# RESPONSE AND RECOVERY TO ENVIRONMENTAL CONCERNS FROM THE 2017 HURRICANE SEASON

## HEARING

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENT

OF THE

## COMMITTEE ON ENERGY AND COMMERCE

## HOUSE OF REPRESENTATIVES

ONE HUNDRED FIFTEENTH CONGRESS

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# C O N T E N T S



[1] Mr. Lopez, Mr. Glenn, and Mr. Coleman jointly answered submitted questions.

# RESPONSE AND RECOVERY TO ENVIRONMENTAL CONCERNS FROM THE 2017 HURRICANE SEASON

**TUESDAY, NOVEMBER 14, 2017**

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENVIRONMENT,
COMMITTEE ON ENERGY AND COMMERCE,
*Washington, DC.*

The subcommittee met, pursuant to call, at 10:00 a.m., in Room 2123, Rayburn House Office Building, Hon. John Shimkus (chairman of the subcommittee) presiding.

Members present: Representatives Shimkus, McKinley, Barton, Blackburn, Olson, Johnson, Flores, Hudson, Walberg, Carter, Walden (ex officio), Tonko, Ruiz, Peters, Green, DeGette, Dingell, Matsui, and Pallone (ex officio).

Staff present: Ray Baum, Staff Director; Mike Bloomquist, Deputy Staff Director; Allie Bury, Legislative Clerk, Energy and Environment; Karen Christian, General Counsel; Jerry Couri, Deputy Chief Counsel, Environment; Wyatt Ellertson, Professional Staff Member, Energy and Environment; Adam Fromm, Director of Outreach and Coalitions; Theresa Gambo, Human Resources and Office Administrator; Jordan Haverly, Policy Coordinator, Environment; A.T. Johnston, Senior Policy Advisor, Energy; Mary Martin, Chief Counsel, Energy and Environment; Alex Miller, Video Production Aide and Press Assistant; Tina Richards, Counsel, Environment; Dan Schneider, Press Secretary; Hamlin Wade, Special Advisor for External Affairs; Everett Winnick, Director of Information Technology; Andy Zach, Senior Professional Staff Member, Environment; Jeff Carroll, Minority Staff Director; Jacqueline Cohen, Minority Senior Counsel; Caitlin Haberman, Minority Professional Staff Member; Rick Kessler, Minority Senior Advisor and Staff Director, Energy and Environment; Jon Monger, Minority Counsel; Alexander Ratner, Minority Policy Analyst; Andrew Souvall, Minority Director of Communications, Member Services, and Outreach; Tuley Wright, Minority Energy and Environment Policy Advisor; C.J. Young, Minority Press Secretary; and Catherine Zander, Minority Environment Fellow.

## OPENING STATEMENT OF HON. JOHN SHIMKUS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. SHIMKUS. We will ask staff to close the back door, please, and ask the committee to now come to order, and I will recognize myself for 5 minutes for an opening statement.

I want to thank all our witnesses for joining us today. We are especially grateful for those of you who have traveled significant distances to be with us today to share your stories about the hurricanes that tore through our country this fall and about the impact of those hurricanes on the environment.

We know that many of you are still in the trenches of dealing with the response and recovery efforts, so your willingness to take the time to be here today does not go unnoticed.

This fall, the continental United States and some United States territories in the Caribbean experienced severe weather from five hurricanes, including extensive damage due to landfall from four storms.

Hurricane Harvey impacted Texas and Louisiana; Hurricane Irma hit Florida, Georgia, Puerto Rico, and the U.S. Virgin Islands; Hurricane Maria, again, hit Puerto Rico and the U.S. Virgin Islands; and Tropical Storm Nate impacted Louisiana and Mississippi.

The Energy and Commerce Committee is conducting a series of hearings to look at the response and recovery efforts conducted during this hurricane season so we can figure out what went well and what we could we have done better, what we need to do is going—and what we need to do going forward.

We are also focused on what Congress can do to assist the impacted communities as they work to get back on their feet.

Today we are focused on the environmental impacts of these hurricanes and the response efforts. No two hurricanes are alike, and a storm's individual characteristics, like the speed, intensity, and amount of precipitation, play a large role in the extent of the storm's impact on natural resources and the environment.

For example, as we will hear from several of our witnesses, Hurricane Harvey may have significantly impacted several Superfund sites in Houston because of the record rainfall and flooding.

Likewise, in Puerto Rico, Hurricanes Irma and Maria uncovered the intensified issues associated with aging and inefficient energy infrastructure, contaminated sites that are rapidly multiplying, landfills that are already overflowing, and possibly the most contaminated drinking water supply in the United States.

Residents across the island are still without power and reliable source of—and a reliable source of drinking water. Many are drinking potentially contaminated water because water purification systems have largely failed in the wake of the storm, and in the municipality of Dorado citizens resorted to drinking well water from Superfund sites.

Today, we will look at the response efforts by the Environmental Protection Agency and the States for the impacted communities. We will consider environmental issues in the hurricane-impacted communities such as the availability of clean drinking water, the potential for air releases, the impact on Superfund sites and solid and hazardous waste disposal facilities, and risk management and emergency response plans.

We hope to hear from the affected EPA regional administrators about their efforts, what they accomplished, what remains to be done, and what can be done better in the future and how Congress can assist.

We will also hear from several private sector witnesses from academia as well as people who are serving in the boots-on-the ground roles in Texas and Puerto Rico, and people who can weigh in on what needs to be done regarding the drinking water systems in the affected communities.

Again, I thank all our witnesses for being here. I hope the discussions will start today about the response and recovery efforts, the National Response Framework, and about whether statutory or other changes need to be made.

We will adjust the beginning as we continue to oversee and assist the Federal and State governments as they carry out the response and recovery efforts for the communities impacted by the hurricanes.

[The prepared statement of Mr. Shimkus follows:]

## PREPARED STATEMENT OF HON. JOHN SHIMKUS

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the beginning as we continue to oversee and assist the Federal and State governments as they carry on the response and recovery efforts for the communities impacted by the hurricanes.

Mr. SHIMKUS. And before I yield back my time, I am going to yield 30 seconds to Marsha Blackburn.

Mrs. BLACKBURN. Thank you, Mr. Chairman.

I want to welcome our witnesses. So pleased that everyone is here. There are so many different aspects to preventing, planning for, responding to the natural disasters, as the chairman has said, and these events are taking a toll on our communities, also on our Nation.

And so much is involved in it—today, the environmental aspects, but also looking at the health aspects, and we know that they all have to work hand in hand.

I have got a piece of legislation, H.R. 1876, the Good Samaritan Health Professionals Act, that deals with that one component of making certain that people are cared for appropriately.

But we thank you for being here. We want to do what is right, we want to be helpful to the process, and we want to make certain that citizens are cared for in these situations.

And I yield back.

Mr. SHIMKUS. Gentlelady yields back her time to me, and before I turn to the ranking member I also want to mention that we will have sitting in with us Jenniffer Gonzalez, who is the resident commissioner of Puerto Rico. She's going to be sitting at the dais, but per committee rule she can't ask questions, she can't make an opening statement. But when she comes, I will make sure I recognize her.

With that, I yield back my time and yield 5 minutes to the ranking member, Mr. Tonko, for 5 minutes.

## OPENING STATEMENT OF HON. PAUL TONKO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. TONKO. Thank you, Mr. Chair.

It is important that we are holding this hearing and I thank you for doing that.

I was sad to hear the news that our friend, the former ranking member of this subcommittee and the current ranking member of our Health Subcommittee, Gene Green, will be retiring at the end of the 115th Congress.

I know Gene was here a few moments ago. But I want to thank him for his friendship and know that he will—and I certainly know that he will be fighting for disaster assistance for Houstonians for the next 13 months. So we wish him well.

And I thank all of our witnesses for being here. It is great to have EPA witnesses join us on this very important topic. I hope Administrator Pruitt will appear before the subcommittee at some point in the near future as well.

I want to especially take this opportunity to welcome Administrator Peter Lopez. Mr. Lopez and I have worked together for many years. His former Assembly district overlapped a portion of New York's 20th Congressional District.

Our constituents were hit hard by Hurricane Irene and Tropical Storm Lee, and we well know that disasters don't discriminate.

Peter, you are an outstanding public servant, and I wish you well in your new role and it is great to have you at the witness table today.

Mother Nature does not discriminate. She doesn't care if you are a Republican or a Democrat, and our Government must be ready to respond to help everyone get back on their feet.

So I hope you can take the lessons learned over the years both in the response and recovery efforts and apply them to assist our fellow Americans in need now.

We know the recovery effort will be long. But, sadly, in Puerto Rico and the United States Virgin Islands the response effort is still underway.

Far too many Americans continue to live without electricity or safe drinking water and that is simply unacceptable.

On today's panels we will hear about the work done in the aftermath of Hurricanes Harvey, Irma, and Maria, to address environmental concerns.

EPA plays an important role in disaster response by assessing and restoring water systems and Superfund sites, responding to chemical and oil spills, and monitoring air quality.

I know there will be a wide variety of issues addressed today including Superfund, chemical safety, air emissions, and debris management.

I am particularly concerned about water systems, which we know are often aging and in disrepair, even without the stress of a disaster.

There are legitimate questions as to whether State revolving fund loans are the most appropriate vehicle to get communities back on their feet following such devastation.

In Texas and in Florida, flood waters were contaminated with bacteria and toxins. Water included high concentrations of E. coli as well as elevated levels of lead, arsenic, and other heavy metals.

In Puerto Rico, we have heard stories of people drinking from and bathing in contaminated rivers. There have been a number of reported cases of leptospirosis.

The media even reported people using a well located—a well located on Superfund site, which only after the fact was determined to meet Federal drinking water standards.

These examples show the direness of the circumstances that Americans faced following these disasters—no power, no clean water, and driven to acts of desperation.

These hurricanes should serve as a reminder that EPA is one of our Nation's most essential public health agencies. EPA has important work to do as recovery for these disasters begins.

But the drastic proposed reduction to EPA's budget, personnel, and environmental safeguards will make it harder to fulfil its mission including supporting disaster response and disaster recovery.

Preserving a strong EPA is critical to the health of Americans. These storms have made that clear. A robust EPA will make communities more resilient.

For example, today we will hear about the risks posed to Superfund sites by disasters and the work EPA has done to assess these sites both before and after storms.

But the best and perhaps only way to mitigate the risks to these sites is through actual remediation. Reducing funding to the Superfund program will not make cleanups happen any quicker and will not make sites less vulnerable to storms.

I would also be remiss if I did not mention climate change and the role EPA should be playing in addressing that threat. If we continue to ignore climate change, increasingly severe disasters will become the new normal and we can expect many more hearings like this one in the future.

I hope we can work together to ensure EPA has the resources necessary to support disaster response efforts and make our communities more resilient to disasters before they occur.

I look forward to hearing from the witnesses today and yield back and, again, thank you, Mr. Chairman.

Mr. SHIMKUS. Gentleman yields back the time.

The Chair now recognizes the chairman of the full committee, Mr. Walden, for 5 minutes.

**OPENING STATEMENT OF HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON**

Mr. WALDEN. I thank the gentleman.

Today marks the third hearing our committee has held to examine the response and recovery efforts for the hurricanes that ravaged our communities along the Gulf Coast and our island territories in the Caribbean.

And I would note for the committee in response to our concern about the situations especially in the island territories we will be having a congressional delegation—a pretty high level limited seating capacity trip—to Puerto Rico and the Virgin Islands coming up most likely early next month to have—get a firsthand look at the situation. You will get more information as we go along.

Hurricane response and recovery deals with human tragedy. These storms didn't just damage property and displace residents. They delayed dreams and fundamentally altered the lives and fortunes of millions of Americans in ways big and small.

While we cannot undo the damage of these storms we can work to ensure the Federal Government is diligently doing its job to aid recovery and not making it harder to get that job done.

Public health risks typically associated with natural disasters including drinking water contamination and the leeching of hazardous waste are varied and include heightened risk of infectious disease, as you all know.

These risks can be particularly dangerous for vulnerable populations such as individuals with immuno suppressed and the elderly and infants, clearly.

Our job this morning is to better understand who in the context of environmental concerns that bear on public policy is engaging in the tough work to help speed recovery, what they are doing or not doing to make hurricane victims lives better and the challenges they face, when will something resembling normalcy return and where are the resources coming from to make recovery a reality and what private efforts can be leveraged. So it is all the who, what, when, where, and why and how.

We also need to determine whether the Federal presence is helping or hurting that recovery and, if so, how do we—how do we change things that need to be changed.

Some of the areas we hope to cover today will have to go unaddressed for now. We had hoped to have a Puerto Rico solid waste official testify via video conference about the situation on the ground there.

Last week, she confirmed she would testify but then, unfortunately, power went down on the island and our ability to communicate with her was lost.

We also hoped to hear from the Federal Emergency Management Agency about its work leading response efforts and improving funding for recovery activities. But they were unable to find someone who could testify. Pretty remarkable.

We will continue working with FEMA to ensure these questions are answered so we can feel confident in both statutory authority and administrative practice, support rational decision making, and promote the needs on the ground.

That said, I want to welcome our witnesses today. Thank you for being here. Some of you have come great distances but each of you has important lessons for our committee to learn and we appreciate your participation.

I am confident that in the midst of all this bad news you will provide us some stories of dedication, innovation, gumption, acts of personal sacrifice, kindness, and courage.

These should inspire us to be equally fearless and committed in our work ahead. And in this committee and its broad jurisdiction we do roll up our sleeves and search for solutions to the various challenges that present themselves after a major disaster and we want to make sure the agencies under our jurisdiction are well prepared, responding appropriately, and that lives are improving as a result.

If not, we want to know about it so that we can fix it. I expect that this will be an excellent hearing for us to identify vulnerabilities and assess what is needed to better prepare and respond to this and future storms and disasters.

So thank you for being here. We look forward to working with you. I know the former chairman of the committee, the vice chairman, has a special announcement he'd like to make now about some of our folks in the audience who are with us today.

[The prepared statement of Mr. Walden follows:]

## PREPARED STATEMENT OF HON. GREG WALDEN

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Hurricane response and recovery deals with human tragedy. These storms didn't just damage property and displace residents, they delayed dreams and fundamentally altered the lives and fortunes of millions of Americans in ways both big and small. While we cannot undo the damage of these storms, we can work to ensure that the Federal Government is diligently working to aid recovery and not making it harder to get the job done.

Public health risks typically associated with natural disasters, including drinking water contamination and the leaching of hazardous waste, are varied and include heightened risk of infectious disease. These risks can be particularly dangerous for

vulnerable populations such as infants, individuals who may be immunosuppressed, and the elderly.

Our job this morning is to better understand who, in the context of environmental concerns that bear on public health, is engaging in the tough work to help speed recovery, what they are doing or not doing to make hurricane victims' lives better and the challenges they face, when will something resembling "normalcy" return, and where are the resources coming from to make recovery a reality and what private efforts can be leveraged. We also need to determine whether the Federal presence is helping or hurting recovery and, if so, get input on how it needs to change.

Some of the areas we hoped to cover today will have to go unaddressed for now. We had hoped to have a Puerto Rico solid waste official testify via video conference about the situation on the ground there. Last week, she confirmed she would testify, but then power went down on the island and our ability to communicate with her was lost.

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In this committee and its broad jurisdiction, we roll up our sleeves and search for solutions to the various challenges that present themselves after a major disaster. We want to make sure that the agencies under our jurisdiction are well prepared, responding appropriately, and lives are improving. If not, we want to know about it so we can fix it. I expect that this will be an excellent hearing for us to identify vulnerabilities and assess what is needed to better prepare and respond to this and future storms and disasters.

Mr. WALDEN. So with that, Mr. Chairman, I would yield to the gentleman from Texas the remainder of my time, Mr. Barton.

Mr. BARTON. Well, I thank you, Chairman Walden. Thank you, Chairman Shimkus and Mr. Tonko, for holding this hearing.

I had the privilege way back when—have been a White House fellow under President Reagan back in 1981 and part of 1982 and today I have the current class of White House fellows on their visit to the Hill.

They are in the back lefthand corner. They are 14 of the best and brightest young Americans. They work for Cabinet secretaries or agency heads. They are full of vim and vinegar, and I told them they are in the best committee in the House. So we want to welcome our White House fellows and wish them the very best in the years ahead.

[Applause.]

I also want to welcome our two Texas witnesses, Dr. Shaw and Mr. Sam Coleman. Mr. Coleman is the acting regional administrator, Region 6, at EPA in Dallas, and Dr. Brian Shaw is head of the TCEQ down in Austin, Texas. They are both good men and good friends of mine. We welcome them to the committee.

With that, I yield back, Mr. Chairman.

Mr. SHIMKUS. Gentleman yields back his time.

The Chair now recognizes the ranking member of the full committee, Mr. Pallone.

**OPENING STATEMENT OF HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY**

Mr. PALLONE. Thank you, Mr. Chairman.

Environmental impacts from this season's hurricanes have wreaked havoc and continue to threaten public health in serious and unacceptable ways.

The Federal Government's response to these hurricanes has been disorganized and in the instance of both Puerto Rico and the Virgin Islands it has been too little and too late and we must step up our efforts.

Two weeks ago, the Subcommittee on Energy held a hearing focused on energy infrastructure recovery efforts, which is a central and ongoing concern, and last week we saw a major setback in the recovery of the electric grid in Puerto Rico when a repair transmission line failed.

And today, more than two months after Hurricane Maria, more than half of the island is still without power and that is adversely affecting everything from health care to access to safe drinking water.

This lack of electricity puts lives at risk and must be addressed. Unfortunately, at this point, it does not appear that any agency within the Federal Government is standing up and taking full control of this effort.

The Army Corps and FEMA say the other is in charge and that is unacceptable. Someone needs to take the lead now.

This is also far from the only challenge facing communities in Texas, Florida, Puerto Rico, and the Virgin Islands.

First and foremost is the lack of safe drinking water. This has been a problem in all of the areas affected by these hurricanes and it continues to threaten lives.

The severity of these issues show the weaknesses in our drinking water infrastructure and how important it is for our drinking water systems to be more resilient to extreme weather and climate change.

Drinking water infrastructure has been a priority for this subcommittee this year and an issue that we have worked on together, and several of the provisions included in the committee's bipartisan drinking water bill could have helped water systems prepare for these storms.

But I think we are learning that we need to do even more and that we need to provide more resources to these affected areas, and I hope that we can continue to work together in a bipartisan manner to address the concerns we hear about today.

Superfund sites also pose serious risks when natural disasters strike. Several of these dangerous sites were damaged during this hurricane season and we are still struggling to understand the health impacts of that damage.

An extreme—as extreme weather events become more frequent, it is even more important that we clean up Superfund sites quickly and thoroughly.

With greater funding for Superfund cleanups we might have avoided some of the damage we have seen and, again, I hope my

Republican colleagues will join me in working to address this issue as well.

And these hurricanes have also led to significant air pollution with real public health impacts. In Texas, we saw an accidental release of benzene at the Valero refinery and a dangerous series of chemical fires at the Arkema plant.

In Puerto Rico and the Virgin Islands, we continue to see dangerously high air emissions from diesel generators which could worsen dramatically as debris management efforts being in earnest.

And if we can't get the power turned back on soon, if we can't get safe drinking water out to our citizens, more Americans are going to die. This is a humanitarian crisis and we must do everything we can to fix it.

As Congress prepares the next emergency spending bill, we need to consider all these environmental concerns and do what is necessary to protect human health and the public welfare.

We can and should be doing more to increase access to safe drinking water, to secure and remediate Superfund sites, and to limit air pollution.

So I just want to thank the witnesses who traveled here today from Texas, Puerto Rico, from the Virgin Islands, and from Georgia, and, Mr. Chairman, I look forward to hearing from you. I don't know if any of our Democratic members want the time.

If not, I will yield back.

[The prepared statement of Mr. Pallone follows:]

PREPARED STATEMENT OF HON. FRANK PALLONE, JR.

Thank you, Mr. Chairman. Environmental impacts from this season's hurricanes have wreaked havoc and continue to threaten public health in serious and unacceptable ways. The Federal Government's response to these hurricanes has been disorganized and in the instance of both Puerto Rico and the Virgin Islands, it has been, too little, too late. We must step up our efforts.

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These hurricanes have also led to significant air pollution with real public health impacts. In Texas, we saw an accidental release of benzene at the Valero refinery and a dangerous series of chemical fires at the Arkema plant. In Puerto Rico and the Virgin Islands, we continue to see dangerously high air emissions from diesel generators, which could worsen dramatically as debris management efforts begin in earnest.

If we can't get the power turned back on soon, if we can't get safe drinking water out to our citizens, more Americans are going to die. This is a humanitarian crisis and we must do everything we can to fix it.

As Congress prepares the next emergency spending bill, we need to consider all of these environmental concerns and do what is necessary to protect human health and the public welfare. We can and should be doing more to increase access to safe drinking water, to secure and remediate Superfund sites, and to limit air pollution.

I want to thank the witnesses who have traveled here today from Texas, from Puerto Rico, from the Virgin Islands, and from Georgia. I look forward to hearing from you.

Mr. SHIMKUS. Gentleman yields back his time.

We want to thank all our witnesses for being here today and taking the time to testify before the subcommittee.

Today's witnesses will have an opportunity to give an opening statement followed by a round of questions from the Members. Of course, your full statements are going to be submitted for the record.

Our first witness panel for today's hearing will include Mr. Peter Lopez, regional administrator, Region 2, Environmental Protection Agency; Mr. Trey Glenn, regional administrator, Region 4, of the Environmental Protection Agency; Mr. Sam Coleman, acting regional administrator, Region 6, Environmental Protection Agency; and Dr. Brian Shaw, chairman of the Texas Department of Environmental Quality.

And with that, we will turn first to Mr. Lopez. You have 5 minutes, sir.

Welcome.

## STATEMENTS OF PETER D. LOPEZ, REGIONAL ADMINISTRATOR, REGION 2, ENVIRONMENTAL PROTECTION AGENCY; TREY GLENN, REGIONAL ADMINISTRATOR, REGION 4, ENVIRONMENTAL PROTECTION AGENCY; SAMUEL J. COLEMAN, ACTING REGIONAL ADMINISTRATOR, REGION 6, ENVIRONMENTAL PROTECTION AGENCY; AND BRYAN W. SHAW, PH.D., CHAIRMAN, TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

### STATEMENT OF PETER D. LOPEZ

Mr. LOPEZ. Thank you, Chairman Shimkus and Chairman Walden, Ranking Members Tonko and Pallone, and fellow Energy and Commerce Committee members.

I am Pete Lopez. I am the regional administrator for Region 2, which includes all of New York, New Jersey, the Virgin Islands, and eight federally recognized Indian Nations.

It is a privilege to join you today for this important conversation, and my testimony today, please understand, is a snapshot of what's happening as a result of Hurricanes Irma and Maria.

Please understand that we are very much in an emergency response mode and that the testimony we offer today is subject to change on a daily basis. So we are doing our best here.

Just to preface, in my years as a member of the State legislature, I was intensely involved in a response very similar to what's happened in the Caribbean.

So in upstate New York in 2011, we were ravaged by Hurricane Irene and Tropical Storm Lee. Mr. Tonko and I were partners there working on this issue.

In this instance, my parents were homeless. My family was homeless. We had eight feet of water in my village. A similar situation with infrastructure, communications, power grids. The socioeconomic conditions very much the same.

If you understand New York geography, northern Appalachia, what we found—and this is a critical issue for the committee and for the administration—is that the more disadvantaged the community, the more painful and slow the recovery.

So I can't understate that message, and I just wanted to bring it to the committee's conscious thought.

Recently, I had a chance to travel to Puerto Rico, and it was with my colleague, Deputy McCabe, who is with me today, and I was struck by the incredible destruction, and I have to tell you that the sights, the sounds, the smells were all too familiar.

And as with Irene and Lee, I also have family on the islands in the Arecibo and Camuy area. The Lopez family and Corderos are there, as well, and we are very concerned about their safety.

The focus of the trip was not just to be on the ground but to connect. We met with leaders. We met with leaders of the territories and the Commonwealth, local officials, and our main goal was to connect with them, to identify problems and issues and really help them problem solve.

So we are very committed, and I have to say the experience was both sobering but also galvanizing. I found that my colleagues on the ground are very passionate about the work they are doing and treat individuals as subjects, not objects. We are concerned about individual families, communities, and the integrity of the entire population.

As was noted by some of the introductory remarks, a major challenge remains with the power grid, and here, as you can imagine, virtually everything relies on electricity.

So whether it is pollution controls at Superfund sites, drinking water and wastewater system operation, all of those things are challenged.

Our response has been working with FEMA and Army Corps to place strategically placed generators at key locations. The challenge, of course, is that it provides an alternate power source, but reliability in the long term is at risk here.

So they require fuel, and even the generators themselves are subject to mechanical failure. So, as we try to run around the island, we are challenged with the electricity issue.

I just want to say in their defense—for both FEMA and Army Corps—their job is unprecedented, and I don't want to draw too much of a parallel to Europe after World War II, where we talk

about the Marshall Plan and off script a little, but the challenges on the island are unique.

So, in defense of our colleagues with FEMA and Army Corps, their job is extraordinary.

EPA has about 325 employees and contractors on the ground in Puerto Rico and in the Virgin Islands. We hope to have that number increased to about 400 in December.

In your testimony, you'll see greater detail on the status of drinking water facilities, hazardous waste facilities, wastewater treatment, Superfund sites, hazardous debris, comingled debris, and sunken vessels. You'll see all that in front of you in your testimony.

Just as a quick note, we've made great progress. We still face a number of challenges. Outside of the power, we have been dealing with waste—medical waste that has been building up due to logistical limitations.

Many roads are still impassable and, as you know, weather conditions have further compromised with mudslides and flooding. That includes area flooding, chronic flooding, as well as destruction to other property.

So accessibility on the island is an ongoing challenge. Humanitarian aid: We have stepped out of our comfort zone, and where we are the first responders, we are bringing additional humanitarian aid with our staff as we go into the mountainous terrain.

So looking to the future, quickly, we know there are unique challenges. The issue of backup power: We heard reference to what do we do for the future. Having backup power and supplies on the island is critical.

Positioning those supplies in key areas, particularly with storms advancing, would be very helpful. And, again, we know there are opportunities for improvement always, but we welcome the committee's engagement and thank you for this opportunity to be here with you.

Thank you so much, Chairman.

[The prepared statement of Mr. Lopez follows:]

**Testimony of**
**Peter D. Lopez, Regional Administrator**
**U.S. Environmental Protection Agency, Region 2**
**Before the**
**U.S. House of Representatives**
**Committee on Energy and Commerce, Subcommittee on Environment**

**November 14, 2017**

Good morning Mr. Chairman, Ranking Member and fellow Energy and Commerce Committee members, I am Pete Lopez, Regional Administrator for EPA's Region 2, which covers New Jersey, New York, Puerto Rico, the U.S. Virgin Islands and eight federally-recognized Indian Nations. Thank you for the privilege of joining you today for this important conversation. My testimony today is a snapshot of EPA Region 2's response phase to hurricanes Irma and Maria.

**EXPERIENCE WITH IRENE AND LEE:**

In my years of experience as a New York State Legislator, I was intensely involved in a response to a very similar situation to Irma and Maria. In 2011, upstate NY was hit by Hurricane Irene and Tropical Storm Lee. Here, my parents and family members were left homeless and 6 out of 7 of my counties were placed in states of emergency. My region faced similar devastation and had similar geographical features and similar socioeconomic conditions. Throughout my experience with Irene and Lee, I developed an understanding of how complicated it can be for areas to recover, and I learned that the more disadvantaged the community, the slower and more painful the recovery.

**IRMA, MARIA AND THE CARIBBEAN:**

Let me turn to EPA's effort in Puerto Rico and the U.S. Virgin Islands. I traveled to Puerto Rico and the U.S. Virgin Islands the week of October 16. I was, of course, struck by the incredible destruction in the wake of the hurricanes, but I was also immensely impressed with the resilience of the people. The focus of my trip was not to simply observe EPA's work, but also to strengthen relationships with Commonwealth, Territory and local officials and find solutions to pressing local problems. The experience was both sobering and galvanizing. I saw the incredible needs, and witnessed the urgency with which EPA and our other partners are working to meet these challenges.

A major challenge in the response and recovery efforts for Puerto Rico and the U.S. Virgin Islands communities, as well as for the responding agencies, remains the lack of electricity. Virtually everything relies on electricity, including drinking water and wastewater systems, pollution controls and treatment systems at Superfund sites. Generators have provided an alternative power source, but are not a reliable long term solution, as they require fuel and experience mechanical failures. The U.S. Army Corps of Engineers, FEMA and the Commonwealth and Territory governments are working hard to tackle the electricity issue, and I applaud their efforts amid the extraordinary complications presented by the island setting and the age and condition of the power plants electrical grids. I encourage the continued support of these agencies as they make progress in this very difficult arena so that EPA and our partners can better assist communities in their recovery efforts.

EPA Region 2 has about 325 employees and contractors involved in the response, with about 230 on the ground in Puerto Rico and the U.S. Virgin Islands. The following is the status

report as of November 11, 2017, resulting from our work with the governments of Puerto Rico and the U.S. Virgin Islands, as well as with our many federal partners:

- In Puerto Rico, 20 of 115 drinking water plants are out of service;
- EPA has helped assess all 237 independent smaller rural community drinking water systems not operated by PRASA. Where systems need repair, the EPA is working with FEMA, the U.S. Army Corps of Engineers and local NGOs to help get the needed repairs, and in some cases to install solar power to these systems;
- In the U.S. Virgin Islands, EPA has taken well over 1000 drinking water samples. This information is being used to determine where disinfection of systems is needed. EPA is offering assistance to VI officials to support follow up visits to those sites that have been impacted;
- We have completed about 340 assessments of facilities covered by hazardous waste, risk management, and spill prevention regulations. Of these assessments, 253 are in Puerto Rico and 86 in the U.S. Virgin Islands. While there was damage at some of these facilities, there were no major releases or spills reported;
- EPA has conducted about 266 wastewater treatment assessments, including plants, pump stations and trunk lines. Of these, 233 were in Puerto Rico and 33 in the U.S. Virgin Islands;
- In Puerto Rico, 4 of the 51 wastewater treatment plants operated by PRASA are out of service. Of the 800 pump stations in Puerto Rico, about 106 are overflowing sewage due to lack of power, malfunctioning generators or damage;

- Many of the USVI wastewater plants on St. Thomas, St. Croix and St. John are operating, though some plants and pump stations are damaged or blocked by storm debris;
- EPA has assessed all 36Superfund and oil sites and has not found major spills or releases, though some sites do have damage;
- EPA is working with local jurisdictions and the U.S. Army Corps of Engineers to collect hazardous debris – household hazardous waste, white goods (i.e., heavy consumer durables such as for example, air conditioners, refrigerators, and stoves), electronics, as well as orphaned containers found in some communities. EPA has already collected more than 7,400 small containers, drums, and tanks in Puerto Rico and U.S. Virgin Islands;
- We are also coordinating with Puerto Rico, the U.S. Virgin Islands and the U.S. Army Corps of Engineers to handle other, often comingled debris. Where vegetative debris is concerned, we are working to support composting efforts and will be providing fine particle monitoring where local and state officials choose to burn woody debris using special devices;
- EPA is working closely with the U.S. Coast Guard as they address the nearly 800 sunken vessels and the resulting debris and small oil spills.

**CHALLENGES:**

We have made great progress, but have much work ahead of us, and face a few serious challenges in addition to the overarching concern of providing electricity across Puerto Rico and the U.S. Virgin Islands:

- Due to the lack of power from the utilities in both Puerto Rico and the U.S. Virgin Islands, there continues to be a need for a large number of generators. To help address this need, the EPA has issued some exceptions from current legal requirements to allow additional generators and fuel supplies to be used in Puerto Rico and U.S. Virgin Islands.

  - In addition of other forms of waste, medical waste had been building up due to logistical limitations with the specialized shipping containers needed to move medical waste from the islands to the mainland for disposal. In the U.S. Virgin Islands, EPA is addressing this potential public health threat and has so far collected approximately six tons of stockpiled medical waste from the Gov. Juan F. Luis Hospital and Medical Center on St. Croix and 29 tons of medical waste from the Schneider Regional Medical Center. We are in discussion with the government of Puerto Rico to offer them the same type of assistance.

- Many roads are still impassable and there are dangerous mud and rock slides in mountainous regions. EPA is providing important information to FEMA where we encounter blocked road, and we are helping make connections to fix problems presented by road and bridge outages. For example, a bridge to a sewage treatment plant in Utuado, Puerto Rico was destroyed, making it impossible to access the plant or fixed the broken trunk line connected to that plant. EPA coordinated with the Puerto Government and FEMA to advance the issue as a priority. PRASA currently has a contractor on site constructing a temporary bridge and installing a temporary trunk sewer.

- There is a need for ongoing humanitarian aid. In some cases, EPA has stepped out of its traditional role, coordinating closely with FEMA to bring water, food and supplies to more remote areas where we are conducting assessments and where our responders have been the first to arrive.

**LOOKING TO THE FUTURE:**

EPA continues to actively and thoughtfully respond to the devastation of Maria and Irma. As required, we will participate in the Federal government's after-action report and include a detailed description of strategies for more effectively responding to future storm events.

One critical lesson learned so far is that there are unique challenges for both emergency response and future hazard mitigation on the Caribbean islands. For example, there were not enough generators available on the islands to provide back-up electrical power needed for essential services such as drinking water, hospitals, labs, and wastewater collection and treatment. In Puerto Rico, this resulted in much of the population losing access to safe drinking water, widespread sewer overflows that contaminated surface waters and posed risks to the health of people who were drinking from or bathing in surface waters i.e., streams, rivers, lakes, and reservoirs.

I am extremely proud of the work that EPA is doing in response to all three hurricanes, but I am also mindful that there are always opportunities for improvement. We look forward to working with Congress and our federal and local partners to explore how our agency can more effectively respond during and following natural disasters. These collaborative efforts will enable all of us to better safeguard the health and safety of the public while protecting our natural resources to the best of our ability. Thank you again for the opportunity to testify today and I

look forward to any questions the committee might have on EPA's important role in emergency response and recovery efforts.

Mr. SHIMKUS. Gentleman's time has expired.

And let me just for the record ask the regional administrators to state where the headquarters is and remind our colleagues what States they represent. We did this in the Energy Sub, and I think that is just helpful to keep that all in perspective.

So with that—so Mr. Lopez, what are the States and, obviously, protectorates that you cover?

Mr. LOPEZ. Yes, Chairman.

So New Jersey, New York, Puerto Rico, Virgin Islands, and eight recognized Indian Nations—Tribes—and we are headquartered in Broadway, New York City—290 Broadway.

Mr. SHIMKUS. So let me now turn to Mr. Glenn, Region 4 administrator.

**STATEMENT OF TREY GLENN**

Mr. GLENN. Good morning. Mr. Chairman and esteemed members of this committee, I am Trey Glenn, regional administrator for EPA Region 4, which comprises eight southeastern States.

That is Alabama, Florida, Georgia, Mississippi, Tennessee, North Carolina, South Carolina, and Kentucky, and we also have six federally recognized Tribes.

Thank you for the opportunity to appear before you today to discuss the impacts of Hurricane Irma and EPA's response and recovery efforts and to continue the productive discussion that we had last month with the subcommittee.

I have been on the job a little over two months now and I can honestly say that I am in awe of the caliber and expertise and dedication of the regional staff.

These environmental professionals work each day to meet EPA's mission of protecting human health and the environment and this commitment was demonstrated consistently throughout the EPA's response to the devastating hurricanes we experienced this past season.

The 2017 hurricane season was indeed unprecedented in the number and intensity of major storms that impacted the United States and the U.S. territories. The damage from these hurricanes is still being assessed. The recovery will continue for the foreseeable future.

EPA Region 4 is fully engaged in a number of response and recovery activities and we are working in close coordination with our Federal, State, local, and Tribal partners as well as businesses and local communities.

The core of our emergency response program in Region 4 consists of 28 on-the-scene coordinators and 57 additional staff within a response support corps.

Prior to landfall of these storms, I personally reached out to the environmental directors of the four States that were in the potential path of this storm to inform them of Region 4's ability to assist if needed.

