of the swimming season due to bacteria build up from gulls. By planting the expansive beach with native plants and grasses the ecosystem is no longer hospitable to the gulls and bacterial pollution has decreased.

These stories and more can be found at www.healthylakes.org/SuccessStories

BUILDING ON A SOLID BASE

How the region is accomplishing all this work is as impressive as what we are doing. The GLRI is a model for large, landscape-scale restoration. It ensures that the focus remains on the highest regional priorities that are identified by stakeholders through the GLRI Action Plans, which are themselves based on the larger restoration blueprint, the "Great Lakes Regional Collaboration Strategy to Restore and Protect the Great Lakes." It also provides a way for the U.S. to meet its commitments under the 2012 Great Lakes Water Quality Agreement with Canada. The GLRI is a critical component towards ensuring that the goals we set for ourselves in both the agreement and in this comprehensive plan can be achieved.

Additionally, the way the GLRI works also effectively allows federal agencies to obligate their GLRI funds quickly to on-the-ground work. The EPA, working with other federal agencies like the Fish and Wildlife Service, National Oceanic and Atmospheric Administration, Natural Resources Conservation Service, and National Park Service, quickly convert the funding they receive to supplement restoration activities through existing, authorized programs. This structure allows for funds to move quickly from EPA through the interagency agreements EPA reaches with the other federal agencies and onto the ground to complete important restoration work. This model also ensures accountability through the establishment of an "orchestra leader" (EPA), helps accelerate progress, and avoids potential duplication, all of which help save taxpayers money while focusing efforts on the highest, consensus-based priorities.

This model, however, works best when both existing federal agencies and programs, as well as the GLRI, have the funding they need to support each other.

MAINTAINING SUPPORT UNTIL THE JOB IS DONE

Even with the tremendous results we are seeing, the Great Lakes still face serious threats. Nineteen U.S. AOCs are still contaminated with toxic sediment, threat-

ening the health of people and stunting the development of communities. Harmful runoff from farm fields continues to pollute our waters, causing toxic algae outbreaks that threaten water systems, public health, and economic vitality. Habitat loss and aquatic invasive species continue to damage our region's outdoor way of life. And communities across the Great Lakes region continue to grapple with crumbling, antiquated water infrastructure and are faced with a staggering $179 billion over the next 20 years for needed improvements, upgrades, and repairs in the eight-state region. Many of these threats disproportionately impact people that have historically borne the brunt of environmental injustice underscoring an urgency to address these issues for everyone in the region. Furthermore, our changing climate is exacerbating all our region's challenges, making restoration efforts more complex and even more critical to ensure our communities resiliency.

The GLRI works, but with far reaching and ambitious conservation targets being set in the next GLRI Action Plan, there is still a lot of work left to be done. For example:

- The GLRI has helped remediate 80 beneficial use impairments (BUIs) across the region—less than a third of all identified BUIs. Under the proposed Action Plan III, the EPA aims to remove another 48 BUIs and achieve the completion of management actions at 22 of 31 AOCs. Yet, by 2024 nearly half of identified BUIs will remain untreated and management actions at 30 percent of AOCs will remain uncompleted. Furthermore, greater challenges lay ahead as the remaining AOCs are expected to see increasingly complex and expensive contaminated sediment issues. In 2020 alone, 10 pending sediment cleanup projects are expected to require $88 million in federal funding with ongoing projects awaiting another $130 million in future years.
- The GLRI has resulted in an estimated reduction of 881,467 lbs. of nutrients across the priority watersheds of the Maumee, Saginaw, Genesee, and Lower Fox Rivers. A significant step, but under the binational Great Lakes Water Quality Agreement the U.S. has committed to a 40% Phosphorus reduction—a reduction of over 7.3 million pounds—in Lake Erie alone.[2] Other state and federal actions have led to significant reductions in Lake Erie, but early estimates suggest achieving only a 34% reduction by 2020. Greater action is needed to meet our bi-national targets, improve water quality, and address the increasing likelihood of HABs across all Great Lakes.
- Habitat restoration is critical to protecting and improving regional water quality, enhancing the recovery of native species, and improving the resiliency of coastal communities. The GLRI has led to the restoration, protection, and enhancement of over 370,000 acres of habitat. A lot of work remains. The Great Lakes Interagency Taskforce identifies 1,550,000 acres of habitat in need of action and expect to have only reached 29% of this target by 2024, under current funding levels. Simply reaching the target of 260,000 acres of coastal wetland restoration, under current estimates, could cost somewhere in the range of $336 to $483 million alone.[3]

Additional congressional investment through the GLRI is critical to begin to close the gap on these targets. Beyond the GLRI, it is congressional action that will help supplement this restoration progress by helping communities replace lead pipes, address emerging contaminants like PFAS, ending polluted stormwater runoff, and keeping water affordable and safe for everyone. Congress must further support action to stop Asian carp and other aquatic invasive species from invading the region and act to mitigate the damage from climate pollution to help the Great Lakes adapt to a changing climate. We also need strong clean water protections, as well as institutions that are adequately staffed and funded to enforce protections that we all depend on.

CONCLUSION

The Great Lakes Restoration Initiative is working, and along with other restoration investments, is producing unprecedented results. This initiative has given the region an opportunity to protect and restore one of the world's largest freshwater ecosystems. It has spurred public-private partnerships between non-governmental

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[2] EPA, 2018 "Factsheet: U.S. Action Plan for Lake Erie (2018)" Accessed: https://www.epa.gov/sites/production/files/2018-03/documents/lake__erie__action__plan__fact__sheet__-__march__1__2018.pdf

[3] Hansen et al. Targeting Investments To Cost Effectively Restore and Protect Wetland Ecosystems: Some Economic Insights, ERR–183, U.S. Department of Agriculture, Economic Research Service, February 2015; Accessed at: https://www.ers.usda.gov/webdocs/publications/45347/51895__err183.pdf?v=0

groups, industries, cities, states, tribes, and federal agencies. Their work is resulting in cleaned up toxic hot spots, restored fish and wildlife habitat, and protected against the harmful impacts of urban and agricultural runoff. The GLRI's size and scope gives it a central, albeit not the only, role in our region's success for restoring and protecting the Great Lakes. It's a good program for which this subcommittee should be proud.

But serious threats remain, and we must continue to work together to bring about the restoration of our waters and our region. As you look to the future, we urge you to continue to support the GLRI. Recognizing its success as a model for landscape-wide restoration, but also seeing that as our region begins to deal with more and more complex restoration challenges its resources are being stretched further than ever before. We call on Congress to reaffirm its commitment to the region and a program with far-reaching impacts within the basin and beyond its boundaries. We ask you to reauthorize this program for another five years bringing its funding levels up to $475 million to match the first year of the program.

We appreciate the subcommittee's interest and leadership in highlighting the results stemming from the GLRI and for holding today's hearing that examines the benefits of protecting and restoring our iconic waters. The Great Lakes region will celebrate next year a decade of successful restoration and protection. Even with the broad benefits of the GLRI, it is important to recognize that there is still much work to be done.

Thank you again for your support and the opportunity to share our views with you. If you have questions, please do not hesitate to contact me at [redacted] or [redacted].

Sincerely,

CHAD LORD
Policy Director

Statement of Jim Murdaugh, Ph.D., President, Tallahassee Community College, Tallahassee, FL, Submitted for the Record by Hon. Webster

Good morning Chairman Napolitano, Ranking Member Westerman, and members of the Committee:

Thank you for the opportunity of providing written testimony for this most important hearing today on *Protecting and Restoring America's Iconic Waters*. My name is Jim Murdaugh, and I am President of Tallahassee Community College (TCC), located in the state capital of Florida. As most Floridians will tell you we are all very connected to our natural environment, our estuaries, our beaches and waterways. Our economy, and the wellbeing of our State depends on a healthy functioning environmental ecosystem. As an educational institution we strive to teach, educate, and provide solutions to maintain and grow the vibrancy of all of our costal waterways. We are well aware of the impact of harmful algal blooms like red tide on our state. We have seen the loss of key habitats resulting in significant impacts on fisheries and water quality, we know first hand the impact of flooding and coastal erosion related to sea level rise. Our state has become a bellwether for our nation, and what we are able to do here has national implications on improving our waterways throughout the country. We at TCC are ready to help.

Tallahassee Community College is an open admission, comprehensive community college and is one of 28 members of the publicly funded Florida Community College System. TCC serves the most educationally and economically disadvantaged area of Florida and has over 12,000 students including the state's largest number of African American community college students. The college ranks ninth nationally in the number of Associate degrees awarded annually. Fourth nationally in the number of Associate degrees awarded to African American students annually. First among the 28 members of the Florida College System in the percentage of graduates who transfer to the State University System the next year with 75%; and first among Florida College System members in the percentage of Associate degree completers with disabilities. TCC meets the educational needs of a large, diverse student population with Associate in Arts (AA) and Science (AS) degrees in 56 curriculum areas, courses for transfer to four-year colleges, and more than 70 job training programs. TCC is ranked among the nation's top 20 percent of colleges and universities for veterans having been recognized as a military-friendly college. In addition to its educational initiatives, TCC has also embraced its environmental mission and in 2012 started construction on the Wakulla Environmental Institute (WEI).

WEI is a world-class Institute that brings together education, conservation and recreation in a manner that stimulates economic development in an environmentally

responsible way. This region is regarded as one of the top five biodiversity hotspots in all of North America. The Institute is situated on 158 acres of untouched land which includes pine forest, a natural land bridge, sink holes and swamp. The campus building boasts 10,000 square feet of classrooms, meeting spaces, a state-of-the-art wet lab, and plenty of covered porch area ideal for taking in the beautiful campus scenery. WEI was created to highlight Wakulla's natural heritage and biodiversity through education. The Institute offers environmentally- focused certificates and educational programs that promote education, conservation and recreation through hands-on activities, practical experiences and online coursework. One of our more unique programs is our Oyster Aquaculture Certificate Training Program.

This program was developed as a sustainable alternative to wild oyster harvesting in response to the depleting level of oysters in the waters of Wakulla, Franklin and Gulf Counties. Threats caused by overharvesting, the BP oil spill and a narrowing of public combing areas led many to find work in alternative industries. Steering oystermen back into the industry creates a domino effect which benefits the region's economy. The program's mission is to provide oysterman and fishermen the tools to open their own businesses by offering training on how to farm-raise oysters in Wakulla County. However, in addition to the educational and business opportunities created there has also been tremendous positive environmental impacts from our oyster program which have the potential to be completely transformative for the state of Florida and our Nation.

You may be wondering why oysters are so important. Oysters are filter feeders and are thus natural combatants to red tide and other harmful algal blooms. For millions of years oysters have lined the Gulf and the Eastern Seaboard and have protected the coastline against erosion, harmful algal blooms, and other environmentally harmful effects. Now, 85% of natural oyster reefs are gone around the world which are a key component to global ocean health. Oysters are a keystone species, and once you take away a keystone species it has a dramatic downward effect on the entire ecosystem. For example, oysters clean about 50 gallons of water a day while oyster reefs provide support for over 300 species of marine life.

The water in both tanks is from the same time and place. The tank on the right has oysters.

In response to the decline in wild oyster harvests and the subsequent impact on the local economy, WEI initiated a grower training program for oyster aquaculture in 2013. It obtained a five-acre submerged land, full water column lease for aquaculture in the Oyster Bay, Wakulla County, FL; the first ever awarded by the Florida Cabinet. As a result of our efforts in establishing an Oyster Aquaculture Training Program we have found that the reintroduction of oysters has had a tremendous economic as well as a profound environmental effect on the region. Within a few years of establishing our Aquaculture Program we noticed the Bay waters became clearer and the return of other aquatic species to an area which had been desolate due the absence of oysters. We engaged with Florida A&M University to conduct water quality tests to determine what level of impact our Oyster Aquaculture Program had on Oyster Bay and the results have been astounding. Not only did the three year study determine the amount of nitrogen removed from the system, it

quantified the level of water quality by equivocating it to be the same as having an $8 million wastewater treatment facility per year on a five acre lease. This became the genesis of our habitat restoration efforts in finding a way to export *clean water*.

