S. HRG. 112–951

STATUS OF THE DEEPWATER HORIZON NATURAL RESOURCE DAMAGE ASSESSMENT

HEARING

BEFORE THE

SUBCOMMITTEE ON WATER AND WILDLIFE

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

JUNE 28, 2011

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ONE HUNDRED TWELFTH CONGRESS
FIRST SESSION

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STATUS OF THE DEEPWATER HORIZON NATURAL RESOURCE DAMAGE ASSESSMENT

TUESDAY, JUNE 28, 2011

U.S. SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Subcommittee on Water and Wildlife

Washington, DC.

The subcommittee met, pursuant to notice, at 10 a.m. in room 406, Dirksen Senate Office Building, Hon. Benjamin Cardin (chairman of the subcommittee) presiding.

Present: Senators Cardin, Sessions, Vitter and Whitehouse.

OPENING STATEMENT OF HON. BENJAMIN CARDIN, U.S. SENATOR FROM THE STATE OF MARYLAND

Senator CARDIN. Good morning, everyone.

The Subcommittee on Water and Wildlife of the Environment and Public Works Committee is holding this hearing in order to followup on our responsibilities on the oversight of the damage caused by the explosion of Deepwater Horizon.

I want to thank Senator Sessions for his cooperation in arranging for this hearing. I think it is an important part of our continuing oversight responsibility.

On April 20th of last year, the offshore drilling rig Deepwater Horizon exploded, triggering the largest accidental marine oil spill in history. Oil gushed from the well for 87 days, releasing 4.9 million barrels of oil. That is almost 20 times the *Exxon Valdez* oil spill.

The catastrophe claimed 11 lives and left thousands of others in turmoil across Louisiana, Texas, Mississippi, Alabama and Florida. The spill has been referred to as the worst environmental disaster in the United States. With oil covering over 3,000 miles of ocean, impacts on water and wildlife are substantial. Oil contamination killed thousands of birds, in addition to many mammals and sea turtles. Those who depend on the region's natural resources for livelihoods were also impacted.

As Chairman of this Subcommittee I visited the Gulf and saw first-hand the devastation and devastating environmental and economic impacts of the oil disaster. But what I witnessed was the beginning. Long-term impacts on the Gulf waters continue to emerge.

Under Federal law, BP and its partners are liable for the catastrophic damages caused by the Deepwater Horizon. While the statutory limit for the spill is only $75 million, BP has agreed to pay in full and has already committed $1 billion in advance for the restoration projects.

The natural resources damage assessment, NRDA, is the legal process by which the Federal and State agencies identify impacts on natural resources, how to best restore them, and the costs for achieving restoration. Since the NRDA process determines the scale and means of restoration efforts, it is critical that it is done right.

The Water and Wildlife Subcommittee has responsibility for overseeing the NRDA process to ensure that it is accurate, thorough, transparent and fully accounts for the short-and long-term effects of the spill. My colleagues and I are committed to doing everything we can to right the wrong that has happened in the Gulf.

Last year, we initiated oversight hearing by conducting an initial hearing assessing the NRDA process for the Deepwater Horizon spill. We listened to experts from the field who provided invaluable information about the NRDA efforts. Experts shared lessons from the previous spill cleanups, suggesting how to maximize process effectiveness and concerns over obstacles to a successful assessment.

But evaluating impact of oil and hazardous substances on the Gulf's complex ecosystem is no simple task. The process can take years. We come together 1 year later with access to more comprehensive information and a better idea of the true impacts of this devastating accident from the severe and potentially chronic damage to marine life and local fishing economies, to the loss of tourism dollars due to damaged coastal environment.

Today's hearing is intended to ensure that the Deepwater Horizon NRDA process is being conducted as accurately and thoroughly as possible, and will result in a settlement that fully restores the damage that the Gulf region has suffered from this devastating spill.

Specifically, we will be examining where the assessment process currently stands and hear about some of the damage findings to date, learning how damage assessment is taking into account long-term damage effects that may only become evident after a financial settlement is reached and understanding whether the assessment process is effectively engaging the public and providing transparent information to the affected communities.

In the weeks following the spill, the President instituted a commission of national experts to study the spill's response and to recommend concrete improvements to various government responses, including the damage assessment process. That commission noted that the Deepwater Horizon spill as a uniquely destructive spill of national significance and requires a uniquely thorough government response.

The commission has made numerous recommendations to assure the effective and appropriate coordination of the hosts of Federal agencies, State governments and others impacted by a spill of this magnitude. Specifically, the commission recommended the appointment of independent scientific auditors to oversee the damage assessment process. They recommended a course of transparency and public engagement in the data-sharing and restoration planning and they have recommended that human public health impacts be explicitly included in this response.

So today, we will hear from a series of witnesses, starting with our government panel, and then from people from the private sec-

tor to see how well we are complying with the warnings that have been given to us and whether we are using best science; whether we have put together the transparency necessary to make sure that we have public confidence that we are doing what is right; making sure that we not only take care of the known damages now, but that we also understand there may be further damage that comes to our attention, that the restoration plans take that into consideration.

I want to thank all the witnesses for participating today and I look forward to your testimony.

And with that, let me turn to Senator Sessions.

[The prepared statement of Senator Cardin follows:]

STATEMENT OF HON. BENJAMIN L. CARDIN, U.S. SENATOR FROM THE STATE OF MARYLAND

On April 20th of last year, the offshore drilling rig Deepwater Horizon exploded, triggering the largest accidental marine oil spill in history. Oil gushed from the well for 87 days, releasing 4.9 million barrels of oil. That is almost 20 times the *Exxon Valdez* oil spill.

The catastrophe claimed 11 lives and left thousands of others in turmoil across Louisiana, Texas, Mississippi, Alabama and Florida.

The spill has been referred to as the "worst environmental disaster the US has faced." With oil covering over 3,000 miles of oceans, impacts on water and wildlife are substantial.

Oil contamination killed thousands of birds in addition to many mammals and sea turtles. Those who depend on the region's natural resources for their livelihoods were also impacted.

As Chairman of this Subcommittee, I visited the Gulf and saw first-hand the devastating environmental and economic impacts of this oil disaster. But what I witnessed was only the beginning. Long-term impacts on the Gulf waters continue to emerge.

Under Federal Law, BP and its partners are liable for the catastrophic damages caused by the Deepwater Horizon spill. While the statutory liability cap for the spill is a mere $75 million, BP has agreed to pay in full, and has already committed $1 billion in advance for restoration projects.

The Natural Resource Damage Assessment is the legal process by which Federal and State agencies identify impacts on natural resources, how to best restore them, and the costs for achieving restoration.

Since the NRDA process determines the scale and means of restoration efforts, it is critical that it is done right. The Water and Wildlife Subcommittee has responsibility for overseeing the NRDA process to ensure that it is accurate, thorough, transparent, and fully accounts for short-and long-term effects of the spill.

My colleagues and I are committed to doing everything we can to right the wrongs that have happened to the Gulf. Last year, we initiated oversight efforts by conducting an initial hearing assessing the NRDA process for the Deepwater Horizon spill. We listened to experts from the field, who provided invaluable information about the NRDA effort. Experts shared lessons from previous spill clean-ups, suggestions for how to maximize process effectiveness, and concerns over obstacles to a successful assessment.

But evaluating impacts of oil and hazardous substance on the Gulf's complex ecosystems is no simple task. The process can take years. We come together 1 year later with access to more comprehensive information and a better idea of the true impacts of this devastating accident, from the severe and potentially chronic damage to marine life and local fishing economies to the loss of tourism dollars due to damaged coastal environments.

Today's hearing is intended to ensure that the Deepwater Horizon NRDA process is being conducted as accurately and thoroughly as possible, and that it results in a settlement that fully restores the damage that the Gulf region has suffered from this devastating spill. Specifically, we will be:

- examining where the assessment process currently stands, and hearing about some of the damage findings to date;
- learning how damage assessment is taking into account long-term damage effects that may only become evident after a financial settlement is reached; and

• understanding whether the assessment process is effectively engaging the public and providing transparent information to affected communities.

In the weeks following the spill, the President instituted a commission of national experts to study the spill response and to recommend concrete improvements to various government responses, including the damage assessment process. That Commission noted that the Deepwater Horizon spill, as a uniquely destructive "spill of national significance," requires a uniquely thorough government response.

The Commission made a number of recommendations to ensure the effective and appropriate coordination of the host of Federal agencies, State governments, and others impacted by a spill of this magnitude. Specifically, the Commission recommended the appointment of an independent scientific auditor to oversee the damage assessment process. They recommended a course of transparency and public engagement in the data-sharing and restoration planning. And they recommended that human public health impacts be explicitly included in the response efforts.

Today, we will hear from a key architect of those recommendations. He will give us his understanding of whether and to what extent those recommendations have been implemented in the Deepwater Horizon damage assessment, and how what affect that might have on the settlement and the ultimate recovery of the Gulf region.

We will use the Commission's recommendations to help us evaluate the NRDA process.

• How are the trustees handling the damage assessment of this event of "national significance"?

• Do we need an independent science board in the future for spills of national significance?

• Is the current process sufficiently transparent;

• Are public health concerns being incorporated; and

• Is the public being engaged?

We will also hear from NRDA trustees, from both the Federal Government and the states. They will present information about the status of the assessment to date, including reporting on what initial field data are showing about damage to various ecosystems and habitats. They will be able to tell us how the NRDA trustees are accounting for long-term damages, which may not yet be evident in research studies to date, but which could show up in the months and even years to come. They will give us a sense of any restoration planning that has taken place to date, and whether the public is being effectively engaged in the process. They will also be able to give us a sense of how the BP's participation in the damage assessment is impacting the effectiveness of the research and planning.

We cannot undo the damage that has been done. But through the natural resource damage assessment and subsequent restoration efforts, we can employ best practices to minimize impacts and ensure an effective, thorough restoration.

We will do everything in our power to ensure that this process is of the highest quality and that it ultimately results in a settlement that fully repairs all of the damages the Gulf region has suffered due to this tragic spill. I want to thank our witnesses for joining us today to assist us in our efforts to clean up the Gulf, and to provide hope for people living throughout the Gulf region that their environment and way of life will soon be restored.

OPENING STATEMENT OF HON. JEFF SESSIONS, U.S. SENATOR FROM THE STATE OF ALABAMA

Senator SESSIONS. Thank you, Senator Cardin. I appreciate your leadership and efforts to stay on top of the NRDA process. I do believe it is important and thank you for doing that.

I know Senator Vitter, I know how many hours he spent working on this bill, as I did, and how it impacted our States. And we appreciate you bringing this forward.

During the last year Deepwater Horizon incident, more than 200 million gallons of oil spilled into the Gulf, 20-times the volume, as you said, Mr. Chairman, of that released during *Exxon Valdez*. Much of that was dispersed through chemical dispersants. The Gulf waters are warmer and microbes helped remove more than it did in the cold waters of Alaska. But we don't know yet the full impact that all of that will have on our system environmentally.

For a season, the incident spoiled miles of beautiful beaches along the Gulf Coast, dissuaded tourists from frequenting the area, and caused great economic loss to the region's seafood industry. Maybe I would show, Mr. Chairman, two photographs that give a feel for our area on the Alabama Gulf Coast. We were really hammered in the tourist industry. Can you hold that up?

This is the condition of the public beaches where people live and go for recreation. They have been cleaned very well. BP people are still there. If some oil comes up, they will clean it up promptly.

Now, this chart is at the wildlife refuge area on the beach. And under the Fish and Wildlife Service, they are uneasy about using equipment to clean it up for environmental reasons. It may have to be cleaned by hand. But this is an area that is not the public beaches, but it is an area of environmental significance. So it shows sort of what it would be like had they not been cleaned up. And I do believe that issue has got to be confronted. We need to have an effective relationship with the Fish and Wildlife people to determine how to clean that up.

So the tourism industry is rebounding, but we need to look at the long-range natural resource impact of the spill and the losses associated with that impact. The natural resources damages assessment NRDA process will play a critical part in restoring the Gulf Coast. Federal, State, tribal and local governmental stakeholders, the NRDA Trustees, are engaged in the assessment of damage to the natural resources, including the beaches, fishery, the wildlife, water and other resources. And it takes a look at the losses that have occurred.

In Alabama alone, commercial fishing, seafood processing and related industries accounted for some $1 billion in annual revenues before the spill. As we know, the spill caused that industry to essentially shut down for months. Unfortunately for shrimpers, it was in the most critical months of the season, May through October; 40 percent of Alabama's waters were closed to fishing. Shrimp landings decreased by 50 percent to 60 percent in 2010 compared to 2009. One recent study found that oyster beds would in the Gulf Coast would take up to 10 years to recover. That is a significant thing and we would like to know more about that and the meaning of that report.

During the oil spill, around 28,000 sea turtle eggs were moved from the turtle nests along the Gulf shores and beaches. It may be decades before we know the impact of that. We have tried to preserve the turtle population and the people on the beach have been doing that for years voluntarily. They watch them and protect them in any way possible.

So we have had a number of problems. The $1 billion that has been put forth by BP at this point is a good step, as you noted. But the final tally of natural resource damages relating to the spill is likely to require billions more.

So I am glad that we have the representatives of the NRDA Trustee Council here with us, including Alabamian Cooper Shattuck, and I will more formally introduce him on the second panel.

Thank you, Mr. Chairman. I look forward to hearing the testimony.

Senator CARDIN. Thank you, Senator Sessions.

I had the chance to visit the coast with Senator Vitter, and I appreciated his leadership on our Committee in keeping us informed as to the conditions in the Gulf.

Senator Vitter.

OPENING STATEMENT OF HON. DAVID VITTER, U.S. SENATOR FROM THE STATE OF LOUISIANA

Senator VITTER. Thank you, Mr. Chairman, and thank you for that visit and all of your work. And thanks to Senator Sessions. We obviously partnered a lot during this tragedy and the followup, as well as with our other Gulf colleagues. Thank you for this hearing. It is certainly very important.

I would also like to personally thank Garret Graves. He is on the second panel. He is here today as a trustee to Louisiana's restoration efforts, a former member of my staff and a long-time staffer with the Louisiana delegation, now serving as the Chair of the Coastal Protection and Restoration Authority of Louisiana.

As we are all aware, the Deepwater Horizon disaster was a grave disaster, starting with the loss of 11 lives, 11 of our fellow Americans, hard-working contributing members of society who left this world far too soon.

The incident also resulted in the largest oil spill in history, period; an incident that pummeled the Gulf Coast and left significant environmental and economic damage, which is an ongoing challenge.

About a year ago, I was able to work with several of my colleagues to secure funding for a National Academies of Science study to review the best methodology for ascertaining the consequences of the BP spill and to make recommendations to the Trustees for assessing the entire universe of environmental impacts. So I very much look forward to hearing all of the panelists' thoughts about this NAS work.

To say that the work of the NRDA Trustees is important would be an enormous understatement, for Louisiana coastal restoration has been an ongoing challenge. It will be one through my lifetime and beyond my lifetime. Over the last 80 years, 1,900 square miles of wetlands have been lost through coastal erosion. The BP spill exacerbated the habitat challenges for our fisheries and wildlife, but it also provides a significant opportunity to restore much of the Gulf and make critical investment counteracting this very grave trend. And the NRDA Trustees are at the forefront of that opportunity.

Finally, Mr. Chairman, I just want to underscore four key points. No. 1, one of the Federal responses to this tragedy by the Administration was to issue a moratorium on domestic energy production in the Gulf that continues to be a real permitting and economic challenge for the Gulf more than a year later. Production there will fall well below what it should have been over the next year. Unemployment as a direct result of this and the Interior Department's mismanagement of permitting is way too high.

It would be a far smarter economic decision, in my mind, to rectify these issues to get the Gulf and America back to work, rather

than, for instance, selling off part of the Strategic Petroleum Reserve.

No. 2, the Interior Department's idle iron guidance may well be a step backward for Gulf fisheries habitat, and I think we need to look at that carefully. States like Louisiana and Texas have been very supportive of strong rigs-to-reefs programs, and I believe even California has recently taken steps to protect critical marine habitat built through artificial reefs around this infrastructure. When we are trying to recover the fisheries in the Gulf, I really don't think it will be helpful to mandate removing, in many cases, premier fish habitats that have become home to a plethora of marine wildlife.

No. 3, we absolutely need to figure out a way to speed up this NRDA process. The idea that investment in restoration could take upwards of a decade is really unacceptable. We need to figure out to get BP to more quickly sign off on assessment review and funding. The initial $1 billion that Senator Sessions mentioned was a good step, but the continued leverage BP has on the process needs further scrutiny. And I would suggest we look at my bill that I have joined with others on, S. 662, also cosponsored by my Louisiana colleague Mary Landrieu, which would require a further significant down payment on NRDA liability.

And fourth and finally, I continue to work closely with all of my Gulf colleagues, certainly including Senator Sessions, to direct the fines under the Clean Water Act for this disaster to the impacted area in the Gulf. It remains appropriate that at least 80 percent of those fines levied on BP go toward restoring the Gulf and Gulf State economies. And I look forward to continuing to work with Chairman Boxer and this Committee in particular to move that bill. And I believe a markup is being scheduled for the week we return from the July 4th recess.

Thank you very much, Mr. Chairman.

[The prepared statement of Senator Vitter follows:]

STATEMENT OF HON. DAVID VITTER, U.S. SENATOR
FROM THE STATE OF LOUISIANA

Thank you Chairman Boxer and Ranking Member Inhofe for holding this hearing today on assessing the status of early restoration and the Natural Resources Damages Assessment (NRDA) process.

I would personally like to thank Garret Graves, who is here today as a trustee to Louisiana's restoration efforts, a former member of my staff, and a long time staffer in the Louisiana delegation and now serving as the chair of the Coastal Protection and Restoration Authority of Louisiana.

As we are all aware, the disaster at Deepwater Horizon was a grave tragedy that took the lives of 11 of our fellow Americans. These were hard working contributing members of our society who left this world far too soon.

The incident also resulted in the largest oil spill in history. An incident that pummeled the Gulf Coast and left significant environmental and economic damages that remain an ongoing challenge.

Approximately a year ago I was able to work with several of my colleagues to secure funding for a National Academies of Science (NAS) study to review the best methodologies for ascertaining the consequences of the BP spill and to make recommendations to the Trustees for assessing the entire universe of environmental impacts. I look forward to hearing the panel's thoughts on the NAS work.

To say that the work of the NRDA Trustees is important would be a huge understatement. Coastal restoration in Louisiana will be an ongoing challenge to extend well beyond my lifetime. Over the last 80 years 1900 square miles of wetlands have eroded or been lost. The BP spill has exacerbated the habitat challenges for our fisheries and wildlife, but also provides a significant opportunity to restore much of the

Gulf and make critical investment in the science necessary to protect and strengthen the resiliency of the Gulf Coast. The NRDA Trustees are at the forefront of that opportunity.

Finally, there are four key points I would like to highlight:

1. One of the Federal responses to this tragedy was to issue a moratorium on domestic energy production that continues to be a permitting and economic challenge for the Gulf region even now, more than a year later. Production in the Gulf will fall well below what it should over the next year, and unemployment as a direct result from Interior Department's mismanagement of the permitting process remains too high. It would be a far smarter economic decision to rectify the permitting process at Interior and get our fellow Americans back to work in the Gulf rather than selling oil from the Strategic Petroleum Reserve.

2. The Interior Department's "Idle Iron" guidance may very well be a step backward for Gulf fisheries habitat. States like Louisiana and Texas have been very supportive of strong "Rigs to Reefs' programs, and I believe even California has recently taken steps to protect the critical marine habitat and artificial reefs established by this infrastructure. In fact, when we are trying to recover the fishery in the Gulf, I don't see how it can be helpful to remove premier fish habitat that has become home to a plethora of marine wildlife and even threatened and endangered species.

3. We need to figure out a way to speed the process. The idea that investment in restoration could take upwards of a decade is unacceptable. We need to figure out how to get BP to more quickly sign off on the assessment, review, and funding activities. The initial $1 billion was a good first step, but the continued leverage BP has in the process needs further scrutiny. It may be prudent in the near future to look at moving S. 662, legislation written by me and cosponsored by my colleague Mary Landrieu, which would require a significant down payment on NRDA liabilities.

4. Finally, I continue to work closely with my Gulf colleagues to direct the fines under the Clean Water Act to the Gulf States that were impacted. It remains appropriate that at least 80 percent of the fines leveled on BP go toward restoring the Gulf and Gulf State economies. I will continue to work with the Chair and Ranking member of this committee and am committed to my Gulf colleagues who have been working diligently together on this issue for the last several months.

Thank you Madame Chair and ranking member Inhofe, and I thank our witnesses for their testimony today.

Senator CARDIN. Thank you, Senator Vitter.

We will now turn to our first panel.

The agency Trustees play a critical role in this whole process, the two Federal agencies plus the States that are affected, the States of Louisiana, Mississippi, Alabama, Florida and Texas. But the two Federal agencies play a role in assessing and developing an action plan to remedy the damage that is done, hopefully in conjunction with BP, but ultimately decided, if necessary, by the courts.

So we welcome our two government agency representatives that are here. We know that you have been extremely busy on this issue since the incident occurred. First, we have Cynthia Dohner, the Regional Director of the Southeast Region, U.S. Fish and Wildlife, one of the Federal Trustees; and Mr. Tony Penn, the Deputy Chief of the Assessment and Restoration Division, Office of Response and Restoration, NOAA.

Welcome. Your full statements will be made part of the record and you may proceed as you wish.

Ms. Dohner.

STATEMENT OF CYNTHIA DOHNER, REGIONAL DIRECTOR, SOUTHEAST REGION, U.S. FISH AND WILDLIFE SERVICE

Ms. DOHNER. Good morning and thank you, Chairman Cardin and Members of the Subcommittee.

I am Cynthia Dohner, the Regional Director of the U.S. Fish and Wildlife Service's Southeast Region. I also serve as the Department of Interior's authorized official for the natural resource damage as-

sessment and restoration process in the Deepwater Horizon oil spill. I appreciate the opportunity to appear before the Subcommittee today to testify about Interior Department's ongoing work on the assessment and ultimate restoration of natural resource damaged in the wake of the Deepwater Horizon oil spill over a year ago.

The magnitude of the Deepwater Horizon oil spill is unprecedented in the United States and could result in significant injury to the Gulf of Mexico ecosystem and its vast and diverse natural resources. The natural resource damage assessment and restoration effort as a result of this historic oil spill continues to be a high priority effort for the department and the service.

While the response to this historic oil spill continues, the Federal agencies and States that make up the NRDA Trustee Council are working to complete pre-assessment phase activities and have initiated a formal assessment of damages; launched work on a programmatic environmental impact statement for potential restoration options; undertaken emergency restoration projects; and reached an unprecedented agreement with BP that makes the $1 billion available for early restoration projects to be implemented before ultimate resolution of the claims.

The NRDA process focuses on identifying injured natural resources, determining the extent of the injury, recovering damages from those responsible, and planning and carrying out natural resource restoration activities that achieve pre-spill conditions.

NRDA also seeks to ensure that responsible parties compensate the public for the lost use and enjoyment of those resources. The department is working with fellow Trustees and independent and responsible party scientists to obtain the best available scientific data to support our assessment of injuries. Much of the NRDA work currently underway is part of the injury assessment and restoration planning phase.

Although the concept of assessing injuries may sound relatively straightforward, understanding complex ecosystems, the services these ecosystems provide, and the injuries caused by oil and hazardous substance takes time, often years.

The NRDA process seeks to ensure an objective, scientifically rigorous and cost-effective assessment of injuries, and that harm to the public's resources is fully addressed. Simply put, the objective under the Oil Pollution Act is to restore injured natural resources to their pre-spill conditions.

The Trustees issued an notice of intent to conduct restoration planning and initiated the formal assessment process in October, 2010. However, numerous pre-assessment studies involving analysis of baseline and preliminary exposure data are still ongoing. Today, formal assessment studies are well underway and the department expects that any remaining pre-assessment activities will be completed before the end of the year.

Assessment of the injuries resulting from this spill is moving forward through both independent studies by the Trustees and cooperative studies with BP Currently, more than 80 studies are planned. The department is taking the lead on more than 20 of these studies involving bird species, loggerhead and Kemp's Ridley sea turtles, beach mice and aerial imaging.