We also reached out to our Tribal partners that might be impacted by the storm, and Florida was the only State that requested EPA assistance relative to Hurricane Irma.

We deployed our Region 4 on-scene coordinator to provide direct coordination and planning support to the State. We also provided

a liaison to the FEMA regional response coordination center and deployed EPA regional senior leaders to south Florida and myself to Tallahassee.

We worked closely with EPA headquarters to issue fuel waivers and no-action assurances to assist in not only the preparation but also the response activities for these great storms.

We positioned 12 field hazard assessment teams for deployment when and where needed. These teams were deployed at Florida's request to provide oil and hazardous substance response support. We further provided support to the State for orphan container assessment and recovery, vessel pollution response and mitigation, and debris management technical support.

Region 4 also assisted with water and wastewater system technical support. We coordinated with the State to monitor the status of more than 1,600 community drinking water systems and over 2,000 wastewater systems.

Concurrently, Florida also requested assistance in contacting small noncommunity drinking water systems such as schools and restaurants and the water division completed over 1,200 call-down assessments of those facilities.

Our hazardous assessment team performed field assessments at more than 200 chemical and oil storage facilities identified as priorities.

We conducted reconnaissance for pollution incidents and orphan containers and there were no significant storm-related hazardous substance or oil pollution incidents in Region 4.

We also assisted with orphan container and vessel recovery in the Florida Keys and deployed personnel to provide support to the State and assessment of disaster debris management sites.

Our operation in the Florida Keys continues as we speak. We have collected more than 700 orphan containers that are stored in a secure staging area for waste characterization and recycling or disposal.

Our EPA team has recovered oil and hazardous materials for more than 65 sunken or grounded vessels and moved these craft to land-based staging areas where they were transferred to the custody of the Florida Fish & Wildlife Commission.

Prior to landfall, we assessed vulnerabilities at all Superfund sites in Florida. We also deployed six teams to conduct boots-on-the-ground assessments of all national priority list sites and as a further measure we also deployed teams to assess these NPL sites in Alabama, Georgia, and South Carolina, and all we found is that sites experienced very little impact from Hurricane Irma.

Postlandfall, we worked with our State partners to ascertain the status of oil storage facilities required to maintain facility response plans as well as chemical facilities required to maintain risk management plans.

Overall, there were very minimal reports of oil and hazardous substance spills that could be attributed to the storm and only one of the RMP facilities contacted reported a hazardous substance release, the source of which was very quickly mitigated.

Moving forward, we continue to meet mission assignments under the response phase and have initiated recovery with FEMA and other Federal partners under the national disaster recovery frame-

work, and under this framework EPA supports Federal partners primarily on community planning and capacity building, infrastructure systems and recovery and natural and cultural resources.

We are excited to have the opportunity to work with our Federal, State, Tribal, and local partners on this very innovative initiative.

Again, I thank you for the opportunity to be here and share with you what I consider to be a great example of cooperative federalism to assure and restore public safety and recovery from disaster.

I look forward to answering your questions that you have.

[The prepared statement of Mr. Glenn follows:]

**Testimony of**
**Trey Glenn, Regional Administrator**
**U.S. Environmental Protection Agency, Region 4**
**Before the**
**U.S. House of Representatives**
**Committee on Energy and Commerce, Subcommittee on Environment**

**November 14, 2017**

Good morning Mr. Chairman, and esteemed members of the Committee. I am Trey Glenn, Regional Administrator for EPA Region 4, which comprises eight southeastern states (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee) and six federally recognized tribes (Catawba Indian Nation, Eastern Band of Cherokee Indians, Miccosukee Tribe of Indians of Florida, Mississippi Band of Choctaw Indians, Poarch Band of Creek Indians and the Seminole Tribe of Indians).

Thank you for the opportunity to appear before you today to discuss the impacts of Hurricane Irma and EPA's response and recovery efforts, and to continue the productive discussions we had last month with the House Energy and Commerce Subcommittee on Environment.

I have been on the job a little over two months and I can honestly say that I am in awe of the caliber of expertise and dedication of the regional staff. These environmental professionals work each day to meet EPA's mission of protecting human health and the environment, and this commitment was demonstrated consistently throughout EPA's response to the devastating hurricanes we experienced this past season.

The 2017 hurricane season was indeed unprecedented in the number and intensity of major storms that impacted the United States and U.S. Territories. The damage from hurricanes Harvey, Irma and Maria is still being assessed, and the recovery from these storms will continue for the foreseeable future. EPA Region 4 is fully engaged in a number of response and recovery activities and we are working in close coordination with our federal, state, local and tribal partners, as well as the business and local communities.

Responding to emergencies for the prevention, limitation, mitigation or containment of chemical, oil, radiological, biological, and/or hazardous materials or agents during and in the aftermath of an accident, natural or man-made, is a primary mission essential function of the EPA. The core of the Emergency Response program in Region 4 consists of 28 On-Scene Coordinators (OSCs) with support staff who respond to releases of hazardous substances and discharges of oil throughout the eight states of Region 4. Our preparedness and operational capabilities are extended through contracts we have in place for technical assistance and spill response, as well as mutual aid agreements with EPA Regions 3 and 5. Our emergency response program also has reach back ability to all EPA regions and EPA Special Teams, such as the EPA Environmental Response Team and the U.S. Coast Guard National Strike Force.

Region 4 has 57 additional personnel within a Response Support Corp (RSC) which is a body consisting of non-OSC staff trained to deploy to or support disaster response and includes 35 non-OSC staff with Key Leadership Position training under the Incident Command System. Response Support Corp members volunteer to provide this response support in addition to their normal work responsibilities.

Having a robust Superfund program is critical to being prepared and ready to mobilize for any emergency response. In preparation for Hurricanes Harvey and Irma, we worked in a

proactive manner to ensure that we had awareness of potential vulnerabilities and, in particular due to the trajectory of Hurricane Irma, were able to attend to any concerns in Florida prior to the storm's landfall.

In anticipation of Hurricane Harvey, we conducted Incident Management Training for staff the week prior to landfall to ensure that regional Response Support Corps personnel were refreshed in the Incident Command System (ICS). In the immediate aftermath of Hurricane Harvey, Region 4 deployed four Response Support Corps members of the National Incident Management Assistance Team (N-IMAT) to support EPA Region 6 in Texas. The N-IMAT is a standing body of EPA personnel available to respond anywhere in the United States or U.S. Territories to assist regions in establishing an ICS structure to manage incidents that exceed regional capabilities and/or are of national significance.

With our assistance to the Hurricane Harvey response ongoing, and in anticipation that Hurricane Irma would impact the coastal states of the southeast region. I personally reached out to the Environmental Directors of Alabama, Georgia, Florida, North Carolina and South Carolina to inform them of Region 4's ability to assist, if needed. We also reached out to our tribal partners that might be impacted by the storm. Other than Florida, no other Region 4 state or tribe requested EPA assistance relative to Hurricane Irma.

In anticipation of a weekend landfall of Hurricane Irma, we increased staffing in our Regional Emergency Operations Center to provide continuity of operations and coordination across the response activities. At the request of the Florida Department of Environmental Protection (FDEP), we also deployed our Region 4 OSC stationed in Florida to the State Emergency Operations Center (SEOC) in Tallahassee. The purpose of this deployment was to provide direct coordination and planning support to the State under Emergency Support Function

10 (ESF-10), which is Oil and Hazardous Substance Response under the National Response Framework. Prior to Irma's landfall, we also provided a Region 4 liaison to the FEMA Regional Response Coordination Center (RRCC) in Atlanta, Georgia, and deployed EPA regional, senior leaders to Miami-Dade, Palm Beach County, Broward County and Tallahassee to coordinate with local officials on Hurricane Irma preparations and immediate response needs.

As a proactive measure, Region 4 Superfund staff assessed vulnerabilities at all Superfund remedial sites, including National Priority List (NPL) sites, in the state of Florida prior to Irma's landfall. Before and after landfall, we worked closely with EPA Headquarters to issue a combination of 12 fuel waivers across multiple states whose fuel supply was impacted by the hurricanes and no action assurances to help stabilize prices at the pump and ensure that emergency vehicles had access to fuel. The fuel waivers and no action assurances were critical to assure the movement of people and goods, such as food and medical supplies.

On September 10, 2017, Hurricane Irma made landfall, and, on September 11th, while Irma was still moving across northern Florida, we positioned 12 Field Hazard Assessment Teams consisting of EPA OSCs, technical assistance team contractors and FDEP personnel for deployment when needed. In addition, the team included a number of OSCs that were mobilized from the EPA Region 5 office in Chicago to support our efforts. These teams were deployed to Orlando, Florida on September 12th, tasked by the Federal Emergency Management Agency, at Florida's request, under an ESF-10 Mission Assignment to provide oil and hazardous substance response support by first conducting targeted facility assessment support at chemical and oil storage facilities as prioritized by the State of Florida. The Mission Assignment further directed EPA to provide support to the State, for orphan container assessment and recovery, vessel pollution response and mitigation, and debris management technical support.

Region 4 personnel were also deployed to the Florida SEOC to assist the State and the U.S. Army Corp of Engineers with water and wastewater systems technical support at the SEOC and in the field. The region coordinated with FDEP to monitor the status of more than 1,600 Community Drinking Water Systems and over 2,000 wastewater systems in the State. Beginning on September 18th, Regional Water Division personnel began contacting wastewater facilities with an unknown status while FDEP contacted pubic drinking water systems. By September 21st, 934 call-down assessments had been completed and the Water Sector mission completed on September 27th and the team members demobilized from Florida on September 28th. Concurrently, FDEP also made a direct request to EPA's Regional Office in Atlanta for assistance in contacting small non-community drinking water systems, such as schools and restaurants, and the Water Division completed 1,255 call-down assessments during the week of September 25th.

Our Hazard Assessment Teams began field operations in Florida on September 13th, and completed this first phase of their mission on September 16th having performed field assessments at more than 200 chemical and oil storage facilities identified as priorities by the State. On September 15th, the EPA Incident Commander of our Hazard Assessment Group established a command post in St. Petersburg, Florida, and prepared to direct area-wide reconnaissance for pollution incidents and orphan containers in the counties of central and southern Florida. By September 20th, our teams had cleared 134 assessment grids, covering five Florida counties, and identified no significant storm-related hazardous substance or oil pollution incidents.

On September 22nd, we joined the U.S. Coast Guard and the State of Florida in a Unified Command to assist with orphan container and vessel recovery in the Florida Keys. We also

deployed technical specialists to the Keys under a separate FEMA mission to provide support to the state in assessment of Disaster Debris Management Sites.

Our operations in the Florida Keys continue as we speak. To date, we have collected more than 704 orphan containers, consisting primarily of 55-gallon drums and propane tanks, that are stored in a secure staging area for waste characterization and recycling or disposal. With a focus on private canals in the Keys, our EPA teams have recovered oil and hazardous materials from more than 65 sunken or grounded vessels and moved these craft to land-based staging areas where they are transferred to the custody of the Florida Fish and Wildlife Commission. Our current orphan container and vessel recovery Mission Assignment ends on November 30th, and talks are ongoing as to whether the State wishes to extend the mission beyond this date.

As I mentioned earlier, prior to Irma's landfall, we assessed vulnerabilities at all Superfund remedial sites in Florida. On September 12th, at the same time that our Hazard Assessment Teams were deploying to Orlando, Region 4 deployed six Teams to conduct boots-on-the-ground assessments of all National Priority List sites within the State. As a further measure, we also deployed teams to assess NPL sites in Alabama, Georgia, and South Carolina. These teams were directed to complete on-site assessment of the sites, document current operating conditions, verify that there were no releases from the sites and—where necessary—take any further actions to protect health and the environment. In all, we found that our remedial sites experienced very little impact from Hurricane Irma. For example, some minor erosion was observed at the Fairfax Wood site in Florida. As a precaution, samples were collected from an on-site retention pond at Fairfax Wood. Analytical results from these samples indicate that no storm-related contamination issues were present at the site.

Post landfall, we also reached out directly to ascertain the status of all 310 oil storage facilities required to maintain Facility Response Plans (FRP facilities) within Florida, Alabama, Georgia and South Carolina and all 274 chemical facilities within Florida required to maintain Risk Management Plans (RMP facilities). We worked through our state partners to determine the status of RMP facilities within Alabama, Georgia, and South Carolina. FRP facilities are oil storage facilities that store large volumes of oil, typically greater than one million gallons. RMP facilities are facilities that store greater than a threshold volume of hazardous chemicals.

Overall, there were very minimal reports of oil and hazardous substance spills that could be attributed to the Storm and only one of the 274 RMP facilities contacted, reported a hazardous substance release, the source of which was mitigated quickly.

Moving forward, we continue to meet mission assignments under the response phase and have initiated our recovery activities with FEMA and other federal partners under the National Disaster Recovery Framework. Under the Framework, EPA supports federal partners primarily on community planning and capacity building, infrastructure systems and recovery, and natural and cultural resources which translate into smart growth practices, mitigation, community resilience, and disaster planning.

We are excited to have the opportunity to work with our federal, state, tribal and local partners on this innovative initiative.

Again, I thank you for the opportunity to be here and share with you what I consider to be a great example of cooperative federalism to assure and restore public safety and recovery from disaster. I look forward to answering any questions you may have.

Mr. SHIMKUS. The gentleman yields back his time.

The Chair now recognizes Mr. Sam Coleman, acting regional administrator of Region 6.

Sir, you are recognized.

**STATEMENT OF SAMUEL J. COLEMAN**

Mr. COLEMAN. Good morning, Mr. Chairman and fellow committee members. I am Sam Coleman, acting regional administrator for EPA Region 6, which covers Texas, New Mexico, Oklahoma, Arkansas, Louisiana, and their 66 federally recognized Tribes. We are headquartered in Dallas, Texas, in downtown.

Thank you for the privilege of joining you here today for this very important conversation. I am here to speak directly about EPA's response to the devastating impacts of Hurricane Harvey in Region 6 and our associated response activities.

As we have seen in the past three months, every disaster presents unique challenges. Hurricane Harvey hit Corpus Christi as a category four hurricane, then lingered over the Texas Gulf Coast, dropping more than 50 inches of rain in Harris and the surrounding counties, and this impacted over 7 million people.

EPA worked with Texas and local officials to assess more than 2,200 drinking water systems and more the 1,700 wastewater systems.

We retrieved over 950 loose containers and, according to FEMA, we worked with the State to make sure that over 20 million cubic yards so far of debris has been properly disposed of.

At one point, the Texas Commissioner of Environmental Quality had over 500 people working on the response and EPA had over 250 people assisting the State in those response activities.

One of the most noteworthy aspects of the response to Hurricane Harvey was the positive and collaborative relationship between EPA and the State of Texas.

Because we worked very closely with the State agencies and the Governor's office, our collective strength of our efforts were greater than the sum.

By augmenting State resources where needed and providing some specialized monitoring capabilities, together we were able to address many challenges prevented by Hurricane Harvey in a timely manner.

After my 29 years of working at EPA and experiencing events following Hurricane Katrina and the Deepwater Horizon oil spill, I have learned a few key lessons regarding the response activities to assure success.

I am going to go over a few of those. First is exercises—our Federal agency's plan for such catastrophic events by conducting exercises to prepare. It is very apparent that these practices lead us to discover our weaknesses and to have time to correct those efficiencies before the real emergency occurs.

It is difficult to prepare for such an event as devastating as Hurricane Harvey. However, the State of Texas was as well prepared as I've seen and integrations of our organizations was exceptional.

Second is prior coordination. Because EPA has open communication and a longstanding cooperative relationship with our State counterparts and other emergency response agencies, it clears the

path for success that benefits the citizens that are impacted by a disaster.

When a storm is imminent, EPA begins the coordination efforts before landfall. As soon as the storm passes, we have teams that are standing by to begin the assessment of drinking water and wastewater systems to begin evaluating the environmental integrity of impacted businesses, to begin investigating citizen complaints, and to respond to any reported spills or other damaged areas as well as sharing key information with the public.

Next is the experienced staff. An effective response infrastructure includes experienced first responders who are able to address unforeseen circumstances both swiftly and effectively.

Staff development during the preplanning time is of grave importance and should not be underestimated. Experienced responders are the first boots on the ground and they provide the most efficient assistance to communities.

And then, finally, is having the right equipment. EPA employed assets during Hurricane Harvey response to assist the responders that were not available elsewhere. EPA often responds to reports of environmental impacts from air emissions or from other plumes that may be dangerous to a community.

In response to these complaints and odors and fumes during Hurricane Harvey, EPA deployed a TAGA bus. TAGA stands for the trace atmospheric gas analyzer.

This is a mobile pollution detection vehicle that is able to provide air quality results quickly by collecting constant real-time data of outdoor air quality.

The TAGA bus monitored ambient air in the vicinity of approximately 25 facilities and adjacent neighborhoods and during that time they covered over 640 miles going back and forth in those communities.

The results of this we were able to detect actionable emissions to work—then to work with those affected facilities and to work with the State to make sure that they were properly addressed.

There was also widespread coverage of the fires at the Arkema facility in Crosby, Texas. That facility housed volatile chemicals that required refrigeration to prevent them from self-igniting.

When the facility lost power, the conditions deteriorated at the facility, which required an evacuation of the facility and surrounding areas. Ultimately, there was a series of fires that were spontaneous combustion from those materials stored at the site.

EPA used the ASPECT aircraft for air sampling above the facility and in the nearby surrounding areas. ASPECT stands for the airborne spectral photometric environmental collection technology.

And I know that is a mouthful but, basically, it is an airplane that EPA rents that is packed full of EPA-owned monitoring equipment so that we can look into the plume to determine if there are harmful levels of chemicals or if there is any danger either downwind or in the communities surrounding the plant.

The ASPECT flew 28 flights over 112 hours—28 flights and over 112 hours, covering miles of pipeline. We looked at 134 risk management facilities and 456 drinking water plants and also 105 wastewater facilities in support of the Hurricane Harvey response.

The data was invaluable and assessed the risk quickly in responding appropriately to the emergency and the technology was not available through any other parties involved.

The third asset that we used was a mobile laboratory called PHILIS. PHILIS stands for the portable high through-put integrated laboratory identification system.

The PHILIS lab is a mobile laboratory that we deployed in Houston that allowed us to get 48-hour turnaround on volatile and semivolatile samples.

This allowed us to quickly assess the conditions at all of the Superfund sites and also any other samples that we needed a quick turnaround.

If EPA did not have access to these tools, our response and the dissemination of information to the public would not have been as informative and robust. I believe that these EPA assets are critical to effective preparedness and response.

EPA remains activated as an agency continues to respond to Hurricanes Maria and Irma. The agency taps resources from our sister regions during these times of great need.

I have seen the agency continue to grow in our capabilities, learn from each response and apply lessons learned as we face new challenges.

We are able to make more data available to the public. For example, we use story boards as we presented this information to the public so that they could understand what each sample meant and how it impacted them personally.

EPA will continue to develop more methods and improve our responses by working with our State, local, and other Federal agency partners.

While the response has its own unique challenges, we want to remain flexible to address the individual needs. I am very proud of the EPA and the other responders when called to duty in these times of great need.

I am happy to answer any questions about the great work we've done and look forward to continuing to serve.

Thank you.

[The prepared statement of Mr. Coleman follows:]

**Testimony of**
**Samuel J. Coleman, P.E., Acting Regional Administrator**
**U.S. Environmental Protection Agency, Region 6**
**Before the**
**U.S. House of Representatives**
**Committee on Energy and Commerce, Subcommittee on Environment**

**November 14, 2017**

Good morning Mr. Chairman and fellow Committee members, I am Samuel J. Coleman, Acting Regional Administrator for EPA's Region 6, which covers Texas, New Mexico, Oklahoma, Arkansas and Louisiana. Thank you for the privilege of joining you today for this important conversation. I am here today to speak directly about EPA's response to the devastating impacts of Hurricane Harvey in Region 6 and our associated response activities.

**HIGHLIGHTS:**

As we have seen in just the past few months, every natural disaster presents unique challenges. Hurricane Harvey hit Corpus Christi Texas as a category 4 hurricane, then lingered over the Texas gulf coast dropping more than 50 inches of rain in Harris County, according to the National Weather Service, and affected over 7 million people. EPA worked with Texas and local officials to assess more than 2,200 drinking water systems and more than 1,700 waste water systems; retrieved over 950 loose containers and, according to FEMA, safely disposed of over 20 million cubic yards of debris. At one point, the Texas Commission on Environmental Quality had approximately 500 people and EPA had over 250 people assisting in response to this natural disaster.

**LESSONS LEARNED:**

One of the most noteworthy aspects of the response to Hurricane Harvey was the positive and collaborative relationship between EPA and the state of Texas. Because we worked very closely with the state agencies and the Governor's office, the collective strength of our efforts were greater than the sum. By augmenting state resources where they were needed and providing some specialized monitoring capabilities, together we were able to address the many challenges presented by Hurricane Harvey in a timely manner.

**KEYS TO SUCCESS:**

After 29 years working at EPA and experiencing the events that unfolded after Hurricane Katrina and the Deepwater Horizon Oil Spill, I have learned that there are some key aspects to ensuring a successful response, including:

**Exercises:** Federal agencies plan for such catastrophic events by conducting exercises to prepare. It is very apparent that these practices lead us to discover our weaknesses and hopefully have time to correct deficiencies before a real emergency occurs. It is difficult to prepare for an event as devastating as Hurricane Harvey, however, the state of Texas was as well prepared as I have ever seen and the integration of our organizations has been exceptional.

**Prior Coordination:** When the EPA has open communication and a long-standing cooperative relationship with our state counterparts and other emergency response agencies, it clears the path for success that benefits the citizens impacted by a disaster. When a storm is imminent, EPA begins coordination before landfall. As soon as the storm passes, teams are standing by to begin assessing drinking water and wastewater systems, evaluating the environmental integrity of

impacted businesses, investigating citizen complaints, responding to any reported spills or damaged areas, and sharing information.

**Experienced Staff:** An effective response infrastructure includes experienced first responders who are able to address unforeseen circumstances swiftly and effectively. Staff development during these times is of grave importance and should not be underestimated. Experienced responders should be the first "boots on the ground" to provide the most efficient assistance to our communities.

**Right Equipment:** EPA employed assets during the Hurricane Harvey response to assist with response efforts that were not available elsewhere. EPA often responds to reports of environmental impacts from plumes, or air emissions that may be dangerous to the community. In response to complaints of odors and fumes from petroleum plants following Hurricane Harvey, EPA deployed the Trace Atmospheric Gas Analyzer, or TAGA bus. This is a mobile air pollution detection vehicle that is able to provide air quality results quickly by collecting constant, real-time data for outdoor air quality. The TAGA lab monitored the ambient air in the vicinity of approximately 25 facilities and adjacent neighborhoods, covering over 640 miles. The results from this mechanism were able to detect actionable emissions, or confirm that there was nothing of concern.

There was widespread news coverage of the fires at the Arkema plant in Crosby, Texas, that housed volatile materials that had to be refrigerated to prevent them from self-igniting. The plant lost power, conditions deteriorated and the facility was evacuated. As fires took place, EPA used the ASPECT aircraft for air sampling above the plant and nearby areas. ASPECT stands for Airborne Spectral Photometric Environmental Collection Technology. While that is a mouthful, what that means is this plane was able to fly above the Arkema plant, before, during and after

these explosions to ascertain if there was any immediate danger to those downwind from the plant. The ASPECT also flew 28 flights and over 112 hours covering miles of pipelines, 134 Risk Management Plan facilities, 456 drinking water plants and 105 waste water plants in support of the Hurricane Harvey response. This data was invaluable in assessing risks quickly and responding appropriately to this emergency and the technology was not available through any other parties involved.

Another EPA asset used was a mobile laboratory called PHILIS. The technical name for PHILIS is the Portable High-Throughput Integrated Laboratory Identification System. This mobile lab is capable of providing sample results with a 48-hour turnaround and was used to test water samples for volatile organic compounds (VOCs) and semi-volatile organize compounds (SVOCs) associated with assessing Superfund sites and other response activities. This proved to be invaluable in an area that is devastated and lacking in basic infrastructure.

If EPA did not have access to these tools, our response and the dissemination of information on hazards to the public would have been much less informative and robust. I believe that EPA assets such as these are critical to effective preparedness and response.

**LOOKING TO THE FUTURE:**

EPA assets remain activated as the agency continues to respond to Hurricanes Maria and Irma. The agency taps resources from our sister regions to coordinate efforts during these times of great need. I have seen the agency continue to hone its capabilities, learn from each response, and apply the lessons learned as we are faced with new challenges. We are utilizing the tools available to us and are taking more steps to make data available to the public. An example of this is the story boards that the agency prepared that show sampling data by location, allowing the

public to see what is being measured in their own back yard. EPA continues to develop more methods of improving each response and working with our State, local and other Federal agencies.

While each response has its own unique challenges, we remain flexible to address individual needs. I am very proud of EPA and other responders when called to duty in these times of need. I am happy to answer any questions about the great work we have done and I look forward to continuing to serve.

Mr. SHIMKUS. Thank you.

Now, last but not least is Dr. Shaw, chairman of the Texas Department of Environmental Quality. You have 5 minutes, sir.

Welcome.

**STATEMENT OF BRYAN W. SHAW**

Dr. SHAW. Good morning. Thank you, Chairman Shimkus, Chairman Walden, and Ranking Member Tonko and members of the committee. It is a pleasure to be here.

For the record, my name is Bryan Shaw. I am the chairman of the Texas Commission on Environmental Quality and I am happy to discuss our response in recovery efforts related to Hurricane Harvey.

First, my agency's primary mission is to protect the public health and natural resources by ensuring that the air and water and waste are clean and disposed of safely.

This is a critical part of what we work to is fulfilling that mission in the aftermath of a disaster such as Hurricane Harvey.

While we recognize the many challenges that we face and the severity of the—of the storm that we had, the key to making the response as successful as it was you have heard demonstrated through the cooperative nature that we have experienced both with our Federal allies as well as other State and Federal agencies in responding to the hurricane.

As was mentioned by Mr. Coleman, TCEQ deployed about 500 people dedicated to the Hurricane Harvey response. The 250 or so folks that worked from EPA to work hand in hand with us were critical to addressing one of the major issues we face and that is communication.

At the time that the storm rolls through it is very challenging to have the adequate communication and get information in a timely manner because, quite frankly, the local elected officials aren't always as prepared for a hurricane as we might want them to be because typically they are spaced out far enough that this is, in most cases, their first experience at dealing with a hurricane and when you have one of this magnitude it becomes even more critical in having a cooperative relationship between the State and Federal agencies that respond.

It is critical both to providing that information as well as reassuring those local officials where help is and help is on the way.

This cooperation, I think, clearly demonstrates how well State and Federal agencies can work together. We tend to work very well with EPA in previous natural disaster response but never better than we worked in this response and I think considering the unprecedented nature of the severity of the storm and, quite frankly, the fact that this storm sort of parked over Texas and dumped rain continually, it is—if you look at the tragic losses we had but in hindsight considering the severity of the storm, the State fared very well, and that is attributable to the prior planning, it is attributable to the cooperative relationship we had amongst our different State agencies and, quite frankly, it is attributable to the resiliency and the good neighbors that we have in our State of Texas that we are blessed with that come to the aid of their—of their neighbor in time of crisis.

I think this fits very well into the Cooperative Federalism 2.0 effort that is underway and I think that is—I applaud this committee for looking at finding ways to be able to ensure that the State and Federal agencies are working together.

The Environmental Council of the States has a process underway called Cooperative Federalism 2.0 which is trying to incentivize and encourage us moving to that relationship that was demonstrated, and so I am very much encouraged by that.

I will talk briefly because I know we were running short on time from the standpoint of my allocated time but I want to touch on some of the issues that are ongoing.

Obviously, debris management is one of those issues that continues to be a challenge. This is often what I refer to as the slow tragedy associated with an event like this.

You see some of that initially when you see the debris from what is taken out through wind, the tornadoes associated with a hurricane, as well as the surge—the storm surge.

But oftentimes the flood damage you don't see initially because those houses seem to be unaffected until you start seeing the residents return back and removing the debris from inside of the houses, getting the drywall out, moving it to the curbs and to the temporary sites.

And so it is critical that we move quickly to be able to help that happen because having those materials remain indoors leads to mold and other types of biological contamination that can be poor for health as well as making it very difficult for communities to rebuild.

We move it quickly to the curb but you need to move it from there quickly because you have vector issues—mice, rats, other things—that can be there—mosquitoes breeding. And so we want to make sure that we have that process moving along.

And then from the temporary site getting it into a landfill and making sure that we are providing for ultimately, environmental and health protections become very critical.

We are working probably most of our time at this point dealing with the ongoing tragedies and needs related to disposing of debris, working to quickly identify the temporary sites, ensure that we are working with those local officials not just to make sure that all the bureaucratic I's are dotted and T's are crossed but in making sure that we are both safe, protective, and ensuring that we don't have issues that will prevent them from getting reimbursement from those recovery efforts because those communities have already been hard hit from the loss of their tax base, their houses, and their businesses. And so we work very diligently to ensure that moves quickly.

So we are continuing to have success there but we will continue to have those calls that come as judges and mayors realize that the removal process is too slow and we work and continue to provide resources to help them both from a technical standpoint as well as, when we can, providing physical labor and the expertise on the ground.

Air monitoring—we have heard some discussion from Mr. Coleman so I won't go into a lot of detail other than to point out that we have a plan in place, our—I call it our common sense approach

where we make sure that prior to a storm's landfall we take down equipment that is going to likely be damaged or destroyed in a hurricane and then very quickly bring it back up.

That takes some time, especially when, in many cases, we had to wait until we had power restored to an area to be able to get air monitors in place.

We relied very heavily on our Federal partners to be able to do sampling as we had case by case needs as well as deploying monitors that we could bring in to assess plumes and other issues associated with potential emissions from facilities.

I will quickly wrap with drinking water, wastewater issues. As was mentioned, we had a couple thousand drinking water systems that were in the path of the storm. We still have two of those that are inoperable. They are small systems and arrangements have been made to allow for them to have water brought in so those residents are getting their needs served.

But we still have 24 systems that are under boil water notice, some of that because of damage to the system and some of that because, frankly, they're still adjusting to the source water changes associated with the storm.

Wastewater and sewage, we still have three of those systems that are inoperable compared to the 40 at the height of the process. So it does take a good bit of time.

I will close with talking about our hazmat, and we do work cooperatively but we take the lead with regard to identifying containers that may be washed away or moved away during the storm.

And to date, we've had about almost 1,200 of those containers that have been located and properly disposed of as well as dealing with the spills associated with the storm.

So you can see that there is a broad range of issues that have to be addressed and working cooperatively allows us the best chance of being most responsive to our citizens.

And with that, I will thank you for the opportunity to visit with you about this issue. We do have many resources available on our Web site and I am happy to provide those web links as needed. Those are very helpful both in informing the public as well as elected officials about resources that are available to them.

I am happy to answer questions. Thank you, sir.

[The prepared statement of Dr. Shaw follows:]

**Testimony of Texas Commission on Environmental Quality**
**Chairman Bryan W. Shaw, Ph.D., P.E. Delivered to the United States House of Representatives, Committee on Energy & Commerce, Sub-Committee on Environment**

November 14, 2017

**Summary**


- Hurricane response efforts ongoing: The TCEQ continues to coordinate with local, state, and federal officials to address the human health and environmental impacts of Hurricane Harvey and its aftermath.
    - The TCEQ continues to be involved in multiple response efforts, including efforts related to debris management, air quality monitoring, drinking water, wastewater and sewage, Superfund sites, hazmat operations, critical water infrastructure, flood water, and fuel waivers.
- Cooperative Federalism 2.0: The cooperation between agencies during the hurricane response highlighted how well the EPA and the states can work together. The hurricane response and recovery efforts provided a direct opportunity to put into practice key elements of the Environmental Council of the States' Cooperative Federalism 2.0 effort.

**Testimony of Texas Commission on Environmental Quality**
**Chairman Bryan W. Shaw, Ph.D., P.E. Delivered to the United States House of Representatives, Committee on Energy & Commerce, Sub-Committee on Environment**

November 14, 2017

**Testimony**

Mr. Chairman, Ranking Member Tonko, and members of the committee:

Good morning, and thank you for the opportunity to visit with you about the Texas Commission on Environmental Quality's (TCEQ) response to Hurricane Harvey.

My name is Bryan Shaw, and I am the Chairman of the TCEQ. My agency's mission is to protect our state's public health and natural resources by ensuring that the air and water are clean and that waste is disposed of safely. Fulfilling this mission is critical during the aftermath of a natural disaster.

I want to communicate that my agency and I recognize the challenges we face as a state and as an agency. The TCEQ continues to coordinate with local, state, and federal officials to address the human health and environmental impacts of Hurricane Harvey and its aftermath. At the height of our response efforts, the TCEQ had approximately 500 people assisting in response to Hurricane Harvey.

As part of this coordination, a Unified Command was established between the TCEQ, the Environmental Protection Agency (EPA), the Texas General Land Office, and the U.S. Coast Guard to oversee all emergency response efforts. This Unified Command was supported by three (3) operational branches in Corpus Christi, Houston, and Port Arthur. Branch personnel worked to continuously monitor water and wastewater systems, as well as assess spills or discharges as a result of the storm.

The cooperation between agencies during the hurricane response highlighted how well the EPA and the states can work together. The hurricane response and recovery efforts provided a

direct opportunity to put into practice key elements of the Environmental Council of the States' Cooperative Federalism 2.0 effort.

The TCEQ continues to be involved in multiple response efforts, including efforts related to debris management, air quality monitoring, drinking water, wastewater and sewage, Superfund sites, hazmat operations, critical water infrastructure, flood water, and fuel waivers. I am going to run through these efforts and give you the current numbers as of this morning.

**Debris Management**

Construction debris presents a potential health risk as it can harbor mold, bacteria, viruses, mice, and mosquitoes. Construction debris can also contain household hazardous wastes, such as pesticides or cleaners. Proper manage of construction debris is imperative to reduce exposure to these infectious agents and wastes.

The first step is to rapidly move construction debris out of houses, especially if the debris is wet from flood waters, because flood waters are contaminated with microorganisms. This will prevent the growth and spread of mold, bacteria, and viruses indoors. Once out of the house, it is important to quickly move the construction debris from curbs to Temporary Debris Management Sites (TDMS) to reduce habitats for mice, mosquitoes, snakes, etc., and to reduce the potential for exposure to household hazardous wastes. Once at a TDMS, it is crucial to dispose of materials and hazardous wastes properly and as soon as possible through recycling or disposal in a lined landfill. Proper disposal will prevent environmental contamination of the temporary site and reduce the potential of exposure to nearby residents.

**Testimony of Texas Commission on Environmental Quality**
**Chairman Bryan W. Shaw, Ph.D., P.E. Delivered to the United States House of Representatives, Committee on Energy & Commerce, Sub-Committee on Environment**

As of November 9, 2017 the TCEQ has approved 205 TDMSs in areas under the Federal or State Disaster Declaration designations. There is an estimated 1,579,652 cubic yards (CY) of debris at TCEQ-approved TDMSs. I can provide you a link to a map of all the TDMS locations.[1]

TCEQ regional offices and local authorities are actively overseeing the siting and implementation of debris and waste management plans in the affected area. The TCEQ continues to visit staging areas and landfills to ensure compliance with guidelines. As of November 9, 2017, the TCEQ has conducted approximately 1,273 routine TDMS inspections and granted twenty-nine (29) temporary authorizations upon request to allow regulatory flexibility for permitted Municipal Solid Waste facilities to manage debris expeditiously in the affected areas. In addition, TCEQ staff called landfill operators to let them know that they can request temporary authorizations to operate twenty-four (24) hours per day, seven (7) days per week.

The TCEQ and the EPA also released fact sheets in English, Spanish, and Vietnamese on best practices when dealing with debris in damaged or destroyed homes. Guidance for debris management is available on the TCEQ website.[2] In addition, the TCEQ has provided information to the TDMSs regarding the potential to receive reimbursement for proper debris management.