Since the start of our oyster aquaculture program in Oyster Bay we have seen the area change from a soft bottom system with little productivity and few species to a more diverse community with greater abundance of fishes and the presence of seagrasses returning to the area. In order to expedite this amazing natural occurring process, TCC has created a patent pending invention that will reintroduce oysters where they have been decimated by re-establishing natural oyster reefs. We have created oyster domes.

(*Oyster domes ready to be placed in the water*)

Domes are ½ of a sphere. Approximately 3 feet in diameter and about 2 feet tall. Each dome has approximately 10 holes around the dome about 4 inches in diameter. The thickness of the dome is approximately 3 inches.

(*From the top of the dome, a PVC pipe, holds several mature oysters. The oysters in the pipe spawn and populate the area with oyster that attach to the domes.*)

The deployment of our oyster reef dome technology creates an environment for oysters to thrive by providing a protected and deployable seed source. Our domes re-seed an area, re-establishes oyster reefs, thus improving water quality, and acts

as a buffer zone between the watershed and estuary, thus mitigating the problems that arise from watershed runoff.

(*Oyster dome after it has been in the water*)

We have a solution that will reintroduce oysters in areas where they have been decimated and re-establish natural oyster reefs.

- A 5-acre oyster dome site will bring in a permanent oyster seed source to an ecosystem. This seed source will spread oyster seed miles from the original spawn site, growing the oyster ecosystem.
- As the 5-acre oyster dome system matures, trillions of oyster larva will be spawned sending oyster seed to the surrounding area, constantly improving the local ecosystem.
- The trillions of egg and sperm released into the water serves as a major food source to 300 species of very small animals that in turn, will feed the food chain. This will greatly improve the local fisheries.
- The domes serve as wave attenuators, this helps with reducing coastal erosion.
- Oyster domes work in areas where there are limited natural seed source or none at all. Each dome comes with its own seed source.
- 5 acres of domes will produce on average of 750 trillion oyster eggs and quadrillions of oyster sperm per group spawn.
- The domes serve as a permanent space for fisheries nursery. This will improve the local fishing.
- As the water clarity improves, the sunlight will be able to get to the sea floor. This will allow sea grasses to develop and thrive. This will allow more fish to grow and improve spawning.
- Each 5-acre site will clean 500 billion gallons of seawater per year, by year two. This is equivalent to $8 million dollars of water treatment from a typical wastewater treatment plant per year.
- Each dome concentrates the oyster spawn up to 5 times the normal rate of fertilization. This technique allows far more oyster larvae back into the environment to expand the local oyster reefs.

Harmful algal blooms are the one of most destructive natural forces besides hurricanes that impact Florida. Red tide affects the beaches and thus tourism which is the number one economic industry in the Florida. Red tide and other harmful algal blooms are the result of an imbalance in the natural habitat environment caused by toxic waste being dumped in our estuaries from inland river systems. Harmful algal blooms feed on nitrogen, picoplankton, zooplankton, undersea sediments to name a few. This imbalance keeps occurring because there aren't enough oyster reefs to filter these nutrients out of the system and feed on algae in the water column. Because oysters remove harmful nutrients and feed on algae, they are the perfect foil in addressing problems with harmful algal blooms.

In Sarasota County alone, last year it was estimated that red tide had a $44 million effect on the residents and businesses in that area. Tourism, health, and fisheries related incidents are where the bulk of the estimated damages occurred. Since

2013 when we started the oyster aquaculture industry here in the state of Florida, we have produced more than 20 million oysters in the bay, and in two years we have experienced a dramatic change in water quality and fishing in the areas surrounding our leases. Last year Oyster Bay did not have any recorded accounts of red tide. We know that this is because of the presence of the oysters as a keystone species being reintroduced in the area and thus keeping levels of nitrogen and other nutrients that harmful algal blooms feed on in check.

In closing, I must say it is an honor to come before the Committee and provide written testimony to discuss these important issues. We all understand the significant threat our waterways are under, and the swiftness for which we must act to mitigate against true and permanent environmental damage. As Tallahassee Community College's President, I come before you today with possible solutions that have the potential to be transformative for our Nation. I thank you for holding this hearing and allowing me the opportunity to address this Committee.

APPENDIX

QUESTIONS FROM HON. GRACE F. NAPOLITANO TO PRESTON D. COLE, SECRETARY, WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Question 1. You mention in your testimony that Great Lakes Restoration Initiative funding has helped protect local drinking water by "working with farmers to prevent nearly 800,000 pounds of phosphorous from polluting the Great Lakes and causing harmful algal blooms."

Can you describe, in more detail, what actions have been taken, and the agreements reached between regulators and farmers to achieve this significant reduction? Are additional efforts underway in the watershed to control harmful algal blooms? Can these efforts be replicated elsewhere?

ANSWER. Thank you for the opportunity to provide some additional information about the GLRI and the work that the states and our partners are doing to address these issues.

Since its beginning, Great Lakes Restoration Initiative (GLRI) goals and performance metrics recognized that success depended on reducing both urban and agricultural sources of nutrients. The GLRI funding has supported a multi-pronged approach that increased capacity to carry out on-the-ground actions, develop tools to target and prioritize, monitor effectiveness, and encourage innovation (based on supporting science, including better understanding of the drivers of harmful algal blooms).

The *GLRI funding has supported a wide variety of actions to reduce phosphorus loading from agricultural lands*. The actions include (among others) restoring/installing wetlands, providing incentives for planting cover crops and implementing no-till practices, re-naturalizing channelized streams, stabilizing eroding streambanks, creating riparian buffers, installing waste storage facilities, conducting farm risk assessments and implementing nutrient management plans. Farmers are actively engaged in selecting agricultural practices to tailor them to their farming operations and needs. The GLRI has also supported green infrastructure projects such as rain gardens, bioswales, porous pavement, and bioretention ponds to reduce runoff pollution from developed urban areas.

A particularly *innovative and successful GLRI-funded effort is the establishment of the Demonstration Farm Networks*, a program that was piloted in the Lower Fox River watershed (WI)[1], and has now been replicated in multiple watershed areas throughout the Great Lakes region. The Demonstration Farms program has allowed farmers to try new practices, such as side dressing manure into corn, interseeding (sowing cover crop seeds into the field before crops have been harvested), and no-till practices. The program also incorporates edge-of-field monitoring, so scientists can document the impact of the innovative practices on water quality and provide recommendations to conservation professionals and farmers for improving practices. And perhaps most importantly, it facilitates peer learning by providing opportunities for the demonstration farmers to interact with neighbors through field days, social events (e.g., breakfasts on the farm), and workshops.

The funding for these actions is allocated through existing federal programs such as the USDA–NRCS Environmental Quality Incentives Program (EQIP), competitive awards to state or local agencies and nonprofit organizations, and non-competitive awards to states where the actions support priorities of the Lakewide Action and Management Plan (a multi-jurisdictional plan established under the U.S.-Canada Great Lakes Water Quality Agreement). These *multiple funding pathways are important for enabling partners to work together toward shared goals* and leverage different organizational capacities, technical expertise, and relationships.

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[1] First Great Lakes Demonstration Farm Network to Launch in Green Bay Area https://www.nrcs.usda.gov/wps/portal/nrcs/detail/wi/newsroom/releases/?cid=STELPRDB1241556

Since many of the agricultural best management practices are installed on private lands, *farmers enter into voluntary agreements to install and maintain those practices*. The agencies overseeing the projects establish contracts with farmers to maintain the practice for a certain number of years (variable depending on the place and the practice; usually 5 years to 15 years). In some cases, permanent easements are established. The agencies provide funding to help pay for the installation of the practice and may provide incentive payments for their continued maintenance. Farmers participating in the Demonstration Farms Network have seen significant improvements in soil health, which in turn leads to reduced operating costs and resiliency to extreme weather events. Many Demonstration Farmers are adopting practices for water quality without additional contracts or incentive payments.

Beyond the GLRI-funded projects and programs, *state and local partners are working on multiple fronts to reduce nutrient inputs and control harmful algal blooms. One example is the federal Total Maximum Daily Load, or TMDL, Program* which is part of the Clean Water Act. This provides a systematic framework for monitoring to identify waters that are degraded, characterizing the sources of pollutants, and assigning reductions to those sources based on the allowable pollutant load established by the TMDL. Pollutant limits are then incorporated into point source permits while nonpoint sources from agricultural lands are addressed through strategic watershed plans known as Nine Key Element Plans. The Nine Key Element Plans provide the local, ground-level information that conservation professionals need to strategically work with agricultural producers for establishing practices to achieve load reductions. These plans are focal points for public, private, and non-governmental organizations to work together for implementation.

As a state authorized to implement the TMDL Program, Wisconsin has been proactively developing TMDLs. U.S. EPA has approved TMDLs for the Lower Fox River Basin (2012) and the Milwaukee River Basin (2018). A TMDL was recently completed for the Upper Fox and Wolf River Basins. Additional TMDL development is underway in multiple watersheds in Wisconsin's Lake Michigan Basin.

Wisconsin was one of the first states to adopt numeric Phosphorus Water Quality Standards for surface waters (rivers, lakes and streams), which were adopted on December 1, 2010. In addition, the rule package set procedures to implement these phosphorus standards in Wisconsin Pollution Discharge Elimination System (WPDES) permits that included flexibility in the compliance provisions to reduce phosphorus from nonpoint sources. Although the agricultural performance standards are mandatory, the obligation to comply may be contingent on a 70% cost share offer; however, available funding is very limited.

Wisconsin has also been at the forefront in the Great Lakes region for developing a water quality trading program that enables point sources to work with agricultural landowners to achieve nutrient reductions required by their permits while saving money on plant upgrades. Market-based approaches for reducing nutrients have also been explored in the Erie P Trade project [https://www.glc.org/work/eriepmarket] led by the Great Lakes Commission. *Water quality trading and other market-based approaches to reducing nutrients may be transferable to other areas* (and indeed, the Great Lakes region has learned from the Chesapeake Bay experiences and others). Wisconsin has also been encouraging the adoption of managed grazing systems, as they have potentially significant water quality and economic benefits for raising livestock compared to confinement systems.

Other Midwestern states are exploring new and innovative avenues for reducing nutrient loads as well. To reduce algal blooms, *Ohio has studied a tax on fertilizer to reduce soluble phosphorus and implemented an Agricultural Fertilizer Applicator Certification* [https://nutrienteducation.osu.edu/FertilizerCertification], which requires anyone who applies fertilizer (other than manure) to more than 50 acres of agricultural production grown primarily for sale to become certified by attending training and meeting application record-keeping requirements. *Michigan has established the Michigan Agriculture Environmental Assurance Program* (MAEAP), a state-supported voluntary program that enables local conservation technicians to provide a confidential farm evaluation and recommendations for practices that will improve water quality. Farms that implement the recommendations receive recognition and earn regulatory assurances as well as increased access to cost share and technical assistance (see http://www.maeap.org/).

Within the Lake Erie basin, the *4–R Stewardship Program* engages fertilizer retailers, agriculture consultants, farmers and conservation organizations in a common-sense approach *to use the right fertilizer source, at the right rate, at the right time, with the right placement* (see https://4rcertified.org/ and https://www.nutrientstewardship.com/4rs/). Incentives include cost recovery for soil testing. Farmers see an economic benefit that also reduces nutrients.

It is important for these implementation-focused programs to operate in the larger context of watershed goals. The TMDLs and Nine Key Element Plans provide those goals on a local scale. In a system as large as the Great Lakes, regional goals can also play a key role. For example, in the Western Lake Erie Basin, Binational Phosphorus Load Reduction Targets [https://www.epa.gov/glwqa/recommended-binational-phosphorus-targets] for phosphorus have been developed as part of implementing the Great Lakes Water Quality Agreement. The phosphorus reduction targets provide a shared goal and create a common sense of purpose, while enabling tracking efforts such as Blue Accounting's ErieStat [https://www.blueaccounting.org/issue/eriestat]. Ohio, Michigan, Indiana and Pennsylvania have developed Domestic Action Plans [https://binational.net/2018/03/07/daplanphosredinlakeerie/] that establish the measures for achieving those targets.