So far, 24 private nongovernmental and academic entities from several universities are engaged in these studies and the assessment work. More than two dozen technical working groups comprised of the Trustee agencies are working to determine and quantify the impact of the oil spill on multiple public resources. The assessment involves looking at those acute impacts that we can identify now, and the long-term chronic impacts, some of which may not materialize for years to come. All this is being coordinated and directed through the Trustee Council.

One of the actions the Trustees have taken to ensure enhanced transparency during the NRDA process is the public distribution of cooperative assessment work plans and data. Trustees are posting study plans on the Internet, providing opportunities for public engagement, and conducting frequent calls for study planners, scientists and others to assist in both developing a broad integrated ecosystem perspective, as well as reviewing numerous restoration possibilities.

We recognize the value of technical expertise and are using leading researchers from academic institutions and nongovernment organizations to the extent practicable. In addition, emergency restoration projects have been initiated to avoid or reduce irreversible loss of natural resources and to prevent or reduce continuing danger to the resources.

In April, the Deepwater Horizon oil spill Trustees signed an agreement with BP to provide $1 billion toward early restoration projects in 2011 and 2012. This agreement does not affect the ultimate liability of BP or other entities for natural resource damages. The early restoration is taking place on parallel tracks with our assessment work.

We have made a great deal of progress within the NRDA framework. This is a complex process involving five States and two Federal agencies. The scope and magnitude of the natural resource injuries and other impacts resulting from the Deepwater Horizon oil spill are extraordinary and still not fully known at this time. We are working to finish our pre-assessment phase, continue assessment activities in 2012, prepare for potential litigation, and ensure early restoration projects are consistent with long-term restoration planning.

The department is committed to work with the Trustees to fully assess the overall impacts of the spill on the Gulf Coast ecosystem and restore the natural resource damage.

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to testify today. I will be happy to answer any questions you may have.

[The prepared statement of Ms. Dohner follows:]

TESTIMONY OF CYNTHIA DOHNER
REGIONAL DIRECTOR, SOUTHEAST REGION
U.S. FISH AND WILDLIFE SERVICE
U.S. DEPARTMENT OF THE INTERIOR

BEFORE THE SENATE ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON WATER AND WILDLIFE

REGARDING

PROGRESS ON ASSESSING NATURAL RESOURCE DAMAGES AND EARLY RESTORATION AFTER THE BP/DEEPWATER HORIZON OIL SPILL DISASTER

June 28, 2011

Chairman Cardin and Members of the Subcommittee, I am Cynthia Dohner, Regional Director of the U.S. Fish and Wildlife Service's (Service) Southeast Region and the Department of Interior's (DOI) Authorized Official for the Natural Resource Damage Assessment and Restoration (NRDAR) process in the BP/Deepwater Horizon oil spill.

I appreciate the opportunity to appear before the Subcommittee today to testify on our involvement in assessing damages to natural resources and early restoration efforts resulting from the BP/Deepwater Horizon oil spill, the largest oil spill in history. Since I appeared before your panel last July to talk about how the Oil Pollution Act's (OPA) NRDAR process works and its origins after the *Exxon Valdez* oil spill, we have taken important steps toward meeting natural resource restoration needs along the Gulf Coast.

While the response to this historic oil spill continues, the federal agencies and states that make up the NRDAR Trustee Council have initiated a formal assessment of damages, launched work on a Programmatic Environmental Impact Statement (PEIS) for potential restoration options, undertaken emergency restoration projects, and reached an unprecedented agreement with BP that makes $1 billion available for early restoration projects to be implemented before ultimate resolution of the claim. My testimony will highlight the progress we have made to date and the work we see in the years ahead.

NRDAR Process

The NRDAR process focuses on identifying injured natural resources, determining the extent of the injuries, recovering damages from those responsible, and planning and carrying out natural resource restoration activities that achieve pre-spill conditions and resume pre-spill services. NRDAR also seeks to ensure that responsible parties compensate the public for the lost use and enjoyment of those resources. Under the NRDAR paradigm, federal and State agencies, along with Tribal governments are authorized to act as Trustees on behalf of the public for those natural resources they manage or control. DOI is working with fellow Trustees and independent

and responsible party scientists to obtain the best available scientific data to support our assessment of injuries.

In an oil spill, there are three phases in the NRDAR process: 1) pre-assessment; 2) injury assessment and restoration planning; and 3) restoration implementation. During the pre-assessment phase, Trustees collect time-sensitive data to determine if any trust resources have been injured or are likely to be injured by the oil spill.

Restoration implementation involves recovering damages for injured natural resources and using those damages to implement restoration projects. The OPA requires the Trustees to use funds obtained through a settlement or litigation to restore, replace or acquire the equivalent of the injured resources and the services provided by those resources. Injury to species and habitats is measured from the moment the oil impacts the natural resources until the injured resources are returned to the pre-spill or baseline condition. NRDAR allows implementation of emergency restoration projects before assessment is completed, provided those projects prevent additional or ongoing injury, are reasonable, and approved by the Trustees.

Much of the NRDAR work currently underway is part of the injury assessment and restoration planning phase and directly related to four principles attributable to oil spills: documented release, identification of pathway(s), exposure to natural resources, and quantifiable injury.

Although the concept of assessing injuries may sound relatively straightforward, understanding complex ecosystems, the services these ecosystems provide, and the injuries caused by oil and hazardous substances takes time, often years. The time of year the resource was injured, the type of oil, the amount and duration of the release, and the nature and extent of clean-up are among the many diverse factors that affect how quickly resources are assessed and restoration and recovery occurs. The Oil Pollution Act (OPA) requires that the Trustees demonstrate connections between the release of the oil, the pathways the oil moves from the release point to the resources, exposure of the resources to the oil, and finally a causal connection between exposure and resource injury. The litigation context in which NRDAR is conducted requires appropriate scientific rigor for studies in order to ensure that they are accepted into court as evidence in the case. The NRDAR process seeks to ensure an objective, scientifically rigorous, and cost-effective assessment of injuries, and that harm to the public's resources is fully addressed.

Assessment of the injuries resulting from this spill is moving forward through independent studies by the Trustees and cooperative studies with BP, a responsible party under OPA. Currently more than 80 studies are planned. Twenty-four private, non-governmental and academic entities, including seven academic institutions in Texas, Louisiana, Mississippi Virginia, and Delaware, are engaged in the studies and assessment planning. There are 13 Technical Working Groups (TWGs) comprising the Trustee agencies working to determine and quantify the impact of the oil spill on multiple public resources. The TWGs are responsible for identifying endpoints and developing procedures and methods to measure potential injury to its respective resources in study plans. Currently, the TWGs are organized around study of the following categories: water column and sediments, turtles and marine mammals, shorelines,

terrestrial species, human use, shallow water corals, oysters, birds, fish, submerged aquatic vegetation, and deep sea benthos.

The assessment involves looking at both acute impacts that we can identify now and long-term chronic impacts, some of which may not materialize for years to come. DOI, in cooperation with our co-trustees, is moving forward with more than 20 assessment studies focusing on migratory birds, endangered species, and DOI-managed lands and the resources that utilize them. This is a subset of the studies being undertaken by the Trustees to characterize and quantify specific injuries and scale appropriate restoration. These assessment studies focus on the collection of information the Trustees believe is needed to inform incident-specific injury determination that will lead to projects that will restore, replace, or acquire the equivalent of injured natural resources. This assessment work will aid in determining the amount and types of natural resource restoration necessary to ultimately restore the Gulf Coast's natural resources and the services they provide to their pre-spill condition.

One of the actions the Trustees have taken to ensure enhanced transparency during the NRDAR process is the public distribution of cooperative assessment work plans and data. These efforts to make data publicly accessible as soon as possible while ensuring that rigorous scientific protocols are upheld, has required substantial coordination.

Emergency restoration projects have been initiated to avoid or reduce irreversible loss of natural resources, and to prevent or reduce continuing danger to these resources. For example, restoration of more than 2,400 acres of waterfowl habitat in the Mississippi alluvial plain has reduced risk of potential injury by drawing waterfowl away from areas that are oiled. Trustees are implementing emergency restoration for Kemp's Ridley sea turtles that evaluate their nesting activities, support hatchling success rates, and prevent mortality to the population through detection and protection of nesting turtles and nests. Through another emergency restoration project, the Trustees are identifying shoreline areas in need of restoration. At the same time, we are being mindful that some areas are still undergoing cleanup activities. A project to mend scars created in submerged aquatic vegetation (seagrass) beds caused by response equipment will be implemented in Florida.

Funding

There are three main funding mechanisms for the DOI NRDAR process: payments by the responsible parties, reimbursements from the Oil Spill Liability Trust Fund (OSLTF), and reimbursements from DOI's NRDAR Fund. Ultimately, the responsible party must reimburse the NRDAR fund or the OSLTF.

In May 2010, BP provided $45 million to state and federal Trustees for the beginning phase of the injury assessment process. DOI and NOAA were allocated a total of $20 million of that advance funding. The two agencies agreed to split the $20 million evenly. DOI has obligated the $10 million for personnel costs, equipment and supplies, and contracts with outside experts to implement assessment plans.

The DOI Trustees have an Interagency Agreement for $47.8 million from the U.S. Coast Guard managed OSLTF to support initial baseline data collection as well as agency and state coordination work.

Finally, $5.9 million from the DOI NRDAR fund has been allocated for DOI's Deepwater Horizon damage assessment activities. We will seek to recover OSLTF and NRDAR fund disbursements from the responsible parties.

To date, the DOI Trustees have received a total of $12,363,356 in reimbursement from bills submitted to BP for actual costs incurred. These reimbursements are in addition to the $10 million DOI received in advance funding.

On February 25, 2011, DOI presented a claim in the amount of $67,510,774 to the responsible parties for its estimated costs to implement certain selected assessment procedures. This presentment is required by law before money is advanced by the OSLTF.

Lessons Learned

The NRDAR process is built upon many of the lessons learned from the 1989 *Exxon Valdez* spill in Alaska. To increase transparency, Trustees are posting study plans on the Internet; providing opportunities for public engagement; and conducting frequent calls with study planners, scientists and others to assist in both developing a broad, integrated ecosystem perspective, as well as reviewing myriad restoration possibilities. We recognize the value of technical expertise and will use leading researchers from academic institutions and non-governmental organizations to the extent practicable under the NRDAR process. Additionally, we anticipate further use of Gulf of Mexico experts in restoration design, implementation, and monitoring.

The Programmatic Environmental Impact Statement

The NRDAR restoration is subject to NEPA review. Accordingly, as part of the NRDAR restoration planning phase, the Trustees are preparing a Programmatic Environmental Impact Statement (PEIS) on potential restoration options. Public engagement is critical to this process. Ten public scoping meetings were held across the Gulf States; one was held in Washington, D.C. These meetings provided the public with an opportunity to identify a broad range of alternatives to restore, rehabilitate, or replace injured resources. To date, more than 300 unique public comments have been received. A draft PEIS is expected to be available for public comment in early 2012.

Early Restoration Projects

In April, 2011, the Trustees for the Deepwater Horizon oil spill signed a historic agreement with BP to provide $1 billion towards early restoration projects, expected to commence in 2011 and 2012. This agreement exceeds the total amount provided under the Exxon Valdez Natural Resource Damage settlement. This agreement does not affect the ultimate liability of BP or any other entity for full natural resource damages. The agreement is unique because it provides an

accelerated schedule for the initiation of restoration, whereas restoration projects are typically funded only after a final settlement is reached.

This early restoration is taking place on a parallel track with our assessment work. In effect, restoration projects will begin prior to completion of the NRDAR assessment and restoration planning.

In order to implement early restoration projects, the Trustees must complete the public review process for projects under OPA and the National Environmental Policy Act. Additionally, each Trustee and BP must agree to a binding stipulation for the offsets BP will receive as a result of each project. At the end of the damage assessment process, the Trustees will take into account any benefits that were realized from these early restoration projects; however, as mentioned earlier, the projects will not reduce BP's total liability. Offsets are those calculations for early restoration that will reduce the total injury, and are based on the current information about potential injury. Offsets will be based on a comparative valuation of the services provided by a natural resource and the restoration equivalent of that resource. If the projects are successful and meet OPA criteria, they would be applied against BP's total natural resource damage liability. Projects that are part of this $1 billion agreement will be funded when BP and the Trustee Council agree to the offsets BP will receive for the projects. However, other projects funded through the Oil Spill Liability Trust Fund may proceed without such agreement.

The $1 billion will be distributed in accordance with an allocation alternative agreement among the Trustees where each Trustee will receive $100 million for early restoration projects. The remaining $300 million will be used for projects selected by DOI and NOAA from proposals submitted by the states. On June 5, 2011, BP made its first transfer of $500 million to an Early Restoration Subaccount; transfer of the remaining $500 million will be made on October 21, 2011.

The public is encouraged to submit early restoration projects for consideration. The Trustee Council has begun the intensive process of identifying early restoration projects. Examples of early restoration projects that the agreement may fund include the rebuilding of coastal marshes, replenishment of damaged beaches, conservation of sensitive areas for ocean habitat for injured wildlife, and restoration of barrier islands and wetlands that provide natural protection from storms.

The Trustees will continue to coordinate with the Gulf Coast Ecosystem Restoration Task Force. Because NRDAR Trustees have representatives on the Task Force, these two processes are constantly exchanging information as both efforts move forward. As the NRDAR and the Task Force activities move forward simultaneously, the Task Force will address ecosystem health and sustainability issues that existed prior to the spill and are likely to occur in the future. NRDAR's goal is to implement restoration projects that return the Gulf Coast to the condition it would have enjoyed had the spill not occurred. Given the complementary goals of the Task Force and the NRDAR process, we anticipate close, ongoing coordination and opportunities to integrate the activities of both groups.

Next Steps for the Trustees

We have made a great deal of progress within the NRDAR framework. We are able to embark upon restoration quickly thereby allowing the Trustees to address impacts to natural resources in an accelerated manner. We will continue working on assessment activities into 2012 and to prepare for potential litigation. We are also making sure early restoration projects are consistent with long-term restoration planning.

We will continue to address public concerns throughout the remainder of the NRDAR process by holding public meetings to gather input on damage assessment and restoration planning.

Conclusion

The NRDAR process is advancing on parallel tracks between the early restoration efforts and the studies to assess acute and long-term chronic impacts. This is a complex process involving five states and two federal agencies. The scope and magnitude of natural resource injuries and other impacts resulting from the BP/Deepwater Horizon oil spill are extraordinary and still not fully known. While we do not know at this time the extent of the injuries, we believe they will affect fish, wildlife, and plant resources in the Gulf, and possibly in other areas across the country for years or decades to come. To meet the requests from academics, non-governmental organizations, and the general public regarding data and ongoing NRDAR actions, DOI and co-trustees developed data sharing and other outreach practices resulting in one of the most transparent damage assessments in history.

To ensure restoration is commensurate with the injury, we are planning long term monitoring to evaluate its appropriateness and effectiveness. The long term monitoring plans will be used to ensure adverse effects are properly assessed. This spill has illuminated the importance of the Gulf ecosystem and the need for monitoring of natural resources before, during, and after a spill to effectively quantify the damage and to understand the cumulative effects of the stressors that act on the Gulf Coast ecosystem.

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to testify today. I will be happy to answer any questions you may have.

QUESTIONS FOR THE RECORD

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
Subcommittee on Water and Wildlife
Oversight Hearing
June 28, 2011

Cynthia Dohner
Regional Director, Southeast Region
U.S. Fish and Wildlife Service

QUESTIONS FROM SENATOR BENJAMIN L. CARDIN

1. Baseline: During the June 28 hearing, we had the opportunity to hear testimony from state trustees regarding the sufficiency of the available baseline data from the spill-affected area. Could you please provide more in-depth information on this issue? In doing so please address the specific questions below:

a. Does your agency have sufficient funding and other resources to maintain comprehensive baseline data over the long term?

Maintenance of baseline data over the long term is a critically important issue. Because injury assessment is meant to quantify damage to existing resources and the services those resources provide, data describing the condition of the resource and services shortly before a spill occurs is needed for comparison. Long-term historical data can also help to weed out other environmental influences.

The demand on Department of the Interior (DOI) funds and other resources is great, and we use those funds as effectively and efficiently as possible to meet those demands. Demand always exceeds available funding, however. Therefore, DOI looks for ways to maximize data collection, not only by direct funding of collection, but also through partnerships with state, private and public researchers; review of literature; the use and improvement of existing ecological models; and development of new models.

b. Do you have any suggestions for how to improve your agency's ability to gather and maintain baseline data?

Increasing interagency coordination and partnerships with federal, state, and non-governmental entities may improve data collection and maintenance efforts. The use of area contingency plans and coordination through planning and training exercises enables us to collectively use data to identify sensitive areas and pre-plan and stage resources to reduce potential future adverse impacts to natural resources. The geographic extent of the areas requiring monitoring is enormous. Coordination to reduce both overlap and redundancy, and to increase the area covered is likely to benefit our efforts to maintain these data.

c. How is your agency addressing gaps in information for baseline determinations?

We are continuing to stay at the forefront of science applications by using a Strategic Habitat Conservation approach to address natural resource baseline information. This approach includes biological planning, conservation design, plan implementation, monitoring, and adaptive management. This approach provides a platform upon which we can work with partners to connect project- and site-specific activities to larger biological goals and outcomes across landscape levels for aquatic and terrestrial habitats. This not only identifies potential gaps in information but provides a mechanism to address those gaps through a cooperative exchange. To take this further, we are working with many partners – public and private – to achieve this work through the establishment of Landscape Conservation Cooperatives bringing together specific expertise to more efficiently meet these broader, more comprehensive conservation goals. In addition, both the National Park Service and the U.S. Fish and Wildlife Service have ongoing, coordinated Inventory and Monitoring Programs for National Parks and National Wildlife Refuges that provide baseline information on important natural resources and monitor trends in those resources over time.

2. Transparency and public participation: To what extent has the assessment process been conducted to ensure transparency and public participation? How will the restoration efforts address the issues of transparency and public participation? Are there certain methods of public engagement that are not currently being employed that should be employed in the future to maximize transparency and public participation in this process?

The Natural Resource Damage Assessment and Restoration (NRDAR) process for the Deepwater Horizon oil spill is one of the most open and transparent NRDARs ever conducted, as we have embraced the valuable lessons learned from the Exxon Valdez oil spill. There are limitations, however, on the ability of the Natural Resource Trustees to make deliberations, investigations and negotiations immediately available to the public because NRDAR is a legal process requiring a degree of confidentiality to preserve the government's ability to make the strongest damage claim possible on behalf of the public whether it is in settlement negotiation or litigation. Given this constraint, however, the Trustee Council intends to make assessments and draft restoration plans available to the public at the earliest possible date after thorough quality assurance and quality control are performed. The public will have the opportunity to provide meaningful input.

To meet the requests from academia, non-governmental organizations, and the public-at-large regarding data and ongoing NRDAR actions, the Trustees have developed electronic information sharing tools. For example, DOI has created a web page dedicated to sharing information about the BP Deepwater Horizon oil spill (www.doi.gov/deepwaterhorizon/). Posted on this page are numerous links to important information: The NRDAR administrative record, fact sheets, DOI bureau activities, and reports and data. The administrative record includes, among other things, the DOI Interim Partial Claim, and numerous work plans for pre-assessment and injury assessment studies.

The Trustees have designated the National Oceanic and Atmospheric Administration's (NOAA) website as a central location for submittal of public comments on the programmatic environmental impact statement and recommendations for early restoration projects.

DOI has worked with print and electronic media to keep the public informed of significant activities and developments. Staff regularly distributes press releases and responds to media inquiries. Staff also fields questions from the public and interest groups received via mail, email and telephone. As with DOI's request for public input on early restoration projects, staff distributed an email to an interested parties email group of over 100 individuals and groups.

DOI, NOAA, and representative from the states of Mississippi, and Alabama recently met with key environmental groups in Washington, D.C. We are working together to identify additional mechanisms for engaging these groups and the public-at-large, within the constraints that are caused by the legal nature of our work. Earlier this year, the trustees for the BP *Deepwater Horizon* oil spill asked the public for input on the types of restoration needed to address impacts from the spill. The comments were collected as part of the Programmatic Environmental Impact Statement (PEIS) process. The PEIS will serve as the core planning document for restoration associated with the oil spill. Trustees collected comments at public meetings in the Gulf region and Washington, DC, as well as online. A total of 7,773 comments were received, with nearly 70 percent of those coming from Gulf residents and organizations. The comments focused on three main categories: implementation approaches, marine mammals and turtles, and offshore resources.

3. Long-term effects: We heard testimony discussing how scientific modeling is being used to predict long-term impacts and ensure that long-term damages are included in the expected settlement. Do you believe that scientific analysis and modeling is sufficient to assess long-term impacts with confidence? How ought the Trustees balance the need for evaluation of long-term damages with the need to begin timely restoration planning and implementation?

In addition to collecting data on acute impacts, we also are looking at the assessment of the chronic, long-term impacts to the Gulf ecosystem. We acknowledge that some types of ecological damage are hard to immediately measure and can take years to document. For example, certain species of sea turtles do not reproduce every year; therefore it may take many years to demonstrate statistically significant changes in the reproduction rate of sea turtles due to injury from the Deepwater Horizon oil spill.

Modeling is one tool we will use to assess long-term impacts with confidence. Models are only as good as the inputs fed into them, however, making the robust data collected since 2010 that much more important. The data collected now will give an indication of what parameters we should watch more closely in the future.

Achieving a balance between evaluation of long-term injury with the need to begin timely restoration planning and implementation is a challenge. The Trustees have begun to outline long-term monitoring plans in both their assessment studies and proposed restoration projects. For example, a number of our studies are using radio and satellite telemetry tags to track animal

health and movement in the Gulf of Mexico. Many of these tags have a multi-year battery life and plans are in place to monitor these animals long after the formal NRDAR assessment study is expected to be complete.

Transparency and public engagement in the restoration process will also help us achieve the balance between evaluating long-term injury with the need to begin timely restoration planning and implementation. Experts conducting research in the field will be able to review our restoration plans and monitoring studies and help us incorporate measurable and realistic performance measures within these plans.

While the longer–term assessment and monitoring measures are being implemented, the Trustees are also working with BP to implement early restoration projects through a one billion dollar early restoration agreement. Projects are being cooperatively developed with input from the public, academia, and non-profit organizations to prioritize and implement restoration for injured resources that can benefit from early action.

4. Independent review: Why have trustees chosen not to engage an independent scientific auditor? In your opinion, what would the benefits and the drawbacks be to engaging such an independent auditor?

The Trustees have addressed the need for independent scientific review by involving experts from academia, consulting firms, non-governmental organizations, and agencies in the Technical Working Groups. The nature of this critical review, depending upon the degree to which the case is litigated, can be much more intense and detailed than the typical peer review process. The Trustees have made every effort to have its science critically reviewed by as many experts as possible within the constraints of legal privilege concerns.

The NRDA assessment science is produced through work plan development, implementation, data analysis, and peer review; conducted internally within the Technical Working Groups and externally by scientists involved in the NRDA but external to the Technical Working Group that developed the plan. In addition, under OPA, proposed restoration projects undergo public review and comments, which includes other resource scientists and those experts of the companies responsible for the injuries to resources that are the subject of the restoration. Therefore, an independent auditor who would consult with the Trustees would be redundant to the efforts described above.

5. Low-level oil contamination: How would you respond to testimony suggesting that, by not employing certain technology that detects and concentrates low levels of oil, the current estimates of damage underestimate the true impacts on natural resources?

The Natural Resource Trustees use EPA's Data Quality Objectives (DQO) framework to guide data collection methodology. At this time, grab samples and passive sampling devices are used,

depending upon the detection limits required and the analytical methods used. Computer models that take into account longer term duration of exposure and resulting concentration in biological organisms are also used. While Trustee Council Technical Working Groups (TWGs), specifically the Water Column TWG, must continue making progress on work plans and studies for water contamination and impacts on organism using existing protocols, we welcome the opportunity to speak with those researchers that believe different methodologies will produce improved data. As always, if independent scientists have input regarding methodology or any other aspect of the assessment work planned by the TWGs, we encourage them to speak to any or all of the Trustee agencies. The Trustees will refer the information to the appropriate TWGs. If the TWGs agree that a different protocol meets certain standards such as reliability, accuracy and reproducibility, they may find it beneficial to adopt that protocol.