**Air Monitoring**

In responding to the impacts of Hurricane Harvey, the TCEQ used every appropriate means of air monitoring available to support our mission to protect human health and the environment. One of the many preparations for Hurricane Harvey included the TCEQ, the EPA, and other monitoring entities temporarily shutting down several air monitoring stations from the greater Houston, Corpus Christi, and Beaumont areas to protect valuable equipment from storm damage.

[1] https://www.tceq.texas.gov/goto/tdms
[2] https://www.tceq.texas.gov/home-page/response/hurricanes#waste

In Section 4.5.1.2 of the TCEQ's Continuity of Operations Plan (COOP), required by Texas Labor Code § 412, there is a list of hurricane pre-landfall actions for securing capital physical assets including air monitoring equipment. In addition, each TCEQ regional office has a specific hurricane plan. The Houston Region Hurricane Plan describes responsibilities to ensure equipment is appropriately secured prior to an event. Section 2.1.4.2 specifically points to ensuring the safe removal or protection of TCEQ air monitoring assets. These actions are taken as a coordinating effort between the Houston Regional staff and the Monitoring Division staff. After the storm passed, state and local authorities worked together to get the systems up and running again as soon as possible.

Both TCEQ and EPA investigators have spent numerous hours, both day and night, monitoring neighborhoods and industrial fence lines. Between the TCEQ and the EPA, multiple air monitoring assets have been used in the impacted areas. These assets include: EPA Airborne Spectral Photomeric Environmental Collection Technology (ASPECT) flights, EPA Trace Atmospheric Gas Analyzer (TAGA) mobile monitoring bus, TCEQ hand-held air monitoring instruments, TCEQ continuous air monitoring network, and TCEQ's contractor, Leak Surveys, Inc., helicopter flyovers using optical gas imagining cameras (OGIC).

As of September 29, 2017, the TCEQ's air monitoring network was 100% operational in Corpus Christi, Houston, and Beaumont. All 48 sites that were shut down in preparation of Hurricane Harvey have been restored. Of the available air monitoring data collected from August 24, 2017 through October 6, 2017, all measured concentrations were well below levels of health concern.

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**Drinking Water**

Approximately 2,238 drinking water systems were affected by Hurricane Harvey. As of November 3, 2017, two (2) of those systems are inoperable, compared to 61 systems being inoperable post-landfall. Currently, 25 have boil-water notices, compared to 203 systems being under a boil-water notice after the storm. The TCEQ is in contact with the remaining systems to gather updated information on their status. Assistance teams have been in the field working directly with system operators to expedite getting systems back to operational status.

**Wastewater and Sewage**

The TCEQ made contact with 1,743 wastewater treatment plants in the 58 counties within the Governor's Disaster Declaration. As of November 3, 2017, three (3) of those systems are inoperable, compared to the 40 systems that were inoperable following the storm. Releases of wastewater from sanitary sewers occurred as a result of the historic flooding, and the agency is actively working to monitor facilities that reported spills. Additionally, the agency has been conducting outreach and providing technical guidance to all other wastewater facilities in flood-impacted areas. Assistance teams will continue to be deployed to work directly with system operators to expedite getting systems back to operational status.

**Superfund Sites**

The TCEQ partnered with the EPA to assess Superfund sites in Texas. There are 17 state Superfund sites and 34 federal Superfund sites in the affected areas in Texas. The TCEQ completed assessments of all the state Superfund sites, and the sites were cleared. Subsequent to the assessments a sheen was observed downgradient of the International Creosoting site in Brakes Bayou, which has been contained. TCEQ will continue to oversee these activities.

The EPA completed assessments of all the federal Superfund sites in the affected area. Follow up is needed on the San Jacinto Waste Pits site and the EPA is working with potential responsible parties in that regard. The Record of Decision for San Jacinto Waste Pits was signed on October 11, 2017, and the EPA's selected remedy of removal of the contaminated material is described in that document.

**Hazmat Operations**

The TCEQ continues to lead hazmat operations and are monitoring facilities that have reported spills. Orphan containers, which include drums and tanks, found floating in or washed up near waterways continue to be gathered, sorted, and grouped by type prior to shipping them off for safe, proper treatment and disposal. Reconnaissance and assessment of facilities and vessels are being conducted to identify any leaks or spills and responded to accordingly. The Unified Command worked to ensure the disposal of oil and hazardous materials was conducted properly. As of November 3, 2017, 1,155 hazmat orphan drums and containers have been recovered, and the 266 spills or discharges that were reported or observed have been responded to appropriately.

**Critical Water Infrastructure**

The TCEQ made contact with the owners of the 340 dams in the impacted areas. Twenty (20) dams reported some type of damage. There were no reports of downstream damage or loss of life. TCEQ staff also met with affected dam owners.

**Flood Water**

The TCEQ focused flood water quality sampling on industrial facilities and hazardous waste sites. The agency also informed the public of the hazards associated with flood water and precautions that should be taken by anyone involved in cleanup activities or any others who may be exposed to flood waters.

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**Fuel Waivers**

The EPA approved the request from the State of Texas to continue to waive requirements for fuels in Texas through the end of September to help address the emergency circumstances in Texas from Hurricanes Harvey and Irma. These waivers are no longer needed due to the end of ozone season in Texas combined with refineries coming back online.

**Conclusion**

The TCEQ has a vast amount regulatory guidance, support material, and useful information posted on the Hurricane Harvey Response link[3] available on our main web page.[4] I do want to thank you for the opportunity to visit with you today. I am available to answer questions you may have.

[3] https://www.tceq.texas.gov/home-page/response/hurricanes
[4] https://www.tceq.texas.gov

**Hurricane Harvey By the Numbers**
As of November 9, 2017

## DISASTER DECLARATION/RULE SUSPENSION

Governor Abbott has issued a renewed disaster proclamation for Harvey dated October 20, 2017, which extends the TCEQ's request for rule suspensions until **November 20, 2017.**

## TEMPORARY DEBRIS MANAGEMENT SITES AND APPROVALS

Debris Sites: Currently, there are **205 approved temporary debris management sites** (TDMS).

Total Application Status Count by TCEQ Region:

| Region | **Approved** | Pending | Inactive | Withdrawn | Denied Sites | Total Sites |
|---|---|---|---|---|---|---|
| 10 | **18** | 2 | 0 | 1 | 1 | 22 |
| 11 | **1** | 0 | 0 | 0 | 3 | 4 |
| 12 | **100** | 3 | 0 | 14 | 1 | 118 |
| 13 | **2** | 0 | 0 | 0 | 0 | 2 |
| 14 | **84** | 0 | 0 | 6 | 0 | 90 |
| **TOTAL** | **205** | **5** | **0** | **21** | **5** | **236** |

Count at Existing Facilities:

- TDMS at Landfills: 15
- TDMS at Transfer Stations: 9

Estimated Amount of Debris at TCEQ-Approved TDMSs: 1,579,652 CY (as of 11/9/17).

| **TCEQ Region** | **Total Volume (CY)** |
|---|---|
| 9 | 1,152 |
| 10 | 244,131 |
| 11 | 0 |
| 12 | 457,806 |
| 13 | 0 |
| 14 | 876,563 |
| **Total** | **1,579,652** |

Routine inspections conducted by the TCEQ at TDMSs: Approximately 1,273 (as of 11/9/17).

## TCEQ AIR MONITORING NETWORK

**As of September 29, 2017,** the TCEQ's air monitoring network is **100% operational. All 48 sites that were shut down in preparation of Hurricane Harvey have been restored.**

- From the **available air monitoring data collected from Aug. 24 through Oct. 6,** all measured air toxics concentrations were well below levels of health concern.

**Hurricane Harvey By the Numbers**
As of November 9, 2017

## DRINKING WATER AND WASTEWATER

***Public Water System (PWS) Community Water Systems Tracking*** (58 Counties within the Governor's Disaster Declaration):

- 2,238 PWS community water systems that serve a population of approximately 11 million people are being tracked.
- **At the Peak, 61 PWS community water systems were inoperable** on 8/31/17 and 9/4/17, serving a population of 222,821 people.
- **Currently, 2 of the PWS community water systems are inoperable**, serving a population of 1,473 people.
- **At the Peak, 203 of the PWS community water systems had issued a boil water notice (BWN)** on 9/1/17, serving a population of 376,245 people.
- **Currently, 25 of the PWS community water systems are operational, but with an active BWN**, serving a population of 9,376 people.

***Inoperable Wastewater Facility Tracking*** (58 Counties within the Governor's Disaster Declaration):

- 1,743 Domestic & Industrial Wastewater Facilities are being tracked that serve a population of approximately 10 million people.
- **At the Peak, 40 Wastewater Facilities were non-operational** on 9/7/17, serving a population of 168,816 people.
- **Currently, 3 Wastewater Facilities are non-operational**, serving a population of 500 people.
- Of the operating facilities, 14 have issues that are being worked to resolve.

## COSTS

- **Anticipated costs for response efforts: $700,000.**
  - The TCEQ will seek reimbursement from FEMA's public assistance program for these costs.
  - Breakdown:
    - Overtime – $377,748
    - Professional Services – $245,748
    - Supplies – $1,586
    - Travel – $61,043
    - Phone and Utilities – $17
    - Other Expenses – $15,575
- FEMA authorized TCEQ to receive assistance from EPA, totaling $15 million, to conduct field operations.

**Hurricane Harvey By the Numbers**
As of November 9, 2017

## LANDFILL CAPACITY

***Estimated Hurricane Harvey Debris Total: Estimates range from 30 million to 60 million cubic yards (cyd) plus recycling.***

***Region 10 Declared Disaster Counties, Population 644,653***

- Total Capacity: 95,929,116 cyd
- 7 Type I Landfills 95,929,116 cyd
- 6 Transfer Stations

***Region 12 Declared Disaster Counties, Population 6,087,133***

- Total Capacity: 473,509,501 cyd
- 12 Type I Landfills 367,641,791 cyd
- 15 Type IV Landfills 105,867,710 cyd
- 22 Transfer Stations

***Region 14 Declared Disaster Counties, Population 740,485***

- Total Capacity: 160,780,534 cyd
- 5 Type I Landfills 149,597,902 cyd
- 1 Type IV Landfill 11,182,632 cyd
- 6 Transfer Stations

## HAZARDOUS MATERIALS

Hazmat orphan drum and container recovery operations conducted under Emergency Support Function (ESF) #10 within Natural Disaster Operational Workgroup (NDOW) Unified Command:

- **Initial hazmat orphan drum and container recovery operations have been completed.**
- To date, **1,155 hazmat orphan drums and containers have been recovered.**
- To date, **266 spills or discharges reported or observed have been responded to appropriately.**

**Hurricane Harvey By the Numbers**
As of November 9, 2017

**SUPERFUND**

*17 State Superfund Sites* in the Impacted Area:

- **TCEQ completed assessments at all 17 state Superfund sites in the affected areas.**
- **Based on the assessment and sampling, all sites have been cleared.**
- Subsequent to the assessments a sheen was observed downgradient of the International Creosoting site in Brakes Bayou, which has been contained. TCEQ will continue to oversee these activities.

*34 Federal Superfund Sites* in the Impacted Area:

- **EPA completed site assessments at all 34 Superfund sites in the affected areas.**
- **Based on the assessment and sampling, 33 have been cleared.**
- The San Jacinto Waste Pits site (Site) required additional follow up.
    - On 9/28/16 the EPA published the Proposed Plan for the Site. The Proposed Plan presented the EPA's preferred clean-up remedy for the Site, which is removal of the contaminated material. The EPA's selected remedy is detailed in the Record of Decision, which was signed on 10/11/17.

Mr. SHIMKUS. The gentleman's time is expired.

And before I start with the opening question, I want to recognize Jenniffer Gonzalez, the Resident Commissioner from Puerto Rico.

She's here at a good time to hear the opening statements, but also, as I go to my first round of questioning, the first one is going to go to Mr. Lopez.

So I recognize myself for 5 minutes for questions. Mr. Lopez, there have been a number of press reports about people who are without clean drinking water, drinking from a well on a Superfund site in Dorado, Puerto Rico.

Can you explain the situation there and whether it has been resolved?

Mr. LOPEZ. Certainly, Chairman, and thank you for that question.

So, again, of course, there was a lot of attention to early concerns of the individuals drinking from the wells. Those reports were incorrect.

So, in essence, there has been some understandable confusion with the way the infrastructure is designed and operable in that area.

So the wells in question are sealed. They are not accessible. Water has been made accessible through spigots at those well sites that are part of the super aquifer tied to process infrastructure.

When we first learned about the concern, our first response, of course, was humanitarian and we brought bottled water and had Army Corps bring water buffaloes to the sites because the main concern was we want to protect human health and safety, take them away from sites where we had any question, and make sure people had potable water.

From there we engaged in immediate sampling and from the results of the sampling we found chlorine residual from those spigots. Certainly, wells are not prone to have chlorine in them inherently and so our initial deduction was that that was treated water.

We have gone forward to do additional sampling and are doing full spectrum analysis. Thus far, our results reaffirm and process also reaffirm that along with the Department of Health from Puerto Rico that that is part of process water supply. They are not from the contaminated wells.

Mr. SHIMKUS. Are there any other places on the island where this issue may be an issue?

Mr. LOPEZ. Not to our knowledge and, again, the concern—and just to highlight, Chairman, the concern with the Superfund site—and this is part of the challenges—Superfund site doesn't mean that every water source within the designated area is in question.

What it means in this case with the Dorado site we identified a target area—we, at EPA—just to monitor. So where sites were known to have contamination those sites have been locked down. Other sites we continue to test—I say we, the Puerto Rico Department of Health—PRASA—on a regular basis to make sure that those supplies remain potable and within Safe Drinking Water Act thresholds.

Mr. SHIMKUS. Was the Puerto Rican water utility the entity distributing water at the Dorado site?

Mr. LOPEZ. The Puerto Rico Well Authority—PRASA—was not literally distributing the water. The areas in question were fenced and signed. There are spigots there and the sites were entered into and PRASA was not knowingly willingly distributing.

But we—again, our main concern there was to make sure that the water was safe and that is why we brought temporary water until we could ascertain the status of the true supply.

Mr. SHIMKUS. So in your written statement, Mr. Lopez, when you—in your written testimony you note that 20 of the 115 drinking water plants are out of—out of service. What is—what are you doing to remedy the situation about people not having access to potable water in Puerto Rico?

Mr. LOPEZ. Well, our challenge, of course, Chairman, is we assess. So we determine where there are deficiencies, whether it be collapse of trunk sewers, whether power be out, and then we work with Army Corps, which is mission assigned to work with PRASA to make the repairs.

So funding is provided through the Stafford Act to help make necessary improvements. We continue to help provide advisories to the population and, again, we are working with our partners to make necessary repairs as quickly as possible.

Mr. SHIMKUS. Let me, in my last minute and a half, turn to Dr. Shaw. My sister-in-law moved out of Houston right before the storm.

But she has a lot of friends back there, and she visited over the weekend and it raises the point about waste management that you were referring to.

On her return, she showed a picture of her friend's house. About 2½ to 3 feet of drywall had been ripped out. I mean, still, the house will be—take a year probably or I don't know how long to get it. So when we see storm damage, which we have in tornado season, you see the initial pile of refuse on the streets. But then over time you're going to see the refuse from being torn out. They're probably going to be in dumpsters and they're going to be hauled someplace.

So the question is, is there sufficient landfill capacity with this hurricane debris?

Dr. SHAW. The short answer is yes. And you are right, part of that process is moving from the house to the curb. Usually there is about three passes of removing from the curb as well. So it is sort of a cyclical process.

We looked at it very closely and initially estimates were quite high what the debris might be.

The issue is we have enough capacity in those landfills in the areas. The real challenges have been twofold. One, does it reduce the length of life of that landfill, which is obvious.

The second part of that is sometimes those landfills, because they build them out in cells, they may not have a cell that is built out ready to receive all that debris, and so in some cases they may have to exceed their permitted height and we have a process whereby they can apply to make that happen on an emergency basis.

What will happen is following the passing of the storm they will either have to come in and remove that extra cap or they will have

to go through a permit amendment to get approval to leave that landfill at a height that was higher than was permitted and then they can build out another cell, if you will, and move that waste or at least begin taking new waste.

Mr. SHIMKUS. I am way over my time, and I thank you for the answer.

The Chair now recognizes the ranking member, Mr. Tonko, for 5 minutes.

Mr. TONKO. Thank you, Mr. Chair.

Administrator Lopez, as I mentioned earlier, the committee has heard alarming reports of people without access to safe drinking water in Puerto Rico and the United States Virgin Islands, and I heard the exchange with the Chair here just moments ago.

Let's get a little deeper into the drinking water and wastewater system issue. Many remain inoperable. Can you help us understand what are the sources of those problems of inoperation?

Mr. LOPEZ. Much of the problem lies with damaged sewer—excuse me, water mains. We have damaged distribution lines. Power is a considerable issue.

We, again, are working on generators but those generators do not always remain operable. So access is an issue. We have had plants that, because of mudslides or rain, river action, we have had them—access to them denied.

So at this point, 85 percent of the PRASA system users have water and PRASA represents about 97 percent of all the water supply to the island.

There are additional water supply sources—non-PRASA systems, very small sources. There are very—there are about 237 independent water treatment systems throughout the mountains.

We are working with mission assignment, with nongovernmental operations to do work there. In some of those cases we are, again, trying to get those systems back and running. But power, in some case physical damage, in some case access. We also have debris issues. In some case, intakes are clogged with debris and that has been a challenge for some of our operators.

Mr. TONKO. And just what percent or whatever expression we can get from you is concerning electricity failure?

Mr. LOPEZ. Oh, my gosh, I have some detail. So I can go through—I have a number. I will just run through—I have a list. Arecibo alternate power unit, out of service. Esperanza, alternate power service out of Muñiz. We have quite a few. Most of it is power units.

We do have waterline pipes broken. We do have some cases of raw water supply clogged. But much of it is power, and, again, we are using generators and other means to try to activate those systems. Some systems were flooded, and they had to be reassessed even before power could be fully restored.

Mr. TONKO. And you had mentioned the infrastructure failure. What about source water contamination as an issue? Is that——

Mr. LOPEZ. Of course, we are very concerned about it, and I used a phrase Ms. Colon would understand: agua es vida—water is life.

So whether it be water for drinking, water for bathing, water for washing your clothes, water for any purpose, we are all very concerned.

We have been—in terms of the contamination of water our role has been, first, direct resources to restore water and systems to be operable. That's the main goal.

With individual homes and families we are working with the CDC, Puerto Rico Department of Health, and others to provide advisories. So boiled water advisories are in effect, have been in effect.

We are also warning people to be—to avoid using these supplies for potable purposes. We have worked with the CDC to provide alternate disinfection where possible—chlorine tablets and other alternate disinfection. So we are taking——

Mr. TONKO. Oh, go ahead.

Mr. LOPEZ. As broadly as we can we are trying to respond. But the challenge is we can't control individual human behavior and people need water. So our main goal is get water to them as quickly as we can—potable.

Mr. TONKO. Peter, you had mentioned PRASA and with those independent systems—those beyond PRASA—are they continuing to struggle to provide safe drinking water?

Mr. LOPEZ. They are. We are working with them and, again, it is case by case. Just mind you that a number of the systems are mountainous and access to them continues to be an issue.

So we are working on assignment to get to them. But at this point, we had—we have assessed—bear with me a second. Just going to pull up my notes here on non-PRASA. There are 237 independent community systems and we have assessed them all. But getting them all operational is a challenge.

Mr. TONKO. And of those 237, which are operating?

Mr. LOPEZ. Let me—bear with me just a second. About 170 of the 237 are operational.

Mr. TONKO. OK. Thank you.

And is EPA testing water quality at small water systems?

Mr. LOPEZ. We do. Well, the Department of Health—let me say this—the Department of Health for Puerto Rico is the authority. So our sampling is really not something we do as a norm.

We did sample in the Dorado case where there were concerns about drinking from contaminated wells and there we wanted to do rear guard action for the Puerto Rico Department of Health.

But Puerto Rico Department of Health maintains primacy with those—with those sites.

Mr. TONKO. Thank you.

Mr. Chair, I yield back.

Mr. SHIMKUS. Gentleman yields back his time.

Chair now recognizes the gentleman—the chairman of the full committee, Mr. Walden, for 5 minutes.

Mr. WALDEN. And I thank the chairman and I thank, again, our witnesses for your testimony on all these issues our citizens face.

I know, Mr. Lopez, you've talked a lot about the drinking water and we know when the power goes off the pumps don't run and purification doesn't work unless you get generators and all that.

But I would like to move beyond that and ask about the ability to clean up Superfund sites. How is that being impacted along the way here?

Mr. LOPEZ. So, Chairman, the Superfund sites were assessed—they have been assessed routinely. They were assessed before the storm events—Irma. They were assessed after Irma. They have been assessed after Maria.

And much of those sites really are groundwater contamination. So they were not really moved by the storm. The issue for the storm and where there was damage were in terms of fencing and also pump and treat systems, which required power.

So in those cases, we worked to restore those functions. That's what we've been working to do and the—in terms of damage——

Mr. WALDEN. How——

Mr. LOPEZ. I am sorry, sir.

Mr. WALDEN. How far along are you on the Superfund site protection?

Mr. LOPEZ. To my knowledge, things are locked down.

Mr. WALDEN. OK.

Mr. LOPEZ. So if we've seen additional concerns—for example, we found an orphan container that was removed—but we are to lock those sites down, Chairman.

Mr. WALDEN. Mm-hmm. All right. Is that true for the other sites, too? I mean, are we talking about issues in Houston or Florida? Are there any Superfund issues we need to be aware of?

Mr. COLEMAN. With regards to Texas, there were 34 Federal Superfund sites in the State of Texas. We have done the assessment of all. There was one site that we listed, the San Jacinto Waste Pits site, that did require some additional follow-up.

We have been working with the responsible parties. They have plans in place to both do repairs to that site and then there is some additional repairs on the river side of the site where there was scouring that the PRPs are in the process of placing some additional rock to stabilize that portion of the site. That is ongoing.

Mr. WALDEN. All right.

Dr. SHAW. And I would just add I believe there are 17 State Superfund sites, and at those we worked very closely with EPA on both the Federal and the State and secured the sites.

All those sites we're finding there was a release potentially from one that was a sheen that we saw on water and that has been dealt with. So but no offsite concerns at this point. Everything is locked down.

Mr. WALDEN. So can you all give us assurance then that when it comes to the issue of Superfund sites we are not contamination into drinking water, that these sites are secured best they can be, that you've got this under control?

Dr. SHAW. Yes, sir.

Mr. COLEMAN. Yes, sir.

Mr. GLENN. Yes, sir.

Mr. LOPEZ. Yes, sir.

Mr. WALDEN. Perfect. That's good news. I think that had a lot of us worried, including, I am sure, all of you. You know, that is the most dangerous things we face.

Beyond that, you know, as we—as we keep hearing about the power going on and going off in Puerto Rico and we knew they had a bad grid to begin with, what should we be worried about here?

What can we do to help here on that issue of power and how much of this is really the responsibility of the grid owner and the power provider in Puerto Rico?

Mr. LOPEZ. Well, Chairman, again, I think part of the challenge is, as I mentioned in my testimony, the system itself is old.

Mr. WALDEN. Right.

Mr. LOPEZ. And we heard testimony from Army Corps with the Transportation and Infrastructure Committee suggesting that their average age of power plants are much younger than Puerto Rico's.

So we are dealing with a system that was old and challenged to begin with, and I think part of our goal is, one, how do we put power back on but the long-term and——

Mr. WALDEN. Keep it on.

Mr. LOPEZ [continuing]. And for Señora Colon: ese es nombre de mi familia también—my family has that name as well—how do we make sure that it is sustainable and survivable for future events? So that is an open question.

Mr. WALDEN. And from what you have seen on the ground, again, on Puerto Rico or the Virgin Islands especially, are there—are there enough crews? Are the various agencies communicating well with each other?

Are there gaps in that communication we should be aware of? It is always hard in these situations, I know, but——

Mr. LOPEZ. So, Chairman, we work under a command and control function. We work with our incident commanders. There's very close communication with FEMA, Army Corps, our other partners.

Our regions have been providing support where we signal. We have been very thankful to my colleagues here for their staff support as well.

I would say that the communications are strong. The challenge is making sure that we can get the resources when we need them.

The other challenge which we have been working at is also making sure that we are working with the local authorities and respecting their process—their decision making capability, and that is—that means in some cases we have to put things in front of them and give them time, recognizing—and this is the challenge for those in the situation—if you have been in a storm event and you are under constant duress, we are rotating crews in and out routinely——

Mr. WALDEN. They are there——

Mr. LOPEZ [continuing]. They are working under constant duress. So part of our challenge is helping support their decision making and give them time and support they need so they can be at peace with mission objectives and corrective action.

Mr. WALDEN. OK. Did you have something you wanted to—no? OK.

My time has expired. Mr. Chairman, thank you all for the great work you and your teams and the teams from all the agencies are doing the best they can in these circumstances and we appreciate that.

But, again, we want to know if there is a problem that you need help on or they need help on, and I know that our resident commissioner has been terrific at bringing us all up to speed and keeping us up to speed.

So with that, Mr. Chairman, I yield back.

Mr. SHIMKUS. Gentleman's time has expired.

The Chair now recognizes the ranking member of the full committee, Mr. Pallone, for 5 minutes.

Mr. PALLONE. Thank you, Mr. Chairman.

Five years ago, Superstorm Sandy caused major damage to my congressional district including Superfund sites and water treatment facilities and we have seen even more of that with the latest hurricanes.

So I would like to focus briefly on the importance of investing and making our environmental infrastructure more resilient.

In the aftermath of Sandy, I saw the importance of this firsthand when the storm badly damaged the Bay Shore Regional Sewage Authority, which treats the wastewater from a number of the towns in my district, and the authority completed a $28 million project to rebuild the plant and make it more resilient to future storms.

But I don't think we should have to wait for disasters to make our infrastructure more resilient. So let me ask Mr. Lopez, what can EPA do to help communities in Puerto Rico and the Virgin Islands improve their drinking water and wastewater infrastructure to make it more resilient?

Mr. LOPEZ. Thank you. Thank you, Chairman.

So part of the challenge is, again, part of it is the time we are in. Under the Stafford Act, we are in response. So this is an emergency. So it is my understanding that Stafford Act funding means you build in kind—you replace in kind.

So the issue is, and this goes back to you as our partner and our colleagues here, where do we signal programmatic and funding flexibility to allow other sorts of investment.

Now, just as an example, with the nongovernmental allies that we have had with the nonprocess sites, we have been able to put solar systems in a few isolated incidents.

Mr. PALLONE. All right.

Well, let me ask you this. Do you think that we need to invest more Federal dollars though in environmental infrastructure in general as part of this recovery or is it just your concern that we are not focusing on long term?

Mr. LOPEZ. So I am a little bit above my pay grade, Congressman, but bear with me. So I am going to speak from the heart.

So, effectively, it is a function of targeting dollars—making sure dollars are reachable and also ensuring that the broad purposes can be served.

So, again, we have many various funding streams. It is not generally one funding stream, like my colleague, Mr. Cochran knows.

Mr. PALLONE. OK.

Mr. LOPEZ. So to answer your question, I think part of our challenge here would be to look at funding streams, look at resources, ensure that we have maximum flexibility in their use. Part of this——

Mr. PALLONE. OK. And particularly the emphasis on looking at long-term rather than just short-term to fix things.

All right. I am just rushing through because I wanted to ask a question about the Superfund, too. As you know, Hurricane Harvey

damaged a lot of Superfund sites in Texas including one site where hazardous dioxins were exposed and I think we should be doing more to limit the impact of severe weather on Superfund sites.

So let me ask Mr. Coleman. You only briefly mentioned Superfund. But is it—it is a priority, I think, for a lot of communities. Do you agree that more resources for Superfund cleanups would mean few contaminated sites vulnerable to extreme weather?

Mr. COLEMAN. So the site in Texas that you mentioned—the San Jacinto Waste Pits site, is a site that is under EPA oversight but there are accountable responsible parties who are both responsible for the day to day security of the site as well as——

Mr. PALLONE. But my question is do you agree that more resources for Superfund cleanup would mean fewer contaminated sites vulnerable to extreme weather? You can just say yes or no. I mean, I just want to know if you think money or resources would make a difference.

Mr. COLEMAN. Well, we are working with the funds that are appropriated to make sure that those sites that require Federal funding are cleaned up as expeditiously as possible.

Mr. PALLONE. All right. All right.

Let me go back to Mr. Lopez. We heard troubling reports out of Puerto Rico, citizens drawing drinking water from a well on an unsecured Superfund site. What more could EPA do to protect public health from exposures to toxic sites after severe weather strikes?

Mr. LOPEZ. So, Chairman, as I was mentioning to your colleagues, the contamination in the groundwater was really not affected by the storms, to our knowledge.

The issue was making sure that the mitigation methods that were in place were functioning as intended—fencing, pump and treat seat systems.

The—in Dorado, the wells in question were not accessible. Power supplies had been disabled. There was no ability to pull water from the wells. So the source of water, again, was from the—from PRASA, from the public——

Mr. PALLONE. Do you think that we could do more to protect—could EPA do more to protect public health from exposure to toxic sites after severe weather strikes or, again, this is just simply fixing damage?

I mean, the concern I have is, again, what you said—that maybe we are just simply fixing damaged fences, blocking access to these sites. I mean, this goes back maybe to what you were saying before. But just——

Mr. LOPEZ. So at those sites the wells were not accessible of for public access, again, the groundwater contamination was there before the storm and remains, and that is something we continue to work on.

So our challenge is to mitigate—again, track any plumes, for example, in the Dorado site. We are tracking a plume so we test water supplies. We test—vigilance is really the issue here.

We remain vigilant, and we certainly understand the importance of making sure that we are staying within Safe Drinking Water Act standards, keeping people under those thresholds with their water supply.

Mr. PALLONE. All right.

Mr. LOPEZ. So monitoring, continue testing—those are—and then mitigation remain the tools available to us.

Mr. PALLONE. All right. Thanks a lot.

Mr. SHIMKUS. Gentleman's time expired.

The Chair now recognizes the vice chairman of the subcommittee, Mr. McKinley, for 5 minutes.

Mr. MCKINLEY. Thank you, Mr. Chairman, and thank you again for having this hearing on this.

Let me skip from Region 2, 4, and 6 and move to Region 3 out of Philadelphia. There's an area that—the flooding that had taken place the hurricanes had an impact not only in Texas and Florida and Louisiana, along the coast, but it had a demonstrative effect in north central West Virginia, in eastern Ohio, northern West Virginia, western Maryland, western Pennsylvania in the streams.

The water that—the amount of water that came down during that period of time we washed out—our streams were full of debris, full of items that should have been dredged, and as a result we had water lines lost, exposed.

We had septic systems that were destroyed. We had water pumping stations that went down because of this. So I am just curious—and we had loss of life in north central West Virginia as a result of this.

So it is not just happening with hurricanes in the coastal areas that we are talking about—the ravaging that took place. It has had an effect on the central part of this country as well.

So my question, when they try to get the dredging of these streams so that they can mitigate the potential loss, often we are hearing from the region—the EPA is they won't give permits.

They go through an extended permitting period. Either that, or FEMA steps in the way or an environmental group steps in the way.

So if we are going to mitigate the potential loss and the environmental impact, what would you suggest that we do in other areas to clean up our streams if the EPA continues to stand in the way of dredging? Any one of you?

Mr. LOPEZ. Yes. Yes, sir, I can help with that and, again, it is funny how life brings you—moves you forward.

So with Irene and Lee in northern Appalachia—again, we are just north of you. I had Southern Tier. I had the Susquehanna River Valley. We had the Catskill region.

To answer your question, part of our challenge is, is as we get into these streams we have to be very careful because any impact upstream can have an impact downstream.

In my home community, the urgent response was to just dig into streams and we wound up channelizing our streams. Water began flowing faster and destabilizing the stream banks and emergency evacuation routes were compromised.

Short story is as we get in, we are working with NRCS, others—DEC and New York State—to try to look at it from a watershed basis.

Some of it means restoring flood plains. Some of it means restoring the natural flow of the streams. Getting in to clear debris can be an ongoing mission but we also have to recognize that we have

to give room for streams almost like a living organism to get rid of energy and to have a place——

Mr. MCKINLEY. I understand.

Mr. LOPEZ. So——

Mr. MCKINLEY. But the EPA and FEMA are standing in the way of permitting to do that. We have got to—we had—at Follansbee, West Virginia, they have had a—their stream is 8 feet of gravel and sand have built up in that so as a result of this they had no capability of absorbing the amount of water that came down, and homes were washed out as a results of this.

Mr. LOPEZ. So—so——

Mr. MCKINLEY. So I am saying——

Mr. LOPEZ. You know, Chairman, respectfully, I have Region 2, so I am your neighbor in New York, in particular, similar topography.

I can only tell you that the partnership there has been with the State agent. DEC has been the agent in charge. EPA has worked——

Mr. MCKINLEY. The State keeps blaming the Federal Government. Where are we supposed to get through this, so that we can mitigate the potential loss?

We can eliminate a lot of these damages and the environmental impact if we could clean our streams out. But other people keep blaming Region 3.

Is there something you can suggest? Is it happening in other areas that you're seeing a more successful relationship to dredge these——

Mr. LOPEZ. Congressman, if I may, what I'd like to do with your permission is take your information back to our headquarters——

Mr. MCKINLEY. Please.

Mr. LOPEZ [continuing]. See if we could research this issue for you.

Mr. MCKINLEY. Please. The other has to do also when Rick Perry said that hitting a Category 4 which had such devastating effect on the petrochemical industry and has been suggesting that we build a secondary facility in Appalachia with an ethane storage facility in the north central eastern Ohio and western Pennsylvania. As a result, maybe we wouldn't have such loss of product if we had something other.

So I really appreciate the fact that the commissioner and Pruitt all are working together to try to find a secondary source on this—a supply.

I think it would eliminate some problem because we know that when that hit—Hurricane Harvey hit, out of the 23 cracker facilities in the Houston area, 17 went down.

So as a result, it had that ripple effect all across the country that people couldn't get resident supplies and companies had to reduce their workforce as a result of it.

So I am hoping that we can continue to learn from this problem that has occurred and how we can have a secondary source, and we are not going to have both environmental impact and economic impact.

I yield back.

Mr. SHIMKUS. Gentleman's time has expired.

The Chair now recognizes the gentleman from California, Mr. Peters, for 5 minutes.

Mr. PETERS. Thank you, Mr. Chairman, and thanks to the witnesses for being here.

You know, I think—I spend a lot of time when I see these awful disasters come they—they, obviously, cause a lot of dislocation and tragedy.

They also cost us a ton of money at the Federal Government for cleanup, and I think a lot about what you might have learned as part of the cleanup that you might advise us to invest in ahead of time.

So what are the things that maybe you've observed that you think, boy, if the Federal Government had invested in this beforehand we would have saved a lot of money in the long run.

Anything in general that you gentleman saw? Maybe Dr. Shaw?

Dr. SHAW. Yes. Thank you.

Certainly, that is part of what we—we have an ongoing process of trying to do the lessons learned and to that end we are in our second week of our after action review to learn the right lessons from this.

Part of what I think addresses your question is the fact that the Governor has put together a commission to rebuild Texas and part of what we are looking at there is identifying what are those resilience issues, opportunities, and needs both to build back infrastructure but also what do you do—what is that next step you would do if you had additional funds or funds——

Mr. PETERS. Anything in particular in mind right now?

Dr. SHAW. There are things like several—sometimes it is a reservoir—excuse me, a retention system. We have dykes and levy systems that have been proposed and often are waiting on funding.

Mr. PETERS. OK.

Dr. SHAW. And so there are projects that had been approved and are just waiting on funding that would help to mitigate some of those flood issues.

So those sorts of things are obvious and so we are trying to put together a better holistic package of what it looks like statewide but especially in the Hurricane Harvey impacted area.

Mr. PETERS. That seems wise to me.

Before I leave you, Dr. Shaw, have you had—we have had a lot of—we have had issues with massive sewer spills that have flowed and come from Tijuana up into San Diego, which I represent.

I wanted to see if you've had any experience in dealing with clean water and health issues with the CDC or FDA in connection with the issues you face in Texas.

Dr. SHAW. Not specifically.

Mr. PETERS. How has that been?