The key elements of all of these efforts that may be transferable to other areas include collaborative, science-based goal-setting; tracking progress towards those goals; and employing multi-sector, diverse strategies to reach them (blending regulatory and voluntary approaches). Flexibility and adaptive learning are necessary for new ideas to be tested and rolled out to broader audiences. Local, producer-led innovation and information sharing should be supported. Monitoring to track progress and inform future actions is necessary for ensuring resources are allocated to effective programs and practices. Funding to support all of this work is important. The science community is already collaborating beyond the Great Lakes region to share lessons learned about HABs and HAB control and evaluate transferability.

Question 2. In your testimony, you describe some of the ongoing threats to the Great Lakes and note that "most of these threats disproportionately impact people who have historically borne the brunt of environmental injustice."

Can you be more specific as to these threats and the populations affected? Would you recommend something specific this administration or Congress can do to address these disproportionately affected populations?

ANSWER. Great Lakes rivers and harbors were industrial hubs as the U.S. became an economic power in the late 19th and early 20th centuries. The industries that grew up along the shores of the lakes and rivers often left behind legacies of polluted soils, groundwater, and riverine sediments in the centers of some of the Great Lakes region's greatest cities. The populations who continue to live in these urban centers (for reasons discussed in the literature [2]) are often low-income communities and racial and ethnic minorities [3].

While many good programs and projects have been funded to address water quality and infrastructure in underserved communities to date, more work is needed. To address these disproportionately affected populations, the federal government can act on a number of fronts.

It can *support and strengthen existing programs that remove toxic pollutants*, including U.S. EPA's Great Lakes Legacy Act Program and Brownfields Program. Removing these pollutants is an important first step in any effort to revitalize blighted urban centers. Currently, the Legacy Act funds can only be applied to communities designated as Great Lakes Areas of Concern (AOCs). Expanding the program beyond these Areas of Concern would provide opportunities to communities burdened with toxic legacy pollution but without the AOC designation.

Green infrastructure practices should be considered as redevelopment of brownfields and waterfronts occurs. Practices such as rain gardens, pervious pavement, bioswales, and green roofs should be encouraged and supported to reduce the impact of contaminated stormwater runoff on waterways, enhance resilience to extreme weather events, and bring green spaces to urban centers. They can provide increased access to waterfronts, recreational facilities, and parks. It is well documented that access to green spaces supports health and wellness [4]. The GLRI has supported these types of projects in Great Lakes communities and funding the GLRI at $475 million would accelerate their implementation.

Congress and the administration can continue to *support U.S. EPA's Office of Environmental Justice* which provides financial and technical assistance to overburdened communities for addressing environmental justice issues. Examples of suc-

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[2] For example: Taylor, D. Toxic Communities: Environmental Racism, Industrial Pollution, and Residential Mobility; New York University Press: New York, NY, USA, 2014. [Google Scholar]

[3] Cole, F.; Foster, S. From the Ground up: Environmental Racism and the Rise of the Environmental Justice Movement; New York University Press: New York, NY, USA, 2001. [Google Scholar]

[4] For example, see "The Health Benefits of Small Parks and Green Spaces" https://www.nrpa.org/parks-recreation-magazine/2017/april/the-health-benefits-of-small-parks-and-green-spaces/ by Kathleen L. Wolf, Ph.D.

cessful projects are a Groundwork Milwaukee (WI) [http://www.groundworkmke.org/] project funded through a 2015 OEJ award and a People United for Sustainable Housing (PUSH)-Buffalo [https://www.pushbuffalo.org/] project funded through a 2016 Environmental Justice Collaborative Problem-Solving Program award[5]. Both projects involved installing green infrastructure (rain gardens and rain barrels in Milwaukee; riparian buffers in Buffalo) by working with teens and young adults. The young adults gained skills in planting and building the practices and became ambassadors to their communities for raising awareness of green infrastructure.

Another program that merits continued *support is the U.S. EPA Urban Waters Federal Partnership Program* (https://www.epa.gov/urbanwaterspartners). This program helps reconnect economically-disadvantaged urban communities with their waterways by providing an enhanced level of coordination among federal agencies. An example project is in Grand Rapids, MI, where efforts to restore the Grand River are leading to expanded public use and economic redevelopment[6].

Recognizing the importance of water and wastewater infrastructure for maintaining healthy communities and the high cost of upgrading deteriorating systems, the federal government can *increase funding for drinking water and wastewater infrastructure replacement and upgrades* to accelerate the pace of progress on this issue. In addition, the federal government can *provide flexibility for meeting (or forgiving) local cost share requirements* for federal programs.

Great Lakes harbors and ports are economic engines of their communities. The U.S. Army Corps of Engineers dredges navigation channels to maintain sufficient depth for shipping and the dredge material must be placed appropriately, often in confined disposal facilities (CDFs). The Corps requires local communities to share in the cost of the dredging and disposal which can reduce the economic viability of ports, especially as existing CDFs are filled up. *Congress and the administration can amend the Great Lakes Dredged Material Recycling provision of the Water Resources Development Act to increase flexibility of the Corps and its partners to remove previously disposed dredged material for suitable beneficial purposes*. The language should be amended to state that "the removal of previously disposed dredged material, transportation, and unloading of such material at the site of use shall be conducted at federal expense if the costs associated with these activities are less than the proportionate federal share of construction of a new disposal facility for dredged material from the same harbor or channel." This would extend the life of existing CDFs, which in turn reduces the burden on local communities for finding alternative dredge placement options and maintains ports and shipping as economic drivers.

Congress and the administration can also consider how to directly implement, or support local municipalities in implementing, the following procurement policies that strengthen local economies while improving the quality of life for residents: *pay prevailing wages* for publicly-funded projects; when contracting by Request for Proposals (RFP), *award extra points for designs that incorporate habitat, green infrastructure, and/or public access features*; ensure that established *minority & women-owned business set asides are enforced*; and, *implement local hire ordinances*, such as the one established by Gary, Indiana (Ord. No. 6972, § 6, 1–20–1998; see http://garycityclerk.com/gary-municipal-code/code/)[7].

Additional information:

Toxic pollutants that were left behind by industrial development before the key environmental regulations of the 1970s are referred to as "legacy pollutants." Legacy pollutants include polychlorinated biphenyls (PCBs), a chemical that was used in electrical equipment, paper manufacturing, and other manufacturing processes. PCBs are persistent (i.e., they do not break down in the environment) and accumulate in the tissues of insects, fish, and mammals. They are probably carcinogens[8]. Another common legacy pollutant is polycyclic aromatic hydrocarbons (PAHs), which is a general name for multiple chemical compounds. These were released to the environment by coal gasification plants and other industrial operations and some of

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[5] EPA Environmental Justice Grants and Communities, a story map: https://www.arcgis.com/apps/Cascade/index.html?appid=d426d553c4cc44a3af62bff7e175108e

[6] Details available at "Urban Waters and the Grand River/Grand Rapids (Michigan)," https://www.epa.gov/urbanwaterspartners/urban-waters-and-grand-rivergrand-rapids-michigan

[7] Additional discussion of this topic: "Local Purchasing Preferences" by Stacy Mitchell and Olivia LaVecchia, 26 Aug 2015 https://ilsr.org/rule/local-purchasing-preferences/

[8] refer to ATSDR public health statement for PCBs: https://www.atsdr.cdc.gov/phs/phs.asp?id=139&tid=26

the compounds are considered to be carcinogenic[9]. Other legacy pollutants include metals such as mercury, lead and arsenic.

Individuals who live in the same neighborhoods as these contaminated sites can be exposed to these pollutants in a variety of ways. They can be exposed when they catch and consume fish from polluted waterbodies. They can breathe air that contains particulate matter from polluted sites on a dry, windy day. They can eat vegetables from a garden that has been grown in polluted soil. They can drink water that has been drawn from polluted surface water or groundwater and not properly treated and transported.

The U.S. and Canada recognized the importance of addressing toxic pollution for restoring the health of Great Lakes communities, and in the Great Lakes Water Quality Agreement [https://www.epa.gov/glwqa] (first signed in 1972 and updated in 1978, 1987 and 2012) designated Great Lakes Areas of Concern to create a framework for addressing toxic hotspots around the Great Lakes. This in turn prompted the U.S. federal government to authorize the Great Lakes Legacy Act (GLLA) [https://www.epa.gov/great-lakes-legacy-act/about-great-lakes-legacy-act] in 2002 (reauthorized in 2008) to provide technical support and funding for toxic sediment cleanups in the Areas of Concern. This legislation has played a very important role in helping communities to remove contaminants, which they otherwise may not have been able to do given the high costs of cleanups.

The Great Lakes Restoration Initiative (GLRI) has expanded the capacity of the GLLA to carry out cleanups, and strong public-private-partnerships have formed to carry out the cleanup projects. Examples of GLLA cleanups include the Buffalo River [https://bnwaterkeeper.org/projects/buffalo-river-restoration/] in Buffalo, New York; Lincoln Creek [https://dnr.wi.gov/topic/greatlakes/lincolnpark.html] in Milwaukee, Wisconsin; and, the Detroit River [https://www.canr.msu.edu/news/yes_we_are_restoring_the_detroit_rivers_area_of_concern] in Detroit, MI. Following cleanups in AOCs, communities have seen significant economic revitalization[10]. The GLLA represents a success story and one recommendation would be to expand the GLLA—allow it to support cleanups in communities that aren't AOCs and provide additional funds to the program (i.e., support the GLRI at the authorized $475 million).

While the GLLA supports the removal of toxics from waterbodies, the land-based cleanups are also important and regulatory programs such as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund), the Resource Conservation and Recovery Act (RCRA), and Brownfields programs have been successful in transforming polluted industrial sites into desirable locations for new businesses, green spaces, and residential development. These regulations and programs should be sustained and strengthened to ensure the pace of cleanup continues and communities can return to health as soon as possible.

Great Lakes communities can be exposed to toxic substances not only from contaminated soils and sediments but also as a result of nutrient inputs from the surrounding watershed. Toxic algae can cause rashes, stomach or liver illness, and respiratory problems in people and pets[11]. Toxic algae impacted the drinking water system of Toledo, OH in 2014 when a severe bloom occurred in the area of the city's drinking water intake pipe. As a result, more than 400,000 residents were without safe drinking water[12] for three days[13]. Restaurants closed, tourism slowed, and residents had to rely on bottled water. The costs of the bloom were examined in a 2015 report, *Economic Benefits of Reducing Harmful Algal Blooms in Lake Erie*, prepared by Environmental Consulting & Technology, Inc., which estimated the cost of the 2014 bloom to be $65 million.[14]

Because many Great Lakes communities are at the bottom of the watershed, and often have little say in what happens on land upstream of their communities, they

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[9] refer to Wisconsin DHS web page for information: https://www.dhs.wisconsin.gov/chemical/pah.htm

[10] *Assessing the Investment: The Economic Impact of the Great Lakes Restoration Initiative*, a report by the Great Lakes Commission and Council of Great Lakes Industries; see https://www.glc.org/work/blue-economy/GLRI-economic-impact

[11] Nutrient Pollution Effects: Human Health (https://www.epa.gov/nutrientpollution/effects-human-health)

[12] "Toxic Algae Bloom Leaves 500,000 Without Drinking Water in Ohio" https://www.ecowatch.com/toxic-algae-bloom-leaves-500-000-without-drinking-water-in-ohio-1881940537.html

[13] "Lake Erie's algae bloom is growing again after paralyzing Toledo water system" https://www.bridgemi.com/michigan-environment-watch/lake-eries-algae-bloom-growing-again-after-paralyzing-toledo-water-system

[14] "Economic Benefits of Reducing Harmful Algal Blooms in Lake Erie", M. Bingham, S. K. Sinha, and F. Lupi, Environmental Consulting & Technology, Inc., Report, 66 pp, October 2015.

bear the costs of these blooms while others in the watershed are relied upon to take the actions that would alleviate the blooms (and since those actions are largely voluntary, they are not necessarily occurring to the degree that is needed to have a meaningful impact on the severity of the blooms). The nutrient issue is one that many federal, state and local agencies and organizations are working together to address (see response to question 1). One possible strategy for strengthening relationships among the partners seeking solutions is to connect agricultural producers and the downstream communities through fishing trips, community roundtables and farm visits. These activities can help to build a sense of shared goals and empathy for the day-to-day lives of others and how they are affected by these watershed issues (see *Wanted: Innovative farmers to help slow algal bloom on Lake Erie* by Richard Mertens [15], which mentions that "Fishing boat captains are taking farmers out on Lake Erie to let them see algal blooms first-hand.").