QUESTIONS FROM SENATOR DAVID VITTER

1. Can you generally discuss what efforts have been undertaken to rehabilitate the seafood and in particular the oyster habitat over the last several months?

The seafood and oyster habitat is under the jurisdiction of the state Trustees and NOAA as well as the U. S. Food and Drug Administration. We support the work being performed by these entities, and we will continue to work with them on their activities.

2. How would you describe the relationship with BP and their responsiveness in your ongoing efforts?

Overall, BP has been cooperative and responsive to our requests. There have been numerous occasions, however, where coming to agreement with BP has required considerable time and effort. The technical complexity of the proposed work adds to the time required for review. Additionally, the magnitude and extent of the Deepwater Horizon oil spill requires review of and discussion on a far greater number of study plans than we have ever seen before.

In cases where we have not reached agreement with BP on specific pre-assessment and assessment protocols, the Trustees have proceeded without BP's cooperation where we believed that time critical information would be lost. We continue to reserve the option to work independently when agreement cannot be reached.

Generally, the situations described above have not impeded the overall working relationship between the Trustees and BP. As previously discussed, the Trustees are working cooperatively with BP to implement early restoration projects through a one billion dollar early restoration agreement. It is also important to note that, to date, BP is the only responsible party that has participated in the NRDAR process.

3. In your testimony you state that that the NRDA process allows implementation of emergency restoration projects before assessment is completed. What are the limitations on this authority and is there potential to expand and expedite such authority to get more projects moving?

The Oil Pollution Act (OPA) regulations authorize the Trustees to undertake emergency restoration projects, where appropriate. Emergency restoration includes actions that are taken by the Trustees prior to the completion of the damage assessment and restoration planning process to prevent or reduce continuing natural resource injuries and/or avoid a potential irreversible loss of natural resources. Emergency restoration occurs on a parallel track with the assessment phase of NRDAR.

Under the OPA, Trustees may take emergency restoration action, provided that:
(1) The action is needed to avoid irreversible loss of natural resources, or to prevent or reduce any continuing danger to natural resources or similar need for emergency action;
(2) The action will not be undertaken by the lead response agency;
(3) The action is feasible and likely to succeed;
(4) Delay of the action to complete the restoration planning process established in this part likely would result in increased natural resource damages; and
(5) The costs of the action are not unreasonable.
(a) If response actions are still underway, trustees must coordinate with the On-Scene Coordinator (OSC), consistent with the National Contingency Plan, to ensure that emergency restoration actions will not interfere with or duplicate ongoing response actions. Emergency restoration may not address residual oil unless:

(1) The OSC's response is complete; or
(2) The OSC has determined that the residual oil identified by the trustee as part of a proposed emergency restoration action does not merit further response.

(b) Trustees must provide notice to identified responsible parties of any emergency restoration actions and, to the extent time permits, invite their participation in the conduct of those actions as provided in §990.14(c) of this part.
(c) Trustees must provide notice to the public, to the extent practicable, of these planned emergency restoration actions. Trustees must also provide public notice of the justification for, nature and extent of, and results of emergency restoration actions within a reasonable time frame after completion of such actions. The means by which this notice is provided is left to the discretion of the trustee.

4. Can you briefly discuss federal and state "rigs to reefs" programs and why they are important for fisheries habitat?

The Rigs-to-Reefs Program is a partnership between various state agencies (e.g. Mississippi Department of Marine Resources (DMR)), the federal government, and petroleum companies working together to utilize a subset of decommissioned oil and gas platforms for offshore artificial reef development. The Federal government, led by the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), and coastal states work cooperatively with oil/gas companies to utilize these abandoned structures for enhancing fish and invertebrate habitat. Hard bottom habitat formed from a decommissioned platform jacket is beneficial to both the marine organisms that inhabit these reef systems and commercial and recreational fishermen.

a. Given the Interior Department's guidance on 'Idle Iron' and removing decommissioned rigs, why in the midst of recovery post-Deepwater Horizon would we want to remove or destroy fish habitat? Isn't this the antithesis of what we should be trying to do to help Gulf recovery?

"Idle Iron" is a term used in the oil and gas community for wells, platforms and pipelines that are no longer producing or serving exploration or support functions related to the company's lease. Federal regulations require such facilities to be decommissioned. This process involves plugging wells and dismantling and removing platform structures and pipelines in a timely manner and no later than one year following the expiration of the lease.

The Code of Federal Regulations Title 30 -- Mineral Resources states: At the conclusion of the economically productive life of a lease, operators must seal existing wells, remove all associated structures, level the drill site, and clear the site of pollutants, debris, and obstructions. Regulations for abandonment are found at 30 CFR 250.110 and are conducted under the supervision and authority of the BOEMRE.

The creation of artificial reefs from non-producing oil and gas platforms requires balancing between two goals. The first is enhancing recreational fishing opportunities, which have been diminished over time. The second is maintaining a safe energy production environment in the Gulf of Mexico in keeping with an oil and gas company's legal responsibility to decommission and dismantle their facilities when production has ended. Research focused on quantifying the fish injury resulting from the *Deepwater Horizon* oil spill is not yet complete and past science has not determined whether artificial reefs produce more fish or merely provide shelter for existing fish while attracting them to convenient locations for the benefit of fishermen. The Gulf of Mexico, however, is already home to the largest area of artificial reefs in the world. For example, although the state of Alabama claims only five percent of the Gulf's coastline, there are an estimated 8,000 to 10,000 artificial reefs (of which only a handful are decommissioned oil and gas rigs) within a 1,200 square mile area off Orange Beach and Gulf Shores. All of the Gulf states have artificial reef programs.

Senator CARDIN. Thank you very much.

Mr. Penn.

STATEMENT OF TONY PENN, DEPUTY CHIEF, ASSESSMENT AND RESTORATION DIVISION, OFFICE OF RESPONSE AND RESTORATION, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Mr. PENN. Thank you, Chairman Cardin, and Members of the Subcommittee for the opportunity to testify on the status of the ongoing natural resource damage assessment and restoration planning for the Deepwater Horizon oil spill.

My name is Tony Penn. I am the Deputy Chief of the Assessment and Restoration Division in NOAA's Office of Response and Restoration. I appreciate the opportunity to discuss NOAA's role and our work to date on the Deepwater Horizon natural resource damage assessment process, also known as NRDA.

NOAA and our co-Trustees have been working tirelessly to assess the ecological and human-use impacts of the spill and to identify restoration opportunities in the Gulf of Mexico. We will continue in our efforts until restoration of the impacts is complete.

My testimony today will discuss NOAA's involvement in the damage assessment process, the status of the Deepwater Horizon assessment and restoration, and the successes of the Deepwater Horizon NRDA.

NOAA, along with our co-Trustees, is charged with assessing and restoring natural resources injured by an oil spill. The goal of the assessment process is to determine the type and amount of restoration needed to compensate the public for injury to the natural resources. The Trustees also assess public lost use of those resources such as recreational fishing, boating, hunting and swimming. The ultimate goal of the NRDA is to implement a package of restoration projects to compensate the public for all the ecological and human use injuries.

At the outset of the Deepwater Horizon spill, NOAA quickly mobilized staff to begin coordinating with Federal and State co-Trustees and the responsible parties to collect data that are critical to inform the NRDA. The Trustees focused on assessing the injuries to all ecosystem resources from the deep ocean to the coastlines of the Gulf of Mexico. Information continues to be collected to assess potential impacts to fish, shellfish, terrestrial and marine mammals, turtles, birds and other sensitive resources, as well as their habitat, including wetlands, beaches, mud flats, bottom sediments, corals and the water column. Lost human use of these resources such as recreational fishing and beach use are also being assessed.

Technical teams consisting of scientists and State and Federal agencies, academic institutions, and BP have been in the field conducting daily surveys and collecting samples for multiple resources, habitats and services. To date, several hundred scientists, economists and restoration specialists have been and continue to be involved in our NRDA activities.

Through the size of the Deepwater Horizon release and the potential for injury, NRDA field efforts have far surpassed any other for a single oil release. As of early June, the Trustees had approved over 115 study plans and collected more than 36,000 water, tissue,

sediment, soil, tar ball and oil samples. More than 90 oceanic cruises have been conducted since early May, 2010, and many more are scheduled for the summer and fall of 2011.

From these sample collection efforts, more than 21,000 laboratory analyses have been completed. Of those, more than 20,000 have been validated through a rigorous quality assurance process. Once these data clear the validation process, they are then made publicly available, which is a new milestone in NRDA transparency.

Concurrent with the injury assessment, NOAA and the co-Trustees are planning for and implementing restoration. To date, the Trustees and BP have agreed to implement several emergency restoration projects designed to curtail further injury to natural resources. Trustees are also preparing an environmental impact statement which will identify a range of restoration alternatives that the Trustees will consider to compensate the public for lost natural resources and services.

On April 21st of this year, the Trustees announced an agreement whereby BP agreed to fund $1 billion in early restoration projects. Public input on early restoration projects has already begun and will continue through the summer.

To meet the requests from academia, NGO's and the general public regarding data and ongoing NRDA actions, NOAA and the co-Trustees have developed data-sharing and other outreach practices that have resulted in one of the most transparent damage assessments i history. One of the key actions the Trustees have taken is the public distribution of cooperative assessment work plans and data during the NRDA process.

NOAA has continued to update its publicly accessible Gulf environmental response management application website, allowing users to observe data via an interactive map. Along with providing an unprecedented amount of data during the NRDA, NOAA and the other trustees have sustained efforts to educate and communicate with the public.

Since the beginning of the spill, the Trustees have conducted numerous roundtable discussions with stakeholder groups and have facilitated stakeholder field trips where NRDA actions were discussed and observed. As part of the programmatic environmental impact statement process to solicit restoration project ideas, 11 public meetings were held across the Gulf Coast States and in Washington, DC.

The task of quantifying the environmental impact of the spill is no small feat, but I would like to assure you that we will not relent in our effort to protect the livelihood of the Gulf Coast residents and mitigate the environmental impacts of this spill.

Thank you for allowing me to testify on NOAA's damage assessment efforts, and I am happy to try and address any questions that you may have.

[The prepared statement of Mr. Penn follows:]

WRITTEN STATEMENT OF
TONY PENN
DEPUTY CHIEF OF THE ASSESSMENT AND RESTORATION DIVISION
OFFICE OF RESPONSE AND RESTORATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

HEARING ON
ASSESSING NATURAL RESOURCE DAMAGES RESULTING FROM THE BP DEEPWATER HORIZON DISASTER

BEFORE THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WATER AND WILDLIFE SUBCOMMITTEE
U.S. SENATE

June 28, 2011

Thank you, Chairman Cardin and Members of the Subcommittee, for the opportunity to testify on the Department of Commerce's National Oceanic and Atmospheric Administration's (NOAA) role in assessing natural resource damages resulting from the Deepwater Horizon BP oil spill.

My name is Tony Penn, and I am the Deputy Chief of the Assessment and Restoration Division of NOAA's Office of Response and Restoration (OR&R). I appreciate the opportunity to discuss the critical role NOAA serves in the Natural Resource Damage Assessment (NRDA) process following oil spills and the importance of our contributions to protect and restore the natural resources affected by this tragic event.

NOAA's mission is to understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs. NOAA, acting on behalf of the Secretary of Commerce, is also a natural resource trustee and is one of the federal agencies responsible for protecting, assessing, and restoring the public's coastal and marine natural resources when they are impacted by oil spills, hazardous substance releases, and, in some cases impacts from vessel groundings on corals and in seagrass beds. For over 20 years, NOAA has assessed and restored coastal, marine, and riverine habitats impacted by oil spills. During this period, NOAA was instrumental in evolving the field of restoration ecology and is one of the Nation's leaders in environmental restoration following an oil spill.

The Deepwater Horizon BP oil spill, the largest accidental oil spill in history, is only the most recent example of the environmental and socioeconomic damage caused by oil spills, and underscores the importance of and the linkage between healthy environments and our socioeconomic wellbeing. As such, the entire Department of Commerce is deeply concerned

about the immediate and long-term environmental, economic, and social impacts to the Gulf Coast and the Nation as a whole from the BP oil spill. NOAA and our co-trustees have been working tirelessly to assess the ecological impacts and identify restoration opportunities along the coastal and offshore areas of the Gulf of Mexico, and will continue to do so until restoration from those impacts is complete.

My testimony today will discuss NOAA's involvement in the NRDA process, the status of the NRDA for the Deepwater Horizon BP oil spill, successes and challenges of the Deepwater Horizon NRDA, and the current status of restoration efforts.

NOAA's Natural Resource Damage Assessment Role

NOAA has several critical roles mandated by the Oil Pollution Act (OPA) of 1990 (33 U.S.C. 2701 *et seq.*), one of which is as a natural resource trustee. As a trustee, NOAA, along with our co-trustees, is charged with conducting a NRDA to assess and restore natural resources injured by an oil spill. The NRDA process is a legal process that is resolved through a claim for restoration submitted to the courts. The essence of the process is to determine the type and amount of restoration needed to compensate the public for harm or injury to our collective natural resources that occur as a result of an oil spill. Inherent in this process is the need to assess the injuries to natural resources that are caused by the oil spill itself, as well as those caused by actions carried out as part of the oil spill response. According to NOAA's regulations implementing the OPA, injury is determined relative to baseline, which is "the condition of the natural resources and services that would have existed had the incident not occurred" (15 C.F.R. §990.30). For restoration, OPA requires the trustees to restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources and services (33 U.S.C. 2705, *see also*15 C.F.R. §990.30) and in doing so seeks a nexus between the types and magnitude of the injury and the restoration.

In assessing the injuries to the suite of ecological services provided by the natural resources, NRDA also assesses the public's lost uses of those resources, such as recreational fishing, recreational boating, hunting, and swimming. The goal is to implement a comprehensive package of restoration projects that compensate the public for all of the ecological and human use loss injuries.

Stewardship of the Nation's natural resources is shared among several federal agencies, states, and tribal trustees that conduct NRDAs. NOAA, acting on behalf of the Secretary of Commerce, is the lead federal trustee for many of the Nation's coastal and marine resources. NDRA regulations explicitly seek participation by both responsible parties and government (15 C.F.R. § 990.14(c)(1)) to facilitate the restoration of natural resources and their services injured or lost by hazardous substance releases and oil spills. OPA also encourages compensation of injured natural resources in the form of restoration, with public involvement in determining the types and magnitudes of the restoration (33 U.S.C. 2706(c)(5)). NOAA and our fellow trustees conduct a NRDA in three main phases:

- **Preassessment** – The trustees evaluate injury and determine whether they have jurisdiction to pursue restoration and if it is appropriate to do so.
- **Restoration planning** – The trustees evaluate and quantify potential injuries and use that information to determine the appropriate type and scale of restoration actions.
- **Restoration implementation** – The trustees and/or the responsible parties implement restoration and monitoring. This may include corrective actions if necessary.

Within NOAA, the Damage Assessment, Remediation, and Restoration Program (DARRP) conducts NRDA. Established in 1990 after the Exxon Valdez oil spill, DARRP is composed of a team of scientists, economists, restoration experts, and attorneys to assess and restore injured resources. Since 1990, NOAA, together with other federal, state, and tribal co-trustees recovered over $800 million for restoration of natural resources injured by oil, hazardous substances, and vessel groundings, including the recent early restoration agreement with BP. NOAA works cooperatively with co-trustee agencies and (in the case of a cooperative assessment of injuries) the responsible party (or parties) to share data and information collected during the spill and during the injury assessment. Working cooperatively with the responsible party and co-trustees can save time and money and can result in restoration being implemented faster and more efficiently.

Although the concept of assessing injuries may sound relatively straightforward, understanding complex ecosystems, the services these ecosystems provide, and the injuries caused by oil and hazardous substances takes time – often years. The time of year the resource was injured, the type of oil or hazardous substance, the amount and duration of the release, and the nature and extent of clean-up are among the many diverse factors that affect how quickly resources are assessed and restoration and recovery occurs. OPA requires that the trustees be able to demonstrate connections between the release of the oil, the pathways the oil moves along from the release point to the resources, exposure of the resources to the oil, and finally a causal connection between exposure and resource injury. The litigation context in which NRDA is conducted requires an elevated level of scientific rigor for the studies that are required to demonstrate these connections in order to ensure that our studies are accepted into court as evidence in the case. This level of scientific rigor coupled with the complexity of the ecosystems that are impacted by the spill means that the studies necessary to prove injury to resources and services may also take years to implement and complete. The NRDA process seeks to ensure an objective, scientifically rigorous, and cost-effective assessment of injuries – and that harm to the public's resources is fully addressed.

Current Status of NOAA's Natural Resource Damage Assessment Efforts

At the outset of the Deepwater Horizon BP oil spill, NOAA quickly mobilized staff from DARRP to begin coordinating with federal and state co-trustees and the responsible parties to collect a variety of ephemeral data that are critical to help inform the NRDA. The trustees are currently assessing the injuries to the Gulf of Mexico and soliciting public involvement in various restoration initiatives. On September 29, 2010, the trustees sent BP a Notice of Intent to Conduct Restoration Planning. This indicates that the trustees determined they have the jurisdiction to pursue restoration under OPA and moves the case from Pre-assessment Phase into

the Restoration Planning Phase. In this phase, the trustees formally identify and document impacts to the Gulf's natural resources, and the public's loss of use and enjoyment of these resources in order to determine the appropriate restoration projects to compensate for those losses.

The Deepwater Horizon NRDA focuses on assessing the injuries to all ecosystem resources from the deep ocean to the coastlines of the Gulf of Mexico. Information continues to be collected to assess potential impacts to fish, shellfish, terrestrial and marine mammals, turtles, birds, and other sensitive resources, as well as their habitats, including wetlands, beaches, mudflats, bottom sediments, corals, and the water column. Lost human uses of these resources, such as recreational fishing, hunting, and beach use, are also being assessed. Technical teams consisting of scientists from state and federal agencies, from academic institutions, and from BP have been in the field conducting daily surveys and collecting samples for multiple resources, habitats, and services. To date, several hundred scientists, economists, and restoration specialists have been and continue to be involved in our NRDA activities.

These assessment teams, called technical working groups (TWG) have been established to determine the oil spill's impact on multiple trust resources. The TWGs are responsible for identifying endpoints and developing procedures and methods to measure potential injury to their respective resources in study plans. Currently, there are thirteen TWGs divided into the following categories: water column and sediments, turtles and marine mammals, shorelines, terrestrial species, human use, shallow water corals, oysters, birds, submerged aquatic vegetation, and deep sea benthos. Several support TWGs have also been established to help ensure TWGs have the resources and data that they need. The study plans are selected and designed based upon our experiences from past oil spills and sound science with the main purpose of documenting and quantifying injury to a particular trust resource or service.

There are several steps in the development of a NRDA study plan. First, the TWG members identify an injury assessment approach or methodology for a particular resource. They then design and draft the study plan to address one or more questions related to the release, pathway, exposure, and injury resulting from the release of oil. The study plan is reviewed within the TWG, for scientific and statistical rigor, before the plan is reviewed by Deepwater Horizon case managers. As prescribed under the Oil Pollution Act NRDA regulations, the trustees afford BP the opportunity to review and provide input to the trustees in the development of study plans and many of the plans have been agreed to by representatives of the trustees and BP. Cooperation facilitates the cost effective collection and sharing of data, while allowing all parties to conduct their own analysis and interpretation of that data. It is important to note that at any time the trustees have the authority to withdraw from any cooperative assessment. Current study plans are focused on the causal connections between documented exposure to oil and injury to resources and services.

Once BP or their contractor weigh in, the trustees then decide which, if any, of BP's comments to accept. The plans are then submitted to BP, as one of the responsible parties, to either approve and fund or decide not to fund. When trustees cannot reach agreement with BP, or BP decides not to fund the study, the trustees use their own funding sources (e.g., from the Oil Spill Liability

Trust Fund) to conduct the study. Once the source of funds has been identified, the study plan is sent to contracting for processing if necessary. Studies have been developed over the course of days to weeks, and have not been delayed by the source of funds. It should be noted that even if the agencies fund the study, they still expect to recover those costs as "reasonable costs" of the assessment (33 U.S.C. 2702(b)(2)(A)).

Due to the size of the Deepwater Horizon release and the large potential for injury, NRDA field efforts have far surpassed any other for a single oil release. As of June 9, 2011, the trustees had approved over 115 study plans and collected more than 36,000 water, tissue, sediment, soil, tarball, and oil samples. More than 90 oceanic cruises have been conducted since early May 2010 and many more are scheduled for the summer and fall of 2011. From these sample collection efforts, more than 21,300 laboratory analyses have been completed. Of those, more than 20,400 have been validated through a rigorous quality assurance process. Once these data clear the validation process, they are then made publicly available; a new milestone in NRDA public transparency.

Current Status of Restoration Efforts

The NRDA regulations define three types of restoration: emergency (15 C.F.R. § 990.26), primary (15 C.F.R. § 990.30), and compensatory (15 C.F.R. § 990.30). Emergency restoration is undertaken during the response phase to minimize or prevent (further) injury to natural resources. Primary restoration is any action, including natural recovery that returns injured natural resources and services to baseline. Compensatory restoration is any action taken to compensate for interim losses of natural resources and services that occur from the date of the incident until recovery.

To date, the trustees and BP have agreed to implement several emergency restoration projects designed to curtail further injury to different resources. In particular, the trustees will implement a project to mend scars created in submerged aquatic vegetation (seagrass) beds caused by response equipment, namely boat props, in Florida. Designated areas in Mississippi Wildlife Management Areas have been flooded to attract migratory birds that otherwise may gather in oil impacted areas. One initiative will collect, store, and propagate plants, and replant damaged shorelines along the Gulf Coast to prevent further injury and erosion. Another project will improve the nesting and rearing success of endangered sea turtles on the Padre Island National Seashore.

Early restoration is the implementation of projects prior to the final quantification of injury. It is an emerging tool in NRDA that is not defined in the regulations and thus requires a great deal of discussion and agreement on how it will be implemented. It can fall under the purview of either primary or compensatory restoration.

On April 21, 2011, the trustees announced an agreement, called the Framework Agreement, whereby BP agreed to fund $1 billion in early restoration projects. Under a separate allocation agreement the Department of the Interior (DOI), NOAA, and each of the five Gulf States (Florida, Alabama, Mississippi, Louisiana, and Texas) will receive $100 million to implement

projects. The remaining $300 million will be used for projects selected by NOAA and DOI in coordination with the State trustees. All projects must meet the other requirements of the Framework Agreement, which insure a consistency with OPA, and be approved by the Trustee Council (comprised of all the natural resource co-trustees) and BP. Public input on proposed early restoration projects has already begun and will continue through this summer , and will culminate in a formal opportunity for comment once Phase 1 of the Draft Early Restoration Plan has been completed (some time in the fall).

The benefits provided by these early restoration projects will eventually offset a portion of the Responsible Parties' total liability. Under the Framework Agreement, BP and the trustees must agree to the "offsets" that each project will generate. Each project will have its own stipulation, which will be filed with the court hearing the multi-district litigation on the accident. BP, all trustees, and the Department of Justice will sign each stipulation. This restoration should not compromise or negatively impact the NRDA process. Rather, it provides a rare opportunity for active restoration to begin prior to the full quantification of injury, a process that can often take years.

Next Steps

The immediate next steps for the Deepwater Horizon NRDA are to: 1) continue with the injury assessment; 2) implement early restoration with public input; and 3) continue broader restoration planning also with public input.

The trustees have assessment activities planned throughout 2011 and into 2012. These activities will continue to assess impacts to habitats and resources as warranted. This year of field activity is crucial for discerning sub-lethal and temporal changes in populations or habitats; a key component to any damage assessment.

A draft Programmatic Environmental Impact Statement will be available for public review and comment in early 2012. This document will identify the range of restoration alternatives that the trustees will consider to compensate the public for lost natural resources and services and lost human use. Concurrently, the trustees are focused on engaging the public to identify early restoration projects and begin the implementation process.

Highlights of Success in the NRDA

To meet the requests from academia, non-governmental organizations, and the general public regarding data and ongoing NRDA actions, NOAA and co-trustees have developed data sharing and other outreach practices that have resulted in one of the most transparent damage assessments in history. As noted previously, NRDA is a legal process, designed to resolve liability through restoration for the American public. The legal nature of damage assessment requires a degree of confidentiality to preserve the government's ability to make the strongest damage claim possible on behalf of the public in settlement negotiations and litigation. Nonetheless, the trustees have developed new public information sharing protocols to address the American public's unprecedented request for NRDA information, while at the same time,

preserving the trustees' responsibility to ensure a strong legal case. The Administrative Record can be found online at http://www.doi.gov/deepwaterhorizon/adminrecord/index.cfm.

