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IMPROVING AMERICAN ECONOMIC COMPETITIVENESS THROUGH WATER  
RESOURCES INFRASTRUCTURE

Wednesday, September 18, 2019

United States Senate

Committee on Environment and Public Works

Washington, D.C.

The committee met, pursuant to notice, at 10:08 a.m. in room 406, Dirksen Senate Office Building, the Honorable John Barrasso [chairman of the committee] presiding.

Present: Senators Barrasso, Carper, Capito, Braun, Boozman, Ernst, Cardin, Whitehouse, Gillibrand, Van Hollen.

STATEMENT OF THE HONORABLE JOHN BARRASSO, A UNITED STATES  
SENATOR FROM THE STATE OF WYOMING

Senator Barrasso. Good morning. I call this hearing to order.

Today we will be holding a hearing on improving American economic competitiveness through water resources infrastructure. Today's hearing is the start of the important process to pass bipartisan water infrastructure legislation during this 116th Congress. We begin that process taking testimony from the stakeholders who are most impacted.

The Senate Environment and Public Works Committee has established a tradition of working in a bipartisan fashion when it comes to passing much-needed infrastructure legislation. Just before the August recess, this committee unanimously passed the most substantive highway legislation in American history. America's Transportation Infrastructure Act of 2019 is a significant step in improving our Nation's roads and our bridges. It will grow the economy, improve road safety, expedite important projects, and enhance the quality of life for all Americans.

Roads and bridges are critical to our economy and our way of life. Water infrastructure is also critical. That is why we are here today. America's water infrastructure helps move goods across the Country, and prevent catastrophic floods and

disasters. It provides clean and abundant water to millions of American communities, farms, ranches, and small businesses. This is why we must continue the tradition of passing water resources legislation every two years.

In 2018, this committee passed America's Water Infrastructure Act. This bipartisan legislation passed the Senate by a vote of 99 to 1 -- almost unheard of today -- and it was signed into law by President Trump. The Water Infrastructure Act, when fully implemented by the Army Corps and the EPA, will create new jobs, grow the economy, provide more water storage, protect lives and property, and cut red tape. The bill is also the most significant drinking water legislation that we have had in decades.

However, work still needs to be done. This spring, extreme rainfall and rapid snowmelt contributed to widespread flooding along the Missouri, the Mississippi, and the Arkansas Rivers. Pictures of flooded farm fields and destroyed Midwestern communities filled the news. American farmers suffered billions of dollars in damages. According to the U.S. Department of Agriculture's Farm Service Agency, agricultural producers reported over 19.4 million acres of crops were not able to be planted in 2019, the highest level since the agency began releasing reports in 2007.

In addition, arid Western States still grappled with water

supply issues. For example, on July 17th of this year, an irrigation tunnel collapsed near Fort Laramie, Wyoming, affecting over 100,000 acres of farmland between Wyoming and Nebraska. This tunnel collapse blocked a vital artery that provides water for numerous farming and ranching communities in Wyoming and in Nebraska.

In some cases, these irrigation systems are over 100 years old. More needs to be done to assess the health of these irrigation systems, so we can avoid such collapses and widespread crop failures in the future. While the Army Corps does not own these systems, I believe the Army Corps can play a vital role in assessing the state of this aging infrastructure.

In addition, water storage remains a serious concern for Western States, whose ranchers rely on water to grow alfalfa and to raise cattle. Congress no longer authorizes the construction of giant water storage reservoirs, due in large part to their high cost and the lengthy permitting process.

However, working with the States, I believe we can help build smaller scale storage reservoirs, which can give relief to our ranching and our farming communities. We must ensure our ranchers, farmers and communities get the water that they need.

I look forward to working with the members of this committee on a bipartisan basis to enact new water infrastructure legislation in 2020. The process towards passing

that bill begins today.

I have gotten a call from Senator Carper. He is unavoidably detained for a short period of time. But he will be here to help with the committee momentarily.

So we are going to turn to the witnesses, but before we hear from our witnesses, I want to just take a moment to introduce a very special friend and a long-time friend, Pat O'Toole. I have had the pleasure of knowing Pat for many years now. He and his family are sheep and cattle ranchers in southern Wyoming, along the Little Snake River.

Pat has served as the president of the Family Farm Alliance, an organization dedicated to advocating for farmers, ranchers, and irrigation districts in western States since 2005. He has been a board member since the 1990s.

Pat is also a fellow former member of the Wyoming State legislature, having sat in the Wyoming House of Representatives from 1986 to 1992, after which he served as a member of the Clinton Administration's Western Water Policy Review Advisory Committee.

Now, I know Pat to be a tireless advocate for the agriculture community in Wyoming, and a leader when it comes to western water storage policy. He knows just how important water supply and storage is to our State's communities. It is the cornerstone of our economy and everything we do in Wyoming.

So, Pat, it is a privilege to welcome you as a witness again today before the Environment and Public Works Committee, and I want to thank you for traveling all the way from Wyoming to be with us today in Washington. Thank you.

Senator Cardin, Senator Carper has been delayed for a few moments, and he asked that we proceed. I don't know if you would like to make any comments before I turn to the witness.

[The prepared statement of Senator Barrasso follows:]

STATEMENT OF THE HONORABLE BENJAMIN CARDIN, A UNITED STATES  
SENATOR FROM THE STATE OF MARYLAND

Senator Cardin. Mr. Chairman, let me first thank you for holding this hearing. Clearly, the Water Resources Development Act is critical legislation. This committee has a proud tradition of Democrats and Republicans working together. I have a great deal of confidence in Chairman Barrasso and Ranking Member Carper, and Chairman Capito and myself as chair and ranking on the overall committee and the Infrastructure Committee, that we will act, again, in the best interest of our Country and pass a bipartisan bill.

The only point I want to make is that WRDA is important for our environment. I could tell you a long story about the Chesapeake Bay and how important that is, but the committee has already heard this two dozen times.

Senator Barrasso. No, no, go ahead.

[Laughter.]

Senator Cardin. The WRDA bill has helped us deal with the water quality of the Bay, which is critically important to the iconic way of life, and to the economy of Maryland. One trillion dollars of the economy our of region is based upon the Chesapeake Bay.

So I could talk about the economic issues, the Port of Baltimore. The Port of Baltimore ranks ninth as far as foreign



value of imports, number one role for auto and trucks in the Country.

So when you look at WRDA, we have come up with innovative ways, including the environmental restoration of Poplar Island, mid-Bay, which is not only the site where we can put dredge material, which is always challenging, in order to keep our harbors at the depth they need to be, but is also an environmental restoration, so it is a win-win situation.

It is that type of innovation that is coming out of this committee, almost always by unanimous votes, that help our environment and help our economy.

So I just really wanted the committee and the witnesses to know, we have a proud tradition, we want to continue that tradition. We have a great deal of confidence in our leadership of this committee.

And I see that I have talked long enough so that Senator Carper could get here.

[Laughter.]

[The prepared statement of Senator Cardin follows:]

Senator Barrasso. Senator Carper.

STATEMENT OF THE HONORABLE THOMAS R. CARPER, A UNITED STATES  
SENATOR FROM THE STATE OF DELAWARE

Senator Carper. I thank my colleagues for saving my seat, and to both of you for the good work, the Chairman of the full committee and the chairman of the relevant subcommittee, we are delighted to work with you and the members of your staff.