Contaminated sediment sites and toxic algae blooms are often visible problems that garner attention from community leaders and funders. Less visible a threat is the reliance by older Great Lakes cities on crumbling, antiquated drinking water and wastewater infrastructure. Communities in the eight-state region are faced with a staggering $179 billion over the next 20 years for needed improvements, upgrades, and repairs. Lead service lines in drinking water distribution systems continues to threaten the health of families in these older urban centers. Until all lead service lines are replaced, there will be a risk of exposure to lead in drinking water. Part of the cost of replacing the service lines falls to the homeowner. Funding mechanisms that would alleviate this cost for disadvantaged communities could help ensure that infrastructure upgrades occur equitably and do not leave them behind.

Strategies for addressing these threats share some common themes. Successful programs such as the Great Lakes Legacy Act and Brownfields programs exist and should be sustained and potentially expanded. Partnerships should be supported as no one agency or organization can clean up a sediment site, alleviate harmful algal blooms, or upgrade infrastructure on its own. Flexibility to allow partners to arrive at shared, innovative solutions should be supported by the agencies managing government programs. Limited funding is an issue affecting disadvantaged communities' ability to address these threats, and flexibility for meeting (or forgiving) local cost share requirements for federal programs should be considered. Funding for drinking water and wastewater infrastructure replacement and upgrades should be increased to accelerate the pace of progress on this issue. And importantly, agencies who are seeking to support disadvantaged communities should engage members of those communities in developing solutions [for an interesting article, see "*Community Theories of Change: Linking Environmental Justice to Sustainability through Stakeholder Perceptions in Milwaukee (WI, USA)*" [16]].

Question 3. Your testimony also mentions the challenges of emerging contaminants, such as nanoparticles and PFAs. These are becoming water quality challenges across the country.

Do you have any suggestions for actions that Congress, or U.S. EPA should be taken to address these emerging threats to water quality, especially drinking water quality?

ANSWER. As Secretary Cole described in his testimony, there are a suite of new chemicals that we are just beginning to understand, including nanoparticles, microplastics, pharmaceuticals, personal care products, and PFAS. *Understanding sources of or these chemicals, cycling, bioaccumulation, exposure, and short- and long-term health effects of these chemicals individually and in combination is going to be needed moving forward to protect the health and safety of our Great Lakes citizens.* Emerging contaminants like PFAS are particularly challenging to address because they are long-lasting, and substitutions use chemicals with similar chemical formulations that have been shown to be as harmful as the original product.

For all these chemicals, most notably PFAS, *the first important step for the Federal Government is to require EPA to set nationwide maximum contaminant levels (MCLs) for all emerging contaminants* that fully protects the public health from exposure in drinking water, groundwater, and surface water as soon as possible. There are currently no federal standards for PFAS, microplastics, pharmaceuticals, or personal care products. They are not regulated by the Safe Drinking Water Act, or Clean Water Act, and there is no federal mandate to be monitoring for the chemicals. In the absence of federal standards, some states have begun to develop their

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[15] https://www.csmonitor.com/Environment/2018/0529/Wanted-Innovative-farmers-to-help-slow-algal-bloom-on-Lake-Erie

[16] Hornik, Kaitlyn, Bethany Cutts, and Andrew Greenlee. Int. J. Environ. Res. Public Health 2016, 13(10), 979 https://www.mdpi.com/1660-4601/13/10/979/htm#B3-ijerph-13-00979

own standards and monitoring programs, which takes time and resources away from other needs at the state level. EPA needs to make evidence-based PFAS guidelines in drinking, surface water, and groundwater a priority. Additionally, *EPA leadership needs to set guidelines for handling and managing waste containing these chemicals*, so contamination does not continue to be an issue after point-sources of emerging contaminants are identified and controlled.

Guidelines for emerging contaminants need to be guided by public and environmental health concerns. Following guidelines and research from the Agency for Toxic Substances and Disease Registry (ATSDR), *EPA needs to use up-to-date scientific weight of evidence to determine safe levels of exposure to emerging contaminants across all media*. Substances currently banned in the US may be entering undetected through a global supply chain. The binational Great Lakes Water Quality Agreement, through the Chemicals of Mutual Concern annex provides a model for nominating chemicals, systematically evaluating their sources and potential for release into the environment and health risks and developing strategies to address them. Two examples of leveraging studies conducted outside of the US were presented in June at the 2019 Great Lakes Water Quality Forum. Environment Canada (EC) initiated a study to identify whether short-chain chlorinated paraffins (SCCPs), substances banned in both Canada and the US were entering the country. Preliminary results presented indicated SCCPs were detected in several products including children's toys. This illustrates that *we cannot simply consider US-based sources of exposure*.

Additionally, *EPA needs to consider and fund studies that increase our understanding of exposure health effects of unstudied emerging contaminants and the impacts of contaminants in combination with one another*. A recent study found that even 93 percent of bottled water showed some sign of microplastic contamination after accounting for possible background contamination [17], and microplastics are present in human food sources [18] [19] As microplastics break down in the water and become nanoparticles, they can pass directly through the blood-brain barrier [20] and cell membranes to enter the body. Because of their size they are difficult to measure in the environment and more difficult to filter out. Many emerging contaminants can bioaccumulate up the food chain, impacting the aquatic food web, the health of the Great Lakes fisheries, and the health of those who consume Great Lakes fish and wildlife, so funding to understand and determine these bioaccumulation factors are important to setting appropriate guidelines that prioritize public health. These chemicals are not isolated in the environment, and human and aquatic life are exposed to a suite of chemicals at once. Understanding how these chemicals interact with one another and their cumulative effects on human and wildlife is necessary to setting appropriate thresholds.

The federal government needs to develop and fund analytical methods and monitoring programs. Guidance on monitoring protocols and program development at the state and regional level would be invaluable for states to quantify emerging contaminants in the environment. EPA has an analytical method to test for 18 PFAS in drinking water, but there are nearly 5,000 PFAS chemicals in addition to a plethora of other emerging contaminants. There is no plan in place to develop an analytical method to measure emerging contaminants, such as PFAS, in surface water and wastewater. Analytical methods for both media are necessary to quantify contamination and exposure in the environment and assess treatment and remediation technologies. As part of this method development, *EPA needs to ensure that there are certified reference materials and other standards solutions so results are uniform and reliable*. EPA could use its TSCA authority to request information on lab methods from PFAS manufacturers. Alternatively, EPA's Green Chemistry Challenge [21] serves as a model that partners with the chemical industry, trade associates, academia, non-governmental organizations (NGOs) and other government agencies to promote pollution prevention and incentives.

As stated in the testimony, *we do have solutions for many of these problems, but the federal government needs to provide capacity to states to enact solutions*. Funding is required to develop new treatment processes for contaminants, and to provide capacity for states and communities to install new technology and properly dispose of

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[17] Mason et al. Synthetic polymer contamination in bottled water. https://orbmedia.org/sites/default/files/FinalBottledWaterReport.pdf

[18] Yang, D., H. Shi, L. Li, K. Jabeen, and P. Kolandhasamy (2015). Microplastic Pollution in Table Salt from China. Environmental Science & Technology, 49, 13622–13627.

[19] Van Cauwenberghe, L. and C. R. Janssen (2014). Microplastics in bivalves cultured for human consumption. Environmental Pollution, 193, 65–70.

[20] Mattsson, Karin et al. 2017. Brain damage and behavioral disorders in fish induced by plastic nanoparticles delivered through the food chain. *Scientific Reports* 7: 11452

[21] https://www.epa.gov/greenchemistry

contaminated materials. For example, we do not have effective treatment systems for removal of pharmaceuticals and personal care products in the wastewater treatment process. A study[22] in 2013 found that only half of prescription drugs and other newly emerging contaminants in sewage are removed by treatment plants and that the impact of most of these chemicals on the health of people and aquatic life remains unclear. Wastewater treatment plants were not designed to handle these types of chemicals, and most municipalities in the Great Lakes are under tight budgets[23], making additional federal programs and supplemental funding critically important for them to implement new technologies as they are developed. Both drinking water and wastewater infrastructure is underfunded, and revenue caps constrain the actions communities and their utilities can take to address them. Small communities frequently do not have the resources to upgrade their wastewater treatment technologies that address chemical contaminants effectively. These communities look to states for both technical and financial assistance.

While removal of contaminates at the source is a key step moving forward, *Congress needs to provide funding and guidance to remove contamination already in the environment*. States are struggling to protect drinking water sources from PFAS contamination. In Michigan, PFAS foam on lakes and rivers is an issue, prompting consumption advisories on the Rogue River and Van Etten Lake[24]. PFAS has contaminated drinking water wells in Marinette, WI, with eleven being above the EPA's health advisory limit[25]. Currently there is little guidance on who has authority to order investigations and cleanups and authority of federal entities to incur remediation costs. To facilitate contamination remediation, *EPA needs to determine which PFAS are regulated under RCRA and/or CERCLA as hazardous waste or hazardous substances* and provide information to guide remediation of PFAS-contaminated sites per the recommendation of states and professional organizations. We encourage EPA to complete the process to list PFAS as hazardous substances as quickly as possible. Further, the federal government needs to make available low- or no-cost programs for regional cleanup efforts and fully fund projects necessary to ensure that EPA and States can manage risks associated with emerging contaminants.

QUESTIONS FROM HON. GRACE F. NAPOLITANO TO DAVE PINE, SUPERVISOR, FIRST DISTRICT, SAN MATEO COUNTY BOARD OF SUPERVISORS, AND CHAIR, SAN FRANCISCO BAY RESTORATION AUTHORITY

Question 1. In your testimony, you mention that you have put into place a 20-year local funding source for San Francisco Bay restoration projects.

How does this local funding sources compare to the Federal funding the program receives? Does the San Francisco Bay need to continue receiving Federal funding to reach the restoration goals the Commission has outlined?

ANSWER. Despite significant investment of state, regional and even private funds, fully restoring the tidal wetlands of the San Francisco Bay cannot be accomplished without additional federal funding.

The vast majority of SF Bay acreage awaiting restoration is federal property within the national wildlife refuge complex. Yet the San Francisco Bay Joint Venture estimates that of the funds spent on acquisition, restoration and enhancement of bay lands between 1997 and 2018, only 28% were from federal sources.

In 2008, the San Francisco Bay Restoration Authority (SFBRA) was created to raise and allocate local funding for Bay restoration. This was accomplished with Measure AA, a 20-year, $12 parcel tax that was passed by 70% of the voters across all nine Bay Area counties in June 2017. Measure AA was predicated on the idea that both the state and federal government would each contribute approximately one third of the funds necessary to restore the Bay, with SFBRA funding through Measure AA providing the last third.

The need for additional federal resources is clearly illustrated by the large gap between currently available funding and funding requests for projects. In its first two annual grant rounds, SFBRA received almost three times more demand for project funding ($131 million) than funding available ($47 million).

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[22] Uslu et al. 2013. A Survey of Occurrence and Risk Assessment of Pharmaceutical Substances in the Great Lakes Basin. Ozone: Science and Engineering.