One of the key actions the trustees have taken to ensure enhanced transparency is the public distribution of cooperative assessment work plans and data during the NRDA process. Early in the Deepwater Horizon NRDA process, NOAA developed a NRDA Deepwater Horizon website (http://www.gulfspillrestoration.noaa.gov) which has become an effective tool in providing the public with important information. This website currently provides access to over 80 pre-assessment work plans and resulting validated data that are normally kept internal to the trustees until the NRDA has reached a legal settlement. These efforts to make data publicly accessible as soon as possible while ensuring that rigorous scientific protocols are upheld has required substantial coordination efforts.

In addition, NOAA has continued to update its publicly accessible Gulf Environmental Response Management Application (ERMA) website (http://www.geoplatform.gov/gulfresponse), a NOAA tool that served critical operational and situational awareness roles during the response and will continue to be a vital tool during the assessment and restoration planning phases of the NRDA. The team that developed and evolved ERMA was recently named a finalist for the Homeland Security Medal for helping crisis managers respond to the Gulf oil spill by providing critical information on the flow of oil, weather conditions, location of response vessels, and the impact on fisheries and wildlife.

Along with providing an unprecedented amount of data during the NRDA, NOAA and the other trustee agencies have sustained efforts to educate and communicate with the public. Since the beginning of the spill, NOAA has conducted numerous roundtable discussions with stakeholder groups and has facilitated stakeholder field trips where NRDA actions were observed and discussed. NOAA has also used multiple social media tools and videos to help disseminate information regarding the NRDA's status and the opportunities for public involvement. As part of the Programmatic Environmental Impact Statement process to solicit restoration project ideas, eleven public meetings were held across the Gulf States and in Washington, DC. More than 500 citizens attended these meetings. The trustees received several hundred comments on restoration alternatives at the meetings, through a website, and via mail. Throughout the rest of the NRDA process, NOAA and our co-trustees envision holding public meetings where input will be formally sought on the damage assessment and restoration planning process.

Conclusion

The task of quantifying the environmental damage from this spill is no small feat. NOAA knows that our efforts are just one of the many pieces required to restore the larger ecosystem within the Gulf. I would like to assure you that we will not relent in our efforts to protect the livelihoods of Gulf Coast residents and mitigate the environmental impacts of this spill. In the wake of such an event, we are reminded of the fragility of our coastal ecosystems and the dependence of coastal economies on the health and prosperity of our seas. Thank you for allowing me to testify on NOAA's damage assessment efforts. I am happy to answer any questions you may have.

ASSESSING THE IMPACTS OF OIL: FIRST STEPS

Who is assessing the impacts of oil?

Efforts to understand the impacts of oil on ocean life, coastal habitats, and human use began shortly after the spill through the **Natural Resource Damage Assessment (NRDA)** process.

Through NRDA, state and federal partners called "Trustees" are examining oil in the open water, near shorelines and on land to assess the scope and scale of the damage.

Together the Trustees will determine how much work is necessary to restore the Gulf of Mexico.

OIL IN THE OPEN WATER

Oil in the open water may affect the health of microscopic plants and animals that form the basis of the oceanic food web. The eggs and larvae of shrimp, fish, and other commercially and recreationally important species are at risk, as are adult fish, sea turtles, marine mammals, and ocean-going birds. Far beneath the surface, corals and other deepwater communities also might be affected.

OIL IN NEARSHORE HABITATS

Sensitive nearshore communities such as oyster beds and shallow-water corals may lie directly in the path of underwater oil and surface mousse riding the waves to shore. When the oil does hit land, it can severely impact coastal habitats including marshes, mudflats, mangrove stands, and sandy beaches. Organisms that use these habitats, such as birds, crabs, turtles, and other aquatic and terrestrial species also are at risk.

OIL AND HUMAN USE

From fishing and water sports to sunbathing and birdwatching, humans enjoy and recreate on Gulf Coast waters and nearshore environments in many different ways.

WATER COLUMN AND SEDIMENTS

- *Water quality surveys*
- *Transect surveys to detect submerged oil*
- *Oil plume modeling*
- *Sediment sampling*

TURTLES AND MARINE MAMMALS

- *Aerial surveys*
- *Tissue sampling*
- *Acoustic monitoring*
- *Satellite tagging*

SHORELINES

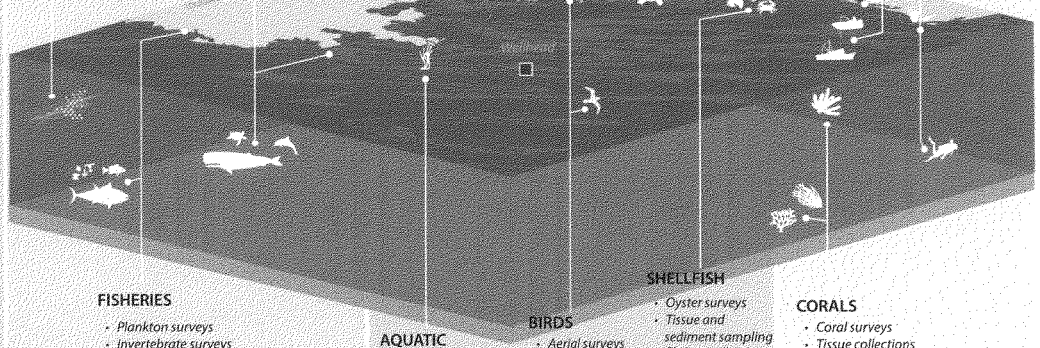
- *Aerial surveys*
- *Ground surveys*
- *Observations of the quality of habitat*
- *Measurements of subsurface oil near the shore*

TERRESTRIAL AND AQUATIC SPECIES

- *Ground surveys*
- *Observations of the quality of habitat*

HUMAN USE

- *Aerial surveys*
- *Ground surveys*



FISHERIES

- *Plankton surveys*
- *invertebrate surveys*
- *Adult fish surveys*
- *Larval fish surveys*

AQUATIC VEGETATION

- *Aerial surveys*
- *Field surveys in large beds of aquatic vegetation*

BIRDS

- *Aerial surveys*
- *Ground surveys*
- *Nearshore boat surveys*
- *Offshore boat surveys*
- *Radio telemetry*

SHELLFISH

- *Oyster surveys*
- *Tissue and sediment sampling*
- *Shrimp collection*

CORALS

- *Coral surveys*
- *Tissue collections*
- *Contaminant surveys*

POST-HEARING QUESTIONS FOR THE RECORD
TONY PENN,
DEPUTY CHIEF, ASSESSMENT AND RESTORATION DIVISION
NATIONAL OCEAN SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
ASSESSING NATURAL RESOURCES DAMAGES RESULTING FROM THE BP DEEPWATER HORIZON DISASTER
U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON WATER AND WILDLIFE
JUNE 28, 2011

Chairman Benjamin L. Cardin

1. **Baseline: During the June 28 hearing, we had the opportunity to hear testimony from state trustees regarding the sufficiency of the available baseline data from the spill-affected area. Could you please provide more in-depth information on this issue? In doing so please address the specific questions below:**

    a. **Does your agency have sufficient funding and other resources to maintain comprehensive baseline data over the long term?**

NOAA has directly conducted or sponsored numerous systematic, long-term monitoring studies thoroughly analyzing the toxic effects of contaminants, such as spilled petroleum, on endemic coastal and marine species around the country. For example, since 1986, the NOAA Mussel Watch program has managed the longest running estuarine and coastal pollutant monitoring effort conducted in the United States, including more than 100 sites from Texas to South Florida. At each site, more than 140 chemical contaminants, chosen through consultation with experts and scientists from academia and government, are measured and have served as a baseline for hundreds of scientific journal articles and technical reports since the program's inception.

NOAA has stewardship responsibility for 74 stocks or species of marine mammals, marine turtles and fishes in the Gulf of Mexico. The assessment for sperm whales is categorized by NOAA to be at "Tier II", meaning the quality of the assessment achieves a level commensurate with ESA and MMPA mandates. Seventy-three stocks or species in the Gulf of Mexico are determined to be at Tier I, which maintains the status quo of knowledge with only limited new assessment efforts. The number of adequate assessments in the Gulf of Mexico is expected to increase by one (northern Gulf stock of bottlenose dolphin) in FY 2012, and NOAA will conduct genetic analyses of eight bottlenose dolphin stocks in FY 2012, resulting in increased quality of those assessments in succeeding years.

NOAA continues to implement surveys and sampling programs and in 2010 partnered with the Bureau of Ocean Energy Management Regulation and Enforcement (BOEMRE) and the Department of the Navy to cooperatively support a comprehensive multi-year

survey of marine mammal, marine turtle and sea bird abundance in the northwest Atlantic Ocean. NOAA also receives support under a separate Interagency Agreement with BOEMRE for assessment work in the northern and eastern Gulf of Mexico which will provide incremental improvements in assessments during 2012-2014. However, the planned effort will not be sufficient to bring stocks to a "Tier II" level of adequacy.

The areas of investigation are related to ongoing and potential offshore energy development and production, and defense readiness training so as to inform NOAA's permitting and authorization of the activities that may affect protected resources, and to help understand and mitigate the effects of planned activities and catastrophic events.

b. Do you have any suggestions for how to improve your agency's ability to gather and maintain baseline data?

Under current funding levels NOAA's protected species stock assessment program could be improved by designing and implementing the following: an ecosystem-based framework using advanced technologies; ship, aerial, and acoustic surveys; ecological modeling tools to provide information on population status and abundance distribution; and behavior, life history and population parameters, and habitat characterization and use. NOAA can engage partners such as BOEMRE and states to share costs for assessing species in areas of mutual interest. NOAA has protected species expertise and ships and aircraft that can be supported for directed monitoring and assessments. This cooperation could include expanding the existing volunteer networks documenting strandings of marine mammals and marine turtles to better understand causes of injury and mortality.

c. How is your agency addressing gaps in information for baseline determinations?

For purposes of assessing the impacts of the Deepwater Horizon oil spill, NOAA and co-trustees continue to assess potential impacts to fish, shellfish, terrestrial and marine mammals, turtles, birds, and other sensitive resources, as well as their habitats, including wetlands, beaches, mudflats, bottom sediments, corals, and the water column. Lost human uses of these resources, such as recreational fishing, hunting, and beach use, are also being assessed. Technical teams consisting of scientists from state and federal agencies, from academic institutions, and from BP have been in the field conducting daily surveys and collecting samples for multiple resources, habitats, and services. To date, several hundred scientists, economists, and restoration specialists have been and continue to be involved in our Natural Resource Damage Assessment (NRDA) activities.

Specifically, NOAA continues to conduct aerial surveys to assess distribution and relative abundance of certain marine mammals and sea turtles. NOAA also is using satellite telemetry to better inform the biases in these aerial surveys. In addition, NOAA has continued to coordinate and, where possible, enhance the existing marine mammal and sea turtle stranding networks.

2. **Transparency and public participation: To what extent has the assessment process been conducted to ensure transparency and public participation? How will the restoration efforts address the issues of transparency and public participation? Are there certain methods of public engagement that are not currently being employed that should be employed in the future to maximize transparency and public participation in this process?**

From the earliest days of the spill, the trustees recognized both the intense public interest in the spill and the benefits of keeping the public informed. The trustees have therefore strived to maximize transparency and public involvement to the greatest extent possible within the confines of a litigation case. The result has been the most transparent NRDA process in history, with the trustees' actions far exceeding public participation requirements from the Oil Pollution Act. Examples of unprecedented levels of transparency and public participation include:

- The public release of all preassessment and injury assessment workplans that have been developed cooperatively with BP. As the data from these plans (over 90 and counting) have been validated, they have also been publicly posted (see thousands of NRDA sample results released at http://www.gulfspillrestoration.noaa.gov/oil-spill/gulf-spill-data/). Map displays of these and thousands of other relevant datasets are available at http://www.geoplatform.gov/gulfresponse/. Normally, these workplans and data would not be made available until the end of the NRDA.

- There have been at least two dozen NRDA-focused public meetings at venues across the Gulf states (11 federally sponsored, more than a dozen state-sponsored). There have also been well over a dozen webinars provided to a variety of public groups and organizations explaining the NRDA process and providing a status update. These unprecedented efforts have extended to many corners of the affected citizenry, including sports, business and environmental groups, local governments, and various fishing communities.

- The trustees have also provided unprecedented access to the media, including multiple interviews and field trips to observe NRDA activities. Public groups have also come out to observe NRDA data collection activities.

- NOAA has also created a state of the art website to keep the public informed (see http://www.geoplatform.gov/gulfresponse/). This site also offers the public the ability to offer their ideas on how to restore the Gulf and allows them to review what others have suggested. NOAA also uses Facebook, Twitter and other social media and maintains an email mailing list which is used to keep thousands of citizens up to date on the latest NRDA information.

- Additional public comment periods following the release of an Early Restoration Plan, a Draft Programmatic Environmental Impact Statement, and the draft Damage Assessment and Restoration Plan will ensure that the voice of the public will continue to shape the trustees' planning efforts.

3. **Long-term effects: We heard testimony discussing how scientific modeling is being used to predict long-term impacts and ensure that long-term damages are included in the expected settlement. Do you believe that scientific analysis and modeling is sufficient to assess long-term impacts with confidence? How ought the trustees balance the need for evaluation of long-term damages with the need to begin timely restoration planning and implementation?**

   The trustees will use scientific observation, analysis, and modeling to understand both the short and long-term impacts to the Gulf of Mexico as much as possible. There is a balance to be struck in further assessing the injuries over a longer time period to reduce uncertainty and resolving the liability in order to implement restoration.

   In order to ensure that the trustees do not miss an impact of the spill after resolution of the natural resource damages liability, the trustees will employ all the tools at their disposal to address any latent impacts. For example, long term monitoring will be part of the restoration program to evaluate restoration project success as well as the condition of the Gulf resources being restored. The trustees will use settlement re-openers and/or other contingencies to pursue restoration of future, yet unknown injuries that can be tied to the Deepwater Horizon oil spill.

4. **Independent review: Why have trustees chosen not to engage an independent scientific auditor? In your opinion, what would the benefits and the drawbacks be to engaging such an independent auditor?**

   An independent auditor on top of the other project review processes already in place would be redundant. It would add delay and unnecessary expense to assessments and restoration planning.

   Although an independent auditor would provide additional review and analysis of the trustees' assessment and restoration activities, there are several drawbacks that outweigh the benefits. First, the OPA natural resource damage assessment regulations require that the trustees issue a Notice of Intent to Conduct Restoration Planning in which the trustees may provide their proposed strategy to assess injury and determine the type and scale of restoration. The notice provides the public an opportunity to comment on the trustee approaches. The most defensible science is produced through work plan development, implementation, data analysis, and peer review; conducted internally within the Technical Working Groups and externally by scientists involved in the NRDA but external to the Technical Working group that developed the plan.

   There are a number of public review opportunities for restoration planning and implementation. All restoration planning by federal trustees comply with the National Environmental Policy Act (NEPA). Under NEPA, the federal trustees follow an extensive process to ensure any federal action does not individually or cumulatively have a significant impact on the quality of the human environment. Therefore, avoidance of

additional injuries resulting from implementing restoration action is a major goal of an OPA restoration action. Second, any proposed restoration project under OPA undergoes public review and comment, which includes other resource scientists and those experts of the companies responsible for the injuries to resources that are the subject of the restoration. These reviewers have frequently shared ideas to improve proposed projects.

5. **Low-level oil contamination: How would you respond to testimony suggesting that, by not employing certain technology that detects and concentrates low levels of oil, the current estimations of damage underestimate the true impacts on natural resources?**

Under OPA, the trustees are required to prove injury to the natural resources. This means that in addition to demonstrating that the natural resources have been exposed to oil, they also have the burden to prove that a causal linkage exists between the exposure and actual resource injury. In determining the studies that need to be conducted to make this linkage, the trustees seek to use the best science available to test their hypotheses and assess injury. To ensure that the data collected will support the questions being asked by these studies, the trustees make use of EPA's Data Quality Objectives (DQO) framework. This framework requires an examination of the types and amount of data required to answer the study question, as well as an assessment of the quality of the data (i.e., the detection limits) necessary to answer the study questions. In some cases, the data quality requires very low detection limits; in others, the study questions can be fully answered with higher detection limits.

In the DWH studies, the trustees have used the DQO framework to identify the appropriate analytical methods and detection limits required to answer the study questions. In some cases, e.g., in assessing exposure and possible injury to shallow water corals, submerged aquatic vegetation communities, and deep water benthic communities, analytical methods include the use of passive sampling devices known as semipermeable membrane devices or SPMDs. In these instances, this method was necessary to ensure that the trustees could document low levels of hydrocarbon exposure to these sensitive organisms and habitats. In other cases, such as evaluation of coastal water baselines and exposure, modified EPA methods were used based on the type and quality of the information necessary to answer the study question. For all of these studies, the analytical methods chosen were based on both the literature and the experience of the scientists to ensure that the analytical method detection limits were appropriate to obtain the hydrocarbon concentration measurements required to answer the study question (be it exposure or injury). In other words, adequately answering the study questions (or addressing the study hypotheses) – not analytical detection limit – was the primary driver in choosing the study design and analytical methods utilized. The Trustees are making best efforts not to underestimate injuries to natural resources in our studies. As part of these efforts, the Trustees are working to develop new data – for example, through studies assessing toxicity effects at low levels – that will help inform the results of other studies and data gathering.

Senator David Vitter

1. **One of the frustrations in the fishing community, and we hear this from both the recreational and commercial side, are the challenges with adequate stock assessments and the science at NOAA. Given that there exist shortcomings in NOAA's stock assessments how is this challenging or complicating your efforts?**

   Understanding the status of fisheries stocks of economic and ecological importance is critical to effective assessment of injury, and to the restoration process for setting priorities and tracking to meeting restoration goals. The precision of stock assessments influences the ability to detect changes in stocks in the aftermath of the spill from baseline conditions and detect changes as a result of restoration. The NRDA process is using all available information to apply to these questions, and in cases for which it is required, has initiated the collection of additional data to strengthen these analyses.

2. **Does there exist the opportunity in this process to improve fishery stock assessments based on what you are doing and how can we help with those efforts?**

   Examples of recent improvements in the Gulf are the new stock assessment scientists hired in 2010, and the expansion of fishery-independent data collections that the Emergency Supplemental allowed. We have now fully implemented electronic dealer reporting, which strengthens our ability to make more accurate and timely projections of when catch limits will be reached. We've completed a pilot study for electronic reporting on headboats and are working on the next steps for full implementation. A pilot for electronic reporting on charter vessels is currently under way and results of the pilot will help determine feasibility of implementing this for the full charter fleet. Electronic reporting is also providing us with much improved information on the spatial distribution of fishing effort by the shrimp fleet. Our highest priority requirements in the Gulf are not dissimilar from national priorities – funding the NOAA fleet to an adequate operating tempo to support fishery-independent data collections and related research, increased observer coverage, the use of advanced technologies to improve effectiveness and efficiency of our data collections, and data processing and management. NOAA has requested level funding for most baseline stock assessment and fishery monitoring programs, and has requested an increase of $15M in FY12 to support expansion of the stock assessment program. This increase in the Expand Annual Stock Assessment (EASA) budget line includes funding to improve surveys nationwide, as well as to move advanced sampling technologies towards operational status for improved surveys in the future. Advanced technology surveys will be particularly useful for surveying fish stocks while also surveying the habitats on which they live, thus better understanding the role of those habitats in supporting the stocks.

Senator CARDIN. Let me thank both of you for your testimony. We really appreciate it. Clearly, we want to make sure you get this right. So our first objective is to make sure that we have the best scientific assistance, that we do the assessment accurately, so that the restoration plan is effective in restoring to the best that we can the environmental damage that has been done, and that it is implemented in an accountable way. So we want to make sure it is done right.

But we also need to have some understanding of where we are in the process and how long you believe that process will take. We understand that a lot depends on the cooperation between BP and the Trustees. If things go into courts in a contested way, it can take a longer period of time. But give us some estimation as to where we are in the process and when you believe we will be able to look forward to an implementation agreement.

Mr. PENN. So, where we are in the process, as Cindy mentioned, we are in the restoration planning phase under OPA, which includes actual injury assessment. We are in the process of quantifying injuries to the resources and services.

At the same time, we are undertaking restoration planning. So we are looking ahead to what can we do to restore those resources that we are finding have been impacted.

Specifically with respect to the injury assessment process, we have come a long ways to identifying exposure to the resources in the Gulf. I don't know if you saw on the map, whether they be turtles, marine mammals, fish resources, shoreline habitat, oyster reefs. We have documented that there has been exposure to these resources. We are in the process of now moving from, OK, yes, there has been exposure, but under OPA we have to go to the next step of what are the injuries, what has been caused by the oil spill that we can quantify that then we try and restore.

So we are in the middle of that injury causality process. And again, at the same time, looking forward to what can we do for restoration of those resources.

Senator CARDIN. Is there a guesstimate as to how much longer that process will take?

Ms. DOHNER. May I just add one thing to what Tony said as far as the assessment as we go forward? We are also looking at the assessment of the chronic, the long-term impacts and how we go forward. And as we go forward, each year gives us new information. And overall, trying to make sure that we accurately count the acutely injured species. Obviously, the more information, the more time we have, the better it would be as we go forward.

Senator CARDIN. And I am not trying to rush the process. I am just trying to get your game plan now as to when you believe you would complete that phase.

Mr. PENN. So, from our perspective, as you probably now, DOJ filed suit in this case that included natural resource damages in December of last year. And so we don't know what that will mean for the court schedule, but we have to be prepared when the judge comes around looking at NRDA. So we are looking at completing another year of field work this year and looking again next year, and then perhaps having to be ready for a court schedule.

So in the next couple of years, we are going to have to have pretty good information on what we have found and where we are.

Senator CARDIN. Which leads me to the early restoration funding, the $1 billion in April, and that was certainly good news and I applaud you and BP for releasing the funds so that restoration work can begin.

But it seems to me $1 billion is a relatively small amount considering the amount of restoration that will be required and that early restoration is important. Can we look forward to additional sums being released before a full settlement is reached so that the States have additional resources to move forward?

Ms. DOHNER. I think that is unknown at this time, but whether or not we go forward, we need to deal with the $1 billion that we have go forward with the early restoration projects that we can do with that $1 billion as we are going along on a parallel path with the assessment and quantifying the injury and making sure that we identify uncertainties.

If we do work on a timeline similar to what Tony was talking about, we need to make sure we also address the long-term, again, chronic damages that we are unsure of as we go forward.

Senator CARDIN. Well, I appreciate your keeping us informed, because we do hear from the States and I am sure we are going to hear more from them today that they are strapped on resources and that the moneys that are being made available are being put to good use. It would be I think an encouraging sign if we could get additional commitments for restoration at this stage. So if you will work with us on that.

I have one more question I want to ask before turning to Senator Sessions, and that is this process builds upon the cooperative relationship between BP and the Trustees which we know could turn adversarial. It is the nature of the process. You have to be realistic. We would like to see an agreement. We may not have an agreement.

Therefore, it is very important that we have an independent scientific base for what we are doing. During *Exxon Valdez*, the NRDA process set up their own council, their own side group of independent experts. Do you have such a process available to you in the BP circumstance? Do you have an independent panel that you rely upon? I know you said you seek independent verification, but is there a panel that has been put together similar to *Exxon Valdez*?

Ms. DOHNER. There is not a panel that is put together at this time. We do have the technical expertise on the technical working groups and we pull from academia in the States and the Federal agencies as needed, and a long list. The responsible parties are part of that technical working group.

So we do have experts in the field as we design these studies for the long-term restoration, the restoration projects.

Senator CARDIN. Did you consider putting together a panel similar to *Exxon Valdez*?

Mr. PENN. We have heard that feedback and that input from some of our NGO partners. I think if memory serves me right, in *Exxon Valdez* that group was I believe set up after there was settlement to look at how moneys were being spent post-settlement.