Dr. SHAW. Not specifically CDC and FDA. We partner, obviously, with EPA very closely on our—on our water quality issues but I've not had experiences with CDC and FDA on those issues.

Mr. PETERS. OK.

Maybe, Mr. Lopez, if you had any general responses to that question about Puerto Rico. I had a specific one, but any general thoughts about what resiliency the Federal Government might be

involved in building in so that we don't face the quantity of destruction that we saw this time next the wastewater——

Mr. LOPEZ. Thank you, Congressman.

And, again, we mentioned a little bit about flexibility with funding to ensure that as rebuild occurs or as we move forward, because recognize that once we leave the response mode we head into recovery and that is going to be a very long conversation.

And for any of my colleagues here we know that that is not just months. That may be years, and that may include additional rebuilding, reinvestment, flexibility of funding.

The other thing that I was discussing with my colleague—my deputy, Ms. McCabe—is the issue of, in that case, having resources available or prepositioned, having——

Mr. PETERS. Right.

Mr. LOPEZ [continuing]. Because of their isolation having resources prepositioned would be very helpful.

Mr. PETERS. Let me go back a step, because you are still—I think you are still—you are still framing the response issue. Let me just——

Mr. LOPEZ. We are very raw there. Yes, sir.

Mr. PETERS [continuing]. Give you an example of something that I just read about, which is Tesla restoring power to the Children's Hospital in Puerto Rico with a solar and storage project.

Now, it seems to me, I know—I think that Puerto Rico burns bunker fuel, which is a logistical issue. You've got to get that—you got to get there and, obviously, it speaks to the age of the power plant.

You have got—I mean, I am sure you had a grid issues that are affected by the wind. But it does seem to me—what I noticed in Puerto Rico was after the storms stopped, the sun was shining, and had there been distributed energy through solar—smart solar investments, things like hospitals would be up online ahead of time.

I would certainly suggest that that is something we ought to be thinking about in these island places which are so isolated you can't just send a truck of bunker fuel out there.

Had we invested in solar in some of these facilities, particular the—around the critical infrastructure like hospitals—the Children's Hospital—ahead of time, I think, you know, a lot of these people wouldn't—wouldn't have been affected in the same tragic ways.

I guess—maybe I will turn to Mr. Glenn and Mr. Coleman. Do you have any sort of lessons learned in terms of pre-disaster investments we might be considering right now so that next time this happens we won't be so on our heels?

Mr. GLENN. Well, I am fairly new to the Federal Government. I have been here two months——

Mr. PETERS. Welcome.

Mr. GLENN [continuing]. And prior to that in the private sector. Thank you. I am enjoying it. Here is what——

Mr. PETERS. I enjoy it sometimes.

[Laughter.]

Mr. GLENN. Here is what I walked in and observed, literally day one on this was the communications interaction and relationships

that we had with our peers at the State level and at the local level as well.

So the one lesson I learned was we cannot do enough coordination with our State and local and Tribal partners to make sure that we know what their systems are, we know who the people are and we train together and work together so that we can respond to this and that is the huge takeaway I had from this for the—relative to the impacts in our region.

Mr. PETERS. Thank you.

Mr. Coleman, my time is expired but maybe someone else will as you the question.

Thank you. I yield back.

Mr. SHIMKUS. Gentleman yields back his time.

The Chair now recognizes the gentleman from Houston, Texas, Mr. Olson, for 5 minutes.

Mr. OLSON. I thank the Chair.

I would like to start out with a point of personal privilege. Yesterday we found out that——

Mr. SHIMKUS. Not again.

Mr. OLSON [continuing]. Found out that a fellow Texan—this is good. Not good, but sad. A fellow Texan, Gene Green, announced this will be his last term in Congress.

He is a dear friend, a great Texan. We will miss you, but thank you for your service, my friend.

Welcome to our four witnesses. A special Texas Aggie howdy to Chairman Shaw, and my question will be for you, Chairman Shaw and you, Mr. Coleman.

First of all, could both of you talk about the sorts of hazards you saw in the Houston area and all of the area impacted by Harvey after Harvey left?

I know, for example, we had some pretty foul water that threatened with bacterial infections and we had debris piles that were magnets—as mentioned, snakes, rates, other animals.

In fact, a young girl who lives in Texas 22 in Sienna Plantation was out working in Wharton, was bit by a copperhead snake in a pile of wet soaked clothes. So my question is do we know anything about how to respond to these threats with Harvey or was it just a larger scale of what you know you have to deal with when a storm hits like Harvey did?

Dr. SHAW. Thank you, Congressman.

Certainly, with regard to this event, it is—a lot of the issues you see are common to a flood event but uncommon from this nature of the magnitude and the breadth of the impacted area.

So with regard to flood waters, anytime we have floodwaters that are going to inundate wastewater treatment plants you are going to have bacterial contamination and that is why our response cooperatively with the EPA was to provide information about how to deal with contamination from flood water.

With regard to the debris, certainly the magnitude of the debris is a challenge and it is exacerbated because of the fact that you have waste haulers, for example, that may have contracts up and down the coast and when you have—the impacted area is up and down the coast you don't have enough resources there potentially

to respond in a timely manner and it is just, you know, 30-plus million cubic yards of debris is an awful lot of debris to deal with.

Mr. COLEMAN. And I would just say that during a natural disaster or any type of disaster there are many, many hazards. Our goal really is to inform the public very quickly of how they can best protect themselves while they are also trying to restore and recover their own property.

With regards to flood waters, we really advise people to minimize their exposure because the waters are contaminated and there are many hazards associated with that.

You mentioned some of the other things. People have to really wear protective equipment and be completely vigilant as they work on their individual property to restore that. I meant, that is very, very important and we work closely with our State and local partners to make sure that that information is put into the hands of every individual so that they understand what they have to deal with.

Mr. OLSON. You mentioned the constant threats out there. For example, a first responder in Missouri City had a flesh-eating virus. Somehow, it got into his—he had a little small cut probably from working through a debris field and got exposed to that virus. So thank you, thank you for getting ahead of the curve.

And you guys mentioned, I think—if I quote you correctly, Mr. Coleman, you said the coordination between you and Dr. Shaw was, quote, "exceptional," and I think it was on the ground and that is what—that is my opinion as well.

But I have concern. You said you prepared for that with exercise after exercise with TCEQ. How do you do that with a storm like Harvey, a big storm like that, and also how about with three storms?

You have Irma and Marie hit at that same time. Can you coordinate with different regions as opposed to TCEQ? I mean, boy, that is a big challenge, isn't it?

Mr. COLEMAN. Yes, sir. It is a big challenge. We work very closely. There is an annual hurricane exercise that the State organizes that involves EPA, the Corps of Engineers, other State agencies as well where we really go through the game planning as to who does what making sure we have all of the proper contact information, everybody knows what their lane is, and what capabilities that they bring to the table.

So we participate in that. We also work on a daily basis to deal with much smaller incidents with the State so that our staff and their staff know each other well and they work seamlessly together to respond to these incidents.

Mr. OLSON. Dr. Shaw, you want to add something to that?

Dr. SHAW. Yes. I would—I would say that we actually—in one of those exercises we had the foresight to mock up a response to a Category 3 hurricane making landfall in Corpus Christi.

Harvey was a 4, making landfall just north of Corpus Christi, but it points out the fact and the way I usually characterize the importance of these exercises is we need to make sure that whenever we show up for the real thing we are not making introductions to our colleagues and counterparts in other agencies.

We already know who they are. We know them by face and by name, and so those exercises are priceless so that we can hit the ground running, not having to make introductions to try to figure out a game plan.

We already have the game plan. We've already practiced it. We begin implementation.

Mr. OLSON. Thank you. Mr. Chairman, I noticed my time has expired and I will close by saying, at 9:54 this morning, all four witnesses confirm they are happy my Houston Astros won the World Series title.

I yield back.

Mr. SHIMKUS. I hadn't heard that before, so thanks for letting us know that.

The Chair now recognizes Mr. Green for 5 minutes.

Mr. GREEN. Well, I am proud of the Astros, too. But I want to thank our panel for being here and thank the Chair and the ranking member for holding the hearing today on Hurricanes Harvey, Irma, and Maria.

I also want to thank our panelists—for the panel, particularly Administrator Coleman and Dr. Shaw, and I know the partnership that you've had between our regional office of EPA and the State has been—even when I was in the legislature years ago.

And I want to thank the EPA for the decision last month after our new administrator viewed the site to remove the cancer-causing dioxins out of the San Jacinto Waste Pits, and that is both on the north side of Interstate 10 and the south side of Interstate 10. And it is an important issue in east Harris County.

I have represented it off and on over the years, first as a State senator and then in Congress, and I shared it with Ted Poe. Now I share it with Congressman Brian Babin.

So we need to fully remove the contaminated soil and accelerate it with the recovery—discovery of the damage and the temporary cap during Hurricane Harvey.

Administrator Coleman, what is the time line for EPA to begin the removal of the contaminated material from the San Jacinto Waste Pits?

Mr. COLEMAN. Thank you, Mr. Green, for that question.

So, as you know, we've issued the recommended decision in October. We are working with both the Justice Department and the responsible parties on this special notice and negotiating a consent decree that will facilitate the specific design and then removal.

Specifically, we expect the negotiations to take six to 12 months in working with the responsible parties. The design activities can take as long as another six to 12 months and then the work will start.

So I can't give you a specific time frame because those negotiations are complex and do involve a number of issues that we have to work through with them.

So but that is generally what we expect to see.

Mr. GREEN. OK. Well, I would hope you would provide information and EPA has been doing it to the constituents out there for, like I said, mostly Congressman Babin now. But I sure have a lot of people who go out and crab and fish right near those sites and

I would—we'd like to make sure they're not, well, consuming that but also to make it much more safer.

And so the process will take almost a year, and I understand the difference because the temporary cap is about a $20 billion and then the permanent cap or the permanent removal is anywhere—the latest estimate, I think, from EPA was almost $120 billion.

Mr. COLEMAN. That is correct—$115 million to $120 million.

Mr. GREEN. And so I expect the responsible parties have the option of going to the courthouse and making that decision. But I understood the original report from the regional office to the national office was really strong opinion on what needed to be done.

Our district also includes—and this is in our district and has been forever, it seems like—the U.S. oil recovery in Pasadena, Texas, it is actually on a—near a bayou in Texas. Pete's gone but it is Vince Bayou coming through Pasadena and into the Houston ship channel or Buffalo Bayou. And many members of the public and local media voiced concern about that toxic material mitigating into the Vince Bayou.

Was there any information from that site that it—did any of that site bleed into the—into Vince Bayou and ultimately Buffalo Bayou and the Houston ship channel?

Mr. COLEMAN. Again, thank you for that question.

As you know, the U.S. oil site consists of two nearly adjacent locations but they are separated by a road and they are different in elevation.

So the former City of Pasadena wastewater treatment plant was flooded and because of the nature of what they did there, which was treat wastewater, we do recognize that there were probably some releases of things that were at that site. But we also know that they never stored hazardous waste or recycled oil on that portion of the site.

The second portion of the site, which is located at a higher elevation, where they did process oils to recover, that site actually did not flood.

It did, of course, sustain over 50 inches of rainfall. So some of the buildings which are in somewhat disrepair there was rainfall that entered the buildings.

There was some—we would call it storm water runoff that occurred and we did assess Vince's Bayou. We looked very closely at the receding waters and collected samples. We did not see that anything significant left that upper portion where the waste oil was processed.

So we feel confident that Vince Bayou only received some runoff from that lower area that was the former Pasadena wastewater treatment plant.

Mr. GREEN. OK. Is there a viable——

Mr. SHIMKUS. Quickly, please.

Mr. GREEN [continuing]. Or responsible party for the U.S. oil site?

Mr. COLEMAN. Yes, sir. We are working with the responsible parties. They say a group of investors who are actually working to both maintain stabilization of the site as well as working with us on a more thorough investigation and, ultimately, a cleanup of that site.

Mr. GREEN. Thank you, Mr. Chairman.

Mr. SHIMKUS. Gentleman's time has expired.

The Chair now recognizes the gentleman from Ohio, Mr. Johnson, for 5 minutes.

Mr. JOHNSON. Thank you, Mr. Chairman, and gentlemen, thank you for joining us today.

Mr. Lopez, prior to the hurricanes hitting Puerto Rico this season, most people would have characterized the municipal solid waste landfills as a mess even on a good day, with 19 of the 29 landfills operating out of compliance with Federal law.

So what's the status of the landfills in the—in the wake of the hurricanes today?

Mr. LOPEZ. So the landfill status, of course, as you mentioned, we had challenges and continue to be challenges on the island.

Debris management, which is really the response, is a complicated undertaking. So there is pressure, of course, to put more material into the landfills.

But what we are attempting to do, working with Army Corps and our partners, is to separate the waste streams and dispose of them in a fashion that relieves pressure on the landfills.

So whether it be vegetative debris or hazardous medical waste—any number of elements that could wind up in a landfill—we are working aggressively to separate out and dispose of, working with the authorities in a proper fashion.

Mr. JOHNSON. So are they still a mess?

Mr. LOPEZ. So a landfill situation that existed prior to the hurricane remains——

Mr. JOHNSON. No. No. What are—what's the status today?

Mr. LOPEZ. So the landfills continue to operate as they did before. There has been no change in that.

Our challenge—incident challenge is handling the debris, keeping the landfills functioning but also handling the debris which could accumulate in the landfills if not properly intercepted.

Mr. JOHNSON. Do you—do you think that Puerto Rico should keep its delegation authority under Subtitle D?

Mr. LOPEZ. Ultimately, the—and, again, we—this will be a longer-term conversation, Congressman. So our challenge will be to help support the local authorities. I feel that that is the appropriate thing to do.

We want to support them, give them capability, help provide resources where we can and also address other ways other than landfilling to address their solid waste.

But recognize that that is not EPA's function as a—as a role. We don't usually do solid waste management. We defer to the local government authorities for the actual management of solid waste.

Mr. JOHNSON. Is it—is it fair to say that current debris removal since the hurricanes—current debris removal is going to further overload the already filled capacity in those landfills?

Mr. LOPEZ. We are working to intercept it. There is a danger—there is always a possibility. But we are working very aggressively and thoughtfully with the leadership to identify waste streams and properly provide siting to separate them out and mitigate them appropriately. So there is always a potential but we are working to minimize the impact.

Mr. JOHNSON. OK.

Mr. Coleman, in your testimony you write that while each response has its own unique challenges, we remain flexible to address individual needs.

So as you indicated, things like geographical constraints, economic conditions, damage extent, and infrastructure vulnerabilities are all factors that shape Federal agency response when a natural disaster strikes.

In other words, how we respond to Houston's challenges is clearly different than those of Puerto Rico's challenges. So how does the EPA currently ensure response efforts take these challenges and regional characteristics into consideration?

Mr. COLEMAN. So we work—we have a national cadre of responders that work very closely together on training and that forms the baseline of how we respond.

As I mentioned, we have a set of technical assets—the ASPECT, TAGA, PHILIS—that also provide that specialized equipment. But then we work very closely with our State partners in each location as well as those other State agencies that we work with,with our FEMA regional offices, with things called regional response teams that then do additional specialized training and facilitation as it relates to the specific incidents that may occur in different geographic areas.

So those multiple layers of training exercises, having the right equipment, allows us to then be adaptable and flexible in responding to all types of different disasters and events.

Mr. JOHNSON. OK. Is there room for improvement?

Mr. COLEMAN. I believe that there's always room for improvement and, as Chairman Shaw indicated, the State does an after-action report. We are doing a similar exercise. We participate with the State side.

But we also have them participate and critique our work so that we can make improvements and we do that after each event and we memorialize those lessons learned so that, as we incorporate that into our training going forward, we are able to make those improvements.

Mr. JOHNSON. OK. All right.

Thank you, Mr. Chairman. I yield back.

Mr. SHIMKUS. Gentleman's time has expired.

The Chair now recognizes Dr. Ruiz from California for 5 minutes.

Mr. RUIZ. Thank you, Mr. Chairman.

I want to throw out a compliment to my colleague from Ohio who just asked those questions. Those are very good questions, very insightful. Thank you for asking those questions.

I want to continue on that line in terms of coordination and some local flexibility problems that I saw when I went to Puerto Rico myself that was an unscripted visit.

I went on my own accord and I visited a lot of locations impromptu so I can get the real story and not the script that folks would like to give you, and I had great assistance when I was on the ground as well.

And by way of background, I am an emergency medicine physician trained in public health and also trained in humanitarian dis-

aster response from the Harvard Humanitarian Initiative and other locations.

We talked about coordination. Let me just ask an open-ended question. Mr. Lopez, who is running the show in Puerto Rico? Who is—who is really in charge?

Mr. LOPEZ. So, understandably, we are under a command and control structure, as we mentioned. Again, FEMA makes the mission assignments.

Mr. RUIZ. OK.

Mr. LOPEZ. So mission assignments are handed out by FEMA.

Mr. RUIZ. So you would say FEMA is in charge?

Mr. LOPEZ. Through our command and control structure.

Mr. RUIZ. Yes.

Mr. LOPEZ. That is—again, as we interact we take mission assignments from FEMA——

Mr. RUIZ. OK.

Mr. LOPEZ [continuing]. And we work with our headquarters in our regional offices for support.

Mr. RUIZ. OK. And how are you coordinated? Where—like, how does that information get down to the EPA folks that are in the field?

Mr. LOPEZ. So we have a command and control structure and in our region we have an incident coordinator.

Mr. RUIZ. Yes, and where is that incident coordinator located?

Mr. LOPEZ. He is in Edison, New Jersey. We also have staff——

Mr. RUIZ. In New Jersey.

Mr. LOPEZ [continuing]. We also have staff—and this is—this is critical for Puerto Rico—we also have staff embedded on the island. So——

Mr. RUIZ. Where exactly are they embedded?

Mr. LOPEZ. Guaynabo.

Mr. RUIZ. Guaynabo.

Mr. LOPEZ. And also out of San Juan.

Mr. RUIZ. And where else are they embedded? In San Juan?

Mr. LOPEZ. San Juan.

Mr. RUIZ. OK.

Mr. LOPEZ. So we have staff embedded there. We also have some staff——

Mr. RUIZ. OK. So, you know, the point I am making is that when I was there the number-one thing you need is clarity in leadership, in roles and responsibilities, and having to bring in all the—all the local players, as Mr. Coleman was talking about, and everybody in a very flexible rapid response group and I didn't see that in Puerto Rico.

We are using a spoke and hub model that is basically run out of San Juan. Very top-down heavy information is being sent out.

All the different agencies are working in silos. They weren't even communicating with each other. So there is things like you mentioned, obstacles in being able to reach certain geographic locations.

I worked with the 82nd Airborne closely in Port-au-Prince right after Haiti. Those—those men and women can move mountains to get supplies anywhere in the world and I didn't see that kind of coordination on the ground to get those supplies, to get the people where they needed to go.

So here is what I am proposing, and I am speaking to every else, is, you know, the challenges of Puerto Rico are very different than the challenges in Houston and Florida.

You don't have a large concentration of population with an infrastructure that is intact—electricity and communication. You still have the majority of people without power. You still have the majority of people who have difficulty finding that clean water. And you say some of the—some of the water systems are operational.

What does that mean, operational? Because I have been into some hospitals they say are operational but that is only one floor of the five floors of the hospital, but yet people want to tout them as operational.

So what we need to talk about is capacity and what is the capacity of the infrastructure to reach how many people. Oftentimes, gentlemen, we get—we get the reports of how many people on the ground, how many water bottles, how many systems.

But that is not the way that you manage or that you count accountability in a disaster response. We have to talk about capacity. So what is the capacity of the different agencies and the different infrastructure systems to provide the much-needed services?

And you are right, Mr. Lopez. Agua es vida—water is life and so tell me, is there a water task force in Puerto Rico with different stakeholders and where is that water task force—how is that water task force managed and who are the stakeholders in that task force?

Mr. LOPEZ. So it is a small group. So we have, again, FEMA. We have mission assignments. Our offices—we work with the EQB—environmental quality board—and with the territory health department.

So those are the principal actors.

Mr. RUIZ. OK.

Mr. LOPEZ. And just, Congressman, if I may, we are on track on a regular basis. We do regular meetings with the island—conference calls and interdiction of——

Mr. RUIZ. Great. My proposal is to have field command posts with all the different stakeholders to address local issues with local mayors and NGOs and the Puerto Rican government, the Federal Government, and other agencies working together—pretty much what Mr. Coleman talked about that is occurring in other locations but have that in Puerto Rico more in the field so that you can have better decision making, coordination, and responding.

Your role is to test and monitor and to track changes. But then that needs to get translated to actual implementation in a much more rapid way so that goods and repairs can be made in a transparent and prioritized way on the ground.

And so that is—my time is up—so that is my—that is my recommendation, given my experience and I think that we need to move forward in trying to implement some of those.

Mr. SHIMKUS. Thank you, Dr. Ruiz. I agree.

We had a very similar hearing like this on the Energy Subcommittee, and the question I asked, well, "Who's in charge?"

Mr. RUIZ. Yes, and——

Mr. SHIMKUS. I would have loved for——

Mr. RUIZ [continuing]. And right now we heard FEMA, but then when I was on the ground FEMA said Puerto Rico——

Mr. SHIMKUS. I—I——

Mr. RUIZ [continuing]. And Puerto Rico says FEMA.

Mr. SHIMKUS. I don't disagree, and I wish that the administration would have just parachuted 82nd there——

Mr. RUIZ. I would have loved to have seen that. Absolutely.

Mr. SHIMKUS [continuing]. To some of the very small villages, and I think we all would have been best served. Then we could have worried about who is responsible later. But you need to get service there immediately.

Mr. LOPEZ. Chairman, if I—just briefly, too. And not last but not least, there is a joint field operations center there and we do have EPA incident commanders and we have branch leaders in Puerto Rico.

So there is an incident command center there. Those other agencies are embedded but——

Mr. RUIZ. See, when you say that, though, Puerto Rico is big, you know, and you leave us with the impression that it is somewhere.

But where exactly, and are they in the different municipalities and do we have the right people working in a group out in the field in those different municipalities, because when I was there they didn't exist.

FEMA told me they didn't have field command posts. DMAT did not have field command posts. I spoke to different agencies that did not—they said that this would be a good idea and something that they would be very willing to work with and actually I am meeting with HHS later today to address this concept.

Mr. SHIMKUS. Great. Thank you. Thank you very much.

The Chair now recognizes the gentleman from Texas, Mr. Flores, for 5 minutes.

Mr. FLORES. Speaking of HHS, that is going to be my question.

I want to thank the chairman and ranking member for holding this hearing. I want to thank the panel for joining us today.

Under Emergency Support Function Number 8, the Department of Health and Human Services, or HHS as it is commonly called around here, is the primary agency for ESF Number 8 and includes support for potable drinking water, solid waste disposal, and other environmental issues related to public health.

I have got a question—this question for Mr. Lopez and Mr. Coleman, starting with Mr. Coleman. Number one, have you worked with HHS to carry out this function regarding providing potable water and also solid waste and debris removal in communities affected by hurricane damage this season?

Mr. COLEMAN. Yes, sir. We do work with HHS. Specific to Hurricane Harvey, as the State and FEMA determined the specific Federal assistance that is necessary, in this particular response, that role of HHS was somewhat limited because of, A, the State capacity was quite extensive and we had done a lot of coordination work with them, but embedded with my staff I have 3 members from the Centers for Disease Control, and they coordinate and have reachback capability to both the CDC headquarters and HHS in general as any issue comes up, and we are able to quickly address those and provide the support as requested by the State.

Mr. FLORES. OK. Thank you, Mr. Coleman.

Mr. Lopez, do you have anything to add regarding ——

Mr. LOPEZ. The only thing I would say, again, is that HHS is part of the unified command structure so that they are immersed in that conversation.

Our local engagement has been with the Puerto Rico Department of Health. So, ultimately, we do have the representation of health interests.

Mr. FLORES. OK.

Mr. Glenn, do you have anything to add?

Mr. GLENN. No, sir. It's part of that structure and we have been working with them.

Mr. FLORES. OK.

Mr. Shaw, you gave us a breakdown of TCEQ's costs for dealing with the hurricane response and you indicated that the funds to reimburse you would be coming from FEMA. Has FEMA been a good partner in working with the State of Texas and dealing with the response and recovery efforts?

Dr. SHAW. Yes, and there is sort of various aspects of how that operates. We have, in the initial public assistance reimbursement from FEMA, about $700,000 anticipated for that cost and that is the initial travel and what have you, working with the initial response.

We also have a $15 million authorization from FEMA for us to work with EPA in dealing with the field operations, which includes a lot of our command and control—our assessment and location of containers displaced and what have you in the field operations.

So $700,000 for the initial component and $15 million to work with EPA on those field operations.

Mr. FLORES. OK. What can be improved upon in terms of that process? It sounds to me like it has worked pretty smoothly. Do you have any suggestions for improvement?

Dr. SHAW. It is working well. Communications is the primary issue and we have a lot of lessons learned. So yes, I think we will learn more but I think the key thing is to point out one of the issues, for example, are lessons learned. We work very closely with EPA. In this event, we were able to very quickly deal with things such as fuel waivers that took weeks in past events and took hours in this event, and that allowed us to focus on those critical issues, making sure we got water, wastewater, and immediate harm issues addressed quickly.

Mr. FLORES. OK. In this process, have you come across anything where Congress can help in terms of making statutory improvements to the Stafford Act or any other related Federal statutes to deal with catastrophes like this?

Dr. SHAW. There are—there is room for improvement and the challenges, quite frankly, Congressman, are going to be those tradeoffs because, you know, as you look at—and this is sort of outside of my lane—but one example is dealing with the repairs on the recovery side of that to homes, for example, and I think there's opportunities to be able to get that done much more quickly and to do permanent repairs as opposed to something that is temporary.

The reason that I am interested in that is because getting those folks back into their homes has such a huge health and environ-

mental impact because the longer it takes to get those homes repaired the longer you have those health issues associated with debris with people that are outside or displaced from their housing and then the economics associated with all those.

So there is room for improvement. A lot of those have to do with making sure that Congress is making the types of decisions about how to improve the efficiency of getting those repairs done as well as making sure that they're ensuring that those funds are expended properly and you avoid—there is going to be foul play involved and that becomes a huge issue as how much you balance, making sure you get the funds out there but you minimize the money that is fraudulently spent.

Mr. FLORES. OK.

Thank you for your responses. Again, I thank the panel for joining us. I yield back the balance of my time.

Mr. SHIMKUS. Gentleman yields back.

The Chair now recognizes the gentlelady from Colorado, Ms. DeGette, for 5 minutes.

Ms. DEGETTE. Thank you so much, Mr. Chairman, and thanks to the witnesses for coming.

Mr. Glenn, before Hurricane Irma, you and the other leaders in Region 4 increased staffing of the Regional Emergency Operations Center, the deployed on-scene coordinators to the State emergency operations center, and you provided a Region 4 liaison to the FEMA Regional Coordination Center. Is that right?

Mr. GLENN. Yes, ma'am.

Ms. DEGETTE. And do you—can you estimate how many senior leaders were deployed prior to the hurricane's landfall?

Mr. GLENN. Prior to the landfall, as far as our executive leadership I, myself, went down and we had two other senior leaders that worked directly for me went to south Florida, and then some individuals from headquarters were also down in Florida.

Ms. DEGETTE. OK. Were you the most senior person down there before landfall or was there someone more senior to you?

Mr. GLENN. Prior to landfall, I was the most senior person in the Region 4 down there.

Ms. DEGETTE. OK. And, you know, it is like Mr. Coleman was saying, there was a lot of coordination with the State and local officials down there. Is that right?

Mr. GLENN. Absolutely. Yes, ma'am.

Ms. DEGETTE. So, Mr. Lopez, I want to—I know you didn't arrive on the scene until September 28th but I want to ask you the same question, if you know.

Before Hurricane Irma hit Puerto Rico, did the leaders in Region 2 increase staffing in the Regional Emergency Operations Center?

Mr. LOPEZ. So, again, I started actually on October 11th.

Ms. DEGETTE. Oh, OK.

Mr. LOPEZ. But——

Ms. DEGETTE. So do you—do you know what kind of staffing was increased?

Mr. LOPEZ. I would have to—I would have to get back with you for detail.

Ms. DEGETTE. OK.

Mr. LOPEZ. I have some assessments but I don't want to be inappropriate with a response. So I'd be happy to respond.

Ms. DEGETTE. OK. And so the questions—you'll probably need to get back to me on the staffing, the onsite coordinators, and who the senior leaders were who were there prior to landfall.

The anecdotal evidence that we have is that whereas in Region 4 they were all there before it hit, in Region 2 what happened was they were all rushed—aside from the people who were already embedded there that you testified about before that we were already behind the curve because we had to send a lot of people in. So if you can get me that information that would be really helpful.

And I want to ask you again—to continue, Mr. Glenn, now, on September 12th there were 12 field hazard assessment teams conducting facility assessment support at chemical and oil storage facilities. Is that right?

Mr. GLENN. Yes, ma'am.

Ms. DEGETTE. Now, Mr. Lopez, do you know how many field assessment—field hazard assessment teams were operating in Puerto and the U.S. Virgin Islands two days after Irma made landfall?

Mr. GLENN. I can't tell you the number of teams but I can tell you that teams were on the ground so——

Ms. DEGETTE. You don't—can you get me that answer, please, of the number?

Mr. LOPEZ. I can get you the number, of course.

Ms. DEGETTE. And how about Maria? Same thing?

Mr. LOPEZ. I will have to get you the same thing. Again, the sites——

Ms. DEGETTE. OK.

Mr. LOPEZ [continuing]. As I mentioned in my testimony, were assessed prior and afterwards. So there have been assessments ongoing. But I can't tell you the number.

Ms. DEGETTE. Right.

But, again, you know, in Region 4 they had 12 teams on the ground two days after. So what I want to know, and as several of my colleagues on both sides of the aisle have said, is Puerto Rico is a lot larger physically and more complex because of transportation needs and other issues.

So I am just wondering two days after landfall in Puerto Rico and the U.S. Virgin Islands how many teams did we have and what were they doing.

Now, Mr. Lopez, I bet you can't answer this either.

Mr. LOPEZ. I will do my best, ma'am.

Ms. DEGETTE. Do you know how many teams did Region 2 have in making boots on the ground assessments of Superfund sites two days afterwards—after Irma?

Mr. LOPEZ. As I mentioned, the——

Ms. DEGETTE. If you can get me that information, too.

Mr. LOPEZ. We will get you the specific numbers.

Ms. DEGETTE. Sure.

Mr. LOPEZ. But just to be clear, Congresswoman, there was a presence——

Ms. DEGETTE. Uh-huh.

Mr. LOPEZ [continuing]. And folks were on the ground assessing before and after.

Ms. DEGETTE. I am certainly not trying to imply there was no presence.

Mr. LOPEZ. I understand. I just don't have the correct number.

Ms. DEGETTE. But like Mr. Glenn—correct me if I am wrong—Region 4 had six teams on the ground on September 12th that were making boots on the ground assessment of Superfund sites. Is that right, Mr. Glenn?

Mr. GLENN. Yes, ma'am.

Ms. DEGETTE. So that is what I am wondering, Mr. Lopez, and, frankly, I am a little concerned that you don't know. I realize you didn't come in until October. But we need to know how robust and how quick the response was and the very fact that we are having this hearing, Mr. Chairman, and they can't answer any of these questions for Region 2—Region 4 has it Johnny-on-the-spot—just goes to the concern that we are all—that we are all expressing today and if I can get your answers maybe——

Mr. LOPEZ. Sure.

Ms. DEGETTE [continuing]. Maybe my concerns will be alleviated. But I fear that they will not.

Thank you. I yield back.

Mr. SHIMKUS. The gentlelady yields back her time and I thank her for those questions. It just goes to my point of a standard operating procedure and why are regions different when there is a disaster heading in a certain area.

Ms. DEGETTE. Why is it one thing in one region and another thing in another region?

Mr. SHIMKUS. Right. So thank you very much.

The Chair recognizes the gentleman from North Carolina, Mr. Hudson, for 5 minutes.

Mr. HUDSON. Thank you, Mr. Chairman, and thank you to all the witnesses for being here today.

Mr. Glenn, I particularly want to say welcome to you. Obviously, Region 4 includes my home State of North Carolina. I look forward to getting to know you better and working with you in the future.

While the damage in Puerto Rico and the U.S. Virgin Islands is significant, Region 4, including Florida, sustained substantial damage from Hurricane Irma on the heels of rebuilding after the 2016 hurricane season.

There were several reports after Hurricane Irma of issues with drinking water systems and several communities under boiled water advisories.

What is the status, Mr. Glenn, of drinking water systems in Region 4? Are there still people without access to safe drinking water?

Mr. GLENN. The information I have is that all drinking water systems are operational in Region 4. We are not aware of any people served by a system that are without access to potable drinking water.

Mr. HUDSON. Great. What about right after the storm? How did the drinking systems fare during the hurricane?

Mr. GLENN. Well, as you know, any time a storm like this comes through it has impacts. It has immediate impacts, and so almost every municipality that was in the path of the storm did experience some type of impact at varying levels.

The impact you've heard today—physical damage, power outages, personnel, chemical supply interruptions, and the like—so almost every system was impacted and——

Mr. HUDSON. In terms of water systems—drinking systems?

Mr. GLENN. Yes, sir. Drinking systems. Correct.

Mr. HUDSON. Well, just on your assessment, are there any improvements to the drinking water systems that we could look at to help in future situations like this?

Mr. GLENN. Well, as you know, we operate under the permission authority of the Stafford Act and we will continue to do so and fulfill whatever authorizations are provided for in that act.

Mr. HUDSON. Got you.

For everybody, the whole panel, in June 2016 the National Infrastructure Advisory Councils recommended FEMA consolidate Federal emergency response roles and responsibilities for water into a single ESF within the annex of the national response framework to improve coordination and reduce confusion and improve the information sharing and communication.

The 2016 recommendation repeats an NAIC recommendation from 2009 that declared DHS should elevate water services to its own ESF within the NRF to achieve higher prioritization of water systems during emergency response that opens up to at least everyone from FEMA.

And Dr. Shaw, you're welcome to join in too, but do you believe making this change is a wise move? I would just ask the FEMA regional folks to chime in.

Mr. COLEMAN. So with regards to that recommendation, we think that, and my personal experience is that, water infrastructure is extraordinarily important. It essentially sets the basis for when people can repopulate an area.

So, you know, I think it is very important. I don't have a specific opinion on if it should be its own emergency support function but I think that working very closely with the State Governor's office, et cetera, to make sure that in a response you restore service as soon as possible is the most important thing.

Mr. HUDSON. So you don't—you don't want to say whether making its own ESF would help with that coordination?

Mr. COLEMAN. From my personal experience the coordination with the Governor's office and the local officials is the most important coordination that needs to take place and when that takes place you're able to actually get the right equipment, infrastructure, or support to bring those systems back online.

Mr. HUDSON. Got you.

Dr. Shaw, I see you are chomping at the bit. Please.

Dr. SHAW. And I am going to be supporting what Mr. Coleman said as well and that is that I think the key point is in my State it may be difficult for me to assess whether that—what that need would change because we have such a focus on water and wastewater as our initial response in that.

I am thinking back through the days before, during, and after the landfall and I don't—I have not identified the place where that would have changed things because we work cooperatively and our mission is first and foremost to get out and assess those issues that

are immediate harm and key among those are water and wastewater systems and getting those back online.

We have partners such as with Texas—I always get this wrong—the Texas American Waterworks Association—our TXWARN system which helps us to bring together different resources from different services that are available to get equipment in places. Those things are all working very well. And so my only concern with changes is making sure we don't lose what's working well because it is working well in the State of Texas. Obviously, you want it quicker, but those are tweaks as opposed to major overhauls.

Mr. HUDSON. Got you.

I have got a little over 10 seconds. Do either—Lopez or Glenn, do you have an alternate opinion?

Mr. LOPEZ. Just to reinforce, I was a local official and I was also on the ground during Irene and Lee. The issue of communication is really the critical issue.

So whether it is a single function or a coordinated function, you really need to be in the heads of the plant operators who know exactly what they need and how to get up and running. So if you can penetrate to that level quickly, that is really what you need.