[23] "Only half of drugs removed by sewage treatment plants." https://www.scientificamerican.com/article/only-half-of-drugs-removed-by-sewage-treatment/

[24] 7 ways to address PFAS contamination in Michigan https://www.mlive.com/news/2018/07/7_ways_to_address_pfas_contami.html

[25] New evidence of groundwater pollution turning up near Lake Michigan at Tyco plant in Marinette. https://www.jsonline.com/story/news/local/wisconsin/2018/06/18/new-evidence-groundwater-pollution-turning-up-near-tyco-plant/703136002/

Similarly, the EPA administered San Francisco Bay Water Quality Improvement Fund (WQIF) program, which began in 2008 and provides grants to protect and restore San Francisco Bay, has received $176 million in grant requests but has only been able to provide $50 million in funding. The SF Bay WIQF program has been funded through a directed appropriation averaging only $4 million to $5 million annually. The SF Bay WQIF program lacks statutory authorization and has not grown to meet the funding needs of the Bay. The SF Bay WQIF program funding is a small fraction of what the following estuaries received from Congress in FY 2019: Chesapeake Bay ($73 million), Puget Sound ($28 million), and Long Island Sound ($14 million).

The cost to restore land in public ownership to tidal wetlands is estimated to total at least $1.4 billion. Moreover, this estimate does not include the cost of preventing pollution in the Bay and providing other benefits crucial to its health, as described in the EPA-mandated Comprehensive Conservation and Management Plan (CCMP) completed by San Francisco Estuary Partnership, which is San Francisco Bay's National Estuary Program. The total cost estimate for all CCMP actions is many billions of dollars. Measure AA over its 20 year term will generate approximately $500 million, far short of the total amount needed.

The U.S. General Accounting Office, at the request of the House Transportation and Infrastructure Committee, has reviewed the federal role in the San Francisco Bay's restoration efforts and has also called out the need for more federal funding. The GAO's report, published in August 2018, found that:

- *San Francisco Bay restoration needs additional federal funding*:
  "Obtaining sufficient federal funding for water quality improvement and ecosystem restoration activities" is considered one of the top factors posing a "Very Great" or "Great" challenge by those GAO surveyed." [p.49—figure 8, and p. 50 supporting narrative].
- *The Bay can effectively utilize more federal funding*: The GAO found a high level of coordination and collaboration among entities working on Bay restoration which will enable federal funding to be effectively utilized and leveraged.
  "The results of federal and nonfederal entities working together can be seen in parts of the watershed, such as the Bay, where this work has resulted in the development of comprehensive regional strategies, sources of funding for some restoration projects, an expanding regional database, and an inventory of potential projects." [p. 52]
- *Better tracking and coordination of federal funding from different agencies is needed*: HR 1132, introduced by Congresswoman Jackie Speier and discussed below, calls for the establishment of an SF Bay Program office at the EPA. Such a program office could track and report to Congress all federal agency funding in S.F. Bay.

The limited federal funding for San Francisco Bay was the impetus for Congresswoman Jackie Speier's HR 1132. HR 1132 recognizes the success of the EPA's National Estuary Program model and the need to add additional federal funds ($25 million a year) to implement the CCMP for San Francisco Bay.

Stakeholders in the Bay Area and the state have demonstrated a willingness to invest in the restoration of the Bay. The urgency of restoring tidal wetlands in the Bay is increasing with the threat of rising sea levels, and without additional federal funding the window of opportunity will close for much of the potential restoration work that remains.

Question 2. Often, investment in the restoration of local ecosystems can be narrowly portrayed as only benefiting the environment for its own sake; yet, several studies have shown that investment in the restoration of local ecosystems has far greater benefits than just protection of the environment. For example, I understand that several global companies have offices in the San Francisco Bay region; yet, many of these businesses also face risks due to climate change, sea level rise, and other environmental challenges.

Can you discuss your work with the business community and others in advocating for the restoration of the San Francisco Bay, and how the business community perceives the benefits of the Bay's restoration?

ANSWER. The Silicon Valley Leadership Group and the Bay Area Council, the two largest business member driven organizations in the region, were very involved in the crafting and passage of Measure AA, and continue to be involved with the SFBRA's work. They have done so because numerous businesses, including some of the most recognizable corporations in the world, are located on or near the Bay shoreline and face the threat of sea level rise and flooding.

Businesses such as Google, Facebook, and the San Francisco Giants publicly endorsed and contributed financially to Measure AA. In addition to the Silicon Valley Leadership Group and the Bay Area Council, numerous business organizations supported Measure AA including:

- Bay Planning Coalition
- Environmental Entrepreneurs
- Joint Venture Silicon Valley
- North Bay Leadership Council
- Oakland Chamber of Commerce
- Outdoor Industry Association
- Palo Alto Chamber of Commerce
- San Francisco Chamber of Commerce
- San Jose Silicon Valley Chamber of Commerce
- San Mateo County Economic Development Association

The business community in the Bay Area is keenly aware that not only are their immediate properties in some instances imperiled by rising seas, but so is the infrastructure upon which they and their employees rely. They appreciate that tidal wetlands provide a buffer from storm surges and rising seas by knocking down large waves and absorbing floodwaters. They also understand that a healthy Bay is a crucial "quality of life" amenity for their employees.

Question 3. Unlike Chesapeake Bay and the Great Lakes, the San Francisco Bay is a water body contained within one state.

Why does a healthy San Francisco Bay matter to the nation as a whole?

ANSWER. Economically, the Bay Area itself would rank 19th in the world by GDP due in part to the businesses surrounding the Bay, including numerous leading Silicon Valley companies, which are a critical economic engine for the nation. The Bay is also a vital hub for the movement of people and goods between the United States and Asia and along the west coast. Three major airports are located near the Bay, and the Bay contains six shipping ports, including the Port of Oakland which is the eighth busiest container port in the United States.

Ecologically, the San Francisco Bay also is of great national importance:

- It is the largest estuary on the west coast of North and South America.
- It contains more than 100 federally listed threatened and endangered species.
- It is the winter home for 50 percent of the diving ducks in the Pacific flyway.
- It hosts more wintering and migrating shorebirds than any other estuary along the U.S. Pacific Coast south of Alaska.

The San Francisco Bay has received several national and international designations due to its critical ecological value. It has been designated as a "Ramsar Wetland of International Importance" by an intergovernmental wetland conservation treaty, as one of 67 Areas of Continental Significance for waterfowl by the North American Waterfowl Conservation Plan, and a Site of Hemispheric Importance by the Western Hemispheric Shorebird Reserve Network.

The restoration of San Francisco Bay benefits both the environment and businesses. Restored tidal wetlands trap polluted runoff before it reaches open water, provide protection against flooding, rising sea levels and storms, prevent erosion, and capture greenhouse gases to counter climate change.

The State of California, Bay Area taxpayers through Measure AA, and private foundations have all contributed to the remarkable progress we have made in restoring the Bay. The missing partner in this effort is the federal government. With additional federal investment the health of the San Francisco Bay can be dramatically improved and our businesses, communities and ecosystem protected for the benefit of our nation and the world.

QUESTIONS FROM HON. DENNY HECK TO LAURA L. BLACKMORE, EXECUTIVE DIRECTOR, PUGET SOUND PARTNERSHIP

Question 1. Unlike Chesapeake Bay and the Great Lakes, the Puget Sound is a water body contained within one state.

Why does a healthy Puget Sound matter to the nation as a whole?

ANSWER. Puget Sound is an economic engine: it supports a $4 billion flow of goods and services annually, and 780,000 water-dependent jobs. A healthy Puget Sound is good for America's economy as a whole. Restoring Puget Sound to health makes it more resilient to the effects of extreme weather events, thus avoiding the use of federal taxpayer dollars to rebuild.

American families nationwide consume fish and shellfish produced in Puget Sound waters. Washington State is the largest producer of hatchery-reared and

farmed shellfish in the U.S, with more than 300 farms accounting for 25% of the total domestic production by weight and an annual farmgate value exceeding $108 million.[1] Salmon fishing in Puget Sound has an average economic impact of $100 million per year.[2]

American families also come to Puget Sound for tourism. Out-of-state visitors to Washington State accounted for an estimated 12 percent of all participant days, and 27 percent of total outdoor recreation spending.[3] Eighty percent of tourism and recreational spending in Washington State is tied to Puget Sound.[4]

Beyond these facts and figures, we also know that the nation and the world care about Puget Sound recovery because they told us so. The Governor's Southern Resident Killer Whale Task Force received over 18,000 public comments during its first year, and over 2,600 public comments on its final report.[5] While most of these were from Washingtonians, 28 percent were from other states, and 6 percent were from other countries. Schoolchildren from across the country sent handwritten letters, and individuals flew to our meetings from Wisconsin (and the United Kingdom) to testify in person. People care about orcas, and orcas rely on a healthy Puget Sound.

Question 2. What resources is the state of Washington putting towards Puget Sound recovery? Why is additional funding beyond the state's existing contribution necessary?

ANSWER. The state of Washington invests robustly in Puget Sound recovery. The Washington State Legislature's enacted capital budget for the 2019–2021 biennium includes the following investments in Puget Sound recovery:

- Over $300 million for habitat protection and restoration projects;
- $275 million to replace culverts under state roads that block fish passage; and
- Over $280 million for projects to prevent toxic pollution of our waterways.

Via the operating budget, the state also invests substantially in state agency programs to protect and restore habitat, prevent toxic pollution, and reopen shellfish beds to harvest. As just one example, the Legislature awarded the Puget Sound Partnership nearly $12 million in operating funds for this biennium. The total amount of operating budget investment in Puget Sound recovery is not possible to calculate because most state agency programs are statewide; however, we know that the total is vastly larger than the $12 million provided to our small agency per biennium.

Notwithstanding these impressive numbers, federal funding remains crucial to our work. The primary source of funding to implement our Comprehensive Conservation & Management Plan, or Action Agenda for Puget Sound, required under the National Estuary Program is the Puget Sound Geographic Program. Over the past several fiscal years, Congress has appropriated $28 million annually into this fund, managed by the EPA. We leverage this funding at $30 for every $1 of federal investment.[6]

While this funding is significant and appreciated, estimates of the actual need to fully implement the Action Agenda show that the funding received falls far short: the funding gap for the 2014–2015 Action Agenda was 68 percent, and for the 2016–2018 Action Agenda it was 73 percent.[7] The funding gap for salmon recovery is about 84 percent.[8] Our monitoring shows that at these funding levels, we are barely holding our ground against further degradation, if not managing decline of the ecosystem.

Federal funding is essential to our ability to recover this ecosystem.

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[1] Pacific Shellfish Institute website, 2013. http://pacshell.org/default.asp.

[2] Duke's Seafood & Chowder, 2017. "Disappearance of wild salmon hurts local economy." *Seattle Times*, November 20, 2017. https://www.seattletimes.com/sponsored/disappearance-of-wild-salmon-hurts-local-economy/

[3] Earth Economics. 2015. Economic Analysis of Outdoor Recreation in Washington State, January 2015, http://www.rco.wa.gov/documents/ORTF/EconomicAnalysisOutdoorRec.pdf

[4] Earth Economics, 2008. A New View of the Puget Sound Ecology: The Economic Value of Nature's Services in the Puget Sound Basin. https://www.floods.org/ace-files/documentlibrary/committees/A_New_View_of_the_Puget_Sound_Economy.pdf

[5] Office of Washington Governor Jay Inslee, 2018. Summary of public comments received between October 24 and October 29 on the October 24 version of the draft recommendations. https://www.governor.wa.gov/issues/issues/energy-environment/southern-resident-orca-recovery/task-force

[6] US Environmental Protection Agency, 2018. NEPORT 2018 database.