As Cindy said, in this case we are pre-settlement. We do have a lot of technical expertise within these working groups. NOAA alone is working with 75-some academics, along with their support staff. And we feel like we have really got strong technical expertise within our working groups and that we can speak candidly with some of the experts that we are working with who we have under confidentiality agreements.

Senator CARDIN. Thank you.

Senator Sessions.

Senator SESSIONS. Thank you very much.

Ms. Dohner, tell us who is in charge of the NRDA process? In other words, who invokes the meetings and sets the schedules and makes decisions under this statute, as you understand it?

Ms. DOHNER. There are seven different individual Trustees that are part of this. At this time, there is a new structure that has been put in place with an Executive Committee that is helping guide this process.

This process was started at the very, very beginning of the spill as we were pulled together and has met routinely and regularly across the board as we go forward with the technical working groups and working together as a Trustee Council. But within that Trustee Council, as we go forward on different things, we have equal votes as we go forward.

Senator SESSIONS. Is the Secretary of Interior coordinating and calling the group into session?

Ms. DOHNER. Right now, as part of the Executive Committee, Cooper Shattuck is actually the Chair of that committee and Cooper is the lead for helping us put together these meetings. The Trustee Council actually has, as I said, routine meetings that are scheduled. And with the early restoration, at the last meeting we had we scheduled an additional one so we could go forward and work on this early restoration, the project proposal and the process we have to go through to get them approved.

Senator SESSIONS. So if you don't report on time, it would be Cooper's fault. Right?

[Laughter.]

Ms. DOHNER. No, sir. As I said, the Trustees have to work together.

Senator SESSIONS. Well, you do. And I hear good things about the openness with which you are doing the process, but I did note Mr. Penn previously stated he doubts the NRDA process will have moved from the planning stage to the implementation stage by year's end. That may be more likely by the end of 2012. It is a big system.

So I think we share the interest, Senator Vitter and the Chairman did, that we don't want this to take too long. Somebody needs to make sure that this moves forward.

Would you comment on that, Mr. Penn?

Mr. PENN. Yes, and I think that the Trustee Council that has come in with Cooper's leadership has been a shot in the arm to get the Trustees organized and has focused on some of the decisions at hand.

I don't want to suggest that we just sort of slowly moving through the assessment process. I think one of the real accomplish-

ments so far to date here is the $1 billion of early restoration and the new council that has been formed is really focused on identifying projects and looking at how we get to agreement to get those projects implemented. And I think we will see restoration in this case long before we would in most other damage assessment cases because of their leadership and the focus on getting things in the ground very soon.

Senator SESSIONS. Ms. Dohner, I may have been unfair when I said that some of this cleanup hadn't been done by the concerns of Fish and Wildlife. That was sort of the feedback I had gotten.

Are you aware of whether the Fish and Wildlife Service has directed any cleanup efforts to stop as a result of environmental concerns?

Ms. DOHNER. Sir, I was actually down at Bon Secour at that refuge just earlier this month and there are cleanups going on right now. There are times that they have asked the cleanup to stop if there are birds that are nesting, things like that, natural resources that we would want to protect on the refuge. But there is a current active cleanup operation going on right now.

Senator SESSIONS. Well, there is a danger of spreading and washing also in high tides and storms. I think it is not healthy for the environment for it to stay there. So I guess either by hand or by machinery, I would suggest we might as well get on the work in accomplishing that.

The other parts, the beaches are fabulously clean and getting really good reports this year, so we are pleased about that.

Do you talk, Ms. Dohner, with local officials along the Gulf Coast, I will ask both of you, concerning their concerns about how progress is occurring?

Ms. DOHNER. Sir, I haven't myself talked with the local folks, but we have managers that are on the ground and we have people that are stationed at the incident command that are talking with the local folks and working with them on their concerns on how we go forward with the cleanup at the refuge.

Senator SESSIONS. Mr. Penn, when do you expect that NOAA will transition from the assessment and planning phase to the restoration and implementation phrase?

Mr. PENN. Sir, with the early restoration, so right now we have things going on concurrently. We are doing the assessment and we are doing restoration planning, and restoration implementation. We have actually done some emergency restoration action to prevent further injury to resources. And with early restoration, we are looking to implement some of those types of projects here in late 2011 into 2012.

Senator SESSIONS. Just briefly, there are some concerns that have been expressed to me by people that I respect that live in the area that there may be some hesitation to proceed with the NRDA process while the initial response process is still ongoing, that BP as the responsible party is responsible for.

Have you heard, is there any legal concern that they might say, well, you need to certify that we have finished our initial response effort before we go any further with the NRDA process?

Mr. PENN. No, sir. We have moved forward with our damage assessment at the same time the response started. We are learning

from the response. We are getting information that is informing the damage assessment. But we are not delayed at all by the response action.

Senator SESSIONS. Good. Thank you.

Senator CARDIN. Senator Whitehouse.

OPENING STATEMENT OF HON. SHELDON WHITEHOUSE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator WHITEHOUSE. Thank you, Chairman.

First of all, let me welcome Ms. Dohner here. We just had over the weekend the 50th anniversary of the University of Rhode Island Graduate School of Oceanography. And I believe you got your master's degree from GSO.

Ms. DOHNER. Yes, sir.

Senator WHITEHOUSE. We are very pleased to actually have another GSO person on the following panel, so I am glad to see the University of Rhode Island Graduate School of Oceanography so well represented in this hearing.

Mr. Penn, the natural resource damage assessment, as I understand it, stands on a considerable number of study plans that are approved, that identify various problems and explore them. As I understand it, there have been well over 100 approved already. And I understand that the relationship is that the Trustees and BP negotiate to try to define the study plans correctly.

What is your sense of how that process has been going? Have there ever been deadlocks? What happens when there are deadlocks? I understand that BP is paying for all of this as it goes, so they have slightly different interests at stake than you. And I am interested in how that works itself out through this process.

Mr. PENN. Yes, sir. I think the process is going fairly well. We have our disagreements on what we would like to see in study plans. There is kind of the push and the pull that we have between the Trustees and BP

But ultimately, the decision is the Trustees' on what to implement, and what we feel we need to do is to make a defensible damage assessment case. So in the instances where we cannot reach agreement and we can't get signature on these plans and BP agree to up front the cost of those studies, we would take those studies on our own and implement those studies if we felt that they were necessary to meet our needs of the case.

Senator WHITEHOUSE. Without BP paying for it at that point since they are not agreed. What sources of funding do you have? Do you feel that is a restriction on your ability to proceed with any of the studies?

Mr. PENN. I do not feel that it is a restriction. We have been able to up front costs. And in fact, when BP commits, they sign that they are going to fund these studies. They don't actually fund those real-time. We incur the costs and then we recover those costs later.

But any study that we do, the Trustees feel those are reasonable assessment costs that we will recover eventually, if not by a written signature saying they agree up front, those are legitimate costs that we will recover later.

Senator WHITEHOUSE. And you have an account that allows you to pay the scientists and the folks who are doing the work in the

meantime so that they are not carrying the cost of the government study?

Mr. PENN. Yes, sir.

Senator WHITEHOUSE. And you are comfortable that works smoothly, that there is plenty available that is not an issue? Because that creates no hesitancy on the part of NOAA with respect to proceeding with studies?

Mr. PENN. That is correct.

Senator WHITEHOUSE. OK. Good. Good to hear.

Thank you, Chairman.

Senator CARDIN. Senator Vitter.

Senator VITTER. Thank you, Mr. Chairman.

And thank you both for your work.

Ms. Dohner, can you briefly discuss efforts that have been undertaken to rehabilitate seafood and in particular the oyster habitat over the last few months?

Ms. DOHNER. Sir, I do know that they are doing work to evaluate the oyster and the oyster habitat. But as far as the seafood, I would have to get back to you on that.

Senator VITTER. And what broadly is being done on the oyster side?

Ms. DOHNER. I know that they have looked at what needs to be done for restoration and those are some of the early restoration projects that have been evaluated; and also some of the work that has been done under the technical working groups on the impacts. But again, I would get back to you with a better explanation.

Senator VITTER. OK, great. If you could do that followup, that would be super.

In your testimony, you State that the NRDA process allows implementation of emergency restoration projects before the whole assessment is complete. What are the limits on this authority and what is the potential to expand and expedite that authority so we are not backloading everything for 8 years from now?

Ms. DOHNER. The emergency projects are designed to go forward and minimize the injury so that the long-term injury would be less than what is anticipated. Some of the things that we have done is shoreline vegetation and going forward with the shoreline vegetation, or improving habitat that would allow waterfowl to land in areas that are not oiled, things like that.

The other process that we have, the early restoration, would be the overall restoration. So emergency projects are a little bit different than the early restoration projects as we go forward.

Senator VITTER. OK. And Ms. Dohner, if you could briefly discuss both Federal and State rigs-to-reefs programs and their significance for our fisheries habitat?

Ms. DOHNER. Sir, I am sorry. I am not familiar with that project, so I would have to get back to you.

Senator VITTER. OK.

Mr. Penn, one of the frustrations I hear all the time from the fishing community, both recreational and commercial, are challenges with adequate stock assessment and science at NOAA. This pre-dates BP This is a general frustration. Given that there are clear shortcomings in NOAA's stock assessments, how is that complicating your efforts in this context?

Mr. PENN. Sir, we are looking at impacts to fisheries resources from both a recreational use perspective, as well as ecological perspective. I am not an expert in this area. I don't know to what extent we have relied on stock assessments to do that work. I don't think it has come into play for the recreational assessment.

On the ecological side, certainly we need to know the resources that are out there, the types, what might have been impacted by the spill. We are working through some of those issues. How do we determine baseline? What is potentially impacted?

Senator VITTER. I guess that is my question in all of this, and I don't mean to interrupt, but to get to the heart of it, you need some baseline. Ordinarily, a logical baseline to go to would be NOAA stock assessments. I think it is universally recognized those are not current, up to date, precise, adequate in any way.

So how do you determine a baseline?

Mr. PENN. Yes, that is a very good question and we could always use better baseline information across our resources that we are looking at. In this case, what we are able to do is a number of things. We are doing some trials now to determine what is there.

It is not ideal. We would have liked to have been out there before. But we can also then simulate what creatures would have been exposed to oil at different concentrations and look at potential impacts to those species. And then think about how that applies to the larger system that was impacted.

Senator VITTER. Is any of that work being done in this context helpful in terms of the broader NOAA stock assessment responsibility? Because again, I think it is broadly recognized that NOAA is way behind on that. We don't have good current stock assessment information.

Mr. PENN. Yes, that is a good point. And we are coordinating with other NOAA programs that don't typically do damage assessment work, but that have other monitoring requirements and responsibilities. We have supplemented what they have done and then we have enhanced what they have done so that they can use some of that information going forward.

The specifics for stock assessments, I would have to get back to you on how what we are doing is feeding into that process.

Senator VITTER. OK.

Thank you, Mr. Chairman.

Senator CARDIN. I want to underscore the point that Senator Vitter made about the baseline assessments. On our second panel, there will be testimony of concerns about whether we have an accurate baseline. I think some of the points that Senator Vitter raised is very much important to be addressed.

So I would just urge you to use as wide a range of scientific opportunities that we have in order to try to have an accurate baseline to assess damages. I think we could do a stronger job there.

And second, and I think Ms. Dohner you mentioned this specifically, that by having another season, you will get more information and you will have more confidence in the restoration plan. We are concerned about the long-term impact, what might be discovered after the settlement is reached; after the court decisions are finished; after the implementation plans have already started to be implemented.

And I believe I heard from your prior comments that in the assessment and implementation plans, you attempt to deal with those issues the best that you can. Would you spend a minute giving us a little bit more confidence that the unknown that may develop later, that there will be adequate protection in the negotiations?

Ms. DOHNER. Sir, as part of the assessment studies as we go forward in trying to assess the long-term chronic impacts, we are also going to have to have long-term monitoring incorporated into these studies and also incorporated into the restoration planning, and overall to make sure that we are able to, with performance measures within these monitoring plans, identify any types of impacts that we might not see for years from now.

Sea turtles, for example, we might not see impacts years from now, so we need to make sure that is part of the overall process as we go forward.

Senator CARDIN. So we would be protected to make sure that even those discovered later, it is still part of the plan?

Ms. DOHNER. Yes, sir.

Senator CARDIN. Thank you.

Any other questions? Senator Sessions.

Senator SESSIONS. Briefly, we have had reports concerning the oyster situation. Also, some reports have indicated that red snapper stocks are showing more lesions when they have been caught than have been otherwise observed. Some have said it is not unusual. Those are the kind of things we definitely need to get to the bottom of.

Mr. Penn, is that under your review? And do you have any comment on that?

Mr. PENN. Yes, sir. We are looking at the red snapper and we have heard reports of lesions. I know there is a researcher at LSU that has indicated findings of more widespread lesions than might otherwise be expected. So we are looking into that and are developing some study plans that would look at that specifically.

Senator SESSIONS. How long does it take to get that plan developed and executed?

Mr. PENN. We can develop plans in a matter of days to weeks. I don't know exactly what the status is of that particular plan. I know it has been under discussion and we have been looking at the data that is coming from LSU. And some of our data that we have collected through some of our trawls, but not necessarily tied to a particular study plan. So we are actively working on that issue.

Senator SESSIONS. Well, we thank you for your attention to this matter. I do think it provides a historic opportunity to develop a new baseline, to look at some new research, and to identify ways not only to recover from the damage that has been sustained, but also perhaps to manage our stocks and our wildlife better and to make it more healthy.

So thank you very much.

Senator CARDIN. Let me thank both of you again for not just your testimony, but your commitment to this issue. This is the second hearing that this Committee has had on the subject. It will not be our last as we will assist and followup on oversight as to how the process moves forward.

So thank you very much for your testimony.

Mr. PENN. Thank you.

Ms. DOHNER. Thank you.

Senator CARDIN. We will now turn to our second panel. And as they come up, let me yield to Senator Sessions and Senator Vitter for an introduction before introducing the rest of the panel.

Senator SESSIONS. Mr. Chairman, while the panel is coming forward, it is my pleasure to introduce a fellow member of the Alabama Bar, Mr. Cooper Shattuck. Mr. Shattuck currently serves as Legal Advisor to Governor Robert Bentley of Alabama. In that capacity, he was selected to serve as Chairman of the Executive Committee of the NRDA Trustee Council. So we get to hold him responsible for everything, I suppose.

But actually, I am a little concerned that I don't think any of our leaders have a lot of executive power. They just have collegial power in this process.

Prior to joining the Bentley Administration, Cooper was a practicing attorney with the firm of Rosen Harwood in Tuscaloosa, a good law firm. In addition, he served as Adjunct Professor of Law at the University of Alabama School of Law, one of the top law schools in America, I am proud to say.

He is a Bar Commissioner for the Sixth Circuit, which was elected by his fellow bar members. He is currently a member of the Alabama State Bar Foundation Board of Trustees; a member of the Tuscaloosa Bar where he served as President previously. A bachelor's degree in economics he has from Georgia Tech and a juris doctorate from Alabama.

He and his wife Christine live in Tuscaloosa. They have four daughters. He had been an Associate Pastor at First United Methodist Church there.

And thank you for coming. And I also note his mother is a good citizen, former citizen of my hometown of Camden, Alabama, a little community, and they are a great family, and I am proud of Cooper to be serving on this important position with Governor Bentley.

Senator CARDIN. Mr. Shattuck, welcome.

Senator Vitter.

Senator VITTER. Thank you, Mr. Chairman.

As I mentioned, Garret Graves is here today as a Louisiana Trustee, and he also serves as the Chair of the Coastal Protection and Restoration Authority of Louisiana. That is a State cabinet-level position over all of coastal restoration and protection.

Before that, I was honored to have him on my staff serving with me, and he served many Members of Louisiana's congressional delegation over several years. He was intimately involved in virtually every WRDA, water resources, coastal restoration-related bill going through this process while he was up here; very, very able. And I know Louisiana's interests are in very good hands.

Senator CARDIN. Thank you.

Senator Whitehouse.

Senator WHITEHOUSE. I just want to recognize Dean Leinen, this is, as I said earlier, a banner day for the URI Graduate School of Oceanography, with both a graduate in the first panel and a former Dean on this panel. Dean Leinen was kind enough to return to the Graduate School of Oceanography for the 50th anniversary celebra-

tion, and if my timing is right, I think she was actually Dean of the graduate school at the time my wife got her Ph.D. in marine science from the graduate school.

So in any event, she was a good friend her years a Dean in Rhode Island and I am delighted to have her here. Unfortunately, we have lost her to Florida in the meantime, but there is always hope.

[Laughter.]

Senator CARDIN. And Dr. Boesch could have been introduced also by Senator Vitter since he is a native of Louisiana, but now he is a Marylander, so I will take the honor of introducing Dr. Boesch.

He has been a strong advocate for us in Maryland, part of the University of Maryland Center for Environmental Science. He has been a personal adviser to me on many of the environmental issues. And he comes to us as a member of President Obama's Oil Spill Commission.

Dr. Boesch examined the causes of the Deepwater Horizon explosion and recommended improvements to Federal laws, regulations and industry practices to both prevent and mitigate future spills. He has a strong background in biological and ocean issues, and it is a pleasure to have you once again back before our Committee.

And we have another Marylander, Dr. Eric Rifkin, who comes to us through the National Aquarium in Baltimore. Dr. Rifkin is the interim Executive Director of the National Aquarium Conservation Center, which partnered with Mote Marine Laboratories in Florida and Johns Hopkins University to study new technologies for measuring low levels of oil spill contaminants.

I think this is cutting-edge information that helps us better assess the amount of damage that has actually been done. He has been able to actually develop techniques that are more sophisticated in determining areas that we thought were not affected, which in fact were affected by the BP oil spill.

So Dr. Rifkin, it is also a pleasure to have you here, and also another Marylander on the panel.

We will start with Dr. Boesch and work our way down.

STATEMENT OF DONALD BOESCH, PROFESSOR OF MARINE SCIENCE AND PRESIDENT OF THE UNIVERSITY OF MARYLAND CENTER FOR ENVIRONMENTAL SCIENCE, MEMBER OF THE NATIONAL COMMISSION ON THE BP DEEPWATER HORIZON OIL SPILL AND OFFSHORE DRILLING

Mr. BOESCH. Thank you, Senator Cardin.

Senators, I am very appreciative of the opportunity to testify today. I ask that revised testimony just changed to include more specific references and sources be included in the record.

Senator CARDIN. It will be. And all of your statements will be included in the record.

You may proceed as you wish. Thanks.

Mr. BOESCH. I was very actively engaged in scientific research on the long-term environmental issues in the Gulf of Mexico and the impacts of offshore oil and gas development before leaving Louisiana 21 years ago to, as Senator Cardin indicated, head the University of Maryland's Center for Environmental Science.

I suspect it was for this reason, my familiarity with the issues surrounding the oil spill that the President appointed me to serve as one of seven members of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling.

So my perspectives are really those of the commission that I will present today.

The natural resources damage assessment was not central to our investigation, and in any case, was still in a very early stage as we completed our report in January. Nonetheless, the commission's report does discuss and offers some recommendations concerning the ongoing NRDA.

The goal of NRDA is to make the environment and public whole for injuries to natural resources resulting from this oil spill. These injuries are quantified by reference to conditions that would have existed had the incident not occurred. Now, we recognized on the commission that establishing such baseline conditions is challenging, not only because of the paucity of background data and natural variability, but because many Gulf Coast habitats have been substantially degraded over decades from pressure from industrial, agricultural, commercial and residential development.

To illustrate this long-term degradation, I included in my written testimony a simple graph that shows the rate of wetland loss in Louisiana and how it spiked during the 1970's when we had a very aggressive program of dredging canals and wetlands for oil and gas exploitation, as well as transportation.

The Oil Spill Commission recommended that the Trustees ensure compensatory restoration under NRDA process is transparent, appropriate, and to the degree possible, apolitical by, one, as Senator Cardin mentioned in his introduction, an appointed independent scientific auditor to ensure that projects are authorized on the basis of the ability to mitigate actual damages caused by the spill; second, that any potential settlement agreement provided for long-term monitoring and assessment of the affected resources for a period of at least 3 years; and for enhancement of the damages beyond the baseline.

And third, hewing as closely as possible to the in-place/in-kind principles that underpin NRDA regulations to ensure that the injured public resources are made whole to the fullest extent possible regardless of State or Federal boundaries.

The recent agreement to support early restoration presents a promising opportunity to begin to restore impacted resources without waiting years for full compensation of the NRDA, when damage restoration may prove less effective. However, it also presents opportunities for misallocation of these resources. From the beginning, it allocates early restoration funding equally among the States and Federal Trustees despite the fact that there are disparities among these natural resource damages.

This potentially, if this principle continues, could compromise the in-place/in-kind principle in a way that concerned the commission.

The framework agreement also states that early restoration projects must be consistent with the Oil Pollution Act in meeting criteria for making the public whole for injuries from the oil spill. To avoid politically expedient approaches that might miss the mark in terms of compensatory restoration, appointing an independent

scientific auditor to a review board to ensure that projects are authorized on their basis to mitigate actual damages caused by the spill to the degree possible would be prudent.

A scientific audit could also independently evaluate the degree to which the natural resource damage offsets to be credited against the damages due to the responsible party for these projects are measured, calculated and documented using the best available science.

The impacts of the Deepwater Horizon oil spill come, as I mentioned, on top of longer-term degradation of important habitats and resources of the Northern Gulf of Mexico, including loss of coastal wetlands that Senator Vitter mentioned, recurrent hypoxia, the so-called dead zone, over-fished populations and endangered species.

The Oil Spill Commission identified that a restoration effort that is well funded, scientifically grounded and responsive to regional needs and public input would be very consistent with the recommendations that Secretary of the Navy Ray Mabus made earlier last year. The commission recommended that Congress dedicate for this purpose 80 percent of the Clean Water Act penalties, as Senator Vitter mentioned earlier in his discussion of legislation. A Gulf Ecosystem Restoration Task Force chaired by EPA Administrator Lisa Jackson and co-chaired by Mr. Graves is developing a Gulf of Mexico ecosystem restoration strategy, which is due in October 2011.

Legislation to dedicate the funds and establish a council to administer them has seemed, to me at least, stalled in Congress, in part because of a lack of consensus among the Gulf States over the scope and permissible uses of the funds and, once again, allocation among the States. Senator Vitter's announcement that a markup will take place is a hopeful sign that we may see some progress on that.

The Oil Spill Commission in looking at this issue concluded that it was most compelling from a national perspective if the application of these funds focused on ecosystem restoration, and we argued that the criteria should be national significance, contribution to achieving ecosystem resilience, and the extent to which national policies such as flood control, oil and gas development, agriculture, navigation directly contributed to the environmental problems that require the restoration.

So thank you very much.

[The prepared statement of Mr. Boesch follows:]

U.S. Senate Committee on Environment and Public Works
Subcommittee on Water and Wildlife
Status of the Deepwater Horizon Natural Resource Damage Assessment
June 28, 2011

Testimony of
Dr. Donald F. Boesch, Professor and President
University of Maryland Center for Environmental Science
Cambridge, Maryland 21613

Chairman Cardin, Ranking Member Sessions and members of the subcommittee, I am Donald F. Boesch and I am very appreciative of the opportunity to appear before you today to address issues related to damage assessment and restoration of natural resources following the Deepwater Horizon oil spill of 2010. I am a native of the Gulf Coast region and was actively engaged in scientific research on long-term environmental problems of the Gulf of Mexico and the impacts of offshore oil and gas development activities, including oil spills, before leaving Louisiana to head the University of Maryland Center for Environmental Science almost 21 years ago.

I suspect that it was because of my familiarity with the region and scientific issues surrounding the disastrous incident that President Obama appointed me to serve as one of the seven members of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, co-chaired by former Florida Senator Bob Graham and former EPA Administrator William Reilly. While it is primarily from the appraisals of the Commission that I will offer these perspectives today, I will expand on them based on my own experience where appropriate.