Welcome to our guests today. We look forward to hearing from each of you. I want to thank our Chairman for holding an important oversight hearing to kick off our discussions on the next Water Resources Development Act.

I am proud of the bipartisan work that Senator Cardin referred to that we are able to use and employ in accomplishing last Congress on water infrastructure, including significant reforms through the Army Corps of Engineers and the first reauthorization of the Drinking Water Safe Revolving Loan Fund in 22 years. I hope that this hearing will provide us with some important insights as we work to develop the bill in this Congress, and I look forward to hearing testimony from all of our stakeholders here today and others that are not here today.

In the drafting process, the last Water Resources Development Act, also known as AWIA, along with our staffs, Chairman Barrasso and I heard repeatedly that the Office of Management and Budget micromanages the Corps of Engineers, and that there had been a troubling lack of transparency with

respect to OMB's Corps budgeting and project selection process. OMB relies upon a method for prioritizing projects that fails to capture all of a project's benefits. This method, called the benefit-to-cost ratio, considers only a project's national economic benefits. When a Corps project provides important regional and local economic benefits, like flood reduction or ecosystem restoration, these benefits are often not considered by OMB when it determines which projects should receive funding. This means the budget and work plans regularly fail to include the construction of projects that would address critical needs in small, rural, and tribal communities.

OMB is also a little bit of a black box, and the agency rarely, if ever, discloses how projects are evaluated, raising serious questions about which projects will make it into the final Army Corps work plan each year. This is also the case for projects that receive supplemental appropriations for damages sustained during a flood or storm event.

Last Congress, we made strides in improving transparency with the Corps budgeting process. It is my hope that we can continue to build on that important progress.

Millions of Americans across our Country really do rely on Army Corps projects, in my State, and I think in the States of everybody who is a member of this committee. These projects help us safely navigate our waters, stay safe from flooding and

storm damage, and lead to benefits of healthy aquatic ecosystems and marsh land. We need more investments in Corps projects, not less.

In the mid-1980s, though, federal funding for new project construction and major rehabilitation began to steadily decline and it has never recovered. As a result, we now face a backlog of projects and maintenance needs, and most of the Corps' infrastructure has now exceeded its useful life span.

The most recent American Society of Civil Engineering Infrastructure report card tells an unsettling story. Our Country's dams, our levees, our inland waterways, receives a grade of D, as in dismal, representing a cumulative construction and deferred maintenance backlog of more than \$100 billion.

Clearly, our committee has important work to do in this regard, and frankly, so does this Congress, and so does the Administration. I think we are up to it though, and I look forward to working with all of our colleagues and the members of their staffs, to deploy the green as well as the gray infrastructure projects that our economy needs.

Thank you, Mr. Chairman, and thank you for holding this important hearing. Again, welcome to our witnesses. Thank you.

[The prepared statement of Senator Carper follows:

Senator Barrasso. Thank you very much, Senator Carper.

We have three witnesses today: Pat O'Toole, the president of the Family Farm Alliance; we have Mr. Jamey Sanders, who is vice president of the Choctaw Transportation Company; and we have Mr. Derek Brockbank, who is the executive director of the American Shore and Beach Preservation Association.

So I want to welcome all of you and remind all of you that your full written testimony will be included as part of our hearing record. So I ask that you please try to keep your statements to five minutes, so that will give us some time for questions. We are going to have votes starting at 11:00, and we hope to be able to work through all the questions before we have to leave for the vote.

With that, I look forward to hearing each of your testimonies, beginning with Mr. O'Toole. Please proceed.

## STATEMENT OF PATRICK O'TOOLE, PRESIDENT, FAMILY FARM ALLIANCE

Mr. O'Toole. Thank you very much, Senator Barrasso, Senator Carper, members of the committee. I can't tell you how honored I am to be here. I have spent my life trying to figure out how these systems work, particularly in water. I have written testimony that is quite extensive, but I would like to just tell you some personal stories.

Our family started ranching in 1881, when my wife's great-grandfather trailed horses from the Mexican border to the Colorado-Wyoming border. Our ranch is in a valley that the State line crosses 31 times, which makes us a Colorado-Wyoming valley, so we have learned water policy issues in both States, which sometimes they are the same and sometimes they are very different.

But we have a lot of experience in that, and luckily for us, we have leadership at our conservation district level that is world-class visionary, about how we get that resilience that is going to take us to get to the future. Today on our ranch, there is a project that will be the final piece of a trout passage for the entire watershed, we will be trout-passage friendly. We work with Trout Unlimited on it. It starts in the Forest Service and ends up on private land. We have done that for 20 years. This is the last project to do that.

What it did was what I call integrated our irrigation and

fishery, so not only are we having a great success story for the fish part, but it has made the irrigation systems throughout the valley much more efficient and much more critically helpful for us as ranchers and farmers.

A year ago, we were finishing the driest year in the history of the Yampa River. The Yampa River is the headwaters of the Colorado River. And it was brutal. We got no second cutting of alfalfa in our family. It was followed by the second worst winter I have ever experienced. So the \$61 hay that I would have put up if I had had the water was \$270 to feed my livestock because of the brutal winter, followed by one of the top five wettest years that we have ever had in the springtime.

All of those things have an economic reality to them. Our community built storage years ago that I was involved in with the Wyoming legislature. Those people at the lower end of the valley with storage got that second cutting. Their fisheries survived; their process was still intact.

We are working now on another project in the State of Wyoming, the upper part of the valley, in coordination with the State of Colorado. We have unanimous support from their upper district. And it is about working together.

I think one of the things that is so important, this committee is called the Environment and Public Works Committee. This is the appropriate committee to deal with what I consider



to be the crisis of the future. I have this saying that I believe: Mother Nature always gets the last at bat. We saw that in the last 12 months of the incredible volatility. When you talk to farmers and ranchers, it is volatility that is the issue that they talk about.

I visited with a lot of people about this testimony, because I think this issue is so important. A friend of mine, Jim Faulstich, from South Dakota, said that his governor said the 1st of September was the biggest disaster in the State of South Dakota. They then had a 12-inch rain after that. And I said, what are you going to do, Jim? He said, probably going to have to sell our cows. I saw a picture last night of relatives in Nebraska who went through flooding all last year, and the picture was them putting up what hay they were able to put up. The bales were half sunk in another flood yesterday.

Understanding this volatility issue is critical. Next week, I will be on a horse taking cattle off the national forest. The national forest is not functioning correctly. There is a study that is mentioned in my testimony of 160,000-acre feet of water isn't going into the Platte River system because the forest isn't functioning. It is so critical that we address these issues on scale.

In my world, I talk about, you can't solve a million-acre problem with a hundred-acre solution. We have to start thinking

at a scale, and whether it be on the Missouri River system or the Platte River system, the Colorado River system, we have run out of easy answers. The event that Senator Barrasso talked about in Wyoming was on the Platte River system that was built during the Roosevelt Administration, not Franklin. We are talking about century-old infrastructure that has serviced us well. The 104,000 acres that weren't able to be produced in Wyoming is an incredible, devastating event. And yet its infrastructure was over 100 years old.

So I think our challenge us rejuvenating through this committee, the appropriate committee, the ability to use our infrastructure correctly. A thing that jumped out at me really quickly was the fact that half of our fruit now comes from overseas. We have lost a million acres of production in the last five years in California, another million expected in the next five years. We have to realize how important our infrastructure is, so that America produces for itself, and so that ranchers and farmers and rural America have a future that they can look forward to.