[7] Puget Sound Partnership, 2017. 2017 State of the Sound. Olympia, Washington. November 2017. 84pp. www.psp.wa.gov/sos

[8] Governor's Salmon Recovery Office, 2018. *State of the Salmon Report*, Executive Summary, page 9. Accessed June 20, 2019. https://stateofsalmon.wa.gov/exec-summary/

Question 3. If the Puget Sound Geographic Program was funded at the $50 million level it would be authorized to receive by the PUGET SOS Act, what kinds of projects would that extra funding go towards?

ANSWER. The 2018–2022 Action Agenda for Puget Sound charts the course for ecosystem recovery. It contains over 600 ready-to-go near-term actions that, if funded, could be implemented within the next four years. These projects are focused in three strategic initiatives:

1. Protecting and restoring habitat
2. Preventing toxic pollution from stormwater
3. Reopening shellfish beds

Examples of excellent projects simply awaiting funding include the following:

- Lyre River Watershed Protection and Restoration Phase II (protect and restore habitat)
- City Habitats: A Regional Partnership for Stormwater Innovation (prevent pollution from stormwater)
- Lower Stillaguamish Pollution Identification and Control, Phase III (reopen shellfish beds)

Information about all of the projects is available online at Puget Sound Info, our new online platform for sharing information and stories about Puget Sound recovery. Access it at www.pugetsoundinfo.wa.gov.

Question 4. Aside from the Puget Sound Geographic Program and the National Estuary Program, what other resources should Congress support to enhance Puget Sound recovery?

ANSWER. A multitude of additional federal programs enhance Puget Sound recovery, including the following:

- The *Pacific Coastal Salmon Recovery Fund (PCSRF)* is a multi-state, multi-tribe program that has provided crucial support for salmon recovery efforts throughout the Pacific coast region. These funds have supported the implementation of over 13,200 projects, protected and restored over 1.1 million acres of habitat, and opened access to over 10,550 miles of previously inaccessible streams.[9]
- The *Pacific Salmon Treaty (PST)* provides crucial funding to meet the provisions of the Endangered Species Act, address tribal fishing rights, and maintain sustainable US fisheries. Signed by the United States and Canada in 1985, the revamped PST (2019–2028) reflects the international commitment to ensure a better future for salmon and Southern Resident orca.
- The NOAA *Coastal and Marine Habitat Restoration Grants* fund community-based restoration projects that use a habitat-based approach to rebuild productive and sustainable fisheries, contribute to the recovery and conservation of protected resources, promote healthy ecosystems, and yield community and economic benefits. Funding for the *NOAA Habitat Conservation and Restoration Program* is critical.
- The *US Department of Agriculture's voluntary conservation programs* for working lands also make important contributions to Puget Sound recovery. These programs help reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages from floods and other natural disasters.
- The *US Army Corps of Engineers' aquatic ecosystem restoration business lines and continuing authorities program support* the Puget Sound Nearshore Ecosystem Restoration Project to design and implement habitat restoration projects. These programs leverage already-secured state funds to improve the health of nearshore habitats and their ability to support shorebirds, shellfish, salmon, orca, and humans.
- The Corps also needs adequate and timely funding for necessary next steps to complete the *federally-required downstream fish passage at the Howard Hanson Dam and upgrades at the Hiram Chittenden Locks*, which represent important steps to increasing the number of salmon in Puget Sound and supporting the recovery of Southern Resident orcas.

[9] NOAA Fisheries Service, West Coast Region, 2019. *Pacific Coastal Salmon Recovery Fund.* https://www.westcoast.fisheries.noaa.gov/protected__species/salmon__steelhead/recovery__planning__and__implementation/pacific__coastal__salmon__recovery__fund.html

QUESTIONS FROM HON. GRACE F. NAPOLITANO TO WILLIAM C. BAKER, PRESIDENT, CHESAPEAKE BAY FOUNDATION

Question 1. In your testimony, you discuss the Trump administration's efforts to roll back Clean Water Act protections through its Dirty Water Rule to change the scope of water and wetlands entitled to Federal protection.

Can you discuss how the President's Dirty Water Rule, if allowed to go into effect, would affect the long-term health of the Chesapeake Bay? Supporters of the President's proposal suggest that States will simply fill any gap in protection of waters and wetlands; do you agree?

ANSWER. The Chesapeake Bay receives half of its water from an intricate network of 111,000 miles of creeks, streams, and rivers and 1.7 million acres of wetlands, many of which are non-navigable tributaries, non-tidal wetlands, and ephemeral and intermittent streams. Of particular note are the 34,000 acres of Delmarva Potholes on the Eastern Shore. These features all provide significant benefits to the Bay. Wetlands, for example, soak up storm surges, trap polluted runoff (helping to slow the flow of nutrients, sediments and chemical contaminants) and provide habitat to hundreds of fish, birds, mammals and invertebrates. The benefits they provide regarding storm surges and flooding are becoming increasingly critical as the watershed faces new threats and challenges from climate change.

In response to the confusion that unfolded following the Supreme Court's decision in *Rapanos v. United States*, where there was no clear majority and no definition of "significant nexus" (the prevailing theory for identifying waters that are not navigable in fact), EPA and the Army Corps of Engineers (the agencies) finalized a new definition of "Waters of the United States" (WOTUS) in 2015. Commonly referred as the Clean Water Rule, it provided clarity about what types of wetlands require Section 402 (National Pollutant Discharge Elimination System or NPDES) and Section 404 (dredge and fill) Clean Water Act permits and was based on extensive review and scientific analysis. In 2017, President Trump issued Executive Order 13778, *Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule*, and the agencies announced a two-step plan to repeal and replace the 2015 Clean Water Rule.

In 2017, the agencies proposed rules to repeal the Clean Water Rule (and recodify the regulatory language that was in place prior to 2015) and change the effective date of the 2015 Rule to 2020. We expect the agencies to finalize the repeal of the Clean Water Rule in the near future. In December of 2018, the agencies announced their Replacement Rule that narrows the definition of WOTUS, most notably by *excluding* features that only contain water during or in response to rainfall (ephemeral features), groundwater, many ditches (including most roadside or farm ditches), and prior converted cropland. In addition, interstate waters and interstate wetlands would now be considered a separate category of WOTUS. If adopted, it is estimated that this replacement rule will affect the status of *18 percent of streams and 51 percent of wetlands nationwide*.

In the Bay watershed, this limited interpretation will have the greatest impact in states that rely exclusively upon the federal definition of WOTUS for the protection of ephemeral streams and wetlands in their jurisdiction like Delaware, the District of Columbia and West Virginia. In Delaware, for example, almost 200 thousand acres of wetlands would be vulnerable to destruction. Even in Maryland, Pennsylvania and Virginia—where the states have additional water protection programs—the impacts will be felt. We do not believe that the state programs are sufficiently protective without a strong federal program in place. These state programs each have areas of weakness that will be exposed, and the lack of protections upstream will lead to problems downstream. In addition, there have been attempts in both Pennsylvania and in Virginia to limit the states' authority to regulate beyond what is proscribed at the federal level.

The Administration's proposal narrows the scope of the Clean Water Act well beyond anything that was considered in the *Rapanos* case and would leave numerous wetlands and ephemeral streams in the watershed unprotected. CBF opposes this change, and hopes that EPA, in particular, will fulfill its purpose of setting the standard for protecting water quality and seek ways to fulfill its leadership obligations to the Bay under Section 117 of the Clean Water Act. I am attaching our formal comments for a more thorough presentation of our position.

[The formal comments are retained in committee files.]

Question 2. In your testimony, you urge Congress to expand two Chesapeake Bay grant authorities—one for water quality and habitat and one for innovative and market-based approaches to reducing pollution.

Can you give some success stories of this existing program that justify its expansion?

ANSWER. As mentioned during my testimony last month, the Chesapeake Bay Program is the glue that holds this historic clean-up partnership together. Funds are used to coordinate cross-state science, research, modeling, monitoring, and data collection. Each state uses this information to plan, track, and adapt their restoration activities to meet their pollution reduction goals. Over 60 percent of program funds go to states, primarily through grant programs that leverage private investment for restoration activities. Additionally, every federal dollar unlocks more than $2 from other sources.

The Chesapeake Bay Foundation advocated for an increased level of funding for two of the grant programs that are specifically listed in the Chesapeake Bay Program appropriation:

1. *One* grant program goes toward improving water quality and habitat of small, local waterways known as the Small Watershed Grants Program.
2. A *second* grant program supports innovative and market-based approaches to reducing pollution, aptly named the Innovative Nutrient and Sediment Reduction Grants Program.

This increased federal support is an important step to save the Bay and repair some of the most damaged waterways in Virginia, Pennsylvania, and Maryland. The Small Watershed Grant project is administered for the Bay Program by the National Fish and Wildlife Foundation (NFWF) which awards grants to local governments and non-profit organizations. What is remarkable is that while the grants range in size from $20,000 to $200,000, since 2000 this investment has supported over 600 projects and the $27 million in total grant awards has leveraged almost $90 million. Simply stated, there are no other programs that add up to over $100 million in community-based restoration projects. When people see an investment in their communities, they take ownership over the water quality improvements and develop an increased sense of stewardship. The dedication and vested interest that results from local restoration projects cannot be quantified.

The Chesapeake Bay Innovative Nutrient and Sediment Reduction Grant program is also administered by NFWF. The grants awarded under this program are larger, ranging from $200,000 to $1 million. These grants are awarded competitively and focus on those projects that can serve as a demonstration of innovative new practices that have the potential to accelerate pollution reductions. Additionally, through this grant program, there is an investment in those best management practices and strategies that prove most cost-effective and efficient at nutrient reductions.

Like the Small Watershed Grants Program, the Innovative Nutrient and Sediment Reduction Grant Program has aided in getting projects in the ground throughout the watershed. According to the Bay Program, close to 150 conservation projects have been funded through this investment and the $69 million in federal support has leveraged over $100 million in matching dollars.

The two programs combined have led to over 960 projects throughout the watershed. From a total grant investment of $125 million, $233 million in matching funds has been leveraged. CBF is advocating for more funding for these two programs because they have proven to be successful, they provide unique opportunities to leverage additional investment in clean water, and because year after year the project applications exceed available funding.

I have attached a map and summary chart of all the projects supported in whole or in part through the grant programs and two documents that highlight particular projects. Looking through the list of projects you will see they are both big and small, are spread throughout the watershed and have an impressive return on investment through the dollars leveraged. The other characteristic that stands out is partnership—communities, local and state governments, and various stakeholders have come together under the common goal of clean water. It is that partnership that has gotten the Bay where it is today, and that very same sense of collaboration is what will get us to a saved Bay.

[The map and summary chart are retained in committee files.]

QUESTIONS FROM HON. GRACE F. NAPOLITANO TO KRISTI TRAIL, EXECUTIVE DIRECTOR, LAKE PONTCHARTRAIN BASIN FOUNDATION

Question 1. In your testimony, you mention a few projects that Lake Pontchartrain Basin Foundation has completed with the assistance of grants from EPA's Lake Pontchartrain Program. Specifically, you reference ongoing water quality monitoring and the establishment of a museum.

Please provide the Committee with a detailed accounting of all the grant funding the Lake Pontchartrain Basin Foundation has received and expended pursuant to section 121 of the Clean Water Act (33 U.S.C. 1273) for the past ten years. Please include the following information for each grant received:

(a.) the annual cumulative grant amount received by the Lake Pontchartrain Basin Foundation (and date(s) the grant funding was received);

ANSWER. Please find below a table indicating the grant amount received. Please note that this is a cost reimbursement grant. Therefore, LPBF must have a signed grant agreement in order to receive reimbursement for costs expended.

FY	Amount awarded to LPBF	Date LPBF Received Signed Grant Agreement
2009	$562,485.00	9/15/2009 †
2010	$568,000.00	9/14/2010 †
2011	$756,800.00	8/5/2011 †
2012	$616,492.00	7/27/2012 †
2013	$799,500.00	10/16/2013
2014	$335,080.00	9/30/2014
2015	$246,080.00	9/8/2015
2016	$326,680.00	11/3/2016
2017	$300,000.00	11/16/2018
2018	$346,323.00	Not yet received ‡
2019	RFP not yet issued	Not yet received

† For these dates, this is the date LPBF was notified of the award, not the date of the signed agreement; typically an agreement was signed 3 months after notification

‡ LPBF was notified of our FY18 award on July 26, 2018; however, to date, no signed agreement has been received. Therefore, funds are not yet available to LPBF for our FY18 award.