Natural Resources Damage Assessment Process

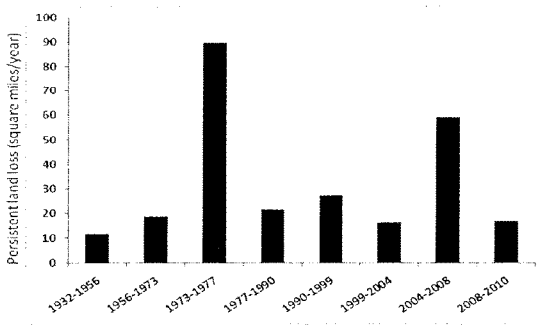
The Oil Spill Commission was charged fundamentally with determining the causes of the disaster, improving the country's ability to respond to spills, and recommending reforms to make offshore energy production safer. Also, we were required to submit our final report within six months of our first meeting and did so on January 11, 2011. The Natural Resources Damage Assessment (NRDA) was not central to our investigation and, in any case, was still in an early phase as we were completing our report. Nonetheless, the Commission's final report *Deep Water: The Gulf of Mexico Oil Spill and the Future of Offshore Drilling*[1] does discuss and offer recommendations concerning the ongoing NRDA. A staff working paper entitled *Natural*

[1] National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. Deep Water and the Future of Offshore Drilling. U.S. Government Printing Office, Washington, DC. http://www.oilspillcommission.gov/final-report

Resource Damage Assessment: Evolution, Current Practice, and Preliminary Findings Related to the Deepwater Horizon Oil Spill[2] was also released by the Commission.

The Commission's report understood the goal of the NRDA is to make the environment and public whole for injuries to natural resources and services resulting from the oil spill and that these injuries are quantified by reference to baseline conditions, the conditions that would have existed had the incident not occurred. We recognized that establishing such baseline conditions will be challenging, not only because of the paucity of background data and the confounding effects of natural variability, but because many Gulf coastal habitats have been substantially degraded over decades under pressure from industrial, agricultural, commercial and residential development.

Of particular note in that regard has been the impact of oil and gas extraction and transportation of Louisiana's disappearing coastal wetlands. The following graph, based on my calculations based of a recent USGS report[3] and not analysis by the Commission, shows how wetland loss spiked during the 1970s following a period of intensive dredging of canals for drilling access and transportation. Annual losses during this period substantially exceed the dramatic wetland losses resulting from the devastating hurricanes Katrina, Rita, Gustav and Ike in 2005 and 2008. I'll return to the need for comprehensive restoration of Gulf ecosystems that goes beyond NRDA requirements later in my testimony.



[2]http://www.oilspillcommission.gov/sites/default/files/documents/Natural%20Resource%20Damage%20Assessment_Evolution%2C%20Current%20Practice%2C%20and%20Preliminary%20Findings%20Related%20to%20the%20Deepwater%20Horizon%20Oil%20Spill_0.pdf

[3] U.S. Geological Survey. 2011.

In crafting its recommendations concerning the need for fair, transparent compensatory restoration based on Natural Resource Damage Assessment, the Oil Spill Commission noted the requirements of the Oil Spill Act for, wherever possible, "in-place" and "in-kind" restoration of natural resource injuries and the lost use of public resources. In other words, the Act favors restoration measures with a connection to oil spill impacts. The Commission observed that the NRDA for the Deepwater Horizon spill is unprecedented in that five Gulf States were affected, each with its own restoration agenda, even though most of the coastal and nearshore damage appeared to occur in Louisiana. We pointed out that, even as we wrote this report in December, the Trustees responsible for the damage assessment were under pressure to approve projects with an "equitable" allocation (i.e., each state receives an equal portion) of resources that may not be entirely consonant with the "in-place, in-kind" requirement. The Commission further noted that the Trustees will be challenged in assessing and providing compensatory restoration for the potentially significant marine and deepwater impacts associated with the spill that are largely outside of the practical experience of the NRDA process.

Based on these considerations, the Oil Spill Commission recommended that the Trustees should ensure that compensatory restoration under the NRDA process is transparent, appropriate and, to the degree possible, apolitical by:

a. Appointing an independent scientific auditor to ensure that projects are authorized on the basis of their ability to mitigate actual damages caused by the spill, with special care taken to assess and compensate poorly understood marine impacts.

b. In any potential settlement agreement, providing for long-term monitoring of affected resources for a period of at least three to five years and for "enhancement" beyond the baseline.

c. Hewing as closely as possible to the "in-place" and "in-kind" principles that underpin NRDA regulations to help ensure that injured public resources, and the communities that rely on them, are made whole to the fullest extent possible, regardless of state and federal boundaries.

In addition to these recommendations of the Oil Spill Commission, I commend consideration of the ten suggestions concerning the NRDA process offered during last July's hearing of this Subcommittee by Dr. Robert Spies[4]. These suggestions were based on lessons derived by a group of scientists with intimate experience in the Exxon Valdez NRDA. In addition, because I

[4] http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing_ID=f1ff5117-802a-23ad-4228-4fd76a477376&Witness_ID=d72c4fd1-9f71-4177-a80e-b90738a463c6

am currently Chair of the National Research Council's Ocean Studies Board, I would be remiss if I did not also bring to your attention the NRC's ongoing study on the Effects of the Deepwater Horizon Mississippi Canyon-252 Oil Spill on Ecosystem Services in the Gulf of Mexico[5]. This study is being conducted in response to mandates of the Supplemental Appropriations Act of 2010 and is addressing new approaches to place value on the ecosystem services affected by the oil spill that may escape the traditional NRDA process.

Early Restoration of Natural Resource Damages

On April 21, 2011, the federal and state Trustees entered into an agreement with BP that provides a framework for early restoration projects to address injuries related to natural resources caused by the Deepwater Horizon oil spill. Under this agreement, BP will provide $1 billion to support early restoration and under a separate agreement it was determined that each of the five Gulf Coast States and the two Federal Trustees (the Department of the Interior and National Oceanic and Atmospheric Administration) will be allocated $100 million each, with the remaining $300 million to be divided between DOI and NOAA for use on projects proposed by the States.

The agreement to support early restoration presents a very promising opportunity to begin to restore impacted resources without waiting years for the full completion of the NRDA when restoration may prove less effective. However, it also presents opportunities for misallocation and misapplication of these resources. To start, it divides the early restoration funding equally among the states and federal trustees, thus already comprising the "in-place and in-kind" principle in a way that concerned the Oil Spill Commission. In other words, Texas, which seems to have seen little or no oil from the Deepwater Horizon spill, would receive the same allocation as those states that were more substantially impacted. The framework agreement clearly states that early restoration projects proposed must be consistent with Section 1006 of the Oil Pollution Act in meeting criteria for making the public whole for injuries resulting from the spill and addressing one or more specific injuries associated with the incident. The agreement also requires that the projects be approved by a majority (four of the seven members) of the Trustee Council. However, this politically expedient allocation solution naturally raises suspicions about the degree to which the projects supported by funds already apportioned will be required to truly address natural resources damages and about the potential for logrolling among the Trustees. In other words, State A might be more than happy to approve questionable projects proposed by State B under the *quid pro quo* assumption of reciprocal support.

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[5] http://dels.nas.edu/Study-In-Progress/Effects-Deepwater-Horizon-Mississippi/DELS-OSB-10-02

To avoid just such problems, the Oil Spill Commission recommended appointing an independent scientific auditor or review board to ensure that projects are authorized on the basis of their ability to mitigate actual damages caused by the spill. A scientific audit could also independently evaluate the degree to which the Natural Resource Damage Offsets for these projects are measured, calculated and documented using best available science as required under 15 C.F.R. Part 990. By the same token, implementing the Commission's recommendation concerning monitoring of the affected resources and the effectiveness of restoration projects would help improve the design and outcomes of subsequent NRDA restoration efforts.

Comprehensive Ecosystem Restoration

As I mentioned earlier, the impacts of the Deepwater Horizon oil spill come on top of longer-term degradation of important habitats and resources of the northern Gulf of Mexico, including loss of coastal wetlands, recurrent hypoxia (commonly referred to as the Dead Zone), and over-fished populations and endangered species. Taking note of the need to restore this ecosystem and improve its resilience to future oil spills and other insults, the Oil Spill Commission identified the need for a long-term restoration effort that is well funded, scientifically grounded and responsive to regional needs and public input. Our recommendations in this regard are consistent with those of the report to the President by Secretary of the Navy Ray Mabus entitled *America's Gulf Coast: A Long-Term Recovery Plan after the Deepwater Horizon Oil Spill*[6]. Specifically the Oil Spill Commission recommended that Congress should dedicate 80 percent of the Clean Water Act penalties in long-term restoration of the Gulf of Mexico and that Congress and federal and state agencies should build the organizational, financial and public outreach capacities needed to put the restoration effort on a strong footing. As I am sure members of this subcommittee are aware, the President has subsequently created the Gulf Ecosystem Restoration Task Force, chaired by EPA Administrator Lisa Jackson, to coordinate intergovernmental (both federal and state) efforts to improve the efficiency and effectiveness in the implementation of Gulf Coast ecosystem restoration actions and present a Gulf of Mexico Regional Ecosystem Restoration Strategy, due in October, 2011.

Unfortunately, it appears that legislation to dedicate the Clean Water Act penalties to a restoration fund and establish a Gulf Coast Ecosystem Restoration Council to administer it is stalled in Congress, in part because a lack of consensus among Gulf state members over the scope of permissible use of these funds and, once again, allocations among the states. The Oil Spill Commission deliberated quite a bit on these questions and recommended that it was only compelling from a national perspective if the application of these funds was limited to ecosystem

[6] http://www.restorethegulf.gov/sites/default/files/documents/pdf/gulf-recovery-sep-2010.pdf

restoration as opposed to economic development projects or even scientific research and monitoring other than needed to support ecosystem restoration. We argued that the criteria for selecting projects for funding include: (1) national significance; (2) contribution to achieving ecosystem resilience; and (3) the extent to which national policies such as related to flood control, oil and gas development, agriculture and navigation, directly contributed to the environmental problem that requires redress.

To provide the maximize effectiveness, advance transparency and enhance credibility, the Commission recommended the establishment of a Gulf Coast Ecosystem Restoration Science and Technology Program, supported by the restoration fund, that would guide and ensure the restoration effort in three ways: (1) by creating a scientific research and analysis program that is operated to support the design of scientifically sound restoration projects; (2) by creating a scientific panel to evaluate restoration plans for technical effectiveness and consistency with the comprehensive restoration strategy; and (3) by supporting adaptive management based on monitoring of outcomes.

This concludes my testimony, Mr. Chairman. I am privileged to appear before you today and happy to address any questions the members of the Subcommittee may have.

Senator CARDIN. Thank you, Dr. Boesch.

Dr. Leinen.

STATEMENT OF MARGARET LEINEN, VICE-CHAIR, GULF OF MEXICO RESEARCH INITIATIVE REVIEW BOARD; EXECUTIVE DIRECTOR, HARBOR BRANCH OCEANOGRAPHIC INSTITUTE; ASSOCIATE PROVOST FOR MARINE AND ENVIRONMENTAL INITIATIVES, FLORIDA ATLANTIC UNIVERSITY

Ms. LEINEN. Thank you, Mr. Chairman and Members of the Subcommittee.

My name is Margaret Leinen. I am the Vice Chair of the Gulf of Mexico Research Initiative Review Board. I am also Associate Provost for Marine and Environmental Initiatives at Florida Atlantic University and Executive Director of Harbor Branch Oceanographic.

My remarks today were prepared by Dr. Rita Caldwell of the Gulf of Mexico Research Initiative and one of your constituents, Senator Cardin.

In May, 2010, BP committed $500 million over a 10-year period to create an independent research program to study the impacts of the Deepwater Horizon oil spill on the Gulf of Mexico. The program, known as the Gulf of Mexico Research Initiative, or GRI, is directed by an independent research board. The research board is responsible for identifying the research priorities, preparing requests for proposals, enabling an open and transparent process for review, selecting proposals for funding based on that review, and reviewing annual progress for continuation of funding.

Although the GRI was announced in 2010, it was not until March 14, 2011 that the master research agreement was signed. That agreement between BP and the Gulf of Mexico Alliance provides the operational structure for the GRI.

As stated in that master research agreement, the GRI is an independent scientific research program and is separate from the natural resources damages assessment process, and BP agrees that the participation of the Alliance in this agreement shall not result in a credit against or defense to any claims for natural resource damages or assessment costs. So we are independent of NRDA.

The objectives of GRI are to study the impacts of the oil, dispersed oil, and dispersant on the ecosystems of the Gulf of Mexico and affected Gulf States in a very broad context of fundamental understanding of the dynamics of these events, the associated environmental stresses, and public health implications.

The GRI will also support the development of improved oil spill mitigation, oil and gas detection characterization, and remediation technologies.

Ultimately, the goal is to improve society's ability to understand and respond to events like this and to understand the effects on coastal ecosystems, with an emphasis on Gulf of Mexico.

We have establish and are implementing peer-reviewed competitive grant programs to support research that advances this understanding in five areas: first, physical distribution, dispersion and dilution of petroleum, its constituents and associate contaminants such as dispersants under the action of physical oceanographic processes, air-sea interaction and tropical storms.

Second, the chemical evolution and biological degradation of petroleum dispersant systems and their subsequent interaction with coastal, open ocean and deep water ecosystems. Third, environmental effects of the petroleum dispersant system on the sea floor, water column, coastal waters, beach sediments, wetlands, marshes and organisms, the science of ecosystem recovery.

Fourth, technology developments for improved response, mitigation, detection, characterization and remediation associated with oil spills and gas releases. And fifth, fundamental scientific research, integrating results from the four other themes in the context of public health.

The Research Board has released two requests for proposals, which we call RFP–1 and RFP–3. We anticipate issuing another request for proposal later this year. The first of these, RFP–1, was announced on April 25th of this year. Through this program, a minimum of $37.5 million per year will fund approximately four to eight research consortia to study the effects of the Deepwater Horizon incident.

It is anticipated that each grant will be for up to 3 years and will range between $1 million and $7.5 million per year. The research will be conducted through these consortia and must address one or more of the five areas that we have described. The proposals are being accepted until the 11th of July and we anticipate announcing the results of this competition August 30th.

The second RFP will be for funding smaller research teams. It will focus on individual investigators with up to three co-principal investigators; a maximum of $7.5 million per year will be available for those grants.

And earlier this year, the Research Board recognized the need to provide short-term or emergency funding to sustain some data collection that had already begun over the summer. On June 7th, we announced the availability of $1.5 million of emergency funding, and are conducting an expedited review of proposals that we have received. We anticipate announcing the results of that competition at the end of this week.

So the GRI supports research that contributes to our understanding of how the Gulf of Mexico was influenced by the Deepwater Horizon oil spill and how this rich and dynamic environment is recovering. This information will undoubtedly be useful and informative to the NRDA program and we expect it to provide valuable insight for the long-term analysis of ecosystems since it lasts for 10 years.

Thank you very much for the opportunity.

[The prepared statement of Ms. Leinen follows:]

Prepared Testimony:

Gulf of Mexico Research Initiative Research Board
Dr. Margaret S. Leinen, Vice Chairman, on behalf of Dr. Rita R. Colwell, Chairman

For:

Senate Committee on Environment and Public Works
Subcommittee on Water and Wildlife

Hearing:

Status of the Deepwater Horizon Natural Resource Damage Assessment

June 28, 2011

Mr. Chairman and members of the subcommittee, thank you for the opportunity to appear before you today to discuss the work of the Gulf of Mexico Research Initiative.

My name is Dr. Margaret S. Leinen and I am Vice Chairman of the Gulf of Mexico Research Initiative Research Board. I am also the Associate Provost for Marine and Environmental Initiatives at Florida Atlantic University and the Executive Director of Harbor Branch Oceanographic Institute in Florida. Today, I would like to present remarks prepared by Dr. Rita R. Colwell, Chairman of the Gulf of Mexico Research Initiative Research Board.

About the Gulf of Mexico Research Initiative

In May 2010, BP committed $500 million over a 10-year period to create an independent research program to study the impacts of the Deepwater Horizon oil spill on the Gulf of Mexico. The program, known as the Gulf of Mexico Research Initiative, or GRI, is directed by an independent Research Board.

The Research Board is responsible for identifying research priorities, preparing requests for proposals, enabling an open and transparent peer-review process, selecting proposals for funding, and reviewing annual progress for continuation of funding.

Although the GRI was announced in 2010, it was not until March 14, 2011 that the Master Research Agreement was signed. The Master Research Agreement between BP and the Gulf of Mexico Alliance provides the operational structure for the GRI.

As stated in the Master Research Agreement, "The GRI is an independent scientific research program and is separate from the Natural Resources Damages Assessment process, and BP

agrees that the participation of the Alliance in this agreement shall not result in a credit against or defense to any claims for natural resource damages or assessment costs."

The objectives of the GRI are to investigate the impacts of the oil, dispersed oil, and dispersant on the ecosystems of the Gulf of Mexico and affected Gulf Coastal States in a broad context of improving fundamental understanding of the dynamics of such events, the associated environmental stresses, and the public health implications. The GRI will also support the development of improved spill mitigation, oil and gas detection, characterization, and remediation technologies.

Ultimately, the goal of the GRI is to improve society's ability to understand and respond to the impacts of petroleum pollution and related stressors of the marine and coastal ecosystems, with an emphasis on conditions in the Gulf of Mexico.

Achieving the Goal

The GRI has established and is implementing peer-reviewed, competitive grant programs that will support research that advances our understanding in the following five areas.

1. Physical distribution, dispersion, and dilution of petroleum, its constituents, and associated contaminants, such as dispersants, under the action of physical oceanographic processes, air–sea interactions, and tropical storms.

2. Chemical evolution and biological degradation of the petroleum/dispersant systems and subsequent interaction with coastal, open-ocean, and deep-water ecosystems.

3. Environmental effects of the petroleum/dispersant system on the sea floor, water column, coastal waters, beach sediments, wetlands, marshes, and organisms; and the science of ecosystem recovery.

4. Technology developments for improved response, mitigation, detection, characterization, and remediation associated with oil spills and gas releases.

5. Fundamental scientific research integrating results from the other four themes in the context of public health.

The Research Board has released two requests for proposals, RFP-I and RFP-III. The Research Board anticipates issuing another request for proposals, RFP-II, later this year.

Proposals received in response to these RFPs will be evaluated in a manner similar to that used by the National Science Foundation.

RFP-I

On April 25, 2011, the GRI announced the release of RFP-I. Through this program, a minimum of $37.5 million per year will fund approximately four to eight Research Consortia to study the

effects of the Deepwater Horizon incident on the Gulf of Mexico. It is anticipated that each grant will be for up to three years and will range between $1 million and $7.5 million per year. The research that will be conducted through these Consortia must address one or more of the five areas previously described.

A Consortium will involve four or more universities, institutions, or independent organizations. A Research Consortia shall consist of research institutions in the Gulf Coast States, provided that institutions outside of the Gulf Coast States may be members of or participate in partnerships with such Consortia.

Proposals for RFP-I funding are being accepted until July 11th. The Research Board anticipates announcing the funded Consortia on August 30th.

RFP-II

The Research Board has identified a need to fund smaller research teams. Thus, a second grant program, RFP-II, is being developed. This effort will award grants that focus on activities involving less money and less internal management than a Research Consortia. These grants will fund efforts involving a principal investigator, but may include co-principal investigators from up to three additional institutions. This research will focus on the same five themes described in RFP-I. A maximum of $7.5 million per year will be available for RFP-II grants.

RFP-III

Earlier this year, the Research Board recognized the need to provide short-term or emergency funding to sustain some data collection efforts this summer. Thus, on June 7th, the GRI announced the availability of funds under a new grant program, RFP-III. One might think of RFP-III as "emergency funding." The Research Board will conduct expedited review and allocation of grant funding to support the acquisition of samples and critical observations. RFP-III will provide support for sampling from July 1 to September 30, 2011.

Applications for funding under RFP-III were accepted until June 17, 2011. The Research Board is in the process of reviewing these applications and we anticipate announcing the funding decisions this week. Roughly $1.5 million will be provided under this program.

Conclusion

The GRI supports research that contributes to our understanding of how the Gulf of Mexico was influenced by the Deepwater Horizon oil spill and how this rich and dynamic environmental system is recovering. This information will undoubtedly be useful and informative to the Natural Resources Damage Assessment program. The GRI is expected to provide valuable insight from the long term analysis of the ecological system of the Gulf of Mexico.

Senator CARDIN. Thank you very much, Dr. Leinen.
Dr. Rifkin.

STATEMENT OF ERIK RIFKIN, INTERIM EXECUTIVE DIRECTOR, NATIONAL AQUARIUM CONSERVATION CENTER, NATIONAL AQUARIUM

Mr. RIFKIN. Good morning, Chairman Cardin, Ranking Member Sessions and remaining Members of the Subcommittee. Thank you very much for inviting me to testify today.

On July 27th of 2010, approximately 1 year ago, the National Aquarium was invited to testify before this Senate Subcommittee on a hearing titled Assessing Natural Resource Damages Resulting from the BP Deepwater Horizon Disaster.

At that time, I emphasized the importance of independent research to address concerns related to our ability to accurately quantify potential chronic damages to natural resources in the Gulf. The rationale for this view was and still is based on the concern that the current NRDA process is not using a methodological approach which adequately measures small quantities of petroleum contaminants which could have chronic impacts on aquatic biota. And this is important because small amounts of contaminants in the water and in the sediment porewater through a process called bioconcentration or biomagnification can increase exponentially in aquatic flora and fauna.

More specifically, my testimony and the written testimony of the other researchers on the panel at that time suggested that devices called passive diffusers can be used to measure low levels of petroleum in order to accurately characterize ecological risks and impacts.

Since the last hearing, as Senator Cardin mentioned earlier, the National Aquarium Conservation Center, in collaboration with the Mote Marine Laboratory and Johns Hopkins University, has deployed sophisticated petroleum contaminant samples as deployed by the USGS well over a decade ago, using semi-permeable membrane devices, the acronym for which is SPMDs. These devices function as virtual fish and provide unparalleled time-integrated data on low levels of petroleum contaminants in the water column and sediment porewater, data necessary for assessing potential chronic impacts.

By using the SPMDs, we were able to level low levels of individual PAHs, these are organic pollutants found in petroleum, in the water column and in the porewater in areas impacted by the BP spill. Our preliminary findings support the contention that data obtained by these devices when incorporated into bioconcentration models, will provide a far more accurate assessment of the nature and extent of chronic damages in the Gulf than the standard approach of using grab samples for water and sediment.

Our samples came from impacted areas off the coasts of Louisiana, Mississippi, Alabama and Florida. A number of months ago, we had an opportunity to meet with representatives from the Environmental Protection Agency so that we could share our preliminary results with the agency and obtain advice and guidance from their research scientists.

At our meeting and subsequent conference calls, EPA scientists support the view that there was value in using these passive diffusers to monitor levels of these so-called PAHs. Incorporating EPA's technical suggestions, we refined our method and once again deployed these devices in Barataria Bay, which is in Louisiana, as you all know. The results from this recent effort should provide values which can be used to model the bioconcentration of contaminants in the food chain, provide empirical data which can be used in bio-assays to assess and quantify chronic damages, and reduce the level of uncertainty when assessing chronic damages from exposure to oil from the BP spill.

The ramifications of our findings should not be underestimated. To date, the vast majority of water and sediment grab samples obtained for the NRDA have resulted in PAH concentrations being reported as ND or non-detect. That is, below the analytical detection limit. Non-detect equates to zero.

So the assumption has been made that there are insignificant damages to natural resources from the released PAHs. However, the PAH values below detection and predetermined benchmark values from grab samples doesn't mean that PAHs are absent or present at levels which are not harmful.

The NRDA protocols reports the use of benchmark values as the basic determinant for whether concentrations of PAHs and other contaminants constitute an ecological risk. However, benchmarks are only meant to be used for screening purposes only. They are not regulatory standards or criteria. Benchmarks cannot be validated for all sites and situations. They can be defended only in terms of regulatory precedent.

And while EPA and other agencies provide broad guidelines for the assessment of benchmark end-points, specific end-points are not identified. A meaningful NRDA must be able to incorporate empirical data in economic models in order to accurately assess chronic damages and injury to natural resources in the Gulf. This perspective should certainly apply here, given the magnitude and scope of this oil spill.

In light of our preliminary findings, there are reasons to give serious consideration to expanding the use of these diffusers in impacted areas of the Gulf as soon as possible. This will increase our ability to assess causality between the release of oil and injured resources and/or lost human use of those resources and services.

I thank you very much for your time.