My grandkids are the sixth generation on our ranch. They all ride and rope and do all those things. If we don't understand how critical it is that our water infrastructure be taken care of, they are not going to have the opportunity that I hope that they have.

Thank you very much for this opportunity.

[The prepared statement of Mr. O'Toole follows:]

Senator Barrasso. Thank you for your testimony, Pat.

Mr. Sanders.

STATEMENT OF JAMEY SANDERS, BOARD MEMBER, ASSOCIATED GENERAL  
CONTRACTORS OF AMERICA AND VICE PRESIDENT, CHOCTAW  
TRANSPORTATION COMPANY

Mr. Sanders. Chairman Barrasso, Ranking Member Carper and Senators of the Environment and Public Works Committee, thank you for inviting me to testify on this vitally important topic.

My name is Jamey Sanders. I am Vice President of Choctaw Transportation Company, located in Dyersburg, Tennessee. We are a fourth-generation construction company, specializing in heavy marine construction and port operations. I have spent all my life in this industry, and I care deeply about the vitality of our water resources infrastructure, and understand the challenges ahead.

I currently serve as Chair of the Federal and Heavy Construction Division for AGC of America. AGC appreciates and thanks the committee for its continued efforts to help develop and improve our Nation's water resources infrastructure.

As many are aware, there is a backlog of more than a thousand authorized water resources construction projects that will cost more than \$98 billion to complete. I am here to tell you that contractors are able and willing to tackle this backlog, but we need Congress' help in untying the regulatory and layered bureaucratic knots from the contractors' hands.

As the Assistant Secretary of the Army for Civil Works,

R.D. James, often says, his focus is to "move dirt." AGC could not agree more, and we urge that this motto be at the forefront as Congress drafts WRDA 2020.

The benefits of our Nation's waterway systems are the envy of the world, and well-known to all who sit on this committee. Harbors maintained by the Corps handle 95 percent of America's import and export trade, while the inland waterways system moves freight at half the cost of rail and one-tenth of the cost of trucks. Spending just \$5 billion a year on this program generates an estimated net benefit of \$87.1 billion in economic development, a 16 to 1 return.

To that point, revenues in the Inland Waterways trust Fund and the Harbor Maintenance Trust Fund should be used for their intended purposes. They should be categorized as mandatory spending and taken off the discretionary budget.

The delays in commencing and completing critical water infrastructure projects have broad and far-ranging ripple effects. For example, just last week at Victoria Bend, mile 595 on the Mississippi River, shoaling caused by the historic 2019 flooding in the Midwest caused major delays in towboats transporting hundreds of barges, loaded with all types of vital commodities that help drive our Nation's economy. As many as 85 towboats were sitting still for days waiting for emergency dredging operations by the Corps to reopen the river to traffic,

costing many companies and consumers untold dollars which we will never get back.

Many times, budgetary and environmental bureaucratic processes can stand in the way. While we must be good stewards of the taxpayer dollars and protect our environment, we must find ways to move dirt more quickly to deliver the benefits to communities that depend on these projects.

As you draft the 2020 WRDA bill, AGC recommends that you consider including the following recommendations, among others listed in my written testimony. Congress should require federal agencies to follow a One Federal Decision process for all environmental reviews and authorizations for major infrastructure projects. This will allow for a single NEPA review for a project that ends with a single record of decision issued by the lead agency.

Reform the benefit-cost analyses. The Chief Reports submitted to Congress show that the project benefits are at least as great as the cost. However, OMB subjects these projects to a second, more rigorous benefit-cost ration. OMB often requires benefits at two and a half times greater than cost.

Congress should establish formalizing partnering on civil works projects to help create an environment that is more conducive to solving project level problems and making timely

decisions. Congress should enact specific deadlines for completing the permitting and review processes.

Encouragingly, this committee has recently passed similar reforms in the Highway Reauthorization Bill. This bill details provisions to streamline the environmental approval processes, reduce duplication, and increase accountability and transparency, all of which would be great benefit if included in the WRDA 2020.

Thank you again for inviting AGC to testify before the committee today. I look forward to answering your questions. Thank you.

[The prepared statement of Mr. Sanders follows:]



Senator Barrasso. Thank you very much for your testimony,  
Mr. Sanders. It is really very helpful. Thank you.

Mr. Brockbank.

STATEMENT OF DEREK BROCKBANK, EXECUTIVE DIRECTOR, AMERICAN SHORE  
AND BEACH PRESERVATION ASSOCIATION

Mr. Brockbank. Thank you.

American shoreline is infrastructure that upholds the U.S. economy. Forty percent of the U.S. population lives in a coastal shoreline county, with a combined GDP of \$7.9 trillion dollars. If counties, not States, just counties, along the coast were considered as an individual country, they would rank number three in global GDP, behind only the U.S. and China.

So if we want to improve American economic competitiveness, we had better make sure that the coastal infrastructure that is protecting America's most populous and prosperous regions from rising seas and increasingly powerful storms are ready for the challenges ahead.

If Hurricane Dorian had stalled over the Atlantic coast of Florida rather than the Bahamas, the tenor of this hearing would be vastly different.

American Shore and Beach Preservation is an organization of beach and coastal practitioners, the communities, industry and local elected officials and academics who build, maintain, manage and research our Nation's beaches and shorelines. We have been advocating for healthy coastlines since 1926. Thank you for including us here today.

When we talk about coastal infrastructure, we are talking

about natural infrastructure, beaches, dunes and wetlands, and occasionally hard infrastructure, seawalls and riprap that project homes, communities and other coastal infrastructure along a coast. We have seen time and again communities with wide beaches and high, healthy dunes come away from coastal storms with far less damage than communities who haven't maintained their "first line of defense."

Nearly every beach on the east and Gulf Coast and many on the Pacific and Great Lakes coasts, from Rehoboth to Gulf Shores, has been restored, renourished and re-engineered to mimic natural systems. Most estuarine coastlines are also engineered, either armored or restored as wetlands and living shorelines.

What connects all these shorelines is the need for sand and sediment. Sand and sediment are the building materials of a healthy coastline. Beaches and wetlands are dynamic systems that should naturally be eroding and rebuilding, but too often they cannot rebuild because we have prevented sediment from ever reaching the coast. Levees prevent flooding, and sediment deposition, hardened cliffs, riverbanks and dams keep sediment out of waterways. Jetties and dredging send sediment far offshore.

In short, we are facing a coastal sediment crisis, in addition to the challenges of rising seas and localized

subsidence. As the Environment and Public Works Committee develops water resources legislation and provides the Administration oversight, we encourage you to do three things. One, direct the Army Corps of Engineers to better manage sediment; two, change the Army Corps decision making frameworks, so that multi-benefit projects that can use the natural infrastructure can out-compete single benefit projects; and finally, encourage the Office of Management and Budget to better fund and support coastal flood risk management.

We believe the most influential thing and fundamental thing the Army Corps can do to better manage coastlines is operate under principles of regional sediment management, RSM. This is the concept that sediment is a resource, not a waste product, and managing sediment within a watershed or littoral system, not a project-by-project basis, is more ecologically sound and saves money. In short, we need to move sediment within the system, not remove it.

RSM goes well beyond just re-using dredged material, but an important part of RSM is beneficial use. The Corps dredges about 214 million cubic yards of sediment per year from navigation channels. Of that, 38 percent is beneficially used. That is not good enough. The Corps should beneficially use 100 percent of uncontaminated dredged material.

One way to help do this is change the understanding of the

federal standard. As part of the Army Corps' determination of the least cost alternative for disposal of dredged material, the Corps should include the economic valuation of sediment, including potential ecosystem restoration benefits, flood risk reduction benefits, and other economic values and long-term costs.

The next fundamental way to improve coastal project development and prioritization is modifying the benefit-cost ratio, the BCR, as we have heard before, to better support multi-benefit projects. In designing a project authorized as flood risk reduction or coastal storm risk reduction, the Corps calculates the benefits derived from reducing flood risk without fully considering other benefits. So projects are not designed to maximize habitat creation or economic development.

In the case of beaches, the economic value can be remarkably high. Economist Dr. James Houston has calculated that beach travel and tourism generates \$285 billion to the national economy, and generates \$23 billion in federal tax revenue annually. These types of economic figures ought to be considered when deciding which flood risk management projects to prioritize.

The result of advancing RSM and beneficial use and reform of the Corps BCR will be improved decision-making frameworks that appropriately value natural infrastructure, the beaches,

dunes and wetlands, that provide flood risk management but so much more. Army Corps mandates are too broad and the challenges of the coast too great for the Corps to continue to focus on projects that only solve one problem at a time.

Finally, the EPW Committee should look at the role OMB has in underfunding and delaying coastal projects. The Administration's annual budget drastically underfunds coastal flood risk management ,and even when Congress funds coastal projects via appropriation adds and shore protection or via supplemental appropriations, OMB can withhold funding with very little transparency.

ASBPA looks forward to working with the EPW Committee to address these challenges in WRDA and in future infrastructure legislation. Thank you.

[The prepared statement of Mr. Brockbank follows:]

Senator Barrasso. Thank you all for your testimony. We will start with five-minute rounds of questions, and I will start.

Mr. O'Toole, would having the Federal Government partner with the States to build additional water storage in the west, would that have a significant impact economically for rural communities in States like Wyoming?

Mr. O'Toole. Thank you for the question, Senator. As you know, I served on the Select Water Committee in Wyoming. There was a genius in Wyoming of putting aside dollars for infrastructure, long-term renewables, non-renewables and renewables were of the philosophy of where we came from.

But I will tell you that because of budgetary things in Wyoming alone, I know a lot about Colorado also, the ability to assist with funding is critical.

I sit on the Yampa Roundtable, which is all the rivers in northwest Colorado and southwest Wyoming. Every single watershed realizes because of the early runoffs, we have to have storage. That is every single watershed, sub-watershed, including mine, in that part of the Country.

And that is true everywhere. I have seen the map of California that the 50-year plan, 50 years old, none of it was done except for the incredible expansion of population. I think the infrastructure part, storage particularly, because of the

early runoffs, is critical. So it would be very important.

Senator Barrasso. Could I also ask you about the idea of invasive species and the amount of water that invasive species take up? We hear that certainly in Wyoming quite a bit. What can you tell the committee about the impact of invasive species on the water supplies, upon which your organization's members depend? What actions do you believe that the Federal Government could take that would be most effective in fighting these invasive species, which drain so much of the water?

Mr. O'Toole. In my written testimony, I talked about the 160,000-acre feet of water that the Forest Service themselves has said is not going into the Platte River system. That is every one of the systems, because the forest, because of the invasive species, the pine beetle. In my world, I used to ride horses through the trees. You don't do that anymore. It is now pickup sticks. So gathering livestock, hunting, all the activities that we have spent our whole lives doing in the national forest are not doable. We are seeing a lack of thinning, a lack of controlled burns, a lack of aspen regeneration, all things that I think are doable in the context of the dollars that you have in the bills, Senator.

It was interesting, I had a call with the Imperial Valley Irrigation District, which is the southernmost part of California. When they understood that number, the 160,000-acre



feet, if that were replicable on the Colorado River, they said, boy, we would be willing to invest in that, thousands of miles away. Because it is so important to understand when a forest is functioning, and the invasives haven't taken over, you have a whole different watershed reality of water in the system. As we go into the systems now that are more challenged, nothing could be more important.

Senator Barrasso. Mr. Sanders, stakeholders are concerned with the Corps' long history of projects being over budget and taking too long to build. Congress authorized the Olmsted Locking Dam project in 1988, \$775 million. After 30 years of delays, \$3 billion, the Corps of Engineers finally opened the project last year. You are smiling, you are familiar with it.

Any thoughts on how to improve the process so that water projects actually can be developed and put online more efficiently?

Mr. Sanders. I attended the ribbon cutting last year for Olmsted. Nobody could have been happier to see it open than us. The people that have been sitting with barges behind Lock 52 and 53 for the last 30 years experiencing extreme delays in that.

Olmsted is a great example. I think it is awful easy to point fingers at the Corps of Engineers, looking at the execution of Olmsted. I think if you really dig down into it, we can all point fingers at all of us that were involved in that

project over that time, and not working to get it done. And look what happened.

So the previous Administration, they finally got upset and decided to move dirt. Got it fully funded and the industry answered. They got it built ahead of time, ahead of schedule, open to the public, all the delays, just untold millions of dollars in delays that we have been experiencing at Lock 52 and 53 disappeared. They are now demolishing those, now that we have Olmsted open.

So fully funding a project is something that, it is wonderful. We need WRDA 2020, it is our mechanism for getting these projects on the street. But the Administration and the Congress has to look at fully funding these projects, and industry can deliver.

Senator Barrasso. Let me ask a final question, Mr. O'Toole. The Forecast Informed Reservoir Operations, FIRO, is the idea that modern weather and water forecasting technology can be used to better inform decisions on when to retain and release water from reservoirs and to maximize available water storage. A pilot to test this information is currently ongoing at Lake Mendocino in California. I think there are some positive initial results.

Section 1211 of America's Water Infrastructure Act requires the Corps to submit a report to Congress identifying other

candidates for use of this technique. Could maximizing the use of existing water storage, this information, forecasting information, would that benefit farmers and ranchers in Wyoming and other rural States?

Mr. O'Toole. Yes, Senator, it is really interesting, because living on a two-State river, watching the way that information comes to farmers and ranchers, is depending, really, on the system that you are watching. But I think that what we see is being able to plan ahead for letting water out, so that more water in these storms, because of the intensity that I talked about earlier, I just can't overstate the intensity piece of this, how important it is that we have both the ability to plan ahead.

I think the second part is storage, and in California, they have several projects, storage projects, online that would be designed to take that high water that comes from intense storms and save it, rather than have it go out to the ocean. So that planning capability I think is critically important.

Senator Barrasso. Senator Carper. Thank you.

Senator Carper. Again, thank you all for wonderful testimony. We are delighted that you are here.

Mr. O'Toole, sometimes you have said, and I will paraphrase you, you said something about understanding the volatility issue is critical, understanding the intensity issue is critical.

There is an old song by Stephen Stills, Buffalo Springfield, it says, something's happening here, just what it is ain't exactly clear. What do you think is happening here?

Mr. O'Toole. Let me say first that the Family Farm Alliance wrote a paper on climate in 2007. It is the same philosophy that we have today. We realize, whether it be intensity and volatility, or whether it be growth, or whether any of the aspects that are challenging our water supply, what I think is happening here is we have run out of the easy answers. Without a new initiative and philosophy on storage, on recharge of aquifers, on understanding how the systems work, we are just not prepared either on the food side or on the population side for what is inevitably happening.

Senator Carper. Same question for Mr. Brockbank.

Mr. Brockbank. We are a science-based organization, and all the science points to climate change as being the driving force in most sea level rise, increasing storm intensity. So our coasts, it is absolutely critical to do adaptation to prepare for these storms. But there is no adaptation that can be done that will withstand unabated sea level rise from climate change.

Senator Carper. All right, thank you. Another question, if I could, for you, Mr. Brockbank. It relates to one we just had. Extreme weather events, precipitated by climate change,

continue to drive up costs of emergency response in this Country. I assume the ASBPA hears about this issue regularly from coastal communities, especially those that are impacted by storms and long term by sea level rise as a result of climate change.

You touched on this, but I am going to ask you to dig down a little bit more. How can coastal communities and beach communities in particular adapt to rising seas?

Mr. Brockbank. Thank you. I would say two points to this. One is to make sure they are maintaining and building out their coastal defenses. When I talk about coastal defenses, you have to look at those natural systems that are intended to withstand and protect the community. So you build out a wide beach berm that reduces the wave intensity. You build up a high dune system. That dune system can actually prevent storm surge from building in. Your back line, your communities, once they are in sort of the estuarine system, wetlands can absorb storm surge like a sponge and reduce that.

So you need to be able to maintain those beaches, the dunes, and the wetlands. The advantage to each of those, particularly a dune system and wetlands, is they are able to actually accrete, they are able to grow with sea level rise. Vegetative dunes can elevate and grow, wetlands can, if maintained, can actually grow with sea level rise.

The second point is, and this speaks to some of the work of the committee, is after a storm, it is important that these systems are not simply restored to the way they were before, but they need to be allowed to be built even better, built stronger, built to the challenges that we are facing in the coming years, not the challenges we were facing in the past years. This committee has taken some steps to make changes to P.L. 84-99 that reflect this. But continuing to push the Corps to make modifications to projects post-storm that will allow for greater protection in the future is absolutely essential.

Senator Carper. All right, thank you.

A different question, if I could, for Mr. O'Toole, and if we have time, for Mr. Brockbank as well. Stakeholders and sponsor collaboration within the Army Corps of Engineers is essential to solving today's water resources challenges. This helps to limit the costs of missed opportunities, promotes better planning, provides transparency and results in more fiscally and environmentally sound projects.

How can the Corps work better with stakeholders in planning and managing its projects?

Mr. O'Toole. If I might respond with a personal story --

Senator Carper. You are like me; I love to respond in telling stories.

Mr. O'Toole. There you go. So, we met with the head of

the Corps of Engineers, his name was Rock Salt. Sat with Secretary Salazar and a person working on low-head hydro storage, which became a bill that passed the entire system, signed by the President in the last Administration .

What it was, groups came together, American Rivers came together with Family Farm Alliance. And it is putting together, in my mind, the futures coalitions, where we put coalitions of people with vested interests, whether it be on the conservation side or on the production side, with plans that are long-term, plans with the resilience I talked about.

So in my view, the Corps needs to understand that there are multiple benefits and multiple needs, and how do we try to address them in a time when we have as many challenges as we have today. I hope that answers the question.

Senator Carper. Mr. Brockbank, could you just take a few seconds, and essentially what I'm trying to get at is, how can the Corps work better with stakeholders in planning and managing its projects? Just very briefly.

Mr. Brockbank. So I will touch on regional sediment management, it is the concept that we need to manage sediment within a region, and that includes both the Army Corps as well as communities. Sometimes the Army Corps is dredging a project, and a local community wants that sediment. Those two communities need to be talking. One of our proposals in our

written testimony was that each Corps district should have a five-year regional sediment management plan that talks about where they are going to be dredging, where there are going to be sediment needs, and also specifically identifies all the stakeholder groups that are engaged in the sediment within that watershed or within that littoral system, so that officializes the collaboration between stakeholders and the Corps on sediment management.

Senator Carper. All right, thanks. Mr. O'Toole, was that fellow's name Rock Salt or Rock Solid?

Mr. O'Toole. Rock Salt.

Senator Carper. All right, thank you, for the record.

[Laughter.]

Senator Barrasso. Senator Braun.

Senator Braun. Thank you, Mr. Chairman.

The topic of infrastructure across the board, roads and bridges, rail, air, shoreways, inland waterways, it is such a capital-intensive discussion. I am going to circle back to that classic thing we always grapple with here, how you pay for it. We haven't raised the user fee, gas and diesel tax, I think, since 1993. We did it back in Indiana in 2017. We can at least practically talk about how we might do things there, because we are in the context of being in the black. We have a balance sheet that, it is not hypothetical, how we would do our share of



it.

User fees and general fund are kind of the ways that you generally pay for things. Both seem to lack that ingredient here, which is political will. Because everything we have discussed is going to be very expensive.

I know when the President and Schumer and Pelosi talked about infrastructure, and I started hearing trillion and two trillion, that is so disingenuous in a sense that with a balance sheet like we have here at the Federal Government, how do you pay for this stuff?

I personally think, you cited, Mr. Sanders, that bargain we get with moving things on waterways. Mr. Brockbank, you talked about all the GDP that is on our shorelines. However climate is going to paly into it, it looks like it is going to be aggravating rather than ameliorating. So I want to get some opinions on where you think States should enter into this and the private sector. Almost all States have solid balance sheets. They live with guardrails and guidelines and balanced budgets, statutes or amendments. Things work, you pay for it.

I know the private sector does, because you have the hard accountability of competition, and if you don't do things with the bottom line to where you are saving for the future and thinking about things like rainy day funds, investing in either a sinking fund or some way, we are basically here talking about

it in hearings without having anything that is actually going to be feasible to put some of this to where you start moving dirt, as you mentioned.

So I would like to start with Mr. Sanders. This place is generally not known for the subject matter I just mentioned. If in fact we do keep running trillion dollar deficits, is it realistic to expect the Federal Government, where I think infrastructure ought to be the number two priority, behind maybe defending the Country, and we have a portion of our budget, the mandatory spending on Medicare, Medicaid and Social Security, that just on autopilot is creating all these deficits, what is plan B in terms of actually paying for this stuff? I would like to know what your opinion is, because maybe it is something other than looking here to lead and pay for the preponderance of it.

Mr. Sanders. Right off the top, the risk and the lack of reward in being able to be globally competitive, it is just, I think the risk is too great not to try every means possible to be able to fix our critical infrastructure. It is no secret; there are locks and dams that in a lot of cases are being held together by duct tape. Tennessee, I am from Tennessee, we are very blessed, we run a surplus in Tennessee.

Senator Braun. Do you see Tennessee being willing to chip in?

Mr. Sanders. I do.

Senator Braun. And then do you think that the users of waterways are willing to pay more?

Mr. Sanders. Absolutely. We use the waterways, we have grown, we have had four generations of our company and employees use the waterways. We realize how precious it is. And it is the way we make a living. We were 100 percent for the user fee increase previously. So, absolutely, I think we as users would be willing to do our part to make it happen. I think the States, just Chickamauga Lock, for instance, AECOM is there finishing that project, working on that project. It is critical to east Tennessee and middle Tennessee, the economy there.

So I think that the States should look hard and that, and it should be open. It shouldn't be anything locked in place to say, you can or cannot do something. All the stakeholders have to come together and be able and willing to do their part to get something done.

Senator Braun. I hope this committee does realize that we are disingenuous with the public when we do run our operation here in such a way. Because I am hoping that creative solutions involving States and the users of infrastructure start coming into play. Because to me, as a CEO and owner of a distribution and logistics company, I have more faith in that having relative emphasis, rather than grabbing out of our general fund here,

that we borrow a trillion dollars a year to make it work currently. Thank you.

Senator Barrasso. Thank you very much, Senator Braun. Senator Cardin.

Senator Cardin. Thank you, Mr. Chairman.

Mr. Brockbank, I want to get you engaged in a discussion as to how we can have a win-win situation under WRDA, that is, projects that not only provide the economic incentives such as the maintaining the depths of our channels, but also have a positive environmental impact on cleaner water.

I give you this as way of background. Before I was elected to Congress, that is going back over 30 years ago, the sites of dredged material was the principal issue in a Congressional campaign. It elected a member of Congress, that single issue, because of the controversy over where dredged material would be located. He was opposed, the incumbent Congressman was opposed to a site. The challenger ran on that issue of the Port of Baltimore needing deeper channels.

We have come a long way since that debate. My predecessor in the United States Senate, Senator Paul Sarbanes, had an innovative proposal about 15 years ago, 20 years ago, which was to take a vanishing island in the Chesapeake Bay known as Poplar Island, which was at one time populated, which had been reduced to about two acres, to restore it through dredged material in a

way that would become an environmental plus for wildlife and the Bay itself. Poplar Island is almost totally built out now, over 1,000 acres. It is an incredibly pristine facility, and has the total support of all the stakeholders. It is without controversy today, so much so that we now are on our second island, Mid-Bay, which has been fully funded and approved by this committee.

I say that because that is an innovative approach. There is another innovative approach that is being talked about today in regard to Blackwater Wildlife Refuge, which, as Senator Carper pointed out in his opening statement, is the restoration of wetlands is critically important to our environment. We have lost a lot of wetlands in the Blackwater Wildlife Refuge. We have found that if we used dredged material where we have lost wetlands, we can actually restore wetlands. In a pretty fast way, within one season, we have been able to do it.

It costs more money, and the challenge is, as we did with Poplar Island, we used an environmental restoration economic model rather than strictly a pure economic model. And it paid major dividends.

So my question to you, as we look at the next WRDA authorization, can you help us in how we can have those types of innovations built into our law, so that we can not only maintain the economic importance of deeper channels and maintaining our

channels, but we can also restore our wetlands and our environment?

Mr. Brockbank. Yes, thank you. Great question, great points. Poplar Island was one of my examples I was going to use, but you spoke eloquently to it. The ability to use dredged material to restore systems, to maintain systems, is essential. The thin layer placement that happens both on wetlands as well as occasionally placing it in near shore, in my written testimony I mentioned a location outside of Oregon where they are spreading dredged material from the Columbia River, five centimeters. That is not easy to do, to make sure that you are keeping dredged material placed at just five centimeters in the near shore, so that it can then naturally drift back up onto the beach to restore the beaches.

So that kind of innovative technique is more expensive, and I believe what needs to happen is to make sure that when the Corps is pricing out what their least cost disposal method is for dredged material, the valuation of that sand or that sediment is taken into account. So if Blackwater Refuge could use that sediment, that value that that sediment would provide to Blackwater Refuge needs to be included in the disposal cost. So that is going to create economic incentives for the Corps to actually beneficially use their dredged material, rather than just dispose of it. So it is really getting to that framework

of, how do you switch from dredged material being seen as a spoil to dredged material being seen as a resource.

Senator Cardin. The point that you are raising is critically important. We were able to that on Poplar Island by doing it first, by getting the Army Corps to put in the environmental restoration as the value, rather than the pure economic cost factors of disposal of dredged material.

I am suggesting, particularly as it relates to restoration of wetlands, we need to get that type of model developed. We may need language in authorization, in a WRDA bill, in order to be able to advance those types of projects. I would just ask if you could help us in trying to identify how we could make that a reality.

Mr. Brockbank. I 100-percent agree, and I look forward to working with you and your staff to make that happen.

Senator Cardin. Thank you. Thank you very much.

Senator Barrasso. Thank you very much, Senator Cardin.  
Senator Capito.

Senator Capito. Thank you, Mr. Chairman. Thank all of you for being here today. While we know that the Army Corps' critical mission is flood control and navigation, I do think that one of the sources of concern that I have in this Nation is the access to clean drinking water. Numerous reports and studies detail that our Nation's drinking water and wastewater

needs, particularly those, are stemming from aging infrastructure.

In West Virginia, we had one report from a local newspaper that said that our State's water systems lose about 75 percent of their water in their water systems. This is an untenable situation. I think the Army Corps can play an important role here through their environmental infrastructure authorities, which can provide assistance for these water and wastewater projects.

So this is a little off of the waterways, but I think it is critically important, obviously, to all of us.

Mr. O'Toole, I would like to ask you, in your testimony you say that water is the lifeblood of our Nation. I have heard some of your testimony saying that storage, rather than just running it off, keeping it, is a valuable resource. Of course, over in my State of West Virginia, we have abundant water. We would like to pipe it out to California and make a lot of money off it, but we haven't quite gotten there yet.

Anyway, you are a former State legislator, you have probably experienced this area of local communities trying to contend and keep their wastewater and water projects current. How do you see this developing over time and where do you think WRDA and the Corps might be able to be helpful with their expertise in this?



Mr. O'Toole. Yes, ma'am, thank you for that question. I can speak more clearly about personal things we have seen in our community. We have a watershed that over 30 years has had a vision. For example, we turned a desert tributary into wetland that went from 29 species to 140 species of birds.

The thing that is interesting about that, and the river restoration, the integration of irrigation and fishery that we are working on, the people that are on the land doing those projects are the people in our community who are oil and gas people, with the equipment. What we have been able to do is integrate, through using both USDA and Interior, and I think it is really important to understand how those two agencies can benefit each other, both in terms of leveraging dollars and in sort of the philosophy of maintaining agriculture and clean water at the same time. What we have seen is by bringing in the community people with the equipment, we have created an economic development boom for them.

So in the oil field in Wyoming, there are periods of time when you cannot drill because of endangered species or other stipulations. This becomes another piece of the economic development puzzle for those people to stay in business with their equipment.

The thing that we have done that I think is important, our conservation district measures every tributary in our entire

system. There are a lot of people that feel maybe knowledge isn't the best thing to have. We feel like knowledge is power. Our family has had consistently the cleanest system in a watershed. We are so proud of that. But it is because we understood that there are things you can do.

We have done some amazing stuff in our riparian areas, without any negative to our agricultural production at all, because we have enough knowledge to realize that timing of grazing and how we utilize our lands has an immediate effect on water quality.

Senator Capito. Right. So weaving the balance of the economy and environment are what you are seeing the results of in your State.

I am going to switch to another topic. We have a lot of locks and dams going on the Ohio River. I just went with Colonel Evers to see the de-watering of the Robert C. Byrd Locks, very exciting. But you don't get an idea of how massive these projects are until you go all the way down in a de-watered lock and look up and see the massive opening and closing sand how expensive these are, and how important it is to maintain the infrastructure that we have and then to modernize what we don't have.

I was very pleased that the Lower Mon project has been fully funded in the budget. These are, some of them, 100-year

projects and very important to us.

Mr. Sanders, in your testimony you highlight both the issues with pre-construction and construction phases. How do you weave that in with balancing that with the maintenance issue that I saw when I was at the Robert C. Byrd locks on the Ohio, in terms of being able to maintain our water system and keep it viable for the economics? Particularly in the Ohio River for my State it is absolutely critical for things like coal, chemicals, grains and other things.

Mr. Sanders. Sure. As you very well stated, the locks and dams, the communities cannot survive without the commerce being able to easily go through those dams.

Senator Capito. Right.

Mr. Sanders. That is critically important, to have that consistent, we have to have a consistent funding stream that is not related to, this Victoria Bend thing that I brought up a second ago, we just got through nine months of flooding where barges were restricted, commerce coming from your area down the Ohio to New Orleans was restricted. The water finally goes down and we have the ability to move that efficiently on the Mississippi River, and here we are sitting behind the dredging areas that need to be dredged and traffic is stopped again.

It is devastating. It really is devastating to the economy. So when the water is right, when the projects can go,

we have got to be able, and I will say it again, move dirt. The money has got to be there. It is too critical; the cost is too great from a global competitive standpoint. From the environmental side, the clean water side, there is nothing better for the environment than moving commerce in barges. It is the cleanest way of moving commerce that we have. So we have got to keep the funding consistent.

Senator Capito. All right, thank you very much. Thank you.

Senator Barrasso. Thanks, Senator Capito. Senator Whitehouse.

Senator Whitehouse. Thanks, Chairman. Welcome, everybody. We are getting a little tight on time, so I am going to be quite brief and simply ask you to respond to this as a question for the record, if you have suggestions with respect to the problem that I am going to describe.

Mr. Chairman and Ranking Member, I think this is a matter that involves the whole committee. I just want to describe a few episodes.

You have heard me over and over again ask for information about the Flood and Coastal Storm Damage Reduction Account. We have asked for an explanation from the Army Corps why, over the past 10 years, the Corps has requested between 13 and 120 times more money for inland versus coastal projects. One hundred and

twenty times as much for inland versus coastal is a big, big, big discrepancy. It is less than 1 percent for coastal.

I have asked for an explanation over and over again. We have never yet received an explanation. Year after year, I have asked. Year after year, they have simply ignored us.

Debris removal, we have asked to have the Corps support us in removing debris in harbor areas. They said they wouldn't do it, so we got authority in the 2016 WRDA so that they did have authority to do it. They still refused to do it.

So in the 2018 WRDA, we directed a report from the Corps on why they weren't using the 2016 WRDA authority. They had not even done the report. I sent a comment letter as recently as February. No report, no implementation guidance, no response.

On innovative materials, the 2016 WRDA included a study on the potential use in water resource projects of innovative materials, composites and things like that, that are less likely to rust. Wouldn't start the report because they said they didn't have an appropriation for it. So we, in the 2018 WRDA, said no, do the report. They haven't done the report.

On harbors of refuge, the 2018 WRDA included a request for the Corps to complete a study of the hurricane barriers and harbors of refuge in our region, so that we can get an update on whether they are safe for the traffic in and out of those ports and marine areas. They haven't even started that report from

the 2018 WRDA.

So what I see here is an agency that comes to our committee that wants funding for all this great stuff and that doesn't pay a damned bit of attention to what we want to do. They think we are a bunch of chumps who throw them billions of dollars with which they get to do whatever the hell they want, whenever the hell they want to do it, without feeling any obligation to actually obey the law that we set out that requires them to do these things.

If it was one or if it was two, I would be upset. But at this point, it is essentially every damned time. What I think we need to do is set up some kind of a procedure where, when they are messing around like this and not following the law, we have a standard procedure in the committee where we call them back in here and get a darned explanation for what the heck is going on.

In court, I was a courtroom lawyer in the old days, you would do like a show cause hearing, in which you would ask the court to invite in the other party, and say, why are you not complying with this order. If you have a good reason for your non-compliance, we would like to hear it. If you are just being truculent and refusing to obey a lawful order of the court, well, then, you face some consequences.

I think we need to do something. I don't know what it is.

A show cause hearing of some kind comes to mind, where members of this committee can say, here are the projects that concern me, here are the projects that the Corps is ignoring, despite repeated, in some cases, WRDA authorizations and requirements. And we have got to get some discipline into this organization. Otherwise, we are a useless committee. All we are doing is shoveling money down a spout, and people whose names we don't even know and who we have never heard of who are buried down in the bureaucracy are making the actual decisions about what gets spent where and when, and we are just ciphers.

That is not the Senator I got elected to be, not when things like harbors of refuge are at issue in Rhode Island. So if you all have thoughts about that subject, and about how we can be more effective, and how we can prevent the Corps from becoming a black hole in which all decisions are made by junior bureaucracy and none are made in Congress, then I would love to have your response to that as a QFR.

But I really want to flag it to the Chairman and Ranking Member. Because I think there is room for agreement amongst all of us on this committee that this nonsense has to end, and that when we have said something is to be come in a WRDA that has gotten all the way through Congress and passed into law, then by gum, they need to pay attention to that and do what they have been instructed to do.

Senator Barrasso. And they have been instructed to appear here, and are scheduled to appear on October 23rd. So we will have an opportunity.

Senator Whitehouse. Well, this is my warm-up round.

[Laughter.]

Senator Barrasso. Senator Van Hollen.

Thank you, Mr. Chairman and Ranking Member. Thank all of you for your testimony. Senator Cardin has covered a lot of territory important to the State of Maryland. I second all his comments about the Chesapeake Bay, the importance of Army Corps dredging for the success of Baltimore Harbor and the important connection between disposing of dredged materials, but also dealing with the habitat issues and prevention erosion, which is a win-win. So I am all in with what Senator Cardin said.

Mr. Brockbank, I would like to focus on some of your testimony here. It goes to the issue of how the Corps grades a particular proposed project, and whether that project is successful. You point out in your testimony with respect to flooding, for example, that the Army Corps will calculate the benefits derived from reduced flooding risk, but not the full recreational benefits nor any of the ecological or social benefits. So the project will not be designated to support the economy or habitat.

We have a similar issue in Maryland, I know others face



this in other places around the Country, where one dimension may be measured in terms of economic benefit, but not others. So for example, commercial benefits are measured, as they should, right? So the Port of Baltimore has that.

But there are also really important economic benefits from the recreational boating industry, for example. In Maryland, it is \$3.5 billion. We have an example in Anne Arundel County, Maryland, called the Rockhold Creek Channel, which is important for some commercial activity but also mainly for recreational boating, which supports that community and the livelihood of the community.

Can you talk a little bit about how we should reexamine, how we establish the cost-benefit ratio, especially on the benefit side?

Mr. Brockbank. Thank you. Yes, the title of this hearing is Improving Economic Competitiveness, and I think the core of what you are getting at, and what my testimony addresses, is the fact that we need to be getting more bang for the buck out of every dollar spent with the Corps. So if you are investing a dollar in flood risk management, you should be getting some flood risk management benefit, but you should also be getting economic development benefit, you should also be getting recreation benefit.

The social cohesion, the ability for a community to stay in

place and health benefits provided by the recreational opportunities, all those are tangible values. Some of them are hard to quantify in economic terms, but they are actual values that are critical to a coast.

So changing that benefit cost ratio, which is a sort of blunt tool that the Corps uses to determine how projects get selected on the flood risk side, I think there need to be changes to that to either fully calculate all the economic values, and that is going to be challenging, because you are talking about putting an economic value on habitat, or putting an economic value on social cohesion, or putting an economic value on community health. Or you need to supplement that BCR with ways to incorporate value provided by the environment or habitat.

So yes, your point is well taken, and I think that that BCR is too blunt a tool for a 21st century agency to be developing projects by.

Senator Van Hollen. Mr. Chairman, we put some language in the last WRDA authorization to try to provide a little more transparency in this process to allow the proponents of a project to make their case. But I think we need to go farther, both in transparency, but also reexamine this cost-benefit ratio.

Now, I agree that some of those dimensions you mentioned

are hard to measure. But I can tell you what is not. It is not so hard to mention the economic benefit of the boating industry. There are clear figures on that. That is different than trying to measure the overall social impact and community well-being, which I think should be taken into account.

But there are some projects that are being denied, even though, if you look at their commercial benefit plus their recreational benefit, it is larger than a narrow view of a commercial benefit in another project. So it seems to me that when we are talking about taxpayer dollars and prioritizing those dollars, we should be investing them in a way that has the greatest economic benefit to the communities we are talking about. That is an important responsibility we have as stewards of taxpayer dollars.

So I would appreciate any specific suggestions going forward with respect to supplemental testimony or ideas any of you may have for the committee.

Senator Barrasso. Thank you, Senator Van Hollen. Senator Gillibrand.

Senator Gillibrand. Thank you, Mr. Chairman.

I just want to continue where my colleague left off. I went to the field hearing in Iowa to talk about the horrible flooding in Glenwood, Iowa, and other communities. It was a perfect example of how the ratio is not working. Because it is

a small populated rural area. But the farms were devastated. So we are not actually fully accounting for the value to the community and to the cost and how important agriculture is in this Country.

Similarly, in upstate New York, we have lots of small harbors, like in Oswego, that desperately need dredging for commercial benefit, but also for recreational benefit. We have Lake Ontario flooding, where these communities are being devastated because it is rural. The formula is not working.

So, Mr. Chairman, I would really love this committee to formally ask for a deep dive review of that formula and examples of projects that are being left behind because they are not being adequately valued. It is really disproportionately impacting lower population rural communities, like upstate New York, and like these farms in Iowa.

Mr. Sanders, how should the OMB benefit-to-cost ratio be changed to facilitate funding for more authorized projects, particularly low-income and rural communities?

Mr. Sanders. Well, certainly we all need to be singing from the same sheet of music, to your point.

Senator Gillibrand. Yes.

Mr. Sanders. I mean, it is kind of ridiculous for desperately needed projects to be gotten out there to build and you have the Chief's report looking at it from a one-to-one

basis, then you have OMB looking at it too, and it is not taking into account, some of the things we have talked about today, which I agree with. I know that is difficult sometimes.

But to your point, I think that is a wise move to look at that. But I think at the end of the day, everybody needs to be singing from the same sheet of music and stopping the delays.

Senator Gillibrand. Thank you. Mr. Brockbank, could you elaborate more on the benefits that are currently not being adequately considered by the Corps and OMB when they are conducting their benefit-to-cost analysis?

Mr. Brockbank. Sure. For flood risk management projects, beach projects, whether it is the Hamptons or Rehoboth or Santa Monica, are assessed based on their flood risk value, and then at maximum 50 percent and no more than the equivalent of what the flood risk value is from the national economics.

So if a beach provides \$100 million of flood protection and it provides \$200 million of recreation, they are only going to count \$100 million of that recreation, which has multiple impacts. One, it means those projects are not going to get competitively funded over other projects that are really single use, that only have flood risk value.

It also means there is no incentive to try to maximize the economic value. So if you could try to advance, you do a project that has even more economic value, there is no effort to

design that. So you don't have those national economic benefits. Regional economic benefits aren't included at all. So if it is sort of helping --

Senator Gillibrand. That was an Iowa example. It was really, it is crippling these communities. Because to rebuild those farms is so expensive. If they can't produce, whether they are producing corn or ethanol or wheat or soybeans, it gets devastating to our overall economy.

Mr. Brockbank. And then of course, the ecological benefits have no value. Rockaway Beach, sea turtles nesting for the first time ever this year, no value added.

Senator Gillibrand. No value. So I would like a formal writing how we should fix this, and we will work on our next legislation to do that on a bipartisan basis.

My second issue, for Mr. Brockbank, I want to talk about our shorelines, because ensuring that we have healthy shorelines is really important to States like New York for tourism, recreation, economic development. And as we see increased risks because of sea level rise, and extreme weather events, we are seeing high and more damaging storm surges. It is a matter of life and death. It is a question whether our coastal communities will continue to exist as we know them.

So I would like to highlight the report that you submitted with your written testimony describing the damage prevented by

the Army Corps projects that were in place when Superstorm Sandy hit the northeast. In the Army Corps New York District, coastal protections prevented an estimate of \$1.3 billion in damage.

Can you speak a little more about the effect that having adequate shoreline protection can have on mitigating impacts of storm surge and flooding during major events like Superstorm Sandy?

Mr. Brockbank. Yes. Every time you see a dune that gets eroded by a coastal storm, that is a house that is still standing. Dunes erode and houses stand. Beaches get washed away and roads survived. It is much easier and much less devastating for communities to restore and rebuild their beaches and their dunes than restore and rebuild people's lives.

Senator Gillibrand. And what are out biggest barriers to implement the most effective strategies to achieve maximum shoreline protection?

Mr. Brockbank. Largely, it is funding. We wait until after a storm to fund flood risk management on the coast than we have been doing it ahead of time. Invest up front, you save money than investing afterwards.

Senator Gillibrand. Thank you, Mr. Chairman and Mr. Ranking Member.

Senator Barrasso. Thank you, Senator Gillibrand.

Senator Carper.

Senator Carper. I want to say thank you. We really appreciate your taking the time to come here. For me, your comments were very helpful and very cogent. There is actually a lot of agreement among the three of you which was really helpful, very helpful.

Fortunately, my wife is from Boone, North Carolina, so I understood most of the words you were saying, Mr. Sanders.

[Laughter.]

Senator Carper. When she goes back down there, she talks just like you.

Let me ask another question about what you just mentioned. I think it is important, and you raised the point that there seems to be a big problem with OMB to get projects moving. Mr. Chairman, you may want to ask OMB to join the Army Corps of Engineers in testifying. I would ask that you think about that.

Again, thank you all very, very much.

Mr. O'Toole. Mr. Chairman?

Senator Barrasso. Yes.

Mr. O'Toole. If I may make one last comment, we have been talking about the Corps, and having spent 14 years getting permits for a small water project in Wyoming, the part of the Corps in the permitting part is really critical to understand. They can hold up a project for, we are at a time when we are looking at follow-through and getting projects done immediately,



when needed. Even in State-funded projects, the Corps' ability to hold up the process is really important to understand. Thank you.

Senator Barrasso. Thank you. I thank all of you for being here. Members may actually submit some written questions, some members had to head in and out. So the hearing record is going to stay open for two weeks. I want to thank all of you for being here. Thank you for your time, thank you for your testimony.

The hearing is adjourned.

[Whereupon, at 11:28 a.m., the hearing was concluded.]