(b.) a detailed description of any further activity or project funded through the Foundation using such grant, including the recipient of the funding, the intended purpose of such activity or project, and the date(s) such activity or project was awarded by the Foundation, and the date such activity or project was completed;

ANSWER. As LPBF is a sub-recipient of this funding, we do not grant these funds to other entities. Below please find a list of LPBF's current ongoing programs, and a summary of purpose for each program.

According to the current management conference structure of this grant at this time, all items funded by PRP must produce tangible results & preserve, protect or restore water quality & or habitat of the Pontchartrain Basin in accordance with the Lake Pontchartrain Basin Comprehensive Management Plan (CMP). It should be noted that the referenced CMP was written by LPBF.

Water Quality Program: LPBF performs its basin-wide monitoring program to gain knowledge of the water quality of basin waterways. The program began in 2001 and still continues to this day. These funds have helped ensure that we can monitor approximately 10–12 sites for water quality parameters, disperse that data to the media weekly, and analyze the data to assess trends. Based on results obtained in the basin-wide monitoring program, LPBF established its sub-basin pollution source tracking program in January 2002. The purpose of this program is to locate and correct sources of fecal coliform pollution in the sub-basins of the Pontchartrain Basin. Because data collected from this program is used to identify sources of pollution, LPBF has an assistance program to assistant local entities with wastewater treatment. Additionally, LPBF established multiple "Water Quality Task Forces" in various regions within the basin to coordinate sewage problems among local, parish and state organizations. Accomplishments of these task force meetings are developing and implementing a sewage education plan, providing updates on the status of wastewater treatment facilities and identifying problem wastewater treatment facilities and coordinating efforts to rectify.

Coast & Community Program: Although LPBF has been active in coastal restoration since its inception in 1989, it was in June 2005 that a formal program was established. This aggressive commitment to the coast was triggered by the realization that the coastal wetlands were deteriorating in spite of ongoing authorized restoration programs. A plan was devised by LPBF called the Multiple Lines of Defense Strategy, which was referenced in LPBF's testimony on June 25, 2019. This strategy recognizes natural and manmade lines of defense combined with wetland habitat restoration to provide hurricane protection as well as coastal restoration. Following the hurricanes of 2005, LPBF looked carefully to its Comprehensive Habitat Management Plan (CHMP). The CHMP consists of over 100 projects and is the blueprint for restoration of the habitats in the Pontchartrain Basin. This program also conducts many projects around the basin, including scientific studies, restoration projects and long-term analysis. The development of our Hydrocoast Maps provides a bi-weekly snapshot of conditions across the basin. Additionally, LPBF partners with many agencies, NGOs and universities to study, plan and implement projects that protect all of our citizens from future storms and to keep our coastal region economically and culturally sustainable for the future. This program continues today.

Education & Outreach: LPBF's Outreach & Education Department has a goal to educate the public on important issues affecting the Pontchartrain Basin. With increased awareness of water quality and coastal issues, citizens of the basin become better stewards of the region where they live. LPBF programming is conducted onsite at LPBF's New Canal Lighthouse as well as offsite. LPBF also works in partnership with other organizations to keep the community informed about basin issues. LPBF aims to inspire K–12 students in the region through STEM activities rooted in the history and natural resources of the Pontchartrain Basin. We teach students environmental recovery and restoration strategies through water quality testing, hands-on models for choosing natural and human-made coastal protection options, and field identification of insects and marsh grasses used in coastal restoration—in the urban marsh we created at Bayou St. John—and much more. Funding provides programs and materials at LPBF's New Canal Lighthouse Museum and Education Center and a nearby urban marsh on Bayou St. John, created by LPBF.

Public Access: The Lake Pontchartrain Basin stretches from lush hardwood forests and slow flowing rivers of the north shore to the bayous, swamps, lakes and sounds leading to the Chandeleur Islands. From the fisherman making his way through the early morning fog to the kayaker slowly making her way through the spring irises, to the family picnicking along the shores of Lake Pontchartrain, the Basin is an environment to experience and cherish. LPBF and its partners have restored many of the waterways and habitats of the Pontchartrain Basin so they are once again a resource for recreational opportunities. This program aims to communicate the ways for the public to enjoy our basin. We started this program in 2006 and continue it to this day.

New Canal Lighthouse & Museum: LPBF restored the New Canal Lighthouse, which opened to the public in 2013, and has operated it as a museum and education center with funding from PRP. Our museum's colorful displays, photos, maps, and videos provide historical context: when the Mississippi River deposited Louisiana's coastal soils long ago; Native American and French explorers; the City of New Orleans' growth; the recovery of Lake Pontchartrain's waters; and strategies to restore Louisiana's coast. The New Canal Lighthouse Museum and Education Center educates locals and visitors about the water quality and habitats of the Lake Pontchartrain Basin, about LPBF's Multiple Lines of Defense Strategy to address critical coastal issues, & about the history of the lighthouse and lifesaving station.

(c.) a description of the source and amounts of additional funds (other than those provided by section 121) paired with grant funding to carry out such activity or project; and

ANSWER. The below table contains a breakdown of the percent of funding that the Pontchartrain Basin Restoration Program has contributed per program. Please note

that we are required to have at least a 25% match for our PRP funding for each grant period.

LPBF Program	10 year average % funded by PRP	10 year average % matched by other funding (federal and non-governmental funding) &/or fee for service	10 year average % matched by in kind donations
Coastal Sustainability	10%	80%	10%
Water Quality	50%	40%	10%
Education & Outreach	60%	20%	20%
Public Access	75%	0%	25%
New Canal Lighthouse Museum †	70%	20%	10%
Other (includes development and operations)	0%	90%	10%

† Museum opened in 2013; therefore, this is 2013 to date

LPBF receives federal funding for our *Water Quality* program from two (2) geographic water programs under EPA: PRP and the Gulf of Mexico Program (GOMP). We have occasionally received pass-through PRP funds from another sub-recipient of PRP. We also have periodic contracts with the U.S. Coast Guard to provide additional water quality monitoring in the lake for use in their rescue drills and operations in the basin (approx. $15k per year). We have periodically had a contract with the City of New Orleans to perform sampling and analysis of their stormwater drains. There are no NGO sources of funding for our WQ program. We have collected samples around the Lake (called our Basin Wide Monitoring program) continuously since 2001. PRP has funded this activity with each grant year since 2001, except PRP FY 16 because we were awarded funding from the EPA GOMP for this task that year. In PRP 17, the BWMP was again funded by PRP.

LPBF's *Education Program* began diversifying its funding in 2018. Historically it was 80% funded by PRP. In 2019, it is approximately 50% funded by PRP.

LPBF's *Public access program* is 75% funded by PRP.

LPBF's *NCLH Museum* is 70% funded by PRP, and generates 20% of its needed revenue from event rentals, gift shop sales and tours. The museum opened in 2013. To date, 40,000 youth & adult, residents and visitors (from 40 states), learn about the Lake's recovery, stewardship, and coastal restoration.

(d.) a detailed description of the results the activity or project, including a description of how the activity or project is consistent with and furthers the statutory intent of section 121 to "restore the ecological health of the [Lake Pontchartrain] Basin".

ANSWER. To address the need to inform the public about the lake's current water quality, LPBF's Basin-wide Recreational Water Quality Monitoring Program (BWM) provides timely, scientific analysis and broad dissemination of information every week. This allows the citizens to make informed decisions about using the lake for recreation or fishing. In the case of environmental events and/or poor water quality, it warns the public against the use of the lake (or sections of the lake) for a specified time period. The need to reduce water pollution from sources upstream from the lake is addressed by LPBF's Sub-Basin Pollution Source Tracking Program, which has the goal of improving water quality so additional waterbodies are subsequently removed from the Clean Water Act's 303(d) list. The need to continue expanding capacity and strategies to address urban pollution and storm water volumes is addressed by LPBF's work in the Greater New Orleans area with non-profit, government, and private sector entities engaged in policies, programs, collaborations and partnerships, all intended to help the citizens of Pontchartrain Basin's largest urban area "live with water" in ways that are healthier, safer, and benefit overall quality of life.

This BWM program has provided tangible benefits in the past, and continued efforts should realize other benefits as well:

- This program allows LPBF to advocate for changes to water management practices or issues within the basin. In March of 2017, LPBF identified a sewage infrastructure failure at Bayou Castine because of upwardly trending data;

- In water bodies (e.g., lakes, rivers and beaches), EPA develops criteria for exposure to bacteria that may indicate viruses that cause illness in humans. LPBF monitors water in terms of criteria set by EPA for fecal coliform and enterococci as indicators of fecal contamination. EPA is also considering criteria for coliphages, which are viral particles associated with E. coli and are better indicators of viruses in treated wastewater than bacteria. This funding will allow for LPBF to gather data about coliphages and their usefulness as a viral indicator for the protection of public health in recreational waters.
- This program has an outreach to the local newspaper (The Advocate)'s readership exceeding 132,000 since our weekly water quality results are printed each week. In addition to LPBF's direct posting of results on the Water Quality webpage, this program allows folks who use the lake to make informed decisions about water quality.

Measurable outputs and outcomes include semi-annual results, trends, and other statistical evaluation of the data collected within the basin; and outreach including newspaper readership, views tracked online, and other app-based dissemination measures.

In the north and northwest portions of our basin, in rapidly developing parishes such as St. Tammany, Tangipahoa, Livingston, Iberville, and Ascension, some large wastewater treatment systems exist, but many homes and businesses are responsible for their own wastewater (mainly sewer) treatment, using small, individual wastewater treatment plants (WWTPs). Many times, these small WWTPs are not functioning properly and can release contaminated water into our bayous and rivers. LPBF provides education, advocacy and training to owners of residential and commercial WWTPs to better understand their system and reduce their contribution to downstream water pollution.

These PRP-funds allow us to:

- Work with the WWTP owner to understand the parts of the plant and how it functions. LPBF will assess the facility to see if repairs are needed; we guide the plant owners as repairs are made. To date, we have worked with well over 1000 commercial and 1200 home WWTPs. They are now functioning properly and not contributing wastewater to the rivers;
- Note that several small-system WWTPs are not properly permitted with the Louisiana Department of Environmental Quality (LDEQ), and therefore, they are not regularly monitored, inspected, or improved. LPBF will continue efforts to inspect and permit these facilities in partnership with the LDEQ Small Business Assistance Program;
- Identify and correct sources that contribute to fecal pollution in the rivers as located through water quality monitoring and GIS analysis; and
- Document baseline conditions and tracks changes in water quality.

These steps improve effluent discharge to waterways and streams to reduce waste load allocation burdens, and contribute to returning waterways to their full, intended use. Measurable outputs and outcomes include semi-annual reporting of facilities inspected, and repairs made. Reports also identify costs to make repairs, and facilities that applied for LPDES permits.

Further, LPBF engages municipal, parish, and state officials in water quality task forces aimed at coordinating activities to reduce pollution in target areas of Orleans, Tangipahoa, St. Tammany, and Jefferson Parishes. The water quality issues of these areas are dependent on the development and environmental conditions. Across the board, these task forces build stakeholder partnerships to comprehensively address pollution issues revealed.

LPBF's New Canal Lighthouse Museum (Lighthouse) and Welcome Center benefits the youth and adults of the Pontchartrain Basin, as well as thousands of visitors from across the U.S. The Lighthouse is an iconic symbol for LPBF. The museum offers students, locals, and tourists the opportunity to learn about the pressing problems and solutions regarding coastal sustainability and water quality through colorful images, narrative, and narrations. In the future, it is LPBF's top priority to optimize the museum exhibits and draw more people to experience the lakefront through the lens of environmental restoration and enjoying our natural assets.