[The prepared statement of Mr. Rifkin follows:]

Status of the Deepwater Horizon Natural Resource Damage Assessment

Written Testimony of
Erik Rifkin, PhD
Executive Director
National Aquarium Conservation Center
National Aquarium
Testimony before the Senate Committee on Environment and Public Works
Subcommittee on Water and Wildlife
Washington, DC

July 28, 2011

Submitted on June 23, 2011

Attached please find the written testimony of Erik Rifkin, PhD.

QUANTIFYING CHRONIC DAMAGES TO NATURAL RESOURCES IN THE GULF RESULTING FROM THE BP SPILL:

AN INDEPENDENT STUDY

Erik Rifkin, PhD
Executive Director
National Aquarium Conservation Center
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Professor Edward Bouwer
Director, Center for Contaminant Transport, Fate and Remediation
Geography and Environmental Engineering
Johns Hopkins University
Baltimore MD

Yongseok Hong, Post-doctoral scholar
Johns Hopkins University
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Dana L. Wetzel, PhD
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Mote Marine Laboratory
Sarasota, Florida

June 28, 2011

PREFACE

Approximately one year ago (July 27, 2010), the National Aquarium was given the opportunity to provide the Senate Subcommittee on Water and Wildlife written and oral testimony at a hearing on "Assessing Natural Resource Damages Resulting from the BP *Deepwater Horizon* Disaster". At that time, we emphasized the importance of independent research when attempting to quantify potential chronic damages to natural resources in the Gulf resulting from exposure to petroleum from the BP spill. The rationale for this view was, and still is, based on the concern that the NRDA process is not using a methodological approach which adequately measures small quantities of petroleum contaminants which could have chronic impacts on aquatic biota.

More specifically, the National Aquarium's testimony, and the testimony of the other independent researchers on the panel, suggested that passive diffusers be used to measure low levels of petroleum in order to accurately characterize ecological risks. Since the last hearing, the National Aquarium Conservation Center (NACC), in collaboration with Mote Marine Laboratory and Johns Hopkins University, has conducted research designed to provide concerned government agencies and others with data necessary to quantify chronic damages to natural resources in the Gulf. The findings from this independently funded study will be readily available to interested parties, including Gulf communities directly impacted by this oil spill.

Our research involves the deployment of sophisticated petroleum contaminant samplers, developed by the USGS, called semi-permeable membrane devices (SPMDs). These devices function as "virtual" fish and provide unparalleled, time integrated data on levels of petroleum contaminants in the water column and sediment porewater (interstitial water found in sediment) necessary for assessing potential chronic impacts. Data will be integrated into bioconcentration and bioaccumulation

models in order to more clearly understand the fate and transport of petroleum contaminants in aquatic organisms.

By using SPMDs, we were able to obtain empirical data on levels of individual PAHs (organic pollutants found in petroleum) in the water column and porewater in areas impacted by the BP spill. Our findings support the contention that data obtained from SPMDs, when incorporated into bioconcentration models, will provide a far more accurate assessment of the nature and extent of chronic damages in the Gulf than the standard approach of collection and analysis of grab samples of water and sediment.

The ramifications of our findings should not be underestimated. The ability to measure levels of potentially toxic PAHs in the water column and sediment porewater at specific sites is a necessary prerequisite to accurately quantifying chronic damages to natural resources.

Following the July 27, 2010 Senate Subcommittee hearing, a meeting was arranged with representatives from EPA so that we could share our preliminary findings with the Agency and obtain advice and guidance from their research scientists. At our meeting and in subsequent discussions, EPA scientists supported the use of passive diffusers to monitor levels of PAHs in the water column, sediment and sediment porewater. They acknowledged the benefits of these devices to measure low concentrations of contaminants which, because of bioconcentration, could result in adverse impacts.

A meaningful NRDA must be able to incorporate robust data into economic models in order to accurately quantify chronic damages and injury to natural resources in the Gulf. In light of our findings, there are reasons to give serious consideration to expanding the use of passive diffusers in impacted areas of the Gulf as soon as possible. This will increase our ability to assess causality between the release of oil and injured resources and/or lost human use of those resources and services.

We look forward to the opportunity to provide you with an update of our findings.

I Goals and Objectives

This independent research involves the use of passive samplers to monitor PAH concentrations in water, sediment porewater and sediment in the Gulf of Mexico in order to quantify site-specific, chronic damages to natural resources. The research team consists of three institutions: the National Aquarium Conservation Center (NACC) (Baltimore, MD), Johns Hopkins University (Baltimore, MD) and Mote Marine Laboratory (Sarasota, FL.).

Our goal is to use passive samplers, such as semi-permeable membrane devices (SPMDs) and polyethylene (PE) tubing, to monitor the PAH concentrations in water and sediment porewater respectively, impacted by the *Deepwater Horizon* oil spill. These passive samplers are considered to be an innovative approach in measuring time integrated ng/L levels in situ.

The monitoring results will be archived and shared with all interested stakeholders, researchers and regulators. Our plans are to incorporate the measured values into mathematical models to study bioconcentration and bioaccumulation of PAHs in the Gulf of Mexico ecosystem impacted by the oil spill.

In addition, the measured PAH levels in water and sediment porewater can be used as base line concentrations, which will assist other researchers in conducting a variety of bioassays designed to assess the sublethal toxicity of PAHs and to generate new benchmarks for evaluating possible chronic damages.

II Summary Description of the Proposed Work

We propose a comprehensive approach to characterizing the existing petroleum (PAHs) levels in oil spill impacted areas in the Gulf of Mexico. We will collect data on petroleum levels (specifically focused on PAHs and their homologues) from the water column, sediment porewater, and sediments. In addition, sediment dwelling benthic organisms

which comprise the basis of the foodweb and commercially important organisms, such as redfish, shrimp, oysters, and finfish, will be collected and analyzed to measure bioaccumulated PAHs. The proposed monitoring study particularly suggests using passive samplers, such as semi-permeable membrane devices (SPMDs) and lipid free polyethylene (PE) tubing to measure time integrative PAHs in water and sediment porewater in-situ [1].

Although grab sampling has been traditionally used in this NRDA, that method of sampling provides information on the concentrations of PAHs only during one point in time or a relatively brief interval of time, which is in marked contrast to the exposure duration of most organisms. Moreover, grab sampling methods suffer from potential problems with sample preservation, and the method quantification limits are not adequate for the analysis of environmentally relevant (ng/L) levels of PAHs in water. These relatively low levels of quantification are especially needed for assessing the chronic damages to the natural resources in the Gulf of Mexico.

These difficulties can be minimized by using SPMDs and lipid free PE tubing which can provide a more time integrative measure and improve the ability to detect the low concentrations of PAHs in aqueous environments. The SPMD is one of the most studied and widely used passive sampler for determining water column concentrations [2], and the research team has experience and data sets on PAH occurrence from the use of SPMDs in the Gulf of Mexico, which were obtained with seed funding from the NACC.

SPMDs have severe limitations for measuring sediment porewater concentration, so lipid free PE tubing will also be used to better estimate porewater PAH concentrations [3, 4]. It is important to know sediment porewater PAH levels as they are a better indicator of the bioavailable fraction of PAHs than total sediment concentrations [5].

The passive samplers will be deployed in aquatic environments for several weeks, and PAHs will accumulate in the adsorbing materials of the devices. The samplers will be retrieved and be transported to the laboratory to extract and determine the accumulated PAHs using analytical instruments, such as GC-MS. The water and sediment porewater PAH concentrations can be estimated from the accumulated PAHs with strict QA/QC,

such as estimation of sampling rates using performance reference compounds (PRCs) and mathematical models considering ancillary parameters, such as temperature, dissolved organic carbon and salinity.

III The Value of the Obtained Data

After the Deepwater Horizon oil spill, one of the primary responses from federal and state regulatory agencies, for the natural resource damage assessment, has been collecting water and sediment grab samples and analyzing concentrations of PAHs. The water PAH levels have been directly compared to benchmarks, such as the final chronic value (FCV) derived from the National Water Quality Criteria (WQC) guidelines [6]. The PAH levels in sediment porewater were estimated from the sediment PAH concentrations using equilibrium partitioning theory (EqP) [7, 8]. These values were then compared to the benchmarks, assuming that porewater PAH values are the best estimate of toxicity and bioavailability. So far, most of the grab samples have revealed concentrations below the analytical detection limit, so the assumption is made that there are insignificant damages to the natural resources from the released PAHs [9].

However, PAH values below non-detect and predetermined benchmark values doesn't mean that PAHs are absent or present at levels which are not harmful. The benchmarks are meant to be used for screening purposes only. They are not regulatory standards, site-specific cleanup levels, or remediation goals, and only help the public understand the condition of the environment as it relates to the oil spill.

We have learned valuable lessons from the Exxon Valdez spill with regard to long-term effects on the populations of aquatic organisms [10]. Persistent effects of toxicant exposures were evident in certain species of fish and sea birds and in sea otters, with a notable and persistent decline in some species over the years due to increased mortality, lower growth rates, decreased reproduction and compromised immune function. We observed significant residual oil in the Barataria Bay (LA) from the oil spill during our recent field experiment in May 2011(see Figure 1).

For more accurate quantification of the chronic damages to the natural resources in the Gulf of Mexico, it is necessary to monitor the PAH levels in a more robust way rather than continuing to collect grab samples and reporting non-detect (ND) values. The data obtained from the passive samplers can be used in a variety of ways in quantifying chronic damages to the Gulf of Mexico ecosystems. For example, the bioaccumulation and toxicity of PAHs to benthic organisms can be updated by a direct measurement of porewater PAHs using the passive sampling techniques [5]. The data can further be used to evaluate biomagnification of PAHs through trophic transfer using process based bioaccumulation models [11].

In addition, the values can be used as a baseline concentration to conduct both acute and chronic toxicity studies involving the shellfish and finfish species that are important to the Gulf of Mexico, as well as using the Zebrafish model. Hence, the data we will obtain can be used to evaluate the site and species responsive to a variety of toxic thresholds of PAHs in the Gulf of Mexico ecosystem. We anticipate that several other research institutions will conduct toxicity tests to study organisms' physiological processes at the cellular level (genes and their transcripts and expression products, such as proteins and hormones) and whole animals. Such toxicity tests will provide us with information on the effects of dispersed oil on early developmental processes, muscle/skeletal development, growth, immune systems and reproductive processes.

IV. General Work Plan

We have deployed our passive sampler (SPMDs) and collected organisms with seed funding from the NACC in a few locations, such as Terrebone Bay (LA), Barataria Bay (LA), Jose Bay (MS), Perdido Bay (FL), and Cotton Bayou (AL), to measure PAH levels in water and sediment porewater. The locations of these past sampling efforts are delineated in Figure 2.

Additional funding will allow us to conduct a more comprehensive study in the areas sampled and provide a much more accurate assessment of natural resource damages.

We envision an additional 50 sampling locations including several impacted commercial and recreational fishing zones.

Our team has expertise in risk communication. We plan to meet with local community groups located in the Gulf of Mexico area that have been impacted by the oil spill to communicate our findings and obtain their feedback. We will hold similar meetings with EPA and other interested stakeholders. To assist with public outreach, we will work with the Baltimore Aquarium to develop an exhibit on the Gulf of Mexico oil spill.

We have already been monitoring PAHs for the past year with NACC seed funding in more than 40 locations in the Gulf of Mexico, which are shown in Figure 2. Some of the preliminary data on the PAH concentrations are available in Figure 3. Generally, SPMDs showed far greater sensitivity in measuring 'ng/L' levels of dissolved PAHs in the water column and sediment porewater than grab sampling techniques. Once the data from these different matrices are determined, a model of bioavailability and bioaccumulation will be developed for petroleum contamination. We have the capability to develop process and probability based mathematical models to better understand the underlying processes and to synthesize and interpret experimental observations.

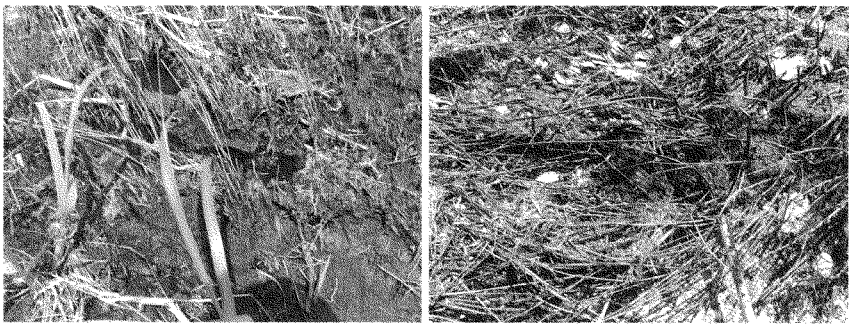
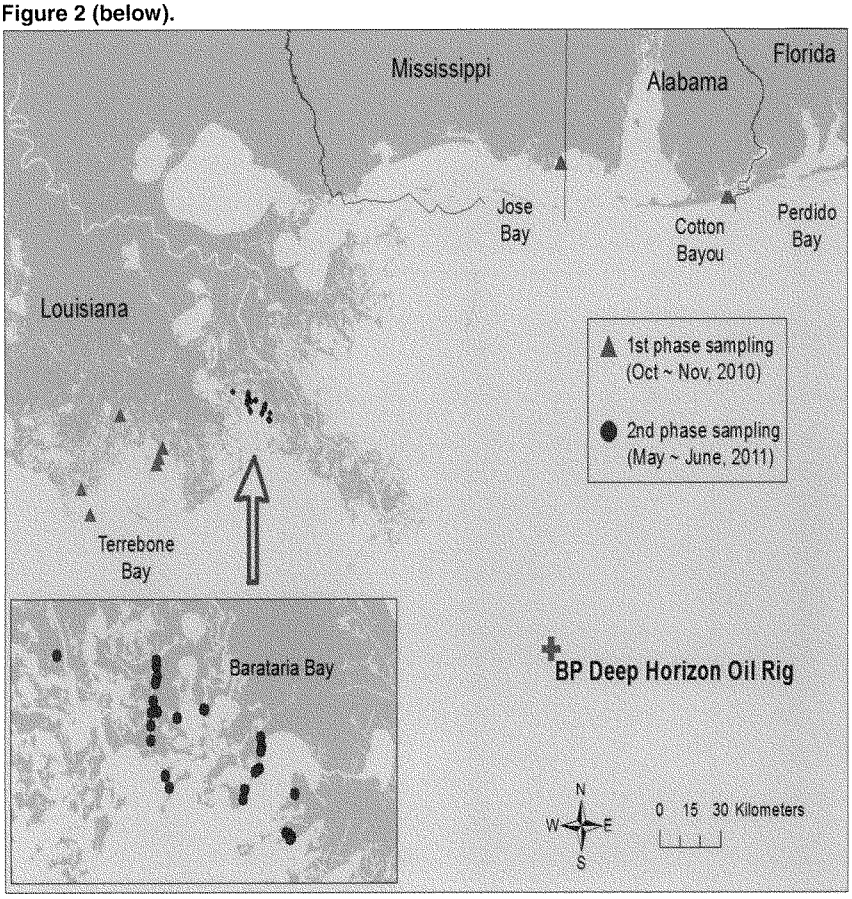
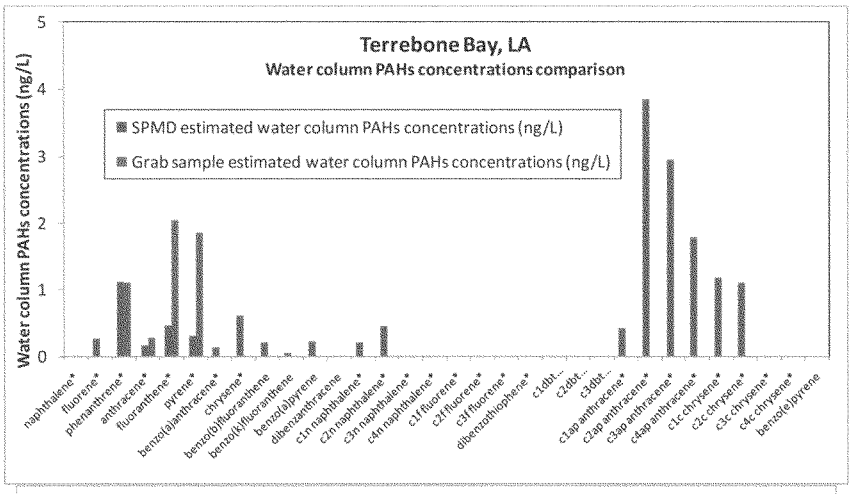
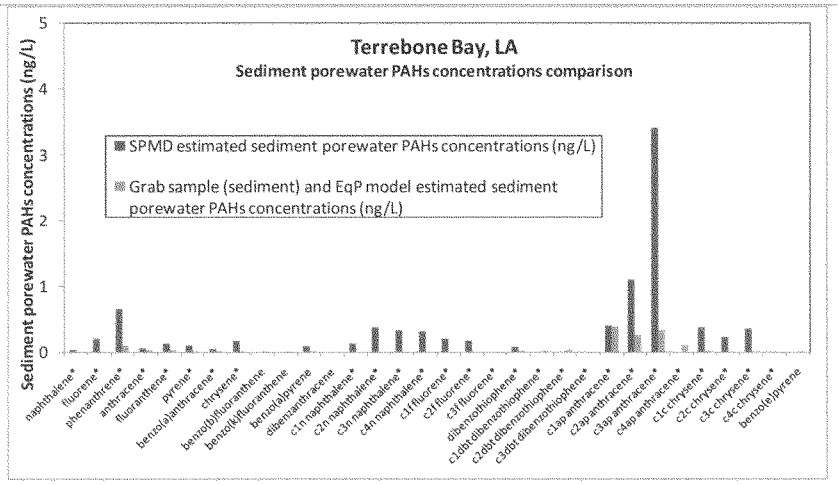


Figure 1. Weathered visible oils in Barataria Bay, Louisiana. The pictures were taken during the 2nd phase passive sampler (SPMDs) deployment and sediment/water grab sampling for PAH analysis (May 14th – 15th, 2011).

Figure 2 (below).




Terrebone Bay, LA
Water column PAHs concentrations comparison
Water column PAHs concentrations (ng/L)
SPMD estimated water column PAHs concentrations (ng/L)
Grab sample estimated water column PAHs concentrations (ng/L)
0
1
2
3
4
5
naphthalene*
fluorene*
phenanthrene*
anthracene*
fluoranthene*
pyrene*
benzo(a)anthracene*
chrysene*
benzo(b)fluoranthene
benzo(k)fluoranthene
benzo(a)pyrene
dibenzanthracene
c1n naphthalene*
c2n naphthalene*
c3n naphthalene*
c4n naphthalene*
c1f fluorene*
c2f fluorene*
c3f fluorene*
dibenzothiophene*
c1dbt...
c2dbt...
c3dbt...
c1ap anthracene*
c2ap anthracene*
c3ap anthracene*
c4ap anthracene*
c1c chrysene*
c2c chrysene*
c3c chrysene*
c4c chrysene*
benzo(e)pyrene


Terrebone Bay, LA
Sediment porewater PAHs concentrations comparison
Sediment porewater PAHs concentrations (ng/L)
SPMD estimated sediment porewater PAHs concentrations (ng/L)
Grab sample (sediment) and EqP model estimated sediment porewater PAHs concentrations (ng/L)
0
1
2
3
4
5
naphthalene*
fluorene*
phenanthrene*
anthracene*
fluoranthene*
pyrene*
benzo(a)anthracene*
chrysene*
benzo(b)fluoranthene
benzo(k)fluoranthene
benzo(a)pyrene
dibenzanthracene
c1n naphthalene*
c2n naphthalene*
c3n naphthalene*
c4n naphthalene*
c1f fluorene*
c2f fluorene*
c3f fluorene*
dibenzothiophene*
c1dbt dibenzothiophene*
c2dbt dibenzothiophene*
c3dbt dibenzothiophene*
c1ap anthracene*
c2ap anthracene*
c3ap anthracene*
c4ap anthracene*
c1c chrysene*
c2c chrysene*
c3c chrysene*
c4c chrysene*
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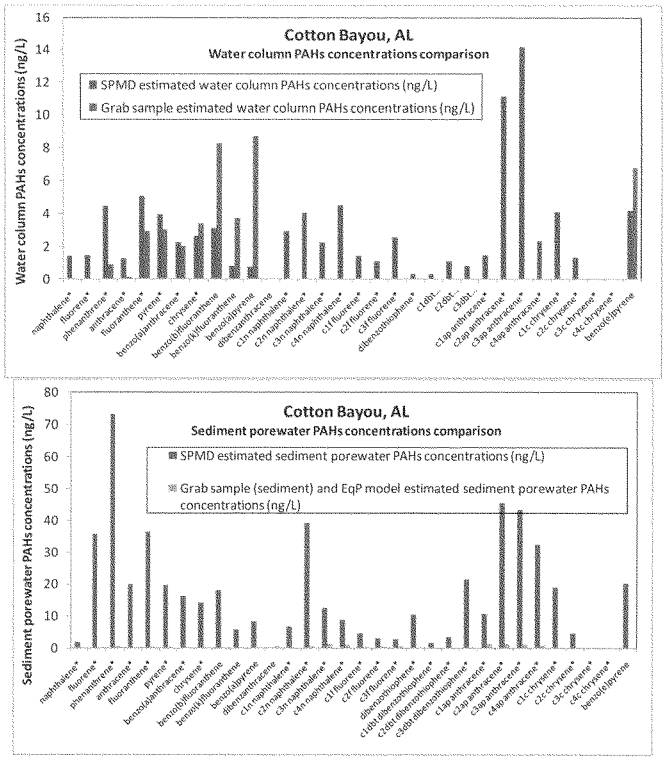

Figure 3. Comparison of PAH concentrations estimated by SPMDs and grab samples in water column and sediment porewater. The models described in Huckins et al. (2006, [2]) were used to estimate water concentrations from SPMD data. Sediment porewater PAH levels for the grab sampling technique were estimated from measuring PAH concentrations in sediment and applying equilibrium partitioning model ($q_s = f_{oc} K_{oc} C_{aq}$), where q_s is the sediment phase PAH concentration, f_{oc} is organic carbon fraction (~ 1 %), K_{oc} is the organic carbon partition coefficient ($\log K_{oc} = 0.903 \log K_{ow} + 0.094$, Baker et al., 1996. Water Environ Res.

V Background

When BP's Deepwater Horizon (DWH) oil platform exploded on 20 April, 2010, it catalyzed the most extensive oil spill response in United States history. That response has largely been governed by the provisions of the Oil Pollution Act of 1990 (OPA-90). OPA-90, in turn, was triggered and shaped by the consequences of the Exxon Valdez oil spill in March 1989, which was the largest US oil spill up until that time.

The response to DWH was substantial, but not without controversy. Although federal agencies charged with responding to the DWH disaster, as well as BP, have suggested that the spill was handled effectively and that short and long-term consequences have largely been mitigated, evidence suggests that chronic ecological impacts still remain.

The Deepwater Horizon oil spill had significant adverse consequences for certain coastal habitats and communities. Reports of those consequences vary considerably, depending on the source. That inconsistency is certainly frustrating to the people living in coastal communities whose health and livelihoods have been affected, but the frustration is exacerbated by a lack of transparency and meaningful involvement of those very communities.

Although scientists and managers learned valuable lessons from the Exxon Valdez spill with regards to short-term effects on the ecosystem, people are still trying to understand long-term population effects on the organisms within those affected areas. Peterson et al. 2003 reviewed the long-term effects of the Valdez spill and noted that chronic exposures persist years after an oil spill, particularly in sediments. Persistent effects of toxin exposures were evident in certain species of fish and sea birds and in sea otters, with a notable and persistent decline in some species over the years due to increased mortality, lower growth rates, decreased reproduction and compromised immune function.

Indirect effects on communities in Prince William Sound were also substantiated from the exposure to oil and were considered as important through direct trophic interactions. Probably one of the most important lessons learned from the Exxon Valdez spill was a significant change in perceptions regarding oil ecotoxicology.

The old paradigms included the beliefs that:

a) oil on shorelines will be rapidly degraded microbially and by exposure to the sun;
b) oil effects on fish are short term and arise from only the volatile fraction of oil;
c) impacts on birds and marine mammals occur solely through coating of fur and feathers resulting in hypothermia, smothering, drowning or ingestion of oil. No long term effects occur; and
d) submerged aquatic vegetation and invertebrates will be affected in the short term due to mortality from exposure to oil.

The emerging appreciation is quite different and includes the following:

a) oil degradation rates depend upon conditions in specific environments and biologically meaningful contamination may occur for years or decades;
b) long-term exposure of fish embryos can have population level consequences through impaired growth, deformities, reduced reproduction and behavioral changes;
c) effects of oil exposure on marine mammals and sea birds may compromise health and reproduction, and synergistically magnifies effects of other environmental stressors with severe consequences; and
d) clean-up attempts (physical or chemical) can be more damaging than the oil itself by interfering with biological interactions within communities, thereby delaying recovery.

VI. Details of Approach:

Traditional approaches approved by the EPA and the NRDA process to sampling environments affected by oil have involved analysis of water column samples (by simply using a water grab sample) and sediments (using a grab sampler that fails to distinguish between contaminants in pore water, where they are most available to benthic organisms, and contaminants bound to sediments themselves).

The experimental design for this project will result in a reduction of uncertainty when quantifying chronic damages (e.g., risks, impacts) to natural resources which have occurred as a result of exposure to BP oil (Figure 4). There is currently a lack of consensus, when using generic ecotoxicological benchmarks, on what organisms should be protected and what level of protection should be achieved. Although EPA and other agencies provide broad guidelines for the assessment of benchmark endpoints, specific endpoints are not identified. Benchmarks cannot be validated for all sites and situations. They can be defended only in terms of regulatory precedent.

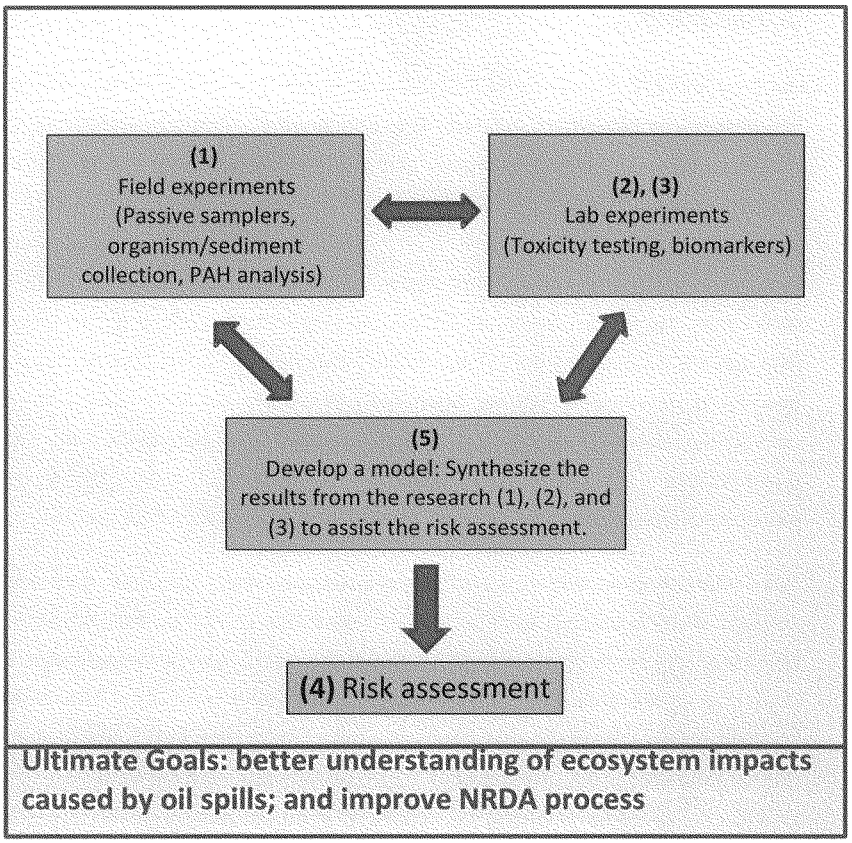

Figure 4 provides a simple flow diagram summarizing the scientific research that would form the underpinnings of our proposed study.

A. Sampling:

We have initiated a more comprehensive approach to defining the existing and future petroleum levels in Barataria Bay and nearby areas. In addition to the traditional sampling, we have already sampled the water column and pore water in those locations using passive diffusers (SPMD's; see below) to collect data on petroleum levels (specifically focused on PAHs). We plan to continue and expand our sample collecting for two more years; we will once again focus on sampling pore-water, the water column, sediments and selected fish, shrimp and benthic filter feeders such as oysters. The precise locations of samples and the range of species to be sampled will be determined in discussions with leaders of the community partners representing fishing organizations. Once the data from these different matrices are determined, a model of bioavailability and bioaccumulation will be developed for petroleum contamination (see below).

The primary proposed method for assessing water column petroleum concentrations is using a semi-permeable membrane device (SPMD) which was developed by Huckins et al. (1990, 1993) to mimic the bioconcentration of organic contaminants without the limitations of using bivalves. The SPMD consists of thin, low-density polyethylene lay-flat tubing filled with 1 g of triolein, a naturally occurring lipid material, and sealed at the ends, with a total surface area of 400 cm^2 placed in a protective housing (Figure 5). When placed in aquatic environments, the SPMD mimics the bioconcentration process of aquatic animals based upon the comparability of its octanol/water partition coefficient, since this membrane device collects hydrophobic organic pollutants from the surrounding area and integrates the

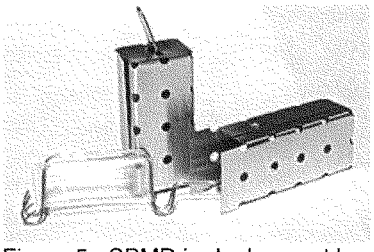

Figure 5. SPMD in deployment housing.

levels over the entire time of exposure (Palowitch 1994, Ellis et el. 1995, Gale 1998). This technique passively replicates the partitioning and accumulation potential found in sentinel organisms while providing consistent availability of a pollution monitoring device without the impediments associated with using live organisms. Possible metabolization and depuration, bias in absorption of contaminants, size, age and sex-related differences influencing body burden and site-to-site variations among bivalves, particularly in highly polluted areas, diminish the utility of using sentinel organisms as ubiquitous monitors in environmental assessment (Buhler and Williams 1989, Prest et al. 1992). Chiou (1985) demonstrated that for a wide variety of organic compounds, a close correlation exists between triolein-water equilibrium partition coefficients (K_{tw}) and octanol-water equilibrium partition coefficients (K_{ow}). The partition coefficient, K, is analogous to the partitioning that occurs from an aqueous phase to an organic solvent in liquid-liquid extraction processes:

$$K = \frac{[\text{analyte in organic solvent}]}{[\text{analyte in water}]}$$

In the case of the partitioning coefficient K_{tw}, the organic solvent is triolein; for K_{ow}, the organic solvent is octanol. It has been shown that a compound's K_{tw} should closely approximate its K_{ow} (Chiou 1985). Since K_{ow} values are large for hydrophobic organic contaminants, the capacity of triolein-containing SPMDs to accumulate these contaminants is correspondingly large (Huckins et al. 1993).

The low-density polyethylene, used to make SPMDs, and gill membranes appears to exhibit similar steric exclusion limits with respect to the uptake of hydrophobic organic contaminants (Lebo et al. 1992). The pore size of the membrane is approximately 10 angstroms, thus excluding contaminants with a larger diameter (Figure 6). Analytes that fall below this size exclusion limit pass through the SPMD and accumulate in the triolein lipid interior of the membrane, and can then be easily extracted and analyzed. By using a sorbent that mimics the lipid/water partitioning that occurs in sentinel organisms, this new tool may potentially provide a consistent and reproducible pollution monitoring method that would overcome several of the disadvantages of using living organisms.

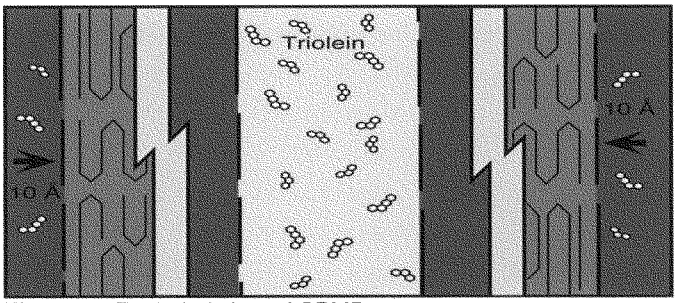

Figure 6. Exploded view of SPMD

All samples will be extracted and analyzed according to standard methods and using gas chromatography-mass spectrometry for ~70 parent and homolog polycyclic aromatic hydrocarbons. We will also conduct analyses for chemicals indicative of the use of Corexit dispersants. Sediment and tissue samples are extracted by pressurized fluid extraction (PFE) according to EPA Method 3545A. Briefly, sediment samples are ground with anhydrous sodium sulfate and packed into a 33mL stainless extraction steel cells. Samples are extracted using a 50% mixture of methylene chloride and acetone using a Dionex 300 ASE system. Samples will be further purified using gel permeation chromatography (GPC). Samples are then analyzed for PAHs on an Agilent 7890A gas chromatograph coupled to an Agilent 5975C mass selective detector (EPA Methods 8260B and

8080). Analyte separation is achieved using a HP-5MS column (30m x 0.250mm x 0.250um; J&W Scientific) with ultrahigh-purity helium as the carrier gas.

After recovery from the field, the SPMDs will be sent to the manufacturer for dialysis and the extracts will be sent back to Mote Marine Laboratory for analysis. A non-exposed SPMD will be retained for both field and lab blanks and analyzed for possible background contamination. All extracts will be analyzed as above.

Additional sediments will be collected with a grab sampler, sieved through a 2mm sieve and stored in glass jars, on ice until analysis.

B. Model Development

PAHs tend to be strongly associated with particulate organic carbon (POC) in sediments, hence sediments have been considered to be a long term source of contaminants after oil spill. Total PAHs in sediments is often used to estimate the bioaccumulation of PAHs to benthic organisms using equilibrium partitioning theory (EqP) (Blerman, 1990). With the EqP, the toxicity of PAHs can be estimated using the narcosis theory and the final chronic value (FCV) derived from the National Water Quality Criteria (WQC) guidelines (USEPA, 2003).
In the proposed modeling study, the bioaccumulation factors and toxicity will be estimated using the data obtained from the field and laboratory experiments.

New FCV will be evaluated based upon sub-lethal toxicity tests. Porewater PAH levels in sediments will be directly estimated from a passive sampler (using PEs) rather than estimating PAHs from total sediment concentrations. From the study, the site specific PAH bioconcentration factors and toxicity in the GOM ecosystems will be evaluated. Since field collected data are likely to have uncertainties, probability based modeling approaches, such as Monte Carlo Simulation, will be conducted to better evaluate and assess the parameters. The values will be compared with current 'Equilibrium Partitioning'.

Bioaccumulation of PAHs

The EqP theory utilizes thermodynamic relations between the POC in sediment, porewater, and lipids in organisms to estimate the distribution of PAHs (Blerman,

1990). The EqP leads to the following biota-sediment accumulation factor (*BSAF*) as a measure of the PAH bioaccumulation potential (McFarland, 1984):

$$BSAF_{sediment} = \frac{q_{lipid}}{q_{oc}} = \frac{q_{organism} / f_{lipid}}{q_{sediment} / f_{oc}} \qquad (1)$$

Here q_{lipid} represents the contaminant lipid-phase concentration of the organism, q_{oc} is the contaminant concentration in the sediment organic matter, $q_{organism}$ is the contaminant concentration in the organism, $q_{sediment}$ is the contaminant concentration in sediment, f_{lipid} is the lipid fraction of the organism, and f_{oc} is the organic carbon fraction in sediment.

More recently, porewater PAH concentrations have been correlated with observed bioaccumulation of PAHs in biota (Lu et al., 2011). The $BSAF_{sediment}$ can be updated by a direct measurement of porewater PAHs using an *in-situ* passive sampler.. The corresponding equation for $BSAF_{porewater}$ is as follows:

$$BSAF_{porewater} = \frac{q_{organism} / f_{lipid}}{K_{oc}\, C_w} \qquad (2)$$

Here K_{oc} is the organic carbon partition coefficient and C_w is the porewater concentration. Equation (2) can be derived from equation (1) using the following empirical linear adsorption model for the partitioning of PAHs to sediments (Karickhoff et al., 1979):

$$q_{oc} = f_{oc} K_{oc} C_w \qquad (3)$$

Here f_{oc} is the fraction of organic carbon in the sediments. The partition coefficients (K_{oc}) can be estimated from octanol-water partition coefficients (Karickhoff 1981) and empirical correlations (Schwarzenbach et al., 2003). Our hypothesis is that the $BSAF_{porewater}$ will be a better estimate of the bioavailability and bioaccumulation of PAHs in GOM sediments, while $BSAF_{sediment}$ can be a useful bioaccumulation indicator in areas where passive samplers cannot be deployed.

Biomagnification of PAHs

Typically, organisms in high trophic levels (fish, mammals) seem to be able to eliminate PAHs quickly,hence no significant bioaccumulation or biomagnification have been observed in such organisms. However, a previous study showed that alkylated PAHs which are elevated in fresh oil can significantly change the bioaccumulation of PAHs to fish (Jonsson et al., 2004).

To assess the biomagnification of PAHs from fresh spilled oil in foodwebs of the GOM, the following biomagnification factor (*BMF*) for each organic compound will be evaluated from the data collected from the site.

$$BMF = \frac{q_{predator} / f_{lipid,predator}}{q_{prey} / f_{lipid,prey}} \qquad (4)$$

Here $q_{predator}$ represents the contaminant concentration in the predator, q_{prey} is the contaminant concentration in the prey, $f_{lipid,\ predator}$ is the lipid fraction of the predator, and $f_{lipid,\ prey}$ is the lipid fraction of the prey. In addition to the simplistic approach described above, there exist several fugacity based bioaccumulation models, such as biomass conversion, digestion or gastrointestinal magnification, micelle-mediated diffusion, and fat-flush diffusion (Fraser et al., 2002; Kelly et al., 2004). The models are highly mechanistic and require many more input parameters (10 to 20 variables) and much more complex characterization studies. The models consider competing rates of chemical uptake from the gastrointestinal tract and other potential chemical elimination routes, such as respiration, gill ventilation, urinary excretion, metabolism, and growth dilution (Kelly et al., 2004). If comprehensive data could be obtained from field and laboratory experiments, more sophisticated and mechanistic biomagnification models will be used.

Toxicity model

PAHs present as a mixture in environments and the toxic effects of PAHs are generally considered to be additive. Hence, the estimation of PAH toxicity should be based upon the individual concentration of PAHs measured in environmental matrix. The approach outlined in USEPA (2003) will be applied to evaluate the toxicity of dispersed oil (PAHs) in GOM using the data obtained from the field and laboratory experiments. Water column and sediment porewater PAHs including alkylated homologues levels will be estimated from the passive sampling devices. The new final chronic values (FCVs) evaluated in toxicity experiments will be used as follows.

$$TPR = \sum \frac{C_{PAH}}{FCV_s} \qquad (5)$$

where *TPR* is the toxic potency ratio of PAH mixtures in environments, C_{PAH} are the individual PAH concentrations measured by passive sampler, *FCVs* are the toxicity threshold of individual PAHs evaluated in the toxicity test. If TPR is greater than 1 in the GOM, the environment may be still under toxic conditions to the organisms. Or if TPR is less than 1, the GOM environment would not be toxic to the organisms.

The development and application of mathematical models helps researchers to understand the underlying processes occurring beyond observation, to predict future behaviors, and to assist decision makers. The proposed mathematical modeling approach incorporates bioaccumulation and toxicity models which are currently being used by USEPA to assess the risk associated with PAH levels measured in water column and sediments. Hence, the approach will be updated by the proposed field and laboratory experiments. Furthermore, by conducting probability based modeling approaches, the uncertainties beyond field and laboratory experiments will be more adequately addressed. We believe that current research will be of value to EPA and other agencies when developing sediment benchmarks in the future.

C. Risk assessment

The primary objective of this Ecological Risk Assessment (ERA) will be to conduct a comparative analysis between: 1) protocols used to quantify chronic damages to natural resources currently used under the formal NRDA process; and 2) our experimental design which uses empirical data from passive diffusers to obtain water-column values for PAHs and bioconcentration and bioaccumulation modeling. These water column values can then be used to conduct a variety of bioassays designed to assess casualty between exposure and impacts.

ERA is a scientific approach used to determine the possible impacts of human activities on the environment. The EPA defines ERA as "the process that evaluates the likelihood that adverse ecological effects are occurring, or may occur, as a result of exposure to one or more stressors". In this context, the stressors are constituents of petroleum released as a result of the BP oil spill in the Gulf – more specifically PAHs.

The ERA process generally runs parallel to human health risk assessment. The ecological problem and the hazards need to be identified. The ecological effects then need to be correlated with exposure to contaminants and/or levels of habitat destruction, and dose-response relationships need to be determined. From all of this information, ecological risks are characterized along with major assumptions and uncertainties.

Risk managers then consider scientific conclusions from the ERA alongside policy judgments, economic ramifications, legal issues, and social concerns. They try to balance these different factors to recommend a course of action. The description of the ecological risk assessment and management process sounds reasonable on paper. The ERA process seems analytical; it appears to be grounded in sound scientific principles. But applying these ideas in a real world isn't simple.

The difficulties begin with the formulation of the problem. What ecological unit should we analyze? There is no standard procedure for assessing ecological risk. It should be noted that the use of a ERA framework for assessing effects of oil spills is applicable to the injury assessment component of Natural Damage Resource Assessment (NRDA). Central to the ERA process is the assessment of exposure, the critical component linking the release of oil to the assessment of effects. A release of petroleum may not, in itself, equate to an effect on a natural resource. The presence of residual petroleum hydrocarbons does not imply either availability to living organisms or injury to a biological resource.

As mentioned above, there is no standard practice to conduct ERAs rather, assessments are addressed on a site-by-site basis. Further, there is no clear relationship between body burdens of PAHs and effects, due to the metabolism of PAHs by many organisms at various levels of the food web, and hence tissue residues are seldom used as a determinant for quantifying risks for these contaminants. Exposure and effects measurements are most often assessed in the benthos, where sublethal toxicity may be observed. Water column, sediment or interstitial (pore) water measures of PAHs are used to quantify exposure while toxicity to benthic organisms is applied as a measure of effects. In some instances, benthic community composition and condition are used to assess effects.

Sediment quality guidelines including empirical (Long et al., 1995; Field et al., 2002) and consensus (Swartz, 1999; MacDonald et al., 2000) approaches as well as the mechanistic equilibrium partitioning sediment benchmarks (ESBs) (U.S. EPA, 2003, 2005) are also used as complementary and predictive tools for assigning risk. In a few rare cases, photo-enhanced toxicity caused by PAHs has also been used to assess risk. To determine the exposure invertebrates experience in contaminated sediments it is necessary to <u>measure</u> or <u>predict</u> the concentrations of bioavailable PAHs. For hydrophobic organic contaminants like PAHs, under equilibrium conditions, the interstitial (pore) water concentration of

PAH is the most accurate indicator of the bioavailable exposure concentration. The interstitial water concentration can be measured empirically or predicted by using equilibrium partitioning (EqP).

In a sediment system, the predominant phases involved in EqP include the sediment organic carbon and dissolved phase (i.e., interstitial water). Based on EqP, theoretically, if the sediment concentration of PAH and concentration of sediment organic carbon are known, the interstitial water concentration of PAH can be predicted. Because the interstitial water concentration of PAH is the primary exposure concentration, knowing this concentration allows for an assessment of potential risk to benthic invertebrates. However, as previously mentioned, there is considerable uncertainty in characterizing ecological risks. There is a lack of consensus, when using generic ecotoxicological benchmarks, on what organisms should be protected and what level of protection should be achieved.

The NRDA protocol supports the use of benchmark values as the basic determinant for whether concentrations of PAHs (and other organic contaminants) constitute an ecological risk. However, benchmarks cannot be validated for all sites and situations. They can be defended only in terms of regulatory precedent. Benchmarks are not criteria or standards and while EPA and other agencies provide broad guidelines for the assessment of benchmark endpoints, specific endpoints are not identified.

The current NRDA protocol for determining whether concentrations of PAHs are potentially problematic has considerable, and perhaps an unacceptable level of, uncertainty. Of particular concern is the use of grab water and sediment samples to determine if PAH values are above or below a predetermined benchmark.

A Final Chronic Value (FCV) for PAHs derived using the National Water Quality Criteria (WQC) Guidelines are generally used as the toxicity endpoint. This value is intended to be the concentration of a chemical in water that is protective of the

presence of aquatic life. This value does not consider the antagonistic, additive or synergistic effects of other sediment contaminants in combination with PAH mixtures or the potential for bioaccumulation and trophic transfer of PAH mixtures to aquatic life, wildlife or humans.

The general PAH water and sediment benchmark calculations use a measured concentration from a water or sediment grab sample (ug/l) x an alkylation multiplier to derive an alkyl adjusted concentration (ug/l). This value is divided by either an acute potency divisor (ug/l) or a chronic potency divisor (ug/l) to arrive at an acute or chronic potency ratio. This sum of these ratios is termed the Equilibrium Partitioning Sediment Benchmark Toxic Unit (EESBTUFCV). Freshwater or saltwater sediments containing <1.0 EESBTUFCV of the mixture of applicable PAHs are acceptable for the protection of benthic organisms, and if the EESBTUFCV is greater than 1.0, sensitive benthic organisms may be unacceptably affected.

The grab sampling method makes it difficult to detect contaminants in the water because they are present in very low concentrations. Further, porewater concentrations are modeled using the equilibrium partitioning approach. The absence of site-specific empirical porewater values adds another level of uncertainty to the equation. Therefore, the result is that measured concentrations of PAHs in water and sediment are generally characterized as non-detect (ND). By definition, if the measured PAH concentration is generally ND, the acute and/or chronic EESBTUFCV will rarely exceed 1 – therefore, implying no toxicity to benthic invertebrates is expected to occur.

However, simply because PAH values are below a predetermined benchmark value doesn't mean PAHs are not present or present at a level which is potentially problematic. There are currently accepted protocols for sampling the water column and sediment pore water which can readily detect low concentrations of PAHs. This is critically important because it has been demonstrated that PAHs bioconcentrate and bioaccumulate in the tissues of

fresh water and marine organisms over time at levels orders of magnitude higher than concentrations found in the water column or porewater.

By using passive diffusers (e.g., SPMDs and PEs) unparalleled, time integrated data on low concentrations of PAHs in the Gulf can be obtained (refer to explanation of SPMDs above). These empirical values can then be converted to water column concentrations and placed in the appropriate bioconcentration and bioaccumulation models so that bioconcentration and bioaccumulation throughout the food chain can be calculated in a variety of marine organisms (refer to modeling section). Armed with this information, bioassays can be conducted to determine if exposure to specific PAHs (and other petroleum contaminants) is causally related to damages.

The use of passive diffusers and water column models will significantly reduce the level of uncertainty in characterizing damages and impacts to natural resources in the Gulf. This approach allows for the use of empirical data obtained at the impacted site to assess ecological risks and provide a more robust data set to be used in quantifying chronic impacts to this aquatic ecosystem. Consideration should be given to incorporating this experimental design in the formal NRDA process.

Ecological risks will be characterized subsequent to the completion of the field experiments (passive samplers, sediment/organism collection and PAH analysis) laboratory experiments (toxicity testing, biomarkers) and development of water column and bioconcentration and bioaccumulation models. Observed concentrations of PAHs in aquatic organisms and results obtained from bioconcentration models will be compared to bioassay results on chronic toxicity in the peer reviewed literature (e.g., reproductive and immune changes, DNA alterations and so on). This site specific, empirical data on potential impacts on indigenous Gulf flora and fauna will allow a comparison with results obtained from water and sediment grab sampling used in conjunction with ecological benchmarks. The results should reduce the level of uncertainty when quantifying chronic damages from exposure to oil from the BP spill.

Once the ecological risks are characterized, this information will be presented to interested members of the impacted community. The information will be in a format which will be readily understood by individuals without a scientific or medical background. Information communicated to the public will include, but not necessarily limited to, the following: rationale for the experimental design; use of benchmarks to assess ecological risks; limitations in using benchmarks; results from using passive diffusers; a comparative analysis of both methods (in the context of assessing risks); an assessment of whether site-specific empirical data from passive diffusers are of additional value in quantifying chronic damages