Mr. HUDSON. Great.

Mr. Chairman, my time has expired. I will yield back. Thank you.

Mr. SHIMKUS. The gentleman yields back his time.

We want to thank this panel. You can tell—we know you've travelled far and there is still a lot of work to do and so we are very appreciative of your efforts.

And there are some Members who have asked questions for you to respond. If you can do so in a timely manner, that would also be appreciated. Thank you for what you do, and now go back to your regions and get to work.

And with that, we will dismiss this panel and ask for the second panel to join.

[Second panel arrives.]

OK. We want to thank all our witnesses for being here today, taking the time to testify before the subcommittee. Our second witness panel for today's hearing includes Mr. Mike Howe, executive director and secretary treasurer for the Texas Section of American Waterworks Association; Mr. Mark Lichtenstein, chief of staff, chief sustainability officer, State University of New York, College of Environmental Science and Forestry; Ms. Lyvia N. Rodríguez del Valle, executive director of Corporación del Proyecto ENLACE del Caño Martín Peña; and Mr. Trent Epperson, assistant city manager, administration, City of Pearland.

So you were able to be here for the—obviously, the first panel. This will be a smaller group but still as important as we get your statements into the record.

There will be some of us who will be here to ask the questions, as you saw in the first panel. We do appreciate you being here, and with that we will start with Mr. Howe. You are recognized for 5 minutes, and your full statement is submitted for the record.

You are recognized, sir.

**STATEMENTS OF MIKE HOWE, EXECUTIVE DIRECTOR, TEXAS SECTION, AMERICAN WATER WORKS ASSOCIATION; MARK LICHTENSTEIN, CHIEF SUSTAINABILITY OFFICER AND CHIEF OF STAFF, COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY, STATE UNIVERSITY OF NEW YORK; LYVIA N. RODRÍGUEZ DEL VALLE, EXECUTIVE DIRECTOR, CORPORACIÓN DEL PROYECTO ENLACE DEL CAÑO MARTÍN PEÑA; AND TRENT EPPERSON, ASSISTANT CITY MANAGER, CITY OF PEARLAND, TEXAS**

**STATEMENT OF MIKE HOWE**

Mr. HOWE. Thank you much and good afternoon, Chairman Shimkus and members of the subcommittee.

My name is Mike Howe, the executive director of the Texas Section AWWA and we manage the Texas Water/Wastewater Agency Response Network, or TXWARN.

The mission of TXWARN is to provide emergency preparedness disaster response and mutual aid assistance for water and wastewater utilities. TXWARN began after Hurricane Katrina when it was apparent that the coordination and prioritization of water utility needs was disjointed under the existing national response framework.

We in the water sector realized that we needed to develop a utility-to-utility mutual aid system. AWWA spearheaded the WARN initiative and collaborated with other stakeholders to facilitate the growth of WARN from the two-State program in 2006 to the 50 programs we have nationwide today.

Membership in TXWARN is free and is available to all public and private utilities in Texas, making it the largest utility-to-utility mutual aid program in the country with more than 1,200 utility members that provide services to 78 percent of the population of the State of Texas.

The Texas Section AWWA manages TXWARN and receives partial funding from the TCEQ via the State revolving fund program to facilitate training and exercises.

Hurricane Harvey made landfall as a Category 4 hurricane in Nueces and Aransas Counties on August 25th and, as you know, meandered to the northeast over the upper Texas coast for four days.

It presented water utilities with unique challenges. As the storm approached, we activated the TXWARN system on October—August 23rd. We first began preparing support teams for the inevitable aid requests.

Ground zero for Hurricane Harvey was the small coastal town of Port Aransas. At daylight after the storm the local water utility manager assessed the damage to the community and the water system.

The power was out for the water pumps, one of the water supply lines from Corpus Christi was out of service, and the majority of the community's water systems were leaking.

As Harvey crossed Aransas Bay, it brought significant similar damage to Rockport's water and wastewater system. The first major request for TXWARN came early Sunday morning on behalf

of Port Aransas. The water system had to be operational before authorities could bring the population back.

TXWARN contacted the San Antonio Water System, or SAWS, a little more than 2 hours away from Port Aransas and its management agreed to send equipment and manpower to Port Aransas. In less than 24 hours, SAWS had deployed 20 field staff and by Friday of that week they had completely restored service.

SAWS also responded to Rockport, performing repairs to it water and wastewater systems. TXWARN arranged to relief SAWS crews after 10 days from this grueling work with crews from the Austin water utility.

During the nearly two-week response period TXWARN was fully activated, we managed more than 50 similar requests for large and small systems. We are very pleased with our response operations during Harvey but there is always room for improvement.

Specifically, I would like to call your attention to how the needs of the water sector are prioritized and coordinated as part of the national response framework, or NRF.

The current organizational structure of the NRF largely reflects the 1992 Federal response plan prepared by FEMA. That was 25 years ago. The experiences of the water sector since then suggest that this current model requires a thorough review and update.

The loss of drinking water and wastewater services compounds the complexities of all response activities and impacts the ability of first responders to sustain shelters, hospitals, and other first responding units.

Therefore, prioritizing the recovery of water and wastewater service is essential to bringing normalcy and commerce back to any community.

The disaggregated approach under the national response framework means that no single entity at the Federal level has total responsibility for the water mission. This is our issue, and others at the Federal level has also recognized this.

In 2009, the National Infrastructure Advisory Council recommended the Department of Homeland Security elevate water services to its own ESF category within the national response framework.

Seven years later, the NAIC recommended that DHS direct FEMA to consolidate Federal emergency response roles and responsibility into a single ESF.

Implementing these recommendations will be consistent with the approaches applied for similar critical infrastructure such as transportation, communications, and energy.

We urge Congress with its oversight jurisdiction and responsibilities to direct FEMA to reconsider how the NRF is used to support disaster response and recovery. This is vital for protecting public health, the environment, and all the communities we serve.

And thank you very much.

[The prepared statement of Mr. Howe follows:]

American Water Works Association

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**Response and Recovery to Environmental Concerns**

**from the 2017 Hurricane Season**

**Presented by**
**Mike Howe**
**Executive Director**
**Texas Section, American Water Works Association**

**Before the House Subcommittee on the Environment**
**Nov. 14, 2017**

Good morning, Chairman Shimkus and members of the subcommittee. My name is Mike Howe and I serve as executive director of the Texas Section of AWWA and as administrator of the Texas Water/Wastewater Agency Response Network, or TXWARN. The mission of TXWARN is to support and promote statewide emergency preparedness, disaster response and mutual aid assistance for public and private water and wastewater utilities. The TXWARN program is part of a national water utility initiative to build a mutual aid and assistance network among water utilities following the devastation brought about by Hurricane Katrina. The framework for the Water/Wastewater Agency Response Network (WARN) originated with utilities in California after the 1991 East Bay Hills Firestorm. The catalyst for a national WARN initiative began with the 2004 hurricane season that devastated Florida with three major storms (Charley, Frances, Jeanne) and the subsequent 2005 season that included Katrina, Rita and Wilma.

The scale of the water infrastructure needs associated with these incidents were beyond those ever previously observed in the sector. In the aftermath of Katrina, it was apparent that coordination and prioritization of water utility needs was disjointed under the existing National Response Framework. Given this limitation, there was recognition within the sector that a "utilities helping utilities" process must be developed to overcome the limitations of the NRF and build on the lessons learned from California and our brethren in the power sector.

AWWA spearheaded the WARN initiative and collaborated with the U.S. Environmental Protection Agency (EPA), state primacy agencies, the National Emergency Managers Association and sector partners to facilitate the growth of WARN from two state programs in 2005 to the 50 programs we have today. The strength and power of WARN includes the economies of scale it provides as a force multiplier in mobilizing specialized resources to expedite the recovery of water and wastewater services.

This requires close coordination with state partners, relationships that TXWARN has fostered since 2005 with the Texas Commission on Environmental Quality (TCEQ) and with the State Emergency Operations Center. Membership in TXWARN free to all public and private utilities in Texas, and when a response is needed, it will work to assist whenever possible and the resources are available. TXWARN is the largest utility-to-utility mutual aid program of its type with more than 1,200 utility members that provide services to 78% of Texas residents. The Texas Section of AWWA manages TXWARN and on TXWARNs behalf, receives some funding from TCEQ via the state revolving loan fund to facilitate trainings and exercises. This small investment has helped build the operational knowledge between all stakeholders that was essential in effectively responding to Hurricane Harvey.

Many Texas water systems were really put to the test when Hurricane Harvey made landfall as a Category 4 hurricane in Nueces and Aransas Counties on August 25, and meandered to the northeast over the upper Texas coast for four days. According to National Oceanic and Atmospheric Administration, Harvey was the wettest hurricane in U.S. history, with rainfall accumulations of 40-61 inches in southeast Texas and southwest Louisiana.

We activated the TXWARN system on August 23, as the storm approached. We initiated the process of preparing our support teams for requests, based on the predicted overnight landfall August 25. Ground zero for Hurricane Harvey with the small coastal town of Port Aransas. At daylight, the local water utility manager, who did not evacuate, assessed the significant damage to the community and the water system. Power was out for the town's water pumps, one of the water supply lines from Corpus Christi was out of service, and the majority of water connections serving the structures in the community were leaking.

As Harvey crossed Aransas Bay, it also impacted Corpus Christi, and brought significant damage to Rockport's wastewater collection and treatment system as well.

The first major request for TXWARN came early Sunday morning via a third party on behalf of the utility in Port Aransas. Prior to allowing evacuees to return, it was essential that the water system was operational. TXWARN contacted the San Antonio Water System (SAWS), located a little more than two hours away, and its management agreed to send equipment and manpower to support Port Aransas. In less than 24 hours, SAWS had deployed 20 field staff to Port Aransas, and by Friday, they had restored service in that community. Adding to the complexity of recovery was the need to clear debris before performing any water utility work, such as leak repairs. In addition, living conditions for responding utilities are limited, meaning some of the crews slept in their trucks. Work

progressed each day from sunup to sundown, so San Antonio rotated crews for safety reasons.

SAWS also agreed to respond in Rockport, doing similar work on its water system, and restoring the wastewater system as well. That work included significant electrical rewiring, particularly in areas that experienced heavy flooding. This is difficult and time-consuming work, TXWARN arranged to relieve SAWS crews after 10 days with crews from Austin Water Utility.

During this time, Harvey transitioned from a destructive hurricane into a major flooding incident covering most of East-Central and Central Texas. News reports illustrated the overall impact, but water utilities throughout the area felt that impact in unique ways.

Staff at the City of Houston's Northeast water plant diverted flood waters from its filter galleries so it could continue operations without interruption. It is notable and a testimony to the utility staff's resilience that the City of Houston's water operations were never interrupted during Harvey. Unfortunately flood waters overwhelmed some of the the city's wastewater operations, but those services were restored as quickly as possible once flood water receded and it was for safe access to the facilities again.

In some instances, it was impossible to complete damage assessment at utilities in Southeast Texas until flood waters receded. However, TXWARN continued to respond to the utilities in the Coastal Bend area. As flooding subsided, TXWARN did move assessment teams and repair crews into Southeast Texas to assist utilities with short-term restoration efforts. Keep in mind our mission is to assist with the immediate response and recovery efforts to restore essential water utility services so utilities are able to plan their long-term recovery as needed. It is worth noting that at least one utility has decided to

abandon its own local wastewater treatment plant and contract with a nearby utility for future services. Rebuilding its facility is cost prohibitive.

During the nearly two-week response period TXWARN was fully activated, including the Labor Day weekend, it managed more than 50 requests for assistance. We worked very closely with other associations and with our regulatory agency, the TCEQ. We worked equally as close with our State Emergency Operations Center, with an understanding of its greater role in the overall response. We attribute our overall success in these working relationships to the fact that we have operated TXWARN for 12 years, since shortly after Hurricane Katrina.

While we are pleased with our response operations during Hurricane Harvey, there is always room for improvement. Specifically, I would call your attention to inconsistencies in how the needs of the water sector are prioritized and coordinated as part of the National Response Framework (NRF). The current organizational structure of the NRF is largely reflective of the 1992 Federal Response Plan prepared by Federal Emergency Management Agency (FEMA). The experiences of the water sector with myriad incidents since Hurricane Katrina suggest that this current model requires a thorough review and update to ensure that the critical lifeline services provided by the water sector in every community are addressed in the most expeditous and efficient manner possible. The loss of drinking water and wastewater services compounds the complexity of response actions and can impact the ability of responders to sustain shelters, hospitals and other emergency services. Therefore, prioritizing the recovery of water and wastewater service, if impacted, is paramount to preserving public health and restoring a community's economic vitality following an incident.

**Opportunities to Enhance Response Coordination in the Water Sector**

The expansion of the WARN program around the country has proven its effectiveness in expediting utility responses to multiple incidents, ranging from wildfires and earthquakes in California to flooding from North Dakota to North Carolina to hurricanes from Texas to New York. Given this emerging capability, the water sector has found that the organizational structure for federal support as defined in the National Response Framework creates inefficiencies in coordination and communication needs, especially during large-scale events such as Superstorm Sandy or Hurricane Maria. This disaggregated approach to federal support, as illustrated in Figure 1 attached to this written testimony, means that no single entity at the federal level has total responsibility for the water mission. It also makes it very difficult to establish a common operating picture, which has implications for informing other sectors and responders about potential resource needs within an impacted community or region.

This issue has been highlighted by the National Infrastructure Advisory Council (NIAC) as follows:

> **NIAC, July 2009, Framework for Dealing with Disasters and Related Interdependencies**
>
> **Finding**: The National Response Framework (NRF) lays out a structure to restore identified key infrastructures and functions for community recovery through 15 Emergency Support Functions (ESFs). Each function or infrastructure under an ESF has a clear priority and path for connection to emergency response decision makers as well as a supporting agency at the Federal level to support its recovery and management during a crisis. State and local response plans reflect parallel structures for NRF ESFs for coordination purposes. Currently, the Water Sector is supported as a subordinate

function to four different ESFs under the NRF. Under this structure water and wastewater services does not have sufficient visibility with leadership or resources necessary to support these other ESFs.

**Recommendation:** *Addressing Needed Water Services Recovery Mechanisms.*

- DHS should elevate Water Services to its own ESF within the NRF to achieve higher prioritization of water systems during emergency response. At the State level, emergency managers can apply current structures to match changes to the NRF, in a manner most efficient to them. These changes should be applied during the next NRF review cycle, and in the interim, FEMA should consolidate responsibility for water services support under EPA or U.S. Army Corps of Engineers.

**NIAC, June 2016, Water Sector Resilience Final Report and Recommendations**

**Finding:** Under the National Response Framework, water responsibilities are distributed across four Emergency Support Functions (ESFs) and multiple Federal agencies. This can result in water being excluded from unified command or interagency coordination, and can create confusion during response and recovery efforts that can impede water service recovery during disaster.

**Recommendation:** *Fortify Water Sector response and recovery capabilities.*

- The Secretary of Homeland Security should direct the administrator of FEMA to consolidate Federal emergency response roles and responsibilities for water into a single ESF within the Annex to the National Response Framework. This would improve coordination and reduce confusion, improve information sharing and communication, and alleviate over-taxing of resources within the Water Sector.
- EPA should increase funding to expand the successful mutual aid program, WARN, to facilitate regional collaboration of events that extend across jurisdictions and reinforce the program as a successful model for addressing the full spectrum of resilience and physical and cyber asset challenges.

Implementing the NIAC recommendations would be consistent with the approach applied in the NRF for similar critical infrastructure such as transportation (ESF 1), communications (ESF 2) and energy (ESF 12).

We urge Congress, with its oversight jurisdiction and responsibilities, to direct FEMA to reconsider how the National Response Framework is used to support disaster response and recovery in the water sector. This will be vital to protecting public and environmental health in the communities we serve in future disasters.

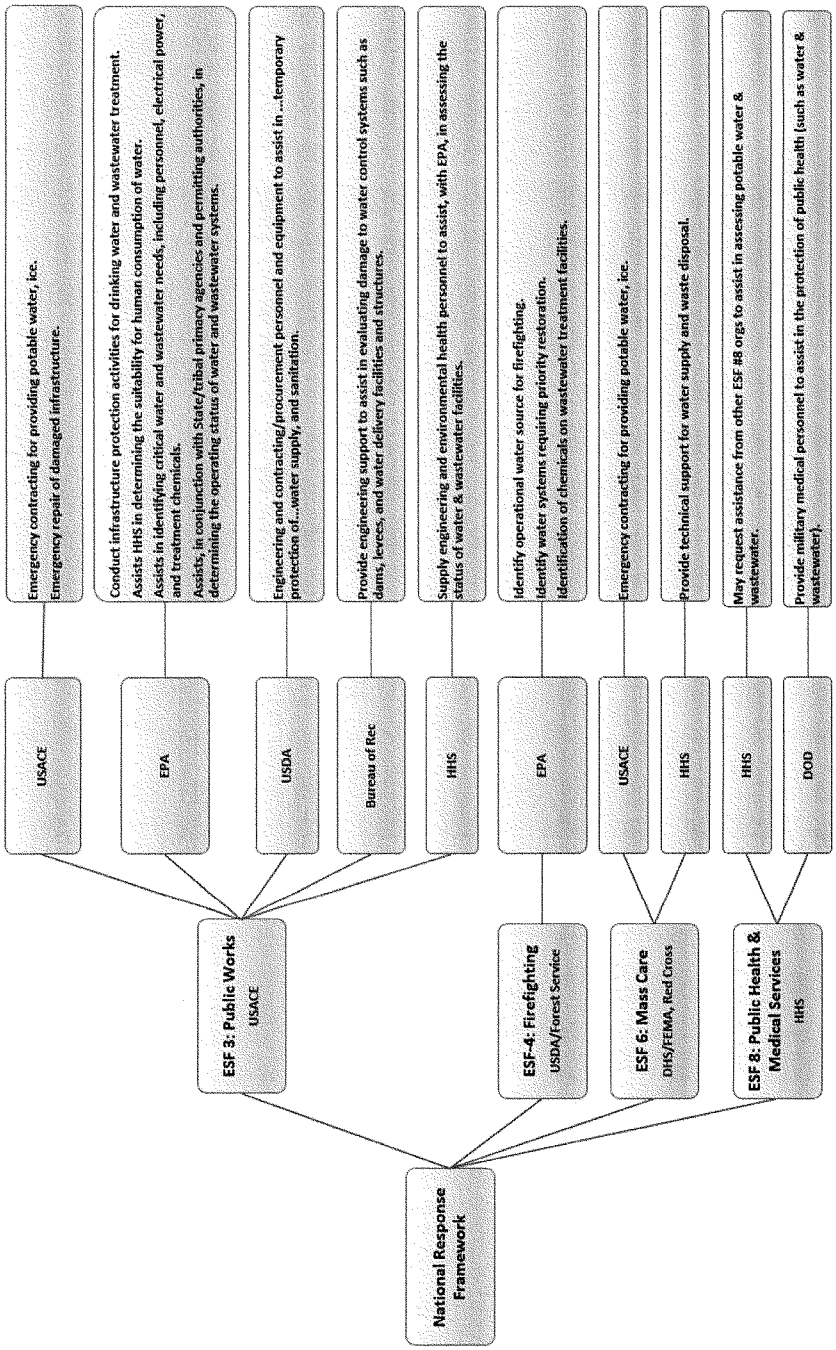
**What is the American Water Works Association?**

The American Water Works Association (AWWA) is an international, nonprofit, scientific and educational society dedicated to providing total water solutions and assuring the effective management of water. Founded in 1881, the association is the largest organization of water professionals in the world.

Our membership includes more than 3,900 utilities that supply roughly 80 percent of the nation's drinking water and treat almost half of the nation's wastewater. Our 50,000 members represent the full spectrum of the water community: public water and wastewater systems, environmental advocates, scientists, academicians, and others who hold a genuine interest in water, our most important resource. AWWA unites the diverse water community to advance public health, safety, the economy, and the environment.

###

**Figure 1. Matrixed Approach to Federal Support for the Water Sector**



Mr. SHIMKUS. Thank you, sir.

And now I would like to recognize Mr. Mark Lichtenstein from the State University of New York. You are recognized for 5 minutes.

**STATEMENT OF MARK LICHTENSTEIN**

Mr. LICHTENSTEIN. You pronounce my name better than I do. Thank you.

Chair Shimkus, Chair Walden, Ranking Members Tonko and Pallone, and honorable subcommittee members, thank you for the opportunity to participate.

Having just returned from Puerto Rico and the Virgin Islands, I have many observations and concerns. But today I am only going to focus on disaster debris.

I have more than three decades of waste management experience including with disasters. I am employed by the State University of New York College of Environmental Science and Forestry—ESF—in Syracuse. It is a different ESF than we have been talking about.

As immediate past president of the National Recycling Coalition, I helped create a task force on sustainable disaster debris management immediately after Harvey.

I have helped address issues in the island since 2009, working with colleagues like my partners to the left, and I am a member of the board for Island Green, a U.S. Virgin Islands nonprofit.

I have been working with local people to devise a sustainable approach for the storm debris. Some U.S. Government responders are appreciated.

However, there is concern from some residents and other experts regarding the potential ecological and human health impacts of a disaster debris management method of choice of the Army Corps of Engineers—air curtain incineration.

ACI is a past practice of FEMA and the Corps in these situations and they have proposed it for the Virgin Islands and possibly Puerto Rico as well.

This would add insult to injury, especially considering that much of the debris is clean vegetation. There are better ways.

During Superstorm Sandy in New York City, the Corps planned to use ACIs continuously for four months but they stopped after one month because they could not get them to function properly.

Air quality was exceeded during days of high humidity and this was November in New York City. Humidity is routinely extremely high on the islands. Local people and others are concerned that ACIs will emit pollutants that could cause pulmonary aggravation, particularly for individuals with asthma or cardiac diseases.

Diesel and gasoline generators, which you have heard about already today, and exposure to indoor mold are already aggravating existing respiratory conditions.

If burning moves forward in any manner, appropriate agencies should be asked to address potential health issues, especially regarding existing conditions. The agency for toxic substances and disease registries should be requested to do a review of the health impacts of burning before it commences. EPA should be asked to establish air monitors downwind of the burners and burning should

not commence until monitors are established and EPA immediately shares results with the public.

Much of the topsoil has been lost through storm water. They have been hammered with rain since the hurricanes. So it is critical that the vegetative debris remain to help replenish the soil that the plants of the islands need.

When considering options like burning, it is essential to incorporate externality costs—costs for which it is hard to calculate an immediate number like climate change, the impacts of depleted soils on the ecosystem, or health effects of air pollution.

These impacts can be reduced through other viable options and this is one reason groups like the National Recycling Coalition have opposed ACIs.

FEMA and the Corps have said they will take the Governor's lead. Many in the Virgin Islands have asked their Governor to oppose incineration. Experts from Puerto Rico, the Virgin Islands, and stateside have worked to develop a viable alternative including recovery of hardwood and then mulching and composting. This all could be done safely and efficiently.

Composting is a process that nature has perfected over millions of years. It has been successful in many locations at large scales and with other disasters like Superstorm Sandy.

Puerto Rico officials are working towards a similar sustainable plan. Providing a valid option to incineration can serve as a positive framework for other disaster-impacted areas in the future and that is key, and it represents a new sustainable scheme for debris and waste on the islands, going forward.

This is a once and done opportunity to get a leg up on acquiring the infrastructure needed for management of the island's long-term organic waste problem, which is about 50 percent of the island's normal waste stream. This gets to the questions about landfills earlier.

To help this sustainable option move forward, assistance could come in the form of a waiver of the matching funds requirement for the next 18 months while the islands build towards this more resilient and future-focused infrastructure.

Right now, FEMA is requiring the debris management solution to be fully implemented in 180 days and this is considered unrealistic for composting or burning.

The residents and visitors of Puerto Rico and the Virgin Islands deserve our focused attention. They deserve clean air and a healthy ecosystem.

The hurricanes were certainly not desired, but this is a great opportunity to build a more resilient and sustainable future so that the islands can come back better than before.

Thank you on behalf of my institution, ESF, and SUNY, and we stand ready to assist the subcommittee as it continues its work.

[The prepared statement of Mr. Lichtenstein follows:]

# Mark Lichtenstein Written Testimony

**November 10, 2017**

**US House of Representatives Energy and Commerce Committee, Subcommittee on Environment**

**Hearing, Tuesday, November 14, 2017**

***Response and Recovery to Environmental Concerns from the 2017 Hurricane Season***

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[redacted]

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**SUMMARY**

***Vegetative waste from disasters should be mulched and composted, not burned.***

Many local residents in Puerto Rico and the US Virgin Islands (USVI), and other off-island experts, have grave concerns regarding the potential ecological and human health impacts of the disaster debris management method of choice for vegetative debris by the US Army Corp of Engineers—Air Curtain Incineration (ACI). The majority of the debris from the recent hurricanes is clean wood from fallen trees and limbs, and other vegetation. There are serious and valid concerns that ACI will emit harmful chemicals and remove material that the soil and plants need to flourish.

ACI is a process has not been clearly explained to local decision-makers and the general public. There are no pollution controls on ACIs, and they can emit concerning levels of particulate matter and other air pollutants. The islands are a sensitive tropical ecosystem with high temperatures and high humidity. Residents who have asthma and other respiratory and cardiac diseases, could experience worsened conditions by increased air pollution. Many people on the islands have expressed worry about ACIs becoming a severe detriment to their health. In addition, it is absolutely critical that vegetative material from the hurricanes be kept on the islands and composted. Experienced experts from Puerto Rico, the USVI, and stateside have worked together to develop a plan that will ensure the process is done safely and efficiently.

The residents, tourists, and visitors of our American paradise—Puerto Rico and the US Virgin Islands—deserve clean air and a healthy ecosystem, and are asking federal representatives to help them implement more sustainable and healthy options. ***FEMA, the Army Corp, and other federal representatives can develop a new sustainable management scheme for debris on the islands that can be deployed in the future in other communities stricken by disasters.***

## OVERVIEW AND INTRODUCTION

**Qualifications**

The primary author of this written testimony is Mark Lichtenstein who has more than 30 years of direct operations, planning, and leadership experience with solid waste management. This includes disaster experience related to major ice-storms, Superstorm Sandy, and post-Katrina reconstruction. Attachment A identifies other sources of information for this document.

Lichtenstein is currently based in Syracuse, NY, at the State University of New York (SUNY), College of Environmental Science and Forestry (ESF). He has been working in Puerto Rico and the US Virgin Islands (USVI) since 2009 to help advance sustainable approaches to waste management, and other initiatives, such as coral reef protection, marine debris management, and environmental education. He has been to the islands working on these issues numerous times. For the last two months, he has worked with local leaders and residents on both sets of islands, as well as the British Virgin Islands, to help devise a more sustainable approach to managing the massive quantities of storm debris.

Lichtenstein facilitated and helped the US Environmental Protection Agency (EPA) found the Puerto Rico and US Virgin Islands Recycling Partnerships in 2010. This week he was on the Puerto Rico main island, the Puerto Rico island of Vieques—very heavily damaged by the storms—and in the US Virgin Islands (USVI), where he also witnessed utter devastation on St. John and St. Thomas. He is a member of the Board of Directors of Island Green Living, an NGO based in the USVI, and has been working closely with people there to implement a composting/mulching solution to vegetative disaster debris.

As a Past President and Honorary Board Member of the National Recycling Coalition, Inc. (NRC), he helped found the NRC's Disaster Debris Sustainable Management Task Force as an immediate response to Hurricane Harvey.

**The Situation on the Ground**

After two months, Puerto Rico and the USVI are still in the midst of picking-up the pieces from the ravages of two back-to-back Category 5 hurricanes. Unofficial measurements on the ground on the USVI island of St. John had wind gusts approaching 275 MPH, and on the Puerto Rico island of Vieques, 250 MPH. The devastation in many locations is beyond belief. For the people on the islands, Irma and Maria were harrowing experiences for them; in fact, health workers on the islands are seeing cases of Post-Traumatic Stress Disorder. Children are now growing up fearing the rain while they sleep on the floors of their houses—houses that for all intents and purposes have no viable roofs.

In many cases, the efforts of FEMA, the US Army Corp of Engineers, and other responders are successful and greatly appreciated by island citizens. During the current stages of recovery, however, there is grave concern from many local residents and other off-island experts regarding the potential environmental, ecological, and human health impacts of a disaster debris management "method of choice" of the Army Corp—ACI.

For instance, many citizens and organizations in the USVI, including Island Green Living Association, have asked Governor Kenneth Mapp, and members of the USVI Legislature to oppose the incineration of the debris. Much of the debris is clean wood from fallen trees and limbs, and it also includes other vegetation. There is serious and valid concern that this incineration will emit harmful chemicals and remove material that the soil and plants need to flourish.

Island Green has introduced a petition on Change.org to ask Governor Mapp to move forward with his original decision not to incinerate <https://www.change.org/p/governor-kenneth-mapp-ban-the-burning-of-us-virgin-islands-natural-resources>. Island Green has been

urging residents and others interested in the health and environmental wellbeing of the USVI to sign this petition, and call and write to the Governor and the members of the USVI Legislature.

The past practice of FEMA and the Army Corp in situations like this has indeed been to use ACI, and they are proposing this for the USVI, and possibly for Puerto Rico as well (that is unclear to key government officials in Puerto Rico at this point, and that lack of clarity is a concern as well). Air Curtain Incinerators are basically large metal containers (approx. 30 cubic yards) with fans blowing air across the container to accelerate the combustion process, and theoretically, to control air pollution (namely, particulates). In some cases, instead of an above-ground container, pits are excavated in the ground, and the material burned there with the air curtain above the pit. It is rumored that the pit method is the recommended path forward for some of the debris on the USVI. It has not been clearly explained to local decision-makers and the general public by the Army Corp that there are no pollution controls on ACIs, and that they often emit particulate matter and other air pollutants. Representatives from the Army Corp shared questionable positive attributes of ACIs as recent as November 6, 2017 at a town hall meeting on St. John sponsored by the USVI Legislative President. Nothing about the lack of air pollution control was mentioned at this meeting.

During Superstorm Sandy, US EPA Region 2 conducted air monitoring, which must also be done in Puerto Rico and the USVI. After Superstorm Sandy, the burning happened on federal land in Brooklyn, NY with the nearest home 0.8 miles away. The Army Corps planned to burn for four months, but they stopped after one month because they could not get the ACIs to function properly. Air quality was exceeded during days of high humidity. That was in November in New York. This is a critically important point, because in Puerto Rico and the USVI, humidity is routinely extremely high.

The National Recycling Coalition (NRC) has called for government officials to use the most environmentally responsible and ethical disposal of storm debris materials, especially through composting, reuse, and recycling. According to NRC President Bob Gedert (August 30, 2017, Minneapolis, Minnesota):

> "The NRC recognizes the crisis for the residents and businesses is—as it should be—everyone's focus of the initial recovery efforts. However, as we've learned from Katrina and Superstorm Sandy, the next stages by necessity have to involve a restoration of the infrastructure, which by necessity includes appropriately dealing with the tens of millions of tons of debris. There is an opportunity to recover some of the material if proper steps are taken in the recovery process."

The NRC recognizes that among the possibilities for recycling are huge piles of vegetative debris, as well as the concrete and metal. There is infrastructure in place, and time-tested technologies to handle that process. The NRC also strongly opposes the use of ACI to dispose of debris, as has been done with previous disasters, *and encourages the federal government to deemphasize that option.* The NRC argues that ACI releases millions of pounds of toxins into the air, which can have long-term deleterious health impacts on an already affected populace.

It is also absolutely critical that vegetative material from the hurricanes be kept on the islands and composted. Experienced composting experts from the USVI and stateside have worked together to develop a composting/mulching plan that will ensure the debris management process is done safely and efficiently including recovery of valuable hardwoods for wood crafts, chipping (mulching), and composting which then results in an organic material that can be made available to local residents, farms, schools and businesses for free. This is a process that nature has perfected over millions of years and one that has been successful in

many locations, and at large scales, including in subtropical/tropical areas like the islands, and with other disasters (like Superstorm Sandy).

The USVI is a sensitive tropical ecosystem with high temperatures and, as noted, high humidity. Many residents of the USVI have asthma and other respiratory and cardiac diseases that are made worse by air pollution. The extensive operation of diesel and gasoline generators, and exposure to indoor mold caused by the storms, are already aggravating existing respiratory diseases. It is an understatement to say that the air quality would be severely impacted if burning were allowed to happen. Many people on the islands have expressed worry about ACIs becoming a severe detriment to their health and to their number one industry, tourism.

The residents, tourists, and visitors of our American paradise—Puerto Rico and the US Virgin Islands—deserve clean air and a healthy ecosystem.

## MULCHING AND COMPOSTING: A COMMITMENT TO SUSTAINABILITY AND RESILIENCY

### Benefits of Composting and Mulching

**Mulching and composting is the safest, most efficient, and most effective way to manage vegetative debris.**

There is a substantial amount of herbaceous, softwood, and hardwood vegetative debris on the ground on the islands. Mulching and composting is the best possible way to help the islands with vegetative debris management well into the future (not only during this disaster response). It is a straightforward process that is easy, safe, and time-tested. Large and successful composting operations exist all over the US and world. More about the recommended mulching and composting process is in Attachment B.

**The islands need the vegetative debris.**

The integrity of the fragile and unique ecology of the islands—particularly the USVI, and the Puerto Rico islands of Culebra and Vieques—can be negatively impacted by removing the vegetative waste through burning or burying. The carbon associated with this debris needs to be put back into the soil. Much of the topsoil—the layer that includes the nutrients needed for healthy plant growth—have been lost through excessive stormwater runoff during the hurricanes and as a result of the heavy rains during the weeks following the storms. Because of this, mineral and nutrient deficiencies are likely to occur. Finished compost will help to rebuild depleted soils and improve soil quality and health. Mulch can be used to reduce water loss

through evapotranspiration from the soil, improve soil quality and health over time, and act as a buffer against heavy rains, thus reducing soil erosion.

Chipping, grinding, or shredding—and composting—of vegetative debris results in mulch and compost. These are commodities that are very badly needed throughout the USVI in particular, but also in areas around Puerto Rico, such as the islands of Culebra and Vieques. Compost and mulch also:

- Create a rich nutrient-filled material, humus (like potting soil), that has many uses
- Increases the nutrient content in soils and helps regenerate poor soils
- Helps soils retain moisture (compost holds five times its weight in water)
- Reduces or eliminate the need for chemical fertilizers
- Suppresses plant diseases and pests
- Promotes higher yields of agricultural crops
- Has the ability to cleanup (remediate) contaminated soil
- Improves soil's ability to store carbon, helping address climate change
- Improves plant growth
- Reduces energy use for irrigation, and need for irrigation water

All over the world—including in the sub-tropics and tropics—large quantities of wood and other vegetative waste are effectively composted in a manner that improves soil health.

**There is concern about the air and surrounding waters of the islands.**

Mulching and composting will greatly minimize the carbon's (smoke and particulates) accumulation in the atmosphere and ocean. Composting creates some methane, carbon

dioxide, and water vapor, but its emissions pale in comparison to ACI. Composting is not known to create particulates, dioxins, heavy metals, or other air pollutants.

**This is an opportunity to establish post-disaster sustainable waste management.**

This is an opportunity to get a leg up on acquiring the infrastructure needed for comprehensive management of the islands' solid waste long-term, including vegetative and organic debris, which makes up around 50% of their normal waste stream. Both in Puerto Rico and the USVI, many of the landfills are overflowing, out of compliance with Federal rules and regulations, and posing many environmental and health threats. Aggressive and sustainable approaches to solid waste management have been on-going for the last seven years. Establishment of composting and mulching operations will continue the progress with more sustainable management of solid waste in the islands. *Importantly, it will serve as a model for many other communities across the US, both those that have suffered natural disasters, and others that have yet to fully address their solid waste challenges.*

**Mulching and composting are very safe.**

FEMA and the Army Corp have advised Governor Mapp and other USVI officials that mulch piles can spontaneously combust (burst into flame). This has occurred in other locations, but it is considered very rare. In those cases, it was due to a number of factors, including:

- The piles not being constructed properly
- Lack of moisture in the piles
- A dry climate

In the islands, fires do not spread easily, considering the high humidity (annual mean relative humidity is 75%; presently). There are numerous instances of landfill fires, and that too is used as an argument against mulching; however, when trash in a landfill is not mixed with copious amounts of soil, this allows fugitive methane to escape from the dump. A flammable brew is created, allowing for fire to start.

If aerated properly—through the simple mixture of chipped/shredded wood and other vegetative debris—this will allow for air circulation in a pile. In addition, compost only warms up to 140 to 150 degrees Fahrenheit. On rare occasions, it can reach 200 degrees F if it is mishandled. These temperatures are far too low to start a fire (water boils at 212 degrees F). Continuously aerated, wet wood chips are not a fire hazard. Dry chips can ignite. But again, humid air inhibits the spreading of fire.

Mulch and compost piles on the islands can be managed routinely for their moisture content in order to sustain the pace of decomposition (in the case of composting). Keeping the piles moist and aerated is the basic work of making mulch and compost. In addition, for the most part, the wood on the islands is of a low-risk grade; that is, it is not cone-bearing trees loaded with flammable resins. In sum, like any biomass material, piles won't combust spontaneously if they are kept moist and aerated.

**Mulching and composing makes great economic sense for the islands.**

Composting can create jobs and support the economies of Puerto Rico and the USVI:

- Composting can be small-scale and local, in addition to the large sites we'll need to create.
- Jobs will be local.

- Composting is importantly linked to urban farm production.
- Composting can diversify farm products and increase farm income.
- Compost products tend to be used locally.
- Use of compost products sustains additional businesses and green jobs.

On a per-ton basis, composting a ton of waste sustains four times as many jobs as sending that ton of waste to a landfill or incinerator. Positive economic arguments for chipping and composting (making valued commodities) do not stop with the debris removal, but continue beyond this disaster as basic infrastructure for comprehensive and sustainable solid waste handling well into the future.

**All of the resulting compost and mulch can be used locally in Puerto Rico and the USVI.**

On-island experts all agree that all of the compost and mulch produced from the disaster's vegetative debris can be utilized locally. Professional management of the mulching and composting will result in a more effective end result.

**Specific Concerns about Air Curtain Incineration**

**Air curtain burning has great potential for negatively impacting the health of people already stressed by the storms and other factors.**

Air Curtain Incinerators (ACI) do not burn at the same efficiency rate as other incinerators such as kilns or waste-to-energy facilities. In this case, efficiency is being referred to as the amount of unburned material that will end up in the air. No matter how efficient an

ACI is, particulate matter (small particles both seen and unseen) are produced. These are released into the air and could cause pulmonary aggravation, particularly for individuals with asthma. It is extremely important to point out that a host of other toxins are likely to be emitted into the air as well, and can have local and downwind impacts. These could include very toxic dioxins, furans, and heavy metals. Departments of health should be asked to address potential health issues especially for people with asthma, other respiratory disease, and heart conditions. Of particular concern, is that people are already breathing increased diesel and gasoline emissions from generators, and many are exposed to indoor mold.

ACI is particularly concerning in areas of high humidity and weather inversions. Failed air quality tests in New York City where air-curtain incineration was used was due to these factors. More analysis of ACIs needs to be completed by neutral organizations.

**The experience of Air Curtain Incinerators after Superstorm Sandy needs to be considered.**

ACIs were used at Floyd Bennet Field in New York City after Superstorm Sandy, as noted above, a process that failed some air quality tests. This is a very large parcel of federal land, and the closest residence was 0.8 miles away. The operation did not go well. It is claimed that when the New Jersey Department of Environmental Protection travelled to NYC to view the operation, they decided not to allow the use of ACIs in New Jersey to deal with storm debris in that state. That should be confirmed, and if true, the reasons why explored.

**When considering the cost of options like burning, it is critically important to incorporate "externality costs."**

Externality costs are those costs for which it's hard to put an immediate number. This includes the health impacts of air pollution, the effect of particulates from burning deposited on land and surrounding waters, long-term management of leachate from landfills where burner ash will be deposited, and the increased cost of landfill closure and monitoring due to ash disposal.

**It is possible that ACIs can have flames and embers that could escape the burning unit.**

This has the potential for a surrounding fire hazard. See Appendix C for images of air-curtain incineration.

**ACI ash should not be put back onto the ground and in soils without first a very extensive testing protocol implemented.**

The ash could potentially have a high pH (9) which will not be beneficial to many island soils, which have a high pH already. In addition, it is unknown whether other material would be burned with the vegetative debris. If so, there is great potential for other toxics and contaminates to be left in the ash. Even if other debris is not burned, it will be nearly impossible to keep from the ACIs plastics (like bags, tarps, etc.) that are tangled in the green waste. ACI ash is not like char one would get from burning wood in kiln.

**Wood and organic material are resources that should not be destroyed through burning.**

Open burning of wood and woodchips simply creates pollution that affects living organisms, and as noted, this is particularly problematic in the islands due to humidity and the elevated ambient air temperature. *Any type of incineration to manage the material is not beneficial at any level when considering numerous negative effects.*

**Climate impacts need to be considered.**

Climate is impacted by excessive carbon released into the atmosphere. ACIs release carbon dioxide and other climate impacting constituents into the atmosphere. Efforts should be made to reduce these inputs where other viable options exist, like mulching and composting.

**There are a number of other important unanswered questions about the use of ACI in the islands and elsewhere that should be answered.**

See Appendix D for these questions.

**Attachment A: Information Sources for this Document**

**Citizens Speaking at St. John Town Hall Meeting:** November 6, 2017

**Stephen Bantillo**: Developer and manager of government sustainable materials management systems including organics and compost. Director of national building materials management certification protocol, Executive Vice President National Recycling Coalition (NRC), Chair of the NRC's Disaster Debris Management Task force. Extensive disaster debris management experience.

**Jean Bonhotel:** Expert compost and organic management expert with decades of experience, including with animal mortality composting. Leads the highly renowned Cornell Waste Management Institute. Has designed and implemented numerous composting systems in the sub-tropics and tropics. Familiar with the islands.

**Jim Doersam, P.E.:** 30 years of large-scale composting facility design and operations experience, including in Texas. Member of the USVI Recycling Partnership and familiar with the islands.

**Judith Enck:** Previous EPA Region 2 Administrator, Co-founder of the US Virgin Islands Recycling Partnership, sustainable materials management and recycling expert.

**Bob Gedert:** President, National Recycling Coalition, Inc. (NRC)

**Greg Gunnel:** University of the Virgin Islands Caribbean Green Technology Center

**Dawn Henry, Esq.:** USVI Commissioner of Department of Planning and Natural Resources

**Senator Hon. Myron D. Jackson:** President, USVI Legislature

**Mark Lichtenstein:** Composting expert having designed and operated compost and sustainable wood management systems for nearly two decades (for a 900 square-mile region). Solid waste and sustainable materials expert, facilitator of the USVI Recycling Partnership since 2010, and

has disaster debris management experience from Superstorm Sandy and multiple ice-storms. Co-founder of the NRC Disaster Debris Management Task Force, and helped with sustainable rebuilding efforts in the Lower 9th Ward in New Orleans after Hurricane Katrina.

**Roger Merritt:** Executive Director of Virgin Islands Waste Management Authority.

**Dr. David Minner:** Composting expert for Iowa State University and Gifft Hill School EARTH Program.

**Susan Parten, P.E.:** Civil and environmental engineer. Practices in both USVI/Caribbean (15 years) and Texas (more than 30 years). St. Thomas property owner, and experienced with developing design and operational plans for municipal scale composting operations, centralized and decentralized wastewater systems, storm-water management, and low impact development practices.

**Brenda Platt:** Executive Director of the Institute for Local Self Reliance, sustainable materials management and composting expert

**Dr. Gary Ray:** A USVI resident, USVI Recycling Partnership member since its founding in 2010, Island Green Living Association co-founder, and scientist specializing in ecology.

**Carlos Robles:** USVI Commissioner of Agriculture

**Lisa Ruggero:** Sustainable materials management expert, and member of the USVI Recycling Partnership since 2011. Experienced with Superstorm Sandy debris management.

**Carly Swope:** Sustainable Tourism Intern, Island Green Living (USVI) from Temple University.

**Harith Wickrema:** Resilient and Sustainable Visionary/Thought leader. President of Island Green Living, Chairman of Board of Virgin Islands Waste Management Authority. Earned EPA Region 2 Environmental Champion Award in 2017.

**Melissa Young:** Master composter and sustainable materials management expert. Experienced with Superstorm Sandy debris management. NRC Board Member.

**Attachment B: Steps for Sustainable Vegetative Debris Management on the Islands**

1. **Segregate precious tropical hard woods like Mahogany:**

   It makes the most sense to first, segregate tropical hard woods for use by local woodworkers, artisans, and students. This can take place through education so people sort it at their residences, and then at the mulching/composting locations (set aside for beneficial use). This will take care of a very small percentage of downed trees.

2. **Chip into wooded areas where it is feasible:**

   Where it is appropriate, pull-behind chippers should be used to blow chips directly back into the adjoining wooded areas from the roads (such as the National Park lands on St. John). This eliminates the need to move the unprocessed/downed wood or chips to central locations. It also puts the nutrients directly back into the ecosystem where they are needed. The chips will be beneficial to next generation plant growth and it will help build soil. It should be distributed in thin layers when blown through the chipper chute. Likely, this can only be done on some roads through wooded areas. The chute will have to be maneuvered back and forth to create a thin layer of chips in the vegetated area. Piles of chips are not recommended.

3. **Federal officials should encourage a systematic RFP process for mulching and composting services before other management methods such as ACI are pursued:**

   A process of static windrow composting is best for the storm debris on the islands. The optimum goal is to keep as much of the vegetative debris near the locations where it was created (limit moving it to other locations). There are many qualified companies in the US that can establish professionally-operated composting operations, which will provide clean compost from three to 12 months. The RFP should identify contractors who have

experience composting untreated wood waste and green debris in a manner that will result in a valuable end product. It can be the responsibility of the selected contractor to offer the end-product compost, with support for the government. Government agencies should be given priority in providing the end-product compost for use on public land.

4. **Collection and chipping:**

The vegetative debris needs to be collected and size reduced, which is happening in some locations around the islands already. This is accomplished with chainsaws, tow-behind chippers, tub grinders, or shredders and can employ local people to collect the debris, run the machinery, and convey chips and grindings if equipment is allocated to the islands, or contract services are secured. Chipping, grinding, or shredding the material once is most efficient. It is important to chip the material to the right size the first time. If chipping cannot be coordinated within the islands, other contractors may be available to size reduce the material. Island-based trucks would need to convey and dump material into "windrows" in designated areas for mulching and composting. Areas need to be chosen and managed so as to limit wood chips from being washed into the ocean.

5. **Mulching:**

*Mulching and distributing wood chips could address about 20-40% of the vegetative waste in the islands.*

Mulch consists of wood chips or shredded wood, which is piled and distributed to users right away. If clean (no plastics or other materials mixed-in), this material can be used immediately once chipped. Some mulch (wood chips) need to be saved to provide a base for the composting operation. If the mulch piles are not distributed immediately, they then should be managed for composting.

Some example uses for mulch (wood chips):

- Offered to local residents and businesses for free
- Stabilizing slopes
- Utilize at hotels for mulching around horticulture
- Rebuild government green infrastructure (stormwater management) projects

6. **Composting:**

*Composting could take up the remainder of the vegetative waste (60 to 80%).* [Some heavily contaminated material would have to be managed through other means.]

Island-based trucks would need to convey and dump material into "windrows" in designated areas. Composting materials through "passive aerated static windrows" would be most efficient and beneficial in the long run. Equipment is not available on the islands to manage turned windrows (such as windrow turners). Passively aerated windrows are a lower tech solution that rely on larger wood chip sized to allow air to travel through the pile, promoting the breakdown of vegetative debris. Much of the vegetation will be herbaceous with softwood and some hardwoods. This plant material ground and mixed together will create a very good mixture for successful passive composting.

This really is just about properly designing the windrows, and then managing the incoming material so that the windrows can be piled and spaced appropriately.

- It does not take that long to make a product: from three to 12-months depending on the mixtures of waste (more fruit, leaves, grass, and vegetables will speed-up the process).
- Rain, humidity, and the normal temperature in the islands is good for the piles.
- The piles don't need to be turned.

- There should be no problem with the carbon to nitrogen (C/N) ratio, important for an effective composting process. Along with periodic monitoring of moisture (a very basic and easy process), keeping the piles moist, and constructing the piles according to prior recommended dimensions, this C/N ratio will help reduce the possibility of spontaneous combustion.
- A screening machine would be beneficial at the end of the process to make the compost finer, and to screen out remaining wood chips or any plastic. These seasoned wood chips will help accelerate the composting process (they include bacteria and other organisms that will help kick-start new composting).

*Some example uses for compost:*

Finished compost is beneficial for erosion control, roadside use and new construction, trees and shrubs, landscaping and container mixes, agriculture, fruit and vegetable crops, turf establishment and maintenance, sports fields, around the two airports and building topsoil anywhere where soil structure has been compromised. Using composted product as a soil amendment would also avoid use of fertilizers, and their accompanying impacts on watersheds, and helps to retain water and reduce erosion. Composted product could be mixed with pulverized glass to make an excellent backfill material. Compost could also be mixed and used for utility trench backfill.

Composting will result in a 50% reduction of material. Arguably, the best air-curtain incineration will do is maybe 90% reduction, with 10% ash remaining (which needs to be disposed-of, and likely will contain higher concentrations of contaminates). The remainder of the burned wood will have been wasted into unused heat and emissions, such as carbon monoxide, carbon dioxide, other oxides, particulates, and other constituents that could negatively impact the environment and human health. Composting has some emissions

(heat, moisture, carbon dioxide), but not on par with incineration. The difference between the two options is that there will be 40% net material (composting vs. incineration) which will be distributed as final produce anywhere from three to 12 months, and the key is that material has multiple beneficial uses vs. air pollution and wasted heat. However, there will be some noise from chippers and grinders, and use of diesel fuel for machinery.

Eventually, other materials can be composted. In the longer-term, bio-solids processed at the sewage treatment plant and food waste from restaurants and institutions could be added (both are consistent supplies of nitrogen needed for effective composting). This will further reduce the impact of waste on island (and other) landfills, and create even better-quality compost for residents and agencies to use.

*The goals here are immediate (manage the disaster debris), longer-term (provide for long-term organics management on the islands) and development of best management practices for disaster debris management elsewhere.*

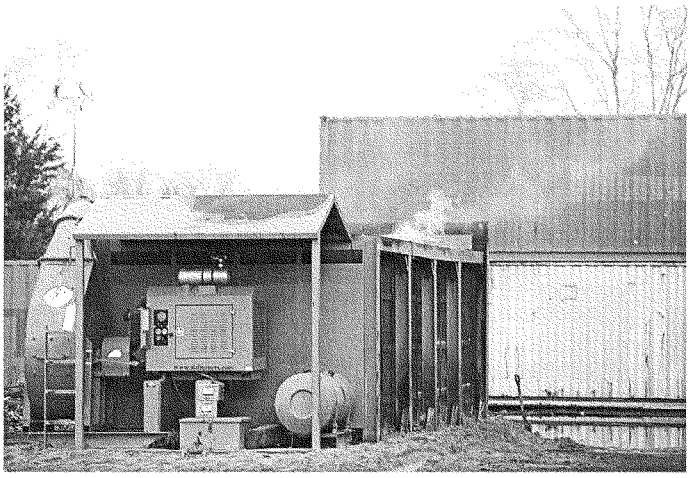
**How much will composting cost?**

Until an RFP is issued, it is difficult to identify an overall cost, but experts agree that immediate costs will be competitive with the estimate for air-curtain incineration on the islands. In addition, however, it is critical to consider three important points:

- Externality costs for air-curtain incineration can dwarf the costs for composting and mulching.
- Composting and mulching produces a product that will have many important uses on the islands.

- Composting and mulching keep the organic material in the vegetative debris on the island to improve soil, vs. burning which does not eliminate or destroy the vegetative debris, it only transforms it into air pollution, ash, and waste heat.

**Attachment C: Images of Air Curtain Incinerators**



Note and Credits: The US Army Corps of Engineers performing an Air Curtain Burning of over 77,000 cubic yards of vegetative debris, mostly tree branches downed by Hurricane Sandy at Floyd Bennett Field in Brooklyn, N.Y., Nov. 28, 2012. Source: Chris Kleponis, https://www.dvidshub.net/image/790740

Note and Credits: A US Army Corps of Engineers air-curtain burning pit in Savannah, Georgia.

Source Savannah division of Army Corps.

https://www.flickr.com/photos/savannahcorps/12074999196/in/photostream/

**Attachment D: Important Questions Regarding Air Curtain Incinerators on the Islands**

1. What are the locations where the incinerators will be sited?
2. How many incinerators will be used at each site?
3. Will constructed pits or containers be used for the burning?
4. What will be the hours of operation?
5. What are the meteorological conditions at each site?
6. How will wind and temperature conditions be factored? For instance, after Hurricane Sandy, the Army Corps of Engineers burned wood at the Floyd Bennett field in NYC during the month of November. On the warmer and more humid November days, air quality exceedances took place. Those days are much cooler than what is experienced every day in USVI. Is there a temperature level at which the burning would cease? Same question for wind conditions.
7. How much material will be burned at each site?
8. What material will be burned (just vegetative waste, or mixed debris)?
9. How long will the incinerators operate? Approximate start date and approximate end date.
10. What local and or federal air permits are needed? Have permit applications been made?
11. Will local agencies or EPA conduct air monitoring immediately downwind of the incinerators?
12. Will there be a commitment of not operating the incinerators until the air monitoring equipment is set up and operating?
13. After Superstorm Sandy, EPA did air monitoring and found some violations of air quality standards. However, EPA tested quite a distance away from the air curtain incinerators.

Will local agencies or EPA commit to establish the monitors immediately downwind from the air curtain incinerators?

14. What will be tested as part of the air monitoring (dioxins, furans, heavy metals, particulates, etc.)?

15. When reporting air test results, EPA used 24-hour averages, even when the incinerator did not operate 24 hours each day. Will there be actual test results shared with the public and not just 24-hour averages?

16. Will DPNR or EPA post air monitoring results on a publicly available website?

17. How much ash is produced from each air curtain incinerator?

18. Where will the ash be disposed of?

19. Will there be ash testing, and if so, what testing practical will be used?

20. Will a private contractor operate the air curtain incinerators? Was an RFP issued and what contractor(s) was selected? Copies of the RFP and background on the contractor should be made public, if one has been selected.

21. Will the cost comparison of mulching, composting, and incineration be made public? c

22. Burning plastic creates dioxin and other air contaminants. What will be done to ensure that plastics and other non- wood waste are burned in the incinerators?

23. In addition to plastics and non-woody debris, what controls will be used to make sure that contaminated wood waste such as treated lumber is not burned?

24. Is there the ability to add pollution controls to the air curtain devices?

25. After Hurricane Sandy, the state of New Jersey would not allow the use of air curtain incinerators. They were used in NYC at Floyd Bennet Field, federal land that was a long distance from homes. The Army Corps of Engineers planned to burn for 16 weeks but stopped after four weeks. Why?

26. The burning at Floyd Bennet Field occurred during the month of November. Burning in the USVI will be in a hot and humid environment. How will that affect local air quality?

27. The Army Corps of Engineers was in charge of the air curtain incinerator operation in New York City after Hurricane Sandy. When that was completed, what percentage of wood was burned and what percentage was composted?

Mr. SHIMKUS. Thank you very much.

Next, we would like to turn to—I don't know if it is Señora or Señorita. Señora? Rodríguez del Valle.

You are recognized for 5 minutes.

**STATEMENT OF LYVIA N. RODRÍGUEZ DEL VALLE**

Ms. RODRÍGUEZ. A disaster within a disaster—that is what the eight densely populated communities on the Caño Martín Peña and others that were already under environmental distress prior to Irma and Maria have been experiencing since the hurricane struck.

The 25,000 U.S. citizens living on the eastern half of the Martín Peña tidal channel already feared rain. They knew about flooding. An average of twice a year heavy rainfall translated into severe floods with wastewater.

Accounts of raw sewage coming out of the shower and toilets or of waking up in the middle of the night to a wet bed and water to your knees and waste were common.

They knew having to dry a wet mattress in the sun to have somewhere to lay down to sleep at night. They also knew disease. The prevalence of gastrointestinal disease in the Caño was of 31 percent in three months, compared to 20 percent in a full year for Puerto Rico.

Forty-four percent of the children 5 years of age and under living close to the Caño had asthma. People had experienced the dengue fever, zika, and chikungunya epidemics. There have been reports of leptospirosis, a disease transmitted mainly by contact with the urine of rats and other animals and which can be fatal.

The Martín Peña channel stretches for 3.7 miles across San Juan, connecting San Juan Bay, where Puerto Rico's busiest port is, to the inland San Jose Lagoon to the east, vital for the stormwater management of the adjacent Luis Munoz Marin International Airport. It is part of the San Juan Bay, recognized by the EPA for its national significance.

From a 200- to 400-feet wide navigable channel, today it is barely five feet wide in some areas. Adjacent communities lack sewer systems and the stormwater system has collapsed. The San Jose Lagoon has lost superficial area and depth, increasing the risk of floods at the airport and other communities throughout San Juan.

If historic—if history were to repeat itself, almost a century ago after two major hurricanes and in the midst of an economic depression, persons migrated to San Juan and the wetlands around the Caño became home.

Prior to Maria, the barrios which survived decades of eviction and gentrification were already a symbol of resiliency, empowerment, and grass roots organization.

Residents engaged in an unprecedented participatory planning process that led to the creation of the comprehensive development ENLACE Caño Martín Peña project. Since then, together with the public and private sectors, they moved forward an agenda of long-term resiliency that has the potential of transforming the city by reconnecting its navigable bodies of water.

Recovering the Caño with participation means healthier and safer conditions for the residents without fear of gentrification

thanks to a community land trust recognized last year with the United Nations World Habitat Award.

And then Irma and Maria struck. Close to 1,000 families lost totally or partially the roofs to their homes. Approximately 75 homes were totally destroyed. The communities experienced another severe flood with raw sewage, only that this time around it lasted for four days.

Approximately half of the trees along the Caño fell and together with the debris from the destroyed houses further blocked the Caño and the storm sewers.

Since Maria, it only takes 15 minutes of rain for floods to start. It even floods on a sunny day. We already have had two significant floods in the past two months, which have been affecting other areas of San Juan as well.

Since Maria, water quality throughout the estuary has significantly worsened. The disturbance of the Caño and uncollected debris from streets caused a rat infestation and augmented the risk of mosquito-borne diseases. Alligators are approaching people's homes. Tarps and Corps-installed blue roofs are already in place. However, there is mold and water filtration.

Fifteen years of organizing allowed for ENLACE, the grassroots G–8, and the land trust to work with partners and bring aid. However, the crisis is far from over.

Now, imagine living in a state of never-ending crisis and trauma—whole families sleeping on the floor on the room that does not get wet after sleeping under the rain for many days in the capital city of Puerto Rico, San Juan.

Using Federal recovery funds to support initiatives like the ENLACE Caño Martín Peña project presents a unique opportunity for an emblematic recovery process that increases Puerto Rico's long-term resiliency and sound economic development.

Investing in the ecosystem restoration of the Caño infrastructure and related acquisitions and relocation supports equitable development and participatory democracy.

There is already a credible and proven institutional and policy framework in place and engaged community and partners, shovel-ready projects and NEPA compliance for the ecosystem restoration piece elaborated under the Water Resources Development Act of 2007.

Due to the current crisis, the Caño cannot keep waiting for ordinary processes to occur. At a time of severe political, economic, fiscal, and financial challenges, support from the U.S. Federal Government is crucial.

That is why I urge Congress to pursue the inclusion of this project and all of its components in any upcoming disaster recovery bill for Puerto Rico.

This project is necessary and should be a priority due to serious repercussions in the San Juan Bay Estuary, public health, and safety.

And finally, I want to stress the importance of ensuring that any funding related to Martín Peña or other communities in a similar situation promote on-site resilient recovery rather than displacement and gentrification and for assistance policies to be context sensitive to allow for a just and equitable disaster recovery.

We are concerned that FEMA individual assistance programs requiring families in need for housing to leave outside the flood plain can make families in desperate need to leave their communities.

When this happens in areas where resilient onsite alternatives are visible and that have been under pressure of displacement and gentrification due to their strategic location, those who have struggled for their lands for decades can end up being uprooted.

No person should leave fearing the rain and no community should be displaced when there is an alternative at hand. With your support, long-term solutions that also keep Puerto Rico face—help Puerto Rico face its economic crisis such as this project will become a reality.

An official visit to Puerto Rico I do invite you to come and visit the work we've done. Thank you.

[The prepared statement of Ms. Rodríguez follows:]

caño 3.7
g-8 • enlace • fideicomiso

2017 Buckminster Fuller Award Finalist
2015-16 United Nations World Habitat Award
2012 EPA National Achievements in Environmental Justice Award
2009 American Planning Association Paul Davidoff Award

**ENLACE Caño Martín Peña: A Restoration and Resiliency Project**
An opportunity to transform the San Juan Metropolitan Area

Testimony by:
Lyvia N. Rodriguez Del Valle, Executive Director
Corporación del Proyecto ENLACE del Caño Martín Peña
Hearing: "Response and Recovery to Environmental Concerns from the 2017 Hurricane Season"
Tuesday, November 14, 2017 at 10:00 AM
Subcommittee on Environment

**Executive Summary**

Prior to María, the communities along the eastern half of the Caño Martín Peña, a tidal channel within the San Juan Bay Estuary in Puerto Rico, faced public health and safety challenges directly associated to the environmental degradation of this ecosystem. The Caño is currently clogged, and the adjacent communities lack basic infrastructure, thus heavy rainfalls translated into floods with highly polluted water. Studies have documented the public health and safety consequences stemming from frequent floods. Hurricanes Irma and María exacerbated these conditions. Over 1,000 homes suffered significant damages.

The ENLACE Caño Martín Peña Project presents a unique opportunity to increase Puerto Rico's resiliency to disasters, investing in the ecosystem restoration of the Caño and in sound infrastructure and related acquisitions and relocations / housing. It will generate new economic development opportunities for Puerto Rico, while reducing the vulnerability of critical infrastructure, such as the Luis Muñoz Marín International Airport. It will also transform the city, by providing a new inland waterfront, and recovering its environmental assets. The ENLACE Project is a model of equitable development, resiliency, and participatory democracy. The *Corporación del Proyecto ENLACE del Caño Martín Peña* (ENLACE), which is a government corporation, works together with the organized community through the grassroots G-8, with an internationally re known community land trust, and with over 100 partners from the private and public sectors and 400 volunteers to implement the ENLACE Project.

There is a comprehensive development plan, policy and an institutional framework, as well as a feasibility report and an NEPA compliant environmental impact statement for the ecosystem restoration piece, elaborated under the Water Resources Development Act of 2007. ENLACE, a government corporation that is the non Federal sponsor, was the author of this report, adopted by Assistant Secretary of the Army for Civil Works. The US Army Corps of Engineers works on the design. The ecosystem restoration project is ready to move into construction. Other components of the ENLACE Project are shovel ready.

ENLACE has leveraged over $100 million and other resources from local, state, and to a lesser extent, the federal government, local and US foundations, and private partners towards implementing the comprehensive development plan. At a time of severe political, economic, fiscal, and financial challenges, Puerto Rico's capacity to further invest in the ENLACE Project is extremely limited. Support from the US federal government is crucial. Congress is urged to pursue the inclusion of this project and all of its components in any upcoming disaster recovery bill for Puerto Rico.

**Testimony**

The Caño Martín Peña is a 3.75 mile long tidal channel located at the heart of the San Juan Bay Estuary, which is part of EPAs National Estuary Program for its national significance. It stretches across San Juan, connecting the San Juan Bay to the west, home Puerto Rico's busiest port, to the inland San José lagoon to the east, vital for the Luis Muñoz Marin International Airport storm water management.

Before Hurricanes Irma and María, the Caño was already in critical condition. From a 200 to 400 feet wide navigable channel, today the Caño is blocked. In the 1930s, after two hurricanes and in the midst of an economic depression, in part due to the collapse of the sugarcane monoculture, peasants migrated to San Juan. The wetlands along the Caño, then at the outskirts of the city, became home to informal settlements. Five generations later, and after decades of neglect and marginalization, 25,000 US citizens in Puerto Rico's most densely populated area are continuously at risk of disease and severe flooding with wastewater. The eight communities[1] that survived eviction and gentrification suffer the consequences of environmental degradation.

A third of the communities lack a sewer system, whereas the storm water system has collapsed. With heavy rainfalls, raw sewage streams into people's homes through the showers and toilets, from the streets, and the Caño itself. The effects on the environment are also severe. As water and sediments stagnate, the San Jose lagoon, critical for the appropriate functioning of the airport's storm water management, has significantly lost depth and its area is reduced. Floods are no longer local. They affect critical infrastructure and other upscale neighborhoods in San Juan.

Before Irma and Maria, the Caño was also a source of inspiration, creative policy making, and participatory democracy. As a result of over 700 community participation activities between 2002 and 2004, the ENLACE Caño Martin Peña Project emerged as an innovative environmental justice and social transformation initiative that pursues a livable, inclusive and resilient city through the ecosystem restoration of the estuarine channel, affordable and safe housing, adequate infrastructure, and quality

[1] These communities are Barrio Obrero (Oeste and San Ciprián), Barrio Obrero Marina, Buena Vista Santurce, Parada 27, Peninsula de Cantera, Israel Bitumul, Buena Vista Hato Rey, Las Monjas, and Parada 27. All, but the Península de Cantera, are part of the Caño Martín Peña Special Planning District.

public spaces. Building upon the capacities of its ~25,000 residents, the organized communities, their partners and the institutions they created were already working on the implementation a comprehensive development plan that is the backbone of transforming the city, generating equitable social and economic development opportunities for Puerto Rico.

Key components of this plan include infrastructure, such as storm water and wastewater sewer systems and potable water distribution systems; the acquisition and demolition of structures and relocation of eligible occupants; and, dredging the Caño to restore the flow of water between the San Juan Bay and the eastern Estuary. To date, 3 of 8 critical infrastructure projects have been completed, over 600 families have been relocated into safe and decent housing, and the Caño Martín Peña Ecosystem Restoration Project authorized under the Water Resources Development Act of 2007 is in the preconstruction, engineering, and design stage, ready to go into construction.

Once completed, the ecosystem restoration of the Caño will restore the flow of water between the San Juan Bay and the San Jose lagoon, uplifting over 6,600 acres of the San Juan Bay Estuary and increasing biodiversity and essential fish habitats. Puerto Rico will be able to take advantage of a navigable Caño and its new waterfronts, reconnecting points of historical, cultural, and tourist interest throughout the Metropolitan Area. Moreover, health conditions for over 15,000+ persons affected by frequent floods with raw sewage and mosquito transmitted diseases (dengue fever, zika, chikungunya) are expected to improve. Partial estimates point that the project will benefit the economy by $587 million, whereas avoided costs include estimated losses of $700 + million during a 100 year recurrence flood event. Over 4,000 jobs will be created only during construction of the ecosystem restoration project.

The institutional design to implement the ENLACE Project has also gained recognition, and has proven to be effective during times of crisis. The pioneering PR Law 489 of September 24, 2004, as amended (Law 489-2004), which resulted from the grassroots participatory planning process, created the government corporation *Corporación del Proyecto ENLACE del Caño Martín Peña* (ENLACE), that implements the comprehensive development plan. It was designed to ensure long term stability despite changes in governments, and a key, protagonic role for the communities and the private sector in

obtaining and overseeing the resources implement the ENLACE Project. In 2015, ENLACE became one of the few non Federal sponsors to successfully complete a Feasibility Report and Environmental Impact Statement that complies with the federal standards and approved by the Assistant Secretary of the Army for Civil Works. Currently, ENLACE works with the US EPA in the Caño Martín Peña Urban Waters Federal Partnerhip. Over 100 private sector partners and 400 volunteers work with ENLACE.

Law 489-2004 also created the *Fideicomiso de la Tierra del Caño Martín Peña (Fideicomiso)*, a private, not for profit community land trust. The Fideicomiso was designed to prevent gentrification as an unintended consequence of the Caño Martín Peña Ecosystem Restoration Project. Instead of displacing the poor, it regularizes land tenure of approximately 1500 families living in informal settlements through collective land ownership and individual surface rights. Coupled with promoting private investment and reinvesting future increases in land value in the community, the Fideicomiso is key for redevelopment that guarantees long term housing affordability. During the planning process, community leaders formed the G-8, Inc., a community based non-profit that unites 12 grassroots organizations, to be an effective partner in revitalization. Residents take pride in their efforts, their strategic place in the heart of San Juan, and the great potential of their comprehensive plan.

Hurricanes Irma and María

After hurricanes Irma and María, as has happened with every previous storm, the conditions of the Caño worsened. These storms affected Puerto Rico's poor and vulnerable communities in a distinct way. The communities along the Caño were severely flooded with wastewater for several days. Irma had already blocked many of the outlets of the storm water system into the Caño. With María, over 50% of the trees along the eastern half of Martin Peña fell, further blocking the Caño. The frequency of floods has increased. We have documented floods even on a sunny day, or after a 15 minute rainfall. People live in fear of the rain, in a tropical island.

Around 1,000 homes had their roofs completely or partially blown away, 75 of which were destroyed. Many families lost most of their material possessions, while others lost their sources of income. As in most of Puerto Rico, today the communities along the Caño do not have power, and

although there is access to water, there are concerns regarding its safety. Communications are still limited. A recent report from Rolling Stone magazine called this a disaster within a disaster.

Right after hurricane Maria, the neighbors did everything they could to help themselves and each other. In less than a day, they had removed fallen trees, cleared the streets from debris, and started to reconstruct at least a portion of the roofs with the materials they were able to recover. Since María, the Fideicomiso, G-8, and ENLACE have been at the forefront of disaster relief and recovery efforts in support of the communities. We have been requesting, receiving and distributing donations of supplies, food and water, tarps; as well as coordinating and facilitating external aid. During the first month after María, we recruited close to 500 external volunteers, removed 122 truckloads of vegetative material, cleaned the flooded homes of the elderly and sick, made referrals of families in need to community health centers, provided over 800 tarps, assisted over 400 families with FEMA individual assistance applications, worked to ensure over 500 blue roof applications were processed, distributed around 5,000 hot meals, 1,500 canned food bags, over 800 mosquito nets, 4,000 mosquito repellents as well as cash to 150 families, and coordinated cultural activities. Three community centers have now solar power, two of which provide free Internet access to residents. Over 40 organizations have donated supplies. The 15 years of community organizing and partnership building in Puerto Rico and abroad proved to be critical for the communities facing a disaster that overwhelmed the government's capacity to respond. So have the relationships built with the federal and local institutions.

Despite these efforts, there are still significant health concerns directly related to the environmental degradation of the Caño and the effects of the hurricanes. Previous health[2] and safety issues have heightened. Currently, we are dealing with a rat infestation due to the presence of debris in the streets, and to the disturbance of the Caño, where they used to remain. This increases the risk of

[2] Increased flooding conditions and the lack of infrastructure has led to a prevalence of 31% cases of gastrointestinal diseases in the District, as compared to 22% in Puerto Rico. District residents exposed to flood waters had twice the likelihood of developing gastrointestinal diseases than their neighbors not exposed to flood waters. See 2012 Roubert, Mayra. Prevalence of Gastrointestinal Symptoms among Residents of Caño Martín Peña Communities. Ponce School of Medicine and Health Sciences. Another study documented that children ages 5-7 had higher asthma and skin allergies prevalence than other children in comparable age groups in Puerto Rico. The sample reflected a strong trend that the closer to the CMP children live, the higher the prevalence of such diseases.

leptospirosis, a disease that can be fatal. Caymans, an exotic species that has been present at the Caño for several years, are now approaching residential areas. We fear mosquito bourne diseases might return to epidemic levels. The prevalence of gastroinestinal and allergic diseases in the Caño is already significantly higher when compared to Puerto Rico, due to the contact with highly polluted waters. There is also risk of increased asthma and other respiratory diseases, as a result of mold and the use of generators.

As we continue to work on health related issues, such as vector control, as well as relief. We are also starting to shift our work towards recovery. To move the project forward, be able to recuperate the Caño Martin Peña, and reach the goals of long term resiliency and just and equitable development, investment of multiple sources is needed. The key elements of the Comprehensive Development and Land Use Plan that will lead to the ecosystem restoration of the Caño entail a total estimated investment of $800 million, of which $275 million are needed for housing and redevelopment, $325 million for infrastructure, including green infrastructure strategies and power microgrids; and $200 million for the dredging of the Caño, water plazas, landscape, and maintenance. According to the programming, some of the relocations and acquisitions as well as infrastructure projects must occur prior to and parallel to the dredging. Some of these projects are currently shovel ready.

ENLACE has leveraged over $100 million and other resources from local, state, and to a lesser extent, the federal government, local and US foundations, and private partners towards implementing the comprehensive development plan. Under WRDA 2007, Congress authorized $150 million for the ecosystem restoration federal project, which according to the Feasibility Report and the most recent estimates, currently amounts to $215 milion. Of these, $140 million is the federal share and $75 million is the local cost share. Under ordinary processes, shall there be enough new starts for ecosystem restoration projects in the FY'19 bugdet, the Assistant Secretary of the Army for Civil Works could include phase one for construction in the upcoming workplan.

On December 2016, the Bipartisan Congressional Task Force on Economic Growth of Puerto Rico created under the Puerto Rico Oversight, Management, and Economic Recovery Act (PROMESA),

included in its report that "the project to restore Caño Martín Peña can provide a significant return on investment for the federal government in terms of improving the economy, protecting public health, and restoring the natural environment in some of Puerto Rico's most distressed communities. The Task Force recommends that the U.S. Army Corps of Engineers and the non-federal sponsor ENLACE finalize the Project Partnership Agreement (PPA) for the project as soon as feasible; that Congress consider appropriating funding to construct this project; and that Congress consider relaxing the cost-sharing obligations of the non-federal sponsor or otherwise taking steps to ensure that the government of Puerto Rico's fiscal crisis does not result in forward progress on this project being halted."

At a time of severe political, economic, fiscal, and financial challenges, Puerto Rico's capacity to further invest in this Project is extremely limited. Support from the US federal government is crucial. That is why I urge Congress to pursue the inclusion of this project and all of its components in any upcoming disaster recovery bill for Puerto Rico. The ENLACE Project is a model of equitable development, resiliency, and participatory democracy.

This project is necessary and should be a priority due to its serious repercussions in the San Juan Bay Estuary, public health and safety, and for the opportunities it presents for Puerto Rico's long term resiliency and sound economic development. Further, it presents an opportunity for an emblematic, model of sound development that benefits all sectors of society, with well documented benefits, a plan, programming, and the institutions and overall support to implement it. Any funding related to Martín Peña should promote on site rehabilitation rather than displacement and gentrification.

No person should live fearing the rain, when there is a solution at hand. The community has done everything in its power, and now there is a window of opportunity to make their project become a reality.

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**Inquiries**

For further information and support documents, please contact Lyvia Rodriguez Del Valle at lrodriguez@martinpena.org or at (787)729-1594 and (787)548-4973.

**Additional materials:**

Documents:

Dossier: Transforming the City (2014): http://cano3punto7.org/nuevo/pdf/transforming.pdf
Dossier: Fideicomiso de la Tierra del Caño Martín Peña (2016):
https://issuu.com/canomartinpena/docs/dossier_ft_final_oct2016
Health Impact Assessment of the Environmental Restoration of the Caño Martín Peña
https://issuu.com/canomartinpena/docs/hia_cmp
Feasibility Report and Environmental Impact Statement of the Caño Martín Peña Ecosystem Restoration Project:
http://dragadomartinpena.org/

Videos:

Agua Mala (2012): https://www.youtube.com/watch?v=rPPbFM-Rvok
https://www.youtube.com/watch?v=_naav6Ro3eo
World Habitat Award: Fideicomiso de la Tierra (5 mins): https://www.youtube.com/watch?v=mNbjXzgnR88

Hurricane María related articles

http://www.rollingstone.com/culture/features/hurricane-maria-inside-puerto-rican-barrios-fight-to-survive-w509203

https://insideclimatenews.org/news/04102017/puerto-rico-health-crisis-hurricane-maria-poverty-water-power-epidemic-risk-photos

Mr. SHIMKUS. Thank you very much.

Now I would like to turn to Mr. Epperson. You are recognized for 5 minutes.

**STATEMENT OF TRENT EPPERSON**

Mr. EPPERSON. Good afternoon, Chairman, and members of the subcommittee.

My name is Trent Epperson. I am the assistant city manager with the City of Pearland in Texas and I am pleased to be invited here today to present to you the effects of Hurricane Harvey as it occurred in the City of Pearland, especially as it relates to critical water and wastewater infrastructure and the need to make that infrastructure resilient and redundant.

The City of Pearland is a suburban city of about 120,000 residents just south of the City of Houston. It has been one of the fastest growing communities in the Nation over the past 15 years.

We have grown from a population of about a little over 30,000 in the year 2000 to today over 120,000 to where we are the third largest city in the Houston metro area.

During Hurricane Harvey, with its unprecedented flooding, Pearland experienced structural flooding affecting over 1,700 residents, 50 businesses, and flooding to critical infrastructure including two wastewater treatment plants.

Most of the flooding occurred along Clear Creek, which, germane to this subcommittee is a 303D-listed impaired water body for bacteria. With a 500-year storm event, it is—it was estimated before this storm that about 7,000 residents in the Clear Creek watershed would flood. I believe we saw that or more in Pearland and the downstream communities.

There is, however, a U.S. Army Corps of Engineers drainage project that has been on the books since the '60s but yet to be funded.

Based on the studies associated with that project, approximately half of those residents that flooded in the watershed would likely have been spared during Hurricane Harvey.

Additionally, critical infrastructure within the watershed would not have flooded and failed as well. Although the City of Pearland has grown rapidly, our new development and our new infrastructure follows current codes and standards.

The result was that in those newer areas we experienced very minimal flooding and that is in areas where we have added tens of thousands of new rooftops over the past 15 years.

So we see that along with the completion of the Clear Creek drainage project what is needed is funding for continued sound investment and resilient and redundant critical infrastructure, especially to bring the older infrastructure to current standards.

The most critical of those infrastructure pieces are water, wastewater, and the automated systems that control that infrastructure. It is a critical life safety issue for any city to have the ability to deliver clean safe drinking water during a disaster.

For Pearland, this critical infrastructure must have adequate generator power, flood proofing, and adequate elevation to survive a minimum of a 500-year storm as well as able to withstand Category 4 hurricane winds.

During Hurricane Harvey, our water system performed very well with only one water well sustaining minor damage due to power surging. We never lost pressure and we were always able to deliver that clean safe drinking water.

Unfortunately, some of our adjoining communities and the smaller water systems around us were unable to do that and did have to issue boil water notices.

Additionally, continuity of service in treating wastewater is critical for citizens sheltering in place and the return of evacuees when they return—when they come back to their homes.

We must ensure that wastewater is adequately treated and not released during a flooding event because that can affect the downstream water quality in our streams and bayous.

In our area, wastewater facilities are often located in low-lying areas near the stream that they outfall to, making them vulnerable to flooding, and therefore a lot of them are in need of the same resiliency and redundancy criteria applied to our drinking water facilities.

During Harvey, unfortunately our wastewater system did not fare near as well as our wastewater system. Our Longwood wastewater treatment plant, which was originally built in the 1960s and is sited in one of the old oxbows of Clear Creek, was inundated with flood waters and inoperable for up to 72 hours during the event. The estimated damage to the plant is about a million and a half dollars.

But due to the proximity of the plant to the creek, instead of making those expensive repairs on a plant that is vulnerable to the next flood, this facility should have its flows redirected to an adequate plant to mitigate any future damage or loss of service.

One final critical piece of infrastructure to our utility operations is the Supervisory Control and Data Acquisition System, or SCADA.

What SCADA is is it is basically a system that allows us to monitor and control our critical water and wastewater facilities remotely.

These systems must be redundant and resilient to provide continuous connectivity to those facilities throughout an emergency event.

SCADA is indispensable to ensure the plants and the lift stations are operational and properly functioning when we cannot reach those facilities due to high water or debris.

During Hurricane Harvey, for three days we could not physically access 18 wastewater lift stations which are critical to getting the wastewater to the plants. Due to a lack of SCADA redundancy, we were also unable to monitor many of these facilities remotely.

The City of Pearland, although challenged, fared relatively well through Hurricane Harvey and will recover stronger than we were before the disaster.

As we rebuild, we look to ensure our critical infrastructure is able to withstand flooding, high winds, and other potential disasters.

To do this, we must have adequate recovery and mitigation funding available so that we do not just rebuild our critical infrastruc-

ture to its original state, but we rebuild resilient, redundant infrastructure ready for the next disaster.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Epperson follows:]

Statement of Trent Epperson, Assistant City Manager, City of Pearland, Texas

Before the House of Representatives Committee on Energy and Commerce, Subcommittee on Environment Hearing on "Response and Recovery to Environmental Concerns from the 2017 Hurricane Season."

Chairman Shimkus, Ranking Member Tonko, and Members of the Subcommittee, I am pleased to be invited to present to you today on the effects of Hurricane Harvey in the City of Pearland, Texas, especially as it relates to critical water and sewer infrastructure and the need to make that infrastructure resilient and redundant.

Pearland, TX is a City of approximately 120,000 residents located just south of Houston and has been one of the fastest growing communities in the Country over the past 15 years. During Hurricane Harvey, with its unprecedented flooding, Pearland experienced structural flooding affecting over 1,700 residences, over 50 businesses, and critical infrastructure including two wastewater treatment plants. Most of the flooding occurred along Clear Creek, which is on the 303D listing of impaired water bodies for bacteria. With a 500 year storm it was estimated that over 7,000 homes flooded in the Clear Creek watershed, which includes Pearland and the downstream communities. There is a US Army Corps of Engineers drainage project which has been on the books since the 1960's but remains unfunded. Had that project been completed approximately half of the houses flooded in the Clear Creek watershed would have been spared. Additionally, critical infrastructure within the watershed would not have flooded and failed.

Although we have grown rapidly, new development and new infrastructure follows current codes and standards. The result was that Pearland had very minimal flooding in new areas where we have added tens of thousands of rooftops over the past 15 years built to current drainage and infrastructure standards. Along with the completion of the Clear Creek drainage project, what is needed is funding for continued sound investment in resilient and redundant critical

infrastructure, especially to bring our older infrastructure to current standards. The most critical infrastructure areas for Pearland are water, wastewater, and the automated systems that control that infrastructure.

It is a critical life/safety issue for a city to have the ability to deliver clean and safe drinking water during a disaster. This ability relies on having resilient and redundant critical infrastructure. For Pearland, this critical infrastructure must have adequate generator power, flood proofing, and adequate elevation to survive a minimum of a 500-year flood event and needs to be structurally built to withstand a Category 4 hurricane. During Hurricane Harvey, our water system performed very well with only one water well sustaining damage due to either a lighting strike or electrical surge. The previously mentioned criteria will be applied to our upcoming Surface Water Treatment Plant which is currently in the design phase and planned to be a regional water supply facility.

Continuity of service for treating wastewater is critical for citizens sheltering in place and the return of evacuees to their homes. We must ensure wastewater is adequately treated and not released due to rising flood waters or wind damage to the treatment process, which can affect downstream water quality in our streams and bayous. In our area, wastewater facilities are traditionally located in low-lying areas close to their receiving streams making them vulnerable to flooding, and therefore in need of the same resiliency and redundancy criteria applied to drinking water facilities

During Harvey, our wastewater system did not fare as well as our water system. The Longwood Wastewater Treatment Plant originally built in mid 1960s is located in an oxbow of Clear Creek and was inundated with flood waters, rendering it inoperable for approximately 72 hours during and after the Hurricane Harvey event. The estimated damage to the plant is over $1.5M. Due to proximity to the creek, instead of making expensive repairs vulnerable to the next flood, this facility should have its flows redirected to an adequately protected plant to mitigate any future

damage or loss of service. Additionally, our Barry Rose Wastewater Plant was out of service for approximately 48 hours due to flooding of a pump pit for the on-site lift station.

One final critical piece of our utility operations (both water and wastewater) is our Supervisory Control and Data Acquisition (SCADA) system. The SCADA system allows us to monitor and control our critical water and wastewater facilities remotely. SCADA systems must be resilient and redundant to provide continuous connectivity to our facilities throughout an emergency event. SCADA is indispensable to ensure plants and lift stations are operational and properly functioning when we cannot reach facilities due to high water or debris. During Hurricane Harvey, for 3 days we could not physically access 18 wastewater lift stations, which are critical to getting wastewater to the treatment plants. Due to a lack of SCADA redundancy we were also unable to monitor many of those facilities remotely.

The City of Pearland, although challenged, fared relatively well thorough Hurricane Harvey and will recover stronger than we were before the disaster. As we re-build, we look to ensure that our critical infrastructure is able to withstand flooding, high winds, and other potential disasters. To do this we must have adequate recovery and mitigation funding available so that we do not just rebuild our critical infrastructure to its original state but we rebuild resilient, redundant infrastructure ready for the next disaster.

Mr. SHIMKUS. Thank you very much. I appreciate the opening statements. I want to start by then recognizing myself for 5 minutes for a round of questioning.

And I have some here prepared in front of me but I really want to go off script a little bit, and if you would hit the time, too, Jerry.

The—you sat in on our—the first panel, which was long with a lot of extensive questioning and I think there was a consensus by my colleagues on both sides that maybe we are just not organized right and I think it addresses all three of your kind of positions because, one, it deals with, you know, the debris management issue, who makes the decision and for what purposes.

Obviously, the estuary and the river systems, but we also want to make sure that if we go in this direction how do we not—it was mentioned in the first panel—how do we not stumble on them having a centralized government get involved in things that are working, right.

So let me—let me go and turn to each one of you and, Mr. Howe, my questions were going to be—going to be totally directed to you but I really would like everyone's response because this is kind of similar to the energy hearing where in some places there is mutual agreements and when you have States or local service areas you can coordinate and you can send folks to. Obviously, islands much more difficult, as we saw with the Energy Subcommittee.

So what would be a structure by which—I think your testimony was there are things that are working—be careful not to screw those up if there was a change in the—in essence, a change of the Stafford Act in some delineation of responsibility.

Mr. HOWE. In speaking to what I spoke in my remarks on the written testimony, also the issue of the multiple ESFs that water is under.

Now, for lack of a better term, under the WARN program across the country we have done a workaround. The WARN programs are utilities supporting utilities and most of those programs are operated independently of the State regulatory agency or the State operation center, even though, as you saw from Mr. Shaw earlier, we cooperate with them directly.

We are partially funded and we are unique to this, by the way. The Texas—the TXWARN program is partially funded by the TCEQ. So we work very closely with them and the State operations center.

But we have identified an issue that occurs in the State operations center because they are broadly looking at public works and the totality of it—that even though we are in touch with them and coordinating with them, they are not necessarily always paying full attention to the water/wastewater side.

So during Harvey we had situations where we would loop back to them and have conversations and we would have to go through a complete refresh——

Mr. SHIMKUS. I wonder if I can jump in so I——

Mr. HOWE. Yes, please.

Mr. SHIMKUS. So your position is that, and I am learning these acronyms as we go through the hearing, it should be raised to an emergency support function level and that would help?

Mr. HOWE. In other words, it is disaggregated now. If it was under one, then I think, as I've said to somebody before, that then those in emergency management would have the same red light flashing on water/wastewater as they do on lifesaving and everything else that they do because it would be a single support function and we know from the industry that there are—you know, we have only talked about three essential services—police, fire, and EMS. But without electric, water, and wastewater the first three can't function.

Mr. SHIMKUS. OK. Let me go to Mr. Lichtenstein.

Mr. LICHTENSTEIN. It is a dichotomous thing. I drove all around the islands—Saint John, Saint Thomas, Puerto Rico, Vieques. So need for plans ahead of time, clearly.

Standard operating procedures—we talked about those earlier. But this is definitely a matrix thing. Can't be top down. It is not linear but yet there is a critical role for the U.S. Government. What I saw, this dichotomous thing, was some unbelievable local efforts of stepping up to the plate. On the island of Vieques, and I don't know if you're familiar with that island but that is an island on the——

Mr. SHIMKUS. We used to debate it a long—couple years ago all the time.

Mr. LICHTENSTEIN. Yes. So here's a story about initiative. The U.S. Coast Guard, while Maria was still kind of hanging out, the captain there used initiative and sent some cutters over to Vieques before anybody else was there for days.

So how do you—how do you value that and how do you enhance that kind of activity to help the locals? Clarity of leadership is key.

Mr. SHIMKUS. Right.

Mr. LICHTENSTEIN. What I saw was lack of clarity of leadership. So this is matrixed and it is something that we are going to have to figure out how to structure and how do you value these local people that are just stepping up to the plate?

Mr. SHIMKUS. And speaking of local people, Ms. Rodríguez del Valle?

Ms. RODRÍGUEZ. Yes. I have to totally agree with Mark Lichtenstein's remarks. In our case being a community in San Juan basically the after—right after Maria it was the residents the ones that took care of themselves and the institutions that have been working with them for a very long time came in the next day and that was the only outside help that they received in practically a month and this was San Juan with a lot of partners—previously built partnerships.

So the other thing that is helpful is for the—in the case of the Federal Government it was very critical for us to have people on the ground that actually were able to listen, because sometimes you design a program that you think is going to work very well everywhere and not necessarily all the circumstances are the same.

So we were able to establish those relationships and improve dramatically the type of help that was being brought to the communities, particularly with the project of the blue roofs and other assistance that we finally got from FEMA and the Federal Government.

Mr. SHIMKUS. Thank you.

And let me, with my colleagues' permission so I can get Mr. Epperson on the record, Texas, local community—how do we be careful that we are not part of the problem and, you know, we are from the Federal Government—we are here to help, and then we end up not being helpful?

Mr. EPPERSON. Thank you, Mr. Chairman.

It is a very local response and effort from the beginning, and with the experience of Hurricane Harvey we really could not get out, could not get in for several days where we are located.

We did—we did—we do have other local government contacts throughout Texas that were able to send high water rescue vehicles that were able to help out.

So I think that initial response it is very local and how you have to deal with that, and then once the flood waters recede and we start talking about projects to—the enhancement projects and projects to make sure that the next time we have the high wind event or the high water event, I believe that is where we can partner with FEMA and the Federal Government and the other agencies.

Mr. SHIMKUS. Thank you very much, and I appreciate my colleagues allowing me to go a few minutes over.

Now I would like to turn to Mr. Tonko for 5 minutes.

Mr. TONKO. Thank you, Mr. Chair.

Ms. Rodríguez del Valle, where water systems are now working in Puerto Rico are there still concerns with water safety?

Ms. RODRÍGUEZ. Yes. Yes, and the people are being told to boil the water before consumption. But when you have no power at home, you know, and the gas is limited it is very hard to comply with those basic health measures.

Mr. TONKO. I have heard that there are over 200 independent water systems on Puerto Rico but they serve a very small percentage of the population.

Can you characterize the types of communities or people served by independent non-PRASA water systems?

Ms. RODRÍGUEZ. Well, I am not an expert in this. But from my knowledge, these are areas particularly in the mountain side of Puerto Rico where it was very difficult to provide formal services.

So the families did community aqueduct systems decades ago and they have been living on those for a long time.

Mr. TONKO. Thank you.

And Mr. Epperson, your testimony mentioned that you need to make $1.5 million worth in repairs to your water—your wastewater treatment plant. How important is it to protect your community's investment by making sure that that facility is more resilient to future flooding?

Mr. EPPERSON. I think it is very important, you know, that we do have the plant up and running with temporary repairs.

Those are the more permanent repairs and—but because of the location of that plant we really are going to look at an enhancement type project with that—with that plant to send those wastewater flows to one of our other plants, expand that plant, because it is situated and located in a location less vulnerable to the rising waters that we experienced at this plant.

Mr. TONKO. And are there currently sufficient Federal funding opportunities to help the communities assess and mitigate future vulnerabilities to their water supplies or water systems?

Mr. EPPERSON. I believe there are opportunities. I am not certain that they are sufficient. You know, we are exploring what those opportunities are right now and moving through that process.

Mr. TONKO. Thank you.

And Mr. Howe, I am interested in how FEMA can improve its emergency support functions for the water sector. How does it compare to other critical infrastructure sectors?

Mr. HOWE. I think the difficulty we have is because it is spread out over multiple ESFs there is not a nationwide or entirety of a single operating system so it can vary from region to region, area to area.

As I mentioned, we were—we were successful in Texas because we've almost—we have made it happen that way. But it is not—it is not consistent. So there needs to be a consistent structure of how that works and we believe under a separate ESF that would happen.

Mr. TONKO. Thank you.

And Mr. Lichtenstein, what types of pollution occur—can occur from burning debris?

Mr. LICHTENSTEIN. Clearly, particulates or smoke. But that is the question that we want to answer—what else is happening.

So if it is a lower temperature burn there—and if plastic—I saw plastic tangled up with the debris and if that is burned it can potentially have dioxins, furans, polyaromatic hydrocarbons and other chemicals. But that really needs to be looked at.

Mr. TONKO. Thank you.

And I imagine that space is at a premium in areas like Puerto Rico and the U.S. Virgin Islands. What is the current state of the landfills there and what particular challenges exist because of the land challenge itself?

Mr. EPPERSON. Yes. I can't speak with authority to the landfills but I do have some knowledge. Some of them are really exceeding capacity and exceeding Federal regulations. Others are well run and doing fine.

The main island of Puerto Rico, of course, has more land than the other islands. In the Virgin Islands there are serious issues.

There are only two landfills—one on Saint Croix and one on Saint Thomas. Both have capacity issues and operational issues. So that is a big concern on those islands.

Mr. TONKO. Thank you.

And Ms. Rodríguez del Valle, if you had one recommendation to this subcommittee or to the committee in general, what would it be in regard to what you see right now in Puerto Rico?

Ms. RODRÍGUEZ. I think disasters kind of bring out the best of the—of the society and also the institutional flaws, and we are seeing a little bit of that currently in Puerto Rico, not only regarding the way in which we have been able to address the crisis.

It has brought the best of the Puerto Rican people and its capacity to organize and do a great job when nobody else was doing it. But it has also brought to light issues regarding the way in which disaster relief was organized, particularly during the first days.

It seemed to many of us living there that there was a lot of disorganization and some of the decisions actually delayed assistance to the people who needed it the most.

I also wanted to add one point regarding Mr. Shimkus' question, and it has to do with Federal Government aid. Actually, being able to be culturally sensitive is something as simple as having FEMA officers visiting people's homes to speak Spanish because most people in Puerto Rico do not understand English, and sometimes decisions were being done regarding the type of aids that these families received with a language barrier in the middle.

So perhaps that curtailed the ability of many of them to be able to actually get the help they needed.

Mr. TONKO. Thank you very much.

And with that, I yield back, Mr. Chair.

Mr. SHIMKUS. The Chair thanks the gentleman.

The Chair recognizes the gentleman from Texas, Mr. Olson, for 5 minutes.

Mr. OLSON. I thank the Chair.

I am going to open with the praise and Texas brag about a friend and leader back home in Texas 22, Trent Epperson. And Trent, I should give you a proper Aggie greeting—howdy, my friend. Welcome.

Trent is the assistant city manager of Pearland, Texas, as he mentioned. Pearland is the largest city in Brazoria County, with over 120,000 people and growing, rapidly.

Trent helps to run their half a billion-dollar capital budget as well as overseeing both the city's public works and utilities department.

Chair, we are so proud of Pearland and Brazoria County's response to Hurricane Harvey. Please tell the committee how many people died in Brazoria County because of Hurricane Harvey.

Mr. EPPERSON. There were no people that died in Brazoria County during Hurricane Harvey.

Mr. OLSON. Zero. Nada. Nil. No deaths. That's amazing, despite 5 feet of rain in parts of Brazoria County. Is that correct?

Mr. EPPERSON. Yes, sir.

Mr. OLSON. OK. Now the fun stuff: the questions.

What kind of help did you get immediately after Harvey hit outside of Brazoria County from the Federal Government, from the EPA, maybe from FEMA, from other States, other entities?

What would you change about the storm response lines of communication now to the next storm that is coming? We know it is coming.

Mr. EPPERSON. As far—as far as immediate help, I think it was mostly locals that were able to do the—all of the immediate response needs.

We have been working with FEMA, meeting with them on a weekly basis since then. I believe that process for the immediate needs and the debris removal and developing our damage assessments is moving forward.

One of the areas where I think that moving forward we want to improve—as well as working with the feds—is a buy-out program, where it has in the past been kind of sporadic when there is a disaster.

We move forward with a buy-out program. It occurs several months to maybe more than a year after the actual event itself. And so we see a need for accelerating that. There are people that are out of their homes right now and don't know whether to repair those homes and make those repairs because they don't know whether there is a buyout opportunity or not.

So I think the ability to accelerate that and have that as an ongoing program even when there is not a disaster that just occurred would really help from a local's perspective.

Mr. OLSON. Anything else you wish from Washington—what we could do better to help you guys get through that? Because you guys were awesome but we can help you I think a lot more, much more—much quicker.

I mean, it just seemed like over and over people calling me up, I can't get somebody to come out to my house to, you know, look at my house and assess the damage.

For example, Pearland had five large—four large dump trucks go in that heavy water. Three are flooded out. You are down to one dump truck. And so I guess, you know, we are trying to get resources to you.

Anything we can improve on here in DC? Because you all do great but we want you to do better. We can help, I think.

Mr. EPPERSON. Yes, sir. I think any of those resources would help.

Mr. OLSON. The previous panel, Trent, talked about planning scenarios with TCEQ and EPA. Has Pearland been involved in any of those? Just—have you been involved at that level planning for another hurricane like Harvey? Have you been involved in that or are you sort of outside looking in?

Mr. EPPERSON. We work, you know, with our local county emergency management as well as with the Texas Department of Emergency Management. But we haven't had any direct contact or work with those folks prepreparing for emergency.

Mr. OLSON. Have you had to adjust your plans for an 800-year flood as opposed to a 500-year flood or a 100-year flood? I mean, how much have you adapted to what happened in August with Hurricane Harvey?

Mr. EPPERSON. I think the big thing we have recognized is that our newer infrastructure designed to current standards fared very well even with the unprecedented flooding and that it is our areas that have been there for many decades that were designed to other standards or before standards were in place that were mostly affected and that those are the areas we want to concentrate on for future drainage improvement projects, as well as other resiliency projects, to make sure that those areas also are able to withstand the same type of flooding.

Of greatest importance to that is the Clear Creek project, which is a project sponsored by the Harris County Flood Control District, and I believe that project has been submitted for Federal funding to move forward after this event.

Mr. OLSON. I am out of time, and I want to say, "Gig 'em," my friend. Thank you.

Mr. EPPERSON. Gig 'em.

Mr. SHIMKUS. The chairman now turns to another Texan, Mr. Green, for 5 minutes.

Mr. GREEN. Well, I appreciate it, and I married into the Aggie family. My son and our son-in-law and my two grandchildren now think they are going to be in the Corps Cadets.

But be that as it may, Mr. Howe, in your testimony you know that some of the City of Houston's wastewater operations were overwhelmed during Harvey.

Can you describe in detail on what locations? Was it mainly upstream, Buffalo Bayou? Because every creek and bayou I have in my area in east Harris County were out of their banks. But it was mostly the City of Houston and Buffalo Bayou that the wastewater treatment plants were overwhelmed?

Mr. HOWE. Yes, sir. It is my understanding on the west side of Houston the wastewater plant was flooded out. Part of that was due to controlled flooding out of the Addicks Reservoir, as you are familiar with that area over there. They currently——

Mr. GREEN. I don't represent it, but I am familiar with it.

Mr. HOWE. Yes, I understand from the City of Houston water utility they are currently dealing with a wastewater line that is in Buffalo Bayou where the bayou is sloughing off continually.

They have a wastewater line that is on the side of that. It is an ongoing issue. Obviously, there needs to be a coordinated response on how that gets rebuilt and how their line gets reinforced or moved.

So it is these ongoing issues. The water system operated just fine. They were able to put coffer dams around the northeast water filter galleries to keep the water system operating fine but wastewater, by its very nature, as Mr. Epperson mentioned, are built in lower level areas and they had some significant flooding, particularly in Houston's lift stations, too.

Mr. GREEN. We have untold number of water districts outside the city limits of Houston or Pasadena and I know they—because they are built on the bayou close to where they're—they treat the effluent and it goes—they have permits to go into the bayous.

Do you have any idea on how many of those were also impacted?

Mr. HOWE. I don't have specific numbers. The difficulty for—in our response during Hurricane Harvey, obviously, was that there was a delayed response. No one could do an assessment until the flood waters went down.

Many of those operations were, obviously, shut down when the flooding started but it doesn't mean there wasn't a pollutant. I don't have specific numbers, though.

Mr. GREEN. OK. Well, I have the eastern part of the county and, like I say, I could give you the watersheds from the bayous and—but Buffalo Bayou and the shipping port of Houston actually runs right in the middle of our district, and whether it be Brays or Sims, Sims Bayou looked like it was the one that didn't flood as bad as Brays and on the north side I have Greens Bayou, Carpenters Bayou in channel view, Hunting Bayou and——

Mr. HOWE. I grew up in Houston. I am familiar with all these.

Mr. GREEN. And all of them were and these were multiple flooding experiences and we continue to work with the Corps of Engineers and, of course, our Harris County Flood Control District—

that a lot of our neighboring counties don't have flood control districts but in Harris County we pay property taxes to be able to have drainage ditches and, you know, take care of our bayous along with the partnership with the Corps.

So it is a big challenge. Your—Mr. Howe, in your testimony you said that the City of Houston was overwhelmed. What part of the city did they—did they shut down the wastewater system or did——

Mr. HOWE. It is my understanding——

Mr. GREEN [continuing]. What part of the city was impacted?

Mr. HOWE. Excuse me. I am sorry.

On the west side of Houston they did have one of their wastewater plants completely flooded out. It was out of service. They were advising people not to flush, those who were still in their residences, and they were—they had the resources to get that plant back online in three or four days, once the water—the water receded.

You know, as you may be familiar, most of Houston's wastewater system is with forced mains or lift stations and they have a significant number of those and I know a number of those were flooded out.

Houston proper was pretty resilient and a lot of that, much like some of the other cities around there. So I don't have specific details as to how they came back but they were very resilient on their own.

Since Hurricane Ike they have built up a lot of resiliency within the City of Houston.

Mr. GREEN. Well, in Harris County also many years ago, because you recognize we were subsiding, the City of Houston is now almost totally on surface water and they have surface water rights.

I know Pasadena I represent complains about having to pay high water rates for the City of Houston.

So we have a central location for surface water so we don't continue to subside. Do you think there is—should be an effort to try and create mega wastewater treatment facilities and partner with an untold number of water districts that we have and see how that would work?

Mr. HOWE. You know, obviously, sir, that is a local decision. The first thing, when you said it, that popped in my head was the—an example of the Trinity River Authority in the Dallas-Fort Worth area, which is a mega wastewater operation without regard to issue.

You know, most of Houston's water comes from the discharge in the Trinity River from TRA. That might be a possibility. I mean, there are any number of small package plants in the muds that you spoke of outside of the Houston area.

There might be an effort to look at consolidating those in a system that would be more efficient. There are enormous costs involved in doing that and getting to that, you know, rerouting sewer lines and everything else. But it is those sort of options I think everybody needs to look at.

Mr. GREEN. Well, and I am already over time, but with the amount of money we are going to have to do to redo those plants and also the houses and the businesses downstream who are in

danger of, you know, because of that effluent being in their houses and their—in their businesses.

So thank you, Mr. Chairman.

Mr. SHIMKUS. I thank my colleague.

I want to thank the colleagues who stayed and participated in the second panel. I personally really appreciate it. An observation is that these disasters that we are talking about in this event, if you noticed—for the panelists, those of us who have been through them really kind of the same type of story.

I do think there is an opportunity for us to work collectively and look at the Stafford Act. This is multijurisdictional, though. This would be a long-term, 5, 6 years trying to get a response.

You know, I keep thinking about big piles of stuff and how do you separate them. I am a big trash energy guy. I would like to see more of that. We have some locally that I have toured.

Buy-out programs—we just had a flood 5 years ago. People are just getting their checks now. So there is a lot of ways these things can be fixed so we do appreciate your testimony.

I also want to tell my—to the committee that we have five legislative days to submit opening statements. I forgot to do that at the beginning of this.

I want to thank you all for being here and pursuant to committee rules, I remind Members that they have 10 business days to submit additional questions for the record.

If you get those, if you would reply we would appreciate it and I ask that you submit your responses within 10 business days upon receipt of the questions.

Of course, if your—can't use your electric stuff because you are in a place where there is no electricity that might be a challenge. But we do appreciate you being here. There is a lot of work for us to do.

Thank you for your time, and with that, I will adjourn the hearing.

[Whereupon, at 12:56 p.m., the committee was adjourned.]

[Material submitted for inclusion in the record follows:]

GREG WALDEN, OREGON
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FIFTEENTH CONGRESS

# Congress of the United States

## House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115
Majority (202) 225–2927
Minority (202) 225–3641

December 12, 2017

Mr. Peter Lopez
Regional Administrator
Region 2
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Mr. Lopez:

Thank you for appearing before the Subcommittee on Environment on Tuesday, November 14, 2017, to testify at the hearing entitled "Response and Recovery to Environmental Concerns from the 2017 Hurricane Season."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on Wednesday, January 3, 2017. Your responses should be mailed to Allie Bury, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to Allie.Bury@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

John Shimkus
Chairman
Subcommittee on Environment

cc: The Honorable Paul Tonko, Ranking Member, Subcommittee on Environment

Attachment

GREG WALDEN, OREGON
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FIFTEENTH CONGRESS

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2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115
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Minority (202) 225-3641

December 12, 2017

Mr. Trey Glenn
Regional Administrator
Region 4
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Mr. Glenn:

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Chairman
Subcommittee on Environment

cc: The Honorable Paul Tonko, Ranking Member, Subcommittee on Environment

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GREG WALDEN, OREGON
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FIFTEENTH CONGRESS

# Congress of the United States

## House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115
Majority (202) 225–2927
Minority (202) 225–3641

December 11, 2017

Mr. Sam Coleman
Acting Regional Administrator
Region 6
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Mr. Coleman:

Thank you for appearing before the Subcommittee on Environment on Tuesday, November 14, 2017, to testify at the hearing entitled "Response and Recovery to Environmental Concerns from the 2017 Hurricane Season."

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Sincerely,

John Shimkus
Chairman
Subcommittee on Environment

cc: The Honorable Paul Tonko, Ranking Member, Subcommittee on Environment

Attachment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 19 2018

OFFICE OF CONGRESSIONAL AND
INTERGOVERNMENTAL RELATIONS

The Honorable John Shimkus
Chairman
Subcommittee on Environment
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515

Dear Chairman Shimkus:

Enclosed please find the U.S. Environmental Protection Agency's responses to the Committee's questions for the record following the November 14, 2017, hearing titled "Response and Recovery to Environmental Concerns from the 2017 Hurricane Season."

I hope this information is helpful to you and the members of the Committee. If you have further questions, please contact me or your staff may contact Carolyn Levine in my office at levine.carolyn@epa.gov or (202) 564-1859.

Sincerely,

[redacted]

Troy M. Lyons
Associate Administrator

Enclosures

Enclosure

**U.S. Environmental Protection Agency**
**Responses to Questions for the Record**
**Committee on Energy and Commerce**
**Subcommittee on Environment**
**Hearing on**
**"Response and Recovery to Environmental Concerns from the 2017 Hurricane Season"**
**November 14, 2017**

**Questions to Regional Administrator Peter Lopez:**

**The Honorable John Shimkus**

1. **Mr. Lopez, how does the financial condition of the Puerto Rico Aqueduct and Sewer Authority affect its ability to use Drinking Water Revolving fund monies to address Safe Drinking Water Act compliance needs? Do you have suggestions for fiscally prudent ways to address this matter?**

**Response:** Currently, funding is not flowing through either Puerto Rico's Clean Water nor the Drinking Water State Revolving Funds (SRF) due to the fiscal issues that have impacted Puerto Rico Aqueduct and Sewer Authority (PRASA's) ability to pay contractors, resulting in planned projects being halted, particularly in the wastewater arena. Under current law, Puerto Rico is required to provide a 20% statutorily required match in order to receive SRF capitalization grants. Given Puerto Rico's severe financial challenges, this 20% match requirement currently serves as an impediment to Puerto Rico's ability to access federal SRF funds. Congress could choose to eliminate or reduce the 20% match requirement as a means to help accelerate disbursement of funds for clean water and drinking water projects, though this would not resolve PRASA's ongoing cash-flow problems. For longer term implementation, Congress could consider taking steps to make subsidy provisions, including principal forgiveness, more consistent across federal funding agencies for disaster relief projects.

2. **Mr. Lopez, as I understand it, the Disaster Declarations for Texas, Florida, and the US Virgin Islands are Category A-F. In Puerto Rico, the disaster declaration came out last week and I understand that the designation was moved to Category A-G, including the permanent repair of publicly owned water treatment and delivery systems and sewage collection and treatment facilities**

    a. **Did EPA have any role in finally getting this declaration moved from temporary work to permanent repair work?**

**Response:** No, EPA did not have a role in the disaster declarations.

    b. **Do you know why Puerto Rico went so long being relegated to only temporary aid?**

**Response:** The EPA does not have this information. The Commonwealth and FEMA would be the source of this information.

3. **Mr. Lopez, what superfund sites, oil sites, and chemical facilities on the US Virgin Islands – have they been evaluated?**

   a. **If so, what was the result of the evaluation and is there any follow up required?**

**Response:** Yes. EPA Region 2 performed field assessments of all Superfund and oil sites in the U.S. Virgin Islands. In addition, EPA assessed about 87 regulated facilities in the U.S. Virgin Islands. The region found that the tank was damaged at the Cruz Bay Oil Tank site in St. John, U.S. Virgin Islands, during Irma but overflights of the area did not show any oil spills from the site. EPA worked with FEMA and the U.S. Navy to gain access to the site and pump the damaged tank to provide more capacity for future rainfall. The tank is currently stable. The remaining oil in the tank bottom will be removed and the tank dismantled once access to St. John has improved and Hurricane response priorities allow EPA personnel and contractors to address the site.

4. **Mr. Lopez, what is the Agency doing about hazardous waste, household hazardous waste, and medical waste that has found its way into the landfills in Puerto Rico?**

**Response:** EPA is working with the U.S. Army Corps of Engineers, the government of Puerto Rico and municipalities, as well as residents, to protect people and prevent hazardous materials from reaching landfills.

EPA is assisting the government of Puerto Rico and municipalities in the collection of household hazardous waste, electronic, and abandoned or "orphan" containers, which include drums, tanks, containers, and cylinders that were found floating in or near water bodies. In Puerto Rico, about 56,500 drums, propane tanks, cylinders, white goods and other containers have been collected, preventing them from reaching landfills. While EPA does not have a specific mission assignment for medical waste collection in Puerto Rico, the agency has been collecting it incidental to the household hazardous waste and orphan container mission assignments.

   a. **Has EPA been working with Puerto Rico Environmental Quality Board to look at the landfills – both before and after the hurricanes?**

**Response:** The EPA worked closely with the Puerto Rico Environmental Quality Board in setting up its staging areas, some of which are at landfills. In these cases, the landfills were assessed by the EPA for staging area suitability, along with the EQB and local municipalities. Previous concerns with landfill capacity, operations and maintenance issues were exacerbated by the storms. EPA's long-term goal is to assist Puerto Rico and the U.S. Virgin Islands in identifying sustainable solutions to managing solid waste, including recycling and proper siting, recognizing, in particular, the geographical constraints of being in an island setting.

5. **Mr. Lopez, has EPA conducted air quality assessments in the impacted areas?**

**a. If so, when and how many?**
**b. What have the results of those assessments been, generally?**

**Response:** One way EPA "assesses" air quality is through a network of air monitors. EPA is working with both the Puerto Rico and U.S. Virgin Islands governments to re-establish the regulatory ambient air monitoring network across the islands. As a result of Hurricanes Irma and Maria, the air quality monitoring networks in Puerto Rico and USVI were rendered inoperable due to the lack of electrical power and because of other damage and access issues at particular sites. The equipment is very sensitive and EPA is in the process of working with FEMA and other authorities to restore the network's operation. A Mission Assignment (MA) was approved by FEMA to repair and restore priority stations in Puerto Rico. A similar MA is in process with VITEMA and FEMA for USVI. Region 2 is also working closely with the Puerto Rico and USVI air quality agencies in establishing air monitoring priorities and getting the system running.

While the increase in power generators in these areas often increases the amount of pollutants in the air, there is also an urgent need for power to run wastewater treatment systems, drinking water systems and pollution control systems on facilities on the islands.

6. **Mr. Lopez, what is the status of the wastewater treatment plants in Puerto Rico and the US Virgin Islands?**

**Response:** As of January 3, 2018, of the 51 wastewater treatment plants operated by PRASA in Puerto Rico, two are not operating. All eight of the wastewater treatment plants are operating in the U.S. Virgin Islands.

**a. Your written testimony notes that of the 800 pump stations in Puerto Rico, "about" 106 are overflowing sewage due to lack of power, malfunctioning generator or damage – what is the Agency doing about it?**

**Response:** Thanks to the partnerships between federal and local partners, the situation in Puerto Rico has improved since EPA testified before the Subcommittee. As of January 3, 2018, 49 of the approximately 714 wastewater pump stations in Puerto Rico are not operating. Many of those are out of service due to lack of primary power which FEMA is helping to address by providing generators. The remaining pump station outages are due to clogs and broken lines, which PRASA is addressing. The EPA continues to coordinate with the Puerto Rico government, FEMA and the U.S. Corps of Engineers to provide generators and make necessary repairs to get these pump stations back up and running.

**b. Your written testimony also notes that "many" of the wastewater plants on St. Thomas, St. Croix, and St. John are operating, though some plants and pump stations are damaged or blocked by storm debris – what is EPA doing about that?**

**Response:** The situation continues to improve in the U.S. Virgin Islands with respect to wastewater treatment. As of January 3, 2018, all of the eight USVI wastewater treatment plants are in service. Three of the 30 pump stations are still experiencing problems. The three have some damage or are without power. The EPA continues to coordinate with the USVI

government, FEMA and the U.S. Corps of Engineers to make necessary repairs and restore power to get the remaining pump stations back up and running.

**c. What is the impact of this sewage on source water for drinking water or, as Mrs. Rodriguez testifies on the next panel, backup into peoples' showers and sinks?**

**Response:** Sewage backups can be serious, and EPA is working to ensure that these types of situations are addressed expeditiously. The particular issue of sewage backup into homes in the municipality of Corozal was addressed. The backup was caused by transmission pipe damage PRASA repaired those pipes. Some overflows were caused by clogged sewer lines, and EPA worked with PRASA, the Puerto Rico Environmental Quality Board, FEMA and the U.S. Corps of Engineers to prioritize sewer lines that need to be fixed or cleaned to prevent backups. EPA is coordinating with PRDOH and PRASA to conduct comprehensive drinking water sampling program throughout the island on PRASA and non-PRASA drinking water systems.

**The Honorable Diana DeGette**

**1. Mr. Glenn testified that Region 4 took several steps to prepare for its response before Hurricane Irma made landfall. Before Hurricane Irma hit Puerto Rico and the U.S. Virgin Islands did leaders in Region 2:**

**a. Increase staffing in the Regional Emergency Operations Center?**
**b. Deploy On-Scene Coordinators to an on-site Emergency Operations Center?**
**c. Provide a Region 2 liaison to the FEMA Regional Coordination Center?**
**d. Did Region 4 take any of the above actions before Hurricane Maria?**

**Response:** It is difficult to directly compare the response in a contiguous state, which is more than 450 miles long, with the response in an island setting. While EPA Region 4 was able to make preparations in areas nearby anticipated landfall in Florida, the island setting in Puerto Rico and the U.S. Virgin Islands made the ability to have responders pre-deployed and stationed in a safe place, while still being within reach of areas expected to be hard hit, much more challenging than the agency's preparations and response to Hurricane Harvey in Texas and Hurricane Irma in Florida.

The EPA's first mission objective is to protect its responders. That said, the agency increased staffing in its Regional Emergency Operations Center and staff were on stand-by to respond to Hurricane Irma. In addition, EPA communicated with both the Puerto Rico and U.S. Virgin Islands governments and a senior official – the Caribbean Environmental Protection Division Director – was located in San Juan and equipped with a satellite phone to help facilitate communications. Hurricane Irma made landfall in the U.S. Virgin Islands and then Puerto Rico on September 6, 2017. Both areas were still receiving severe weather the following day. After receiving Mission Assignments from FEMA, EPA deployed personnel on September 8. EPA sent four assessment teams to both Puerto Rico and the U.S. Virgin Islands, and provided staff to the FEMA's Regional Response Coordination Center in New Jersey.

**Mr. Glenn testified that Region 4 deployed numerous senior regional leaders, including the regional administrator, to the impacted region before Hurricane Irma made landfall in Florida.**

- **e. Did Region 2 deploy EPA senior regional leaders to Puerto Rico and the U.S. Virgin Islands to coordinate with local officials before Hurricane Irma made landfall?**
- **f. How many senior leaders were deployed previous to the Hurricane Irma's landfall?**
- **g. Who was the most senior official who was pre-deployed?**
- **h. Please Response the questions above for the period before Hurricane Maria made landfall.**

**Response:** As EPA noted to your staff following the hearing, the island setting in Puerto Rico and the U.S. Virgin Islands made the ability to have responders pre-deployed and stationed in a safe place, while still being within reach of areas expected to be hard hit, unique and much more challenging than the agency's preparations and response to Hurricane Harvey in Texas and Hurricane Irma in Florida.

As Maria was bearing down on the U.S. Virgin Islands and Puerto Rico as a Category 5 storm, FEMA, in concert with other responding agencies, ordered all responders in the USVI to leave the islands until after the storm. At FEMA's request, a very small number of federal response personnel, including one EPA On-Scene Coordinator, remained on St. Croix in a bunker. The EPA made the decision to manage response personnel in Puerto Rico in the same manner, and response staff were likewise instructed to return to the mainland United States until after the storm.

Unlike areas of the mainland where responders could travel out of harm's way, there was no area of the U.S. Virgin Islands or Puerto Rico that would ensure their safety. EPA's own staff who live in Puerto Rico and the USVI remained, of course, with the safety of themselves and their families being their first priority, including Region 2's Director of the Caribbean Environmental Protection Division. EPA provided key people with satellite phones to facilitate re-connection after the hurricane and made arrangements to re-deploy its resources, along with other agencies' resources, as soon as it was possible to do so. During the week of October 16, 2017, just days after taking office as the new EPA Regional Administrator, Pete Lopez visited both Puerto Rico and the U.S. Virgin Islands. This included trips into the field to strengthen partnerships with local governments and to gauge community needs first-hand. Regional Administrator Lopez focused on finding solutions to challenges and emphasized working directly with Puerto Rico and U.S. Virgin Islands government officials as well as with local governments and community organizations.

Immediately following landfall, EPA Region 2 deployed personnel to the islands and moved response staff to the islands as soon as transport and lodging became available. Even today, several months after the storm, securing sufficient lodging remains one of the biggest logistical challenges.

2. **Mr. Glenn testified that on September 12, two days after Irma made landfall in Florida, Region 4 had 12 Field Hazard Assessment Teams conducting targeted facility assessment support at chemical and oil storage facilities.**

   a. **How many Field Hazard Assessment Teams were operational in Puerto Rico and the U.S. Virgin Islands two days after Irma made landfall?**
   b. **How about two days after Maria made landfall?**
   c. **When were the first Field Hazard Assessment Teams operational?**
   d. **How many teams were there at that time?**

**Response:** Following Hurricane Irma, impacts to St. Thomas and St. John were extreme, but impacts to St. Croix and Puerto Rico were less severe. The EPA was therefore able to deploy personnel within 1-2 days of Hurricane Irma passing Puerto Rico and St. Croix. By that time, EPA was required to remove personnel from the islands (per FEMA's orders in advance of Hurricane Maria's landfall), there were about 44 EPA response personnel on the ground in Puerto Rico and the US Virgin Islands.

As was noted previously, unlike areas of the contiguous states where responders could travel out of harm's way, there was no area of the U.S. Virgin Islands or Puerto Rico that would ensure their safety. Hurricane Maria caused devastating destruction and the most severe impacts of the storm lasted for several days after the initial landfall. The hurricane did not completely clear the northwestern portion of Puerto Rico until late morning on September 21, 2017, and dangerous wave activities continued throughout the Caribbean for several days. All ports and airports were closed for days and in some cases for weeks. FEMA began re-deploying people from Atlanta within a few days, but gave first priority to responders involved with immediate life-saving missions. The EPA was able to start re-deploying by September 23, 2017.

3. **Mr. Glenn testified that on September 12, two days after Irma made landfall in Florida, Region 4 had six teams making boots-on-the-ground assessments of Superfund sites.**

   a. **How many teams did Region 2 have making boots-on-the-ground assessments of Superfund sites two days after Irma made landfall?**
   b. **How about two days after Maria made landfall?**
   c. **When were the first Superfund site assessments made?**
   d. **How many teams were there at that time?**

**Response:** The location, terrain and circumstances in Florida is very different from that in Puerto Rico or the U.S. Virgin Islands, with Florida being accessible from the mainland, versus the island setting of Puerto Rico and the U.S. Virgin Islands, where airports and ports were closed. EPA began assessing Superfund sites within a few days after Hurricane Irma made landfall and had completed those assessments within the few weeks between Hurricanes Irma and Maria hitting the U.S. Virgin Islands and Puerto Rico. About a dozen people were involved with these assessments, with the number and mix of responders varying for each site, including project managers for the sites, contractors and responsible parties.

As noted above, Hurricane Maria caused intense destruction and the most severe impacts of the storm lasted for several days after initial landfall. Even after the hurricane completely cleared Puerto Rico, dangerous wave activity continued throughout the Caribbean for several days, and all ports and airports were closed for several days and in some cases for weeks. FEMA began re-deploying personnel within a few days, but gave first priority to responders involved with immediate life-saving missions. EPA was able to start re-deploying by September 23, 2017. EPA assessments of Superfund sites began on September 22, 2017, performed by EPA employees from the EPA Caribbean office that remained in Puerto Rico. There were twelve people involved in these assessments, including project managers, contractors and responsible parties. Most of the assessments were completed within a few weeks, with a few taking longer due to accessibility of the sites. There were no major releases of hazardous materials or chemicals from any of the sites, though a few had sustained some damage. That damage consisted of broken fencing and lack of power to pump and treatment facilities. The fencing has now been repaired and the pump and treatment facilities are operational.

**Questions to Regional Administrator Trey Glenn:**

**The Honorable John Shimkus**

1. **Mr. Glenn, your written testimony states that Region 4 personnel were deployed to Florida to assist the State and the US Army Corps of Engineers with water and wastewater support and that the Region coordinated with the Florida Department of Environmental Protection to monitor the status of more than 1,600 community drinking water systems and to assist with contacting small, non-community drinking water systems such as schools and restaurants. What is the status of those efforts?**

**Response**: As of November 14, 2017, all assessments of drinking water systems that were impacted by the hurricanes were completed. All water systems are fully operational and all boil water notices had been rescinded.

2. **Mr. Glenn, has EPA evaluated all of the superfund sites in Region 4? [(If no/, when do you anticipate that will be completed? If so, what were the results of the evaluations?]**

**Response**: EPA assessed vulnerabilities at sites in the states impacted by the storms, including all Superfund remedial sites in Florida, and deployed six teams to conduct boots-on-the-ground assessments of all National Priority List (NPL) sites within the state. As a further measure, EPA also deployed teams to assess NPL sites in Alabama, Georgia, and South Carolina.

   **a. Do any of the superfund sites require follow up?**

**Response**: Three sites required minor repairs: 1) Fairfax Wood in Jacksonville, Florida (fallen trees damage to a fence and minor soil erosion); 2) Post Lumber in Quincy, Florida (seam separation in the geomembrane cover protecting a waste pile from weather elements); and 3) Terry Creek in Brunswick, Georgia (fence damage by fallen trees and erosion in the creek and at the storm and process water outfall). During post storm inspection, EPA also noticed damage to a weir at the process outfall at the Terry Creek site. The Potentially Responsible party (PRP) has removed the trees and repaired the fence. The weir will be addressed during the Remedial Action as part of the Superfund Cleanup process.

3. **Mr. Glenn, your written testimony states that in preparation for Hurricanes Harvey and Irma EPA worked to ensure that the Agency had an awareness of potential vulnerabilities at superfund sites and that due to the trajectory of Hurricane Irma, you were able to attend to concerns in Florida prior to the storm's landfall. What issues were you able to head off and can you give us more information on what steps Region 4 took in preparation?**

**Response**: EPA conducted Incident Management Training for staff the week prior to landfall to ensure that regional Response Support Corps personnel were refreshed in the Incident Command System (ICS).

Regional Administrator Glenn personally reached out to the Environmental Directors of Alabama, Georgia, Florida, North Carolina and South Carolina to inform them of Region 4's ability to assist, if needed. The region also reached out to tribal partners who might be impacted by the storm. Other than Florida, no other Region 4 state or tribe requested EPA assistance relative to Hurricane Irma.

EPA Region 4 increased staffing in the Regional Emergency Operations Center to provide continuity of operations and coordination across the response activities. At the request of the State, Region 4 also deployed an On-Scene Coordinator (OSC) stationed in Florida to the State Emergency Operations Center (SEOC.) The purpose of this deployment was to provide direct coordination and planning support to the state. Prior to Irma's landfall, we also provided a Region 4 liaison to the FEMA Regional Response Coordination Center (RRCC), and deployed EPA regional senior leaders to coordinate with local officials on Hurricane Irma preparations and immediate response needs.

Before and after landfall, the region worked closely with EPA Headquarters to issue twelve fuel waivers across multiple states whose fuel supply was impacted by the hurricanes and no action assurances to help stabilize prices at the pump and ensure that emergency vehicles had access to fuel. The region also contacted state drinking water primacy agencies to ensure that emergency contact information was accurate, and that states agencies were familiar with the process for requesting federal water sector assistance under the National Response Framework. In addition, twelve Field Hazard Assessment Teams consisting of EPA OSCs, technical assistance team contractors and Florida Department of Environmental Protection personnel were identified and pre-positioned for deployment when needed. In addition, the team included a number of OSCs mobilized from the EPA Region 5 office in Chicago to support our efforts.

a. **Your testimony also notes that Region 4 conducted boots-on-the ground assessments of all sites on the National Priorities List in Florida, Georgia, Alabama, and South Carolina and your testimony reports that these teams were directed to complete onsite assessment of the sites, document current operating conditions, verify that there were no releases from the sites and—where necessary—take any further actions to protect health and the environment. This sounds like a very proactive plan — do all EPA Regions conduct this sort of proactive planning with respect to superfund sites and if not, shouldn't they?**

**Response**: EPA believes that a proactive approach was necessary and the prudent course of action given the number of sites in Region 4. A similar approach is employed in all of EPA's regions.

4. **Mr. Glenn, your written testimony notes that teams were deployed to Orlando, Florida to provide oil and hazardous substance response support by first conducting targeted facility assessment support at chemical and oil storage facilities as prioritized by the State of Florida. What was the result of the facility assessment?**

**Response**: EPA Hazardous Assessment Teams conducted field assessments at more than 200 chemical and oil storage facilities identified as priorities in Florida. There were no significant storm-related hazardous substance or oil pollution incidents.

5. **Mr. Glenn, your written testimony discussed how Region 4 reached out directly to ascertain the status of all 310 oil storage facilities required to maintain Facility Response Plans (FRP facilities) within Florida, Alabama, Georgia, and South Carolina and all 274 chemical facilities within Florida required to maintain Risk Management Plans (RMP facilities). What was the result of that assessment?**

**Response**: Overall, there were very minimal reports of oil and hazardous substance spills that could be attributed to the storm.

**a. Your testimony indicates that one of the 274 RMP facilities reported a hazardous substance release — what facility was it and what was release?**

**Response:** There was a release of a hazardous air pollutant (ammonia) at the Pilgrims Pride facility in Live Oak, Florida. The release was short in duration (approximately 10 minutes according to the facility), quickly dissipated, and did not cause adverse health or environmental impacts.

**b. Your testimony states that the source was "mitigated quickly" — what steps did the Agency take to mitigate the source?**

**Response:** Mitigation of the source was performed by the facility. The facility implemented their emergency response plan and called the National Response Center to provide notification in a timely manner.

Trained hazmat facility employees responded to the release and isolated the impacted system to minimize the amount of ammonia released, and to make system repairs. During the response, facility personnel used hand held ammonia sensors to monitor the mechanical room air for ammonia concentrations to ensure responding employee safety. The facility reported that the ammonia release was contained onsite, did not leave the complex grounds. There were no injuries and no environmental or outside impact. The corrective action implemented after the incident investigation to prevent reoccurrence, was to shut off all starters during power outages to prevent unplanned start-ups.

6. **Mr. Glenn, what is the status of the stationary air quality monitoring network sites in the impacted areas?**

**Response:** In Florida, sites were fully operational and collecting air monitoring data at 97 of 98 sites within about two weeks after the storm. The remaining station was back up collecting air quality data approximately two months after storm.

In Georgia, no monitoring sites or equipment were damaged. Several sites lost power and were unable to collect data for a few days. All sites are now back online and operational. The Fort Mountain site lost power but was operational and collecting data a week post storm.

**a. If these monitors have been damaged or rendered inoperable, when do you anticipate getting them back online?**

**Response**: All sites that experienced damage or were inoperable due to the storm are fully operational at this time.

b. **If you are having to use other means of monitoring and measuring, such as portable and mobile collection devices, are you concerned about whether these samples are accurate and/or exemplary of air quality conditions throughout the regions?**

**Response:** EPA Region 4 is not using portable and mobile collection devices to assess ambient air quality. The region did not deploy mobile or portable air monitoring resources to assess the region's ambient air quality during the Hurricane Irma response.

**Questions to Acting Regional Administrator Sam Coleman**

**The Honorable John Shimkus**

1. **Mr. Coleman, has EPA evaluated all of the superfund sites in Region 6? [If not, when do you anticipate that will be completed? If so, what were the results of the evaluations?]**

    a. **Other than the San Jacinto Waste Pits, did any other superfund sites require follow up?**

**Response:** All 43 Superfund National Priority List (NPL) sites in the hurricane affected area were inspected and sampled. Only the San Jacinto site required repair and that has been completed. Post-hurricane Superfund site summaries and sampling data for all 43 sites have been published on EPA's website: www.epa.gov/hurricane-harvey.

2. **Mr. Coleman, we have heard a lot about the San Jacinto Waste Pits superfund site in your region with the most troubling being reports of the cap being damaged and dioxin levels as high as 70,000 parts per billion when the cleanup level is only 30 parts per billion. What can you tell us about the status of elevated levels of dioxin?**

    a. **I believe that EPA was requiring the potentially responsible parties to do additional sampling in the area around the site to determine the extent of the problem from the damage to the cap – what the result of that sampling?**

**Response:** EPA directed the potentially responsible parties to conduct probing the week of September 6, 2017, to ascertain possible areas of the cap where waste material might be exposed. EPA approved 14 locations for sampling and analysis. During the week of September 11 2017, sampling was conducted of all 14 areas and additional sampling was conducted in sediments adjacent to the cap to determine if waste material had been transported off of the cap. In one 2-foot by 2-foot location, dioxin levels of 70,000 ppb were measured. This area was covered by cap materials shortly after the samples were taken. The other 13 locations had background levels of dioxins. The sampling results from the adjacent sediment locations showed dioxin levels consistent with the pre-storm levels. EPA believes that this result means that the exposed area of elevated dioxin levels did not cause significant recontamination of the surrounding sediment.

    a. **I know that EPA signed the Record of Decision (ROD) in mid-October and I believe that the remedy selected was removal of the contamination- is that correct?**

**Response:** Yes, the ROD selected excavation and removal of over 200,000 cubic yards of dioxin contaminated wastes followed by off-site disposal.

    b. **Are the potentially responsible parties on board with the ROD and with conducting any immediate repairs necessary on the cap?**

**Response:** The potentially responsible parties submitted significant comments in support of an enhanced cap, and raised several concerns with the alternative of excavation and off-site

disposal. EPA provided extensive responses in the ROD to the comments raised by the potentially responsible parties during the comment period. While the potentially responsible parties have not agreed to conduct the site cleanup, they have shown interest working with EPA on the best design for the remedial action.

The potentially responsible parties promptly conducted the immediate repairs necessary on the cap following impacts from Hurricane Harvey as required by the maintenance plan for the site and they have agreed to the sampling that EPA required.

3. **Has Region 6 had to deal with orphan containers like drums, tanks, canisters, cylinders and similar containers displaced by the hurricane found floating in or washed up near waterways because of the flooding?**

**Response:** Yes, U.S. EPA, U.S. Coast Guard, Texas Commission on Environmental Quality, and Texas General Land Office formed a Unified Command in response to Hurricane Harvey. The Unified Command completed hazmat reconnaissance and recovery activities associated with hurricane impacts. Orphan containers, including drums, tanks, canisters, cylinders and similar hazmat containers found floating in or washed up near waterways were assessed, collected, sorted and grouped by type prior to shipping them offsite for proper treatment and disposal. The Unified Command collected over 1,088 orphan containers and responded to approximately 266 reported spills or discharges. As part of Unified Command, USCG and the Texas General Land Office addressed and completed the marine operations to recover abandoned vessels (boats).

4. **Mr. Coleman, your written testimony describes the Airborne Spectral Photometric Environmental Collection Technology – the ASPECT aircraft. It sounds like the ASPECT aircraft could ascertain whether here was any danger from the Arkema plant which had an explosion in the aftermath of the flooding and was able to assess and damage to and environmental issues with miles of pipelines, 134 Risk Management Plan facilities, 456 drinking water plants, and 105 wastewater plants. Is the ASPECT aircraft owned by EPA?**

**Response:** The aircraft is owned by Airborne ASPECT Inc.; all of the monitoring equipment onboard the aircraft is government-owned, contractor-operated. Though the ASPECT aircraft is stationed in Dallas, Texas, it is a national asset and is available to other Regions. It has been used in over 170 responses, exercises, pre-deployments and environmental assessment activities throughout the country. (See attached fact sheet for additional information.)

5. **Did Region 6 conduct air quality assessments in the impacted areas?**

   a) **if so, when and how many?**
   b) **What have the results of those assessment been, generally?**

**Response:** The EPA completed air quality monitoring using their Trace Atmospheric Gas Analyzer (TAGA), ASPECT aircraft, and handheld instruments. The TAGA conducted monitoring in Houston (September 5-7, 2017 and September 10-12, 2017), Deer Park (September 14, 2017), Baytown (September 15, 2017), Sweeny and Texas City (September 17, 2017), Beaumont, Port Arthur, Victoria, and Point Comfort (September 18), and Corpus Christi

(September 19-20, 2017). The results from continuous air monitors, hand-held instruments, ASPECT and TAGA indicated no levels of immediate health concern.
TAGA data summary reports for September 5-7, 2017 and September 10-13, 2017 are available under the 'documents' section of EPA Hurricane Harvey 2017 website: www.response.epa.gov/hurricaneharvey2017.

Two TAGA mobile air monitoring buses began monitoring air quality around additional industrial sources in Texas. Additional TAGA reports are available under 'documents' section of this website.

EPA also sent its aerial surveillance aircraft to conduct a screening level assessment to evaluate unreported or undetected releases from facilities with Risk Management and/or Response Plans within the hurricane impacted areas. EPA's plane instrumentation measured 13 chemicals. The Airborne Spectral Photometric Environmental Collection Technology aircraft found no exceedances of the Texas comparison values. The screening level results from ASPECT were compared to the ASPECT list of the TCEQ's short-term Air Monitoring Comparison Values and found no exceedances of the short-term AMCVs. A report (see hyperlink) which summarizes the flights dated from September 4-11, 2017 (hyperlinked below) is included on the website at response.epa.gov/hurricaneharvey2017.

ASPECT Sept 11 Flight 2 report
ASPECT Sept 11 Flight 1 report
ASPECT Sept 10 Flight 2 report
ASPECT Sept 10 Flight 1 report
ASPECT Sept 9 Flight 2 report
ASPECT Sept 9 Flight 1 report
ASPECT Sept 8 Flight 2 report
ASPECT Sept 8 Flight 1 report
ASPECT Sept 7 Flight 2 report
ASPECT Sept 7 Flight 1 report
ASPECT Sept 6 Flight 2 report
ASPECT Sept 6 Flight 1 report
ASPECT Sept 5 Flight 1 report
ASPECT Sept 4 Flight 2 report
ASPECT Sept 4 Flight 1 report

6. **Mr. Coleman, your written testimony mentions that EPA deployed the Trace Atmospheric Gas Analyzer which is a mobile air pollution detection vehicle that can provide air quality results quickly by collecting constant, real-time data for outdoor air quality. Is EPA concerned about whether the samples taken by the mobile air pollution detection vehicle are accurate and/or exemplary of air quality conditions throughout the regions?**

**Response:** The TAGA provides accurate, real-time air monitoring data for the immediate location in which the monitoring is conducted. The instruments are calibrated using laboratory-grade standards and methodologies. TAGA laboratories have supported the agency on numerous and varied responses, projects, developments, preparedness activities and deployments. The

following is an illustrative sample of deployments where TAGA data was crucial to air monitoring efforts:

- Emergency Responses: The Paulsboro train derailment, Deepwater Horizon oil spill, and World Trade Center response.
- Vapor Intrusion Studies and Advancement in the Field: Started in 1987 with the Love Canal Habitability Study. The Mass Spectrometer/ Mass Spectrometer system can identify contributions associated with vapor intrusion from contaminated groundwater or soil as well as isolate impacts from confounding sources such as lifestyle materials, outdoor ambient air contributions and accidental or intentional releases.
- Urban Air Toxics Program Studies: Initiated to reduce public exposure to hazardous pollutants. TAGA laboratories provided analytical support in the Baton Rouge (Louisiana), Port Arthur (Texas), and Houston Ship Channel areas.
- Fumigation Remediation Activities: Building decontamination of anthrax at the Hart Senate Office Building, Brentwood and Hamilton Post Offices, Operation Lemon Drop aboard the ship CSAV Rio Puelo, and the former America Media Incorporated (AMI) facility. TAGA was used to monitor outdoor ambient air for the fumigant, chlorine dioxide, and its breakdown product, chlorine, to ensure that public health was not impacted.
- Chemical Warfare Agent (CWA) Monitoring Preparedness: The technology was evaluated by testing its efficacy in monitoring CWAs in parts per trillion by volume (pptv) levels or lower at the U.S. Army's Edgewood Chemical and Biological Center in Maryland.
- Engineering Support: Analytical information provided to optimize operating parameters for remediation operations used to evaluate the effectiveness of a building depressurization system to mitigate a vapor intrusion pathway.
- Pre-deployment and Planning during Events of National Consequence: TAGA laboratories used as operational units during major events such as the Superbowl, political conventions, international conferences, etc.

# ASPECT

## Airborne Spectral Photometric Environmental Collection Technology

**Nation's *only* 24/7 Airborne Stand-off Chemical and Radiological Detection, Infrared and Photographic Imagery Platform**


**Aircraft**

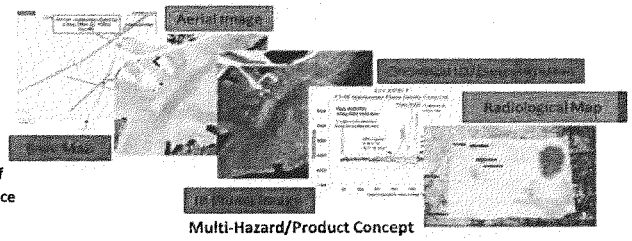
- Cessna 208B Super Cargo Master Platform based in Addison, Texas
- Aircraft Crew: Two Pilots, One Operator, All Commercial/ATP Rated
- Speeds: Data Collection at 100 kts; Cruise at 170 kts
- Range/Aloft Time: Range 1,200 NM; Aloft Time 4 – 6 hours
- Range: Can be anywhere CONUS collecting data within 9 hours
- Coverage: 4-hour coverage within a 800 mile radius
- Service Altitude: Data Collection at 300 to 5,000 ft AGL
- Ground Needs: Standard FBO, ISP with high speed internet

**ASPECT Team**

- Scientists and engineers all with advanced degrees with over 75 years of collective airborne remote chemical and radiological detection experience
- Derived from collaborative research, development, testing and implementation with the interagency, academia, states, and the private sector
- Provides onsite support to first responders, performs data analyses, and makes adjustments and repairs to the system and/or data products per the customer needs
- Provides time critical information while maintaining a budget conscious response
- Designs the chemical detection hardware and develops software applications; commercially available hardware is used for the radiological applications

**ASPECT Program**

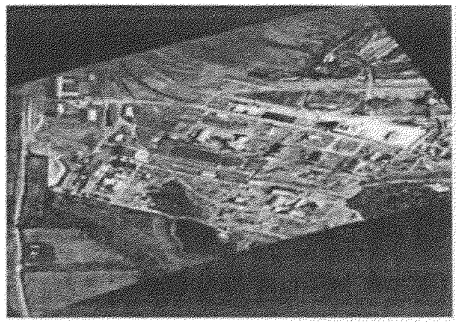
- **24/7/365 Readiness** with 1 hour wheels up capability
- Provides secure information to the **First Responder / Incident Commander** that is **timely, useful, and compatible** with numerous software applications
- **Promotes coordination and communication** with all stakeholders regarding operational data and products
- **Multi-role responses** (homeland security, emergency response, and environmental characterization)
- Provides **infrared & photographic images** with **geospatial chemical and radiological information**
- Products and data formats are **customer driven and** can be **provided to the customer within minutes** to hours depending on the mission




Multi-Hazard/Product Concept

**ASPECT Technologies:**

- An **Infrared Line Scanner** to image chemical plumes
- A **High Speed Infrared Spectrometer** to identify and quantify the composition of the chemical plume in the ppb to ppm range
- **Gamma-Ray Spectrometer** for radiation detection and isotope identification
- **Neutron Detection System** for enhanced radiological detection
- **High resolution digital cameras** (aerial & oblique) with ability to rectify for inclusion into GIS
- **Broadband Satellite Data System** (SatCom)



***Methane Plume IR image***

**Chemical Capabilities**

- ASPECT uses the principles of remote passive infrared detection via a Fourier Transform Infrared Spectrometer (FTS) to detect and quantify gaseous constituents present in the air column between the aircraft and the ground
- Chemical detection software is designed to filter out common atmospheric constituents as it automatically searches for 78 chemical compounds in near real-time (5 in the air column below the aircraft
- Hundreds of other chemicals can be processed by the team post survey

**Deployment History**

- Over 170 responses and deployments since 2001
- National Special Security Events (NSSE) and Special Event Assessment Rating (SEAR) level events (e.g., DNC, RNC, Inauguration, Super Bowl)
- Natural Disasters (e.g., Hurricanes Katrina, Rita, Gustav, and Sandy)
- Environmental Emergencies (e.g., Deepwater Horizon/BP Oil, West Fertilizer, Gold King Mine, site characterizations for Superfund sites)


***Radiation Exposure Contour Map***

**Radiological Capabilities**

- The only airborne remote sensing system in the country that provides NaI & LaBr and neutron detectors
- Improves the US EPA airborne ***gamma-screening and mapping*** capability of ground-based commercially available state-of-the-art hardware
- Applies IAEA, DOE, and EPA processing algorithms
- Near real-time product development based on customer input
- Possess NRC licensed gamma and neutron sources for use in exercises and training activities

**Photography**

- High resolution geo/orthorectified visible digital aerial images
- Geo/orthrectified infrared images
- Georeferenced oblique images
- Customizable display engines (ESRI, Google)

**Website:** http://www2.epa.gov/emergency-response/aspect

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