Question 2. If the Committee were to consider legislation to re-authorize the EPA's Lake Pontchartrain Program, do you have any recommendations to improve the Lake Pontchartrain Program? Please explain.

ANSWER. LPBF has encountered hurdles with this funding for many years, and we appreciate the opportunity to offer recommendations. Because we rely on continuous funding for our many programs, it is crucial to LPBF that this funding be considered a programmatic fund. In the current structure, there is uncertainty each

cycle on when the funding will be available, which interrupts funding of our continuous programs. LPBF also offers a few additional recommendations:

1) Elimination of the Management Conference that works as a liaison between the EPA and grant recipients. This would eliminate the unnecessary time spent on communication and delays. Also, this would allow the grantee to work directly with the EPA staff that administer the program.
2) Currently, LPBF is forced to expend its own reserve funds to support these programs while the Management Conference and EPA work through a lengthy (currently 14-month) delay in disbursing funds. LPBF's major initiatives require ongoing/continuous programmatic funding, which is exactly what this funding stream was initially designed to do. Consistent, timely release of the PRP RFP annually would allow LPBF to continue the valuable work without any interruption.
3) Eliminate the 15% cap on Public Education & Outreach. Outreach & education is a critical component of LPBF's work. Currently, there is a 15% cap on the Public Education portion of the program as stated in 40 CFR 1263(f)(2). The original authorization included $20 million in total funding over 5 years. With annual appropriations significantly reduced from the original amount, the 15% cap is now extremely limiting. Our education & outreach programs educate the community at large on water quality of the Basin. Through our work with local K–12 schools, LPBF also identifies potential job paths related to water management, and ways to ignite interest in this sector.
4) Ensure funding is designed for LPBF's programs as outlined in LPBF's Comprehensive Management Plan, as stated in 40 CFR 1263(b).
5) Allow use of grantees' approved Negotiated Indirect Cost Rate Agreement (NIRCA). Currently the PRP management conference imposes an arbitrary indirect rate of 14% on sub-awardees. LPBF has an approved NIRCA from the U.S. Department of Interior, and recommends using that approved rate for the grant award approved indirect rate.

QUESTIONS FROM HON. GARRET GRAVES TO KRISTI TRAIL, EXECUTIVE DIRECTOR, LAKE PONTCHARTRAIN BASIN FOUNDATION

Question 1. The Bonnet Carré Spillway acts as the pressure relief valve to the Mississippi River system, releasing excess water from the River into the Lake Pontchartrain Basin. Could you describe the challenges of operating a restoration program in this system and how it differs from other estuaries and basins?

ANSWER. Since the 1930s, whenever the spring floods on the river are great enough to threaten the New Orleans levees below Bonnet Carré (BCS), the BCS is opened to relieve the pressure of the high water by sending flood water into Lake Pontchartrain. The massive spillway structure made of 350 bays of reinforced concrete, stretches 7,000 feet. In each bay are 20 timbers that must be individually removed by a crane to open the structure. The Spillway was opened once every 10 years due to high river levels; however, it has been opened 4 times in the last 2 years, including twice already this year.

In 2019, the Bonnet Carré Spillway (BCS) opening has drawn attention from scientists, environmentalists, and the general public. Large amounts of work and funding have been spent in the past three decades on the effort to improve water quality in Lake Pontchartrain. When the BCS is opened, approximately ten percent of the river's flood stage flow is directed into the Lake, which, because it is actually a shallow estuarine system, is very sensitive to sudden changes. The river water replaces the brackish water with muddy, cold fresh water, nutrients and other contaminants. It should be noted that the Mississippi River Basin is the third largest in the world, after the Amazon and Congo basins. Parts or all of 31 states plus two Canadian provinces drain into the Mississippi River, totaling 41% of the contiguous United States and 15% of North America.

As the year has progressed, and as the temperatures rise, algal blooms have begun to occur in the Lake on a large scale. Due to the concerns about the toxicity of some of these algae, warnings against recreational use of Lake Pontchartrain have been issued by the State of Louisiana. After a typical Spillway opening, the Lake is typically able to rebound and restore its balance, but the short-term impact of spillway openings are great enough that future openings will raise many questions from all those concerned about the health of Lake Pontchartrain.

Currently, the Army Corps of Engineers' (ACOE) authority precludes use of the BCS for any purpose other than river flood management, and so does not allow for the ACOE to even assess other uses. In fact, the guide levees are considered an extension of the Mississippi River & Tributary (MR&T) levees. One possible change to maintain the health of the estuary is to shunt water east or west from the BCS

into adjacent wetlands. This would help revive and sustain wetland forests which help protects levees and communities. It would also reduce some amount of nutrient load to the estuary. In fact, diverting water from the west side of the BCS is included in LPBF's 2017 Comprehensive Management Plan (CMP). So the "challenge" is that under existing authority, the Army Corps of Engineers' and the State of Louisiana are precluded from using an existing BCS flood control structure for coastal restoration.

Further, LPBF supports the use of the spillway for flood control rather than solely in response to Mississippi River levels flooding.

The Pontchartrain Estuary system is different from other estuary systems because of the overlapping issues of flood management in a low landscape, with a major river, and a delicate a balance of the estuary. The wetland loss rate is also exceptional. Altogether, the perilous state of our coast requires use of new tools (e.g., sediment diversions) but also use of existing tools (e.g. considering the BCS as a tool).

Other areas that affect the restoration of the Pontchartrain Basin are considering re-authorizing the Caernarvon and Davis Pond Fresh Water diversions for purposes of coastal restoration and not narrowly for salinity management.

All of this is contingent upon solid, quality monitoring throughout the system, due to the unique hydrologic and water quality issues. Louisiana is challenged with unique problems around water flow and draining due to the geographic location. Lake Pontchartrain Basin Foundation is the premier entity working with the local, state and federal government agencies to combat the many issues faced.

QUESTIONS FROM HON. FREDERICA S. WILSON TO TOM FORD, DIRECTOR, SANTA MONICA BAY NATIONAL ESTUARY PROGRAM AND EXECUTIVE DIRECTOR, THE BAY FOUNDATION, ALSO ON BEHALF OF THE ASSOCIATION OF NATIONAL ESTUARY PROGRAMS

Question 1. Twenty-eight estuaries have been designated as estuaries of national significance. However, Biscayne Bay which is the largest estuary on the coast of southeast Florida is not one of the 28. It shares its shoreline with the Miami urban area, supports a wide array of commercial and recreational activities.

A University of Miami study suggests that degraded water quality conditions change how people use the bay, with significant implications for the local economy. More than 25,000 acres of seagrass meadows have vanished as Miami boomed, chronic pollution spread, and climate change drove seas ever higher.

Given the environmental challenges Biscayne Bay is facing, wouldn't it make sense to add it to the National Estuary Program? Why haven't we expanded the program, many of our nation's waters need restoration?

COMMENTS FROM MR. FORD. You are correct, there are 28 estuaries designated as estuaries of national significance. Those estuaries of national significance support a wide array of commercial and recreational activities such as you identify with Biscayne Bay in southeast Florida.

Though I am not familiar with the study you reference from the University of Miami regarding changes in human use of the bay, the loss of seagrass meadows, the spread of chronic pollution, and rising seas driven by climate change are familiar themes. Indeed the 28 estuaries designated as nationally significant share similar threats or stressors. They also share many successes reversing these downward trends by increasing expanses of sea grasses and reducing the concentrations and/or spread of pollution.

The National Estuary Program was intended to identify and inform these threats and stressors, protect public health, promote the preservation of habitats that support commercial and recreational activities and improve water quality. To accomplish these objectives the individual National Estuary Programs (NEPs) establish a Comprehensive Conservation and Management Plan (CCMP). This plan, is developed by the local community, informed by science, and conducted via annual work plans that accomplish actions addressing threats and improve the quality of the estuary. The CCMPs are subject to update and revision every five to ten years respectively, thus they are contemporary documents. I have attached the FY 2017–FY 2019 CLEAN WATER ACT §320 NATIONAL ESTUARY PROGRAM FUNDING GUIDANCE (4–17–2017) and Frequently Asked Questions on NEP Governance (2–19–15) for reference.

[*FY 2017–FY 2019 Clean Water Act §320 National Estuary Program Funding Guidance (4–17–2017)* is retained in committee files and is available online at https://www.epa.gov/sites/production/files/2020-02/documents/nep__fy__2017-2019__nep__funding__guidance__2__15__2017__1.pdf. *Frequently Asked Questions on NEP Governance (2–19–15)* is retained in committee files and is available online at https://

www.smbrc.ca.gov/about__us/orientation/docs/usepa__nep__governance__faq.pdf.]

(a.) Given the environmental challenges Biscayne Bay is facing, wouldn't it make sense to add it to the National Estuary Program?

ANSWER. Establishing a National Estuary Program to protect and restore Biscayne Bay could be very beneficial to reverse the persistent pollution, increase adaptation potential to address sea level rise and the loss of sea grasses amongst others. The Biscayne Bay NEP would direct local, state, and national agencies and interests to work comprehensively throughout, in this case, the Biscayne Bay Watershed and in its nearshore environments. Advised by technical experts, informed by local stakeholders, and realized via actions instituted through diverse partnerships, the CCMP for Biscayne Bay would be a productive action plan for the region. That has been our experience with the Santa Monica Bay National Estuary Program; I am confident you'd receive a similar response from the other 27 NEP directors throughout the country. It has been decades since a new NEP was added to the National Estuary Program. Meanwhile the pressures placed on these estuarine systems are increasing due to population related pressures, old and ineffectual infrastructure, and climate change related stressors such as sea level rise. The successes realized in other NEPs should encourage the expansion of this program to support other estuaries that deserve recognition as estuaries of national significance such as Biscayne Bay. In short, yes it would make sense.

(b.) Why haven't we expanded the program, many of our nation's waters need restoration?

ANSWER. This is a challenging question and there are likely many reasons why "we" haven't expanded this program. From my perspective the successes of the National Estuary Program demonstrate the outputs and outcomes of an ideal model to put communities first and maximize federal investment in these places designated as nationally significant. NEPs have leveraged federal dollars more than ten times over with state, local, and private funds and resources contributing to this progress.

That stated, increased funding to the National Estuary Program is essential to expand and administer the program. Funding for the NEPs has remained static for over a decade, with each NEP in the field receiving about $600,000 annually in federal support. In real terms this means that the NEPs are operating on significantly less funds than a decade ago, and in many cases are struggling to develop and implement their comprehensive plans with the current level of support.

In order to not undermine the existing program, it is necessary to pair the addition of any new NEP with a commensurate increase in funding.

The process for adding an NEP to the existing program is clearly articulated in Section 320 of the Clean Water Act as illustrated below:

(a) MANAGEMENT CONFERENCE

(1) NOMINATION OF ESTUARIES

The Governor of any State may nominate to the Administrator an estuary [https://www.law.cornell.edu/uscode/text/33/1330] *lying in whole or in part within the State as an estuary of national significance and request a management conference to develop a comprehensive management plan for the estuary. The nomination shall document the need for the conference, the likelihood of success, and information relating to the factors in paragraph (2).*

(2) CONVENING OF CONFERENCE

(A) In general

In any case where the Administrator determines, on his own initiative or upon nomination of a State under paragraph (1), that the attainment or maintenance of that water quality in an estuary which assures protection of public water supplies and the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife, and allows recreational activities, in and on the water, requires the control of point and nonpoint sources of pollution to supplement existing controls of pollution in more than one State, the Administrator shall select such estuary and convene a management conference.

Furthermore, the recently established estuary caucus within the U.S. House of Representatives is encouraging https://posey.house.gov/estuaries/. This caucus provides awareness for the importance and benefits of healthy estuaries. Inherently, this is a recognition that many of our nation's waters need restoration. This caucus may prove useful to build support for increased appropriations necessary to bolster

the resources required of the National Estuary Program, and in this specific case to expand and create a new NEP in southeast Florida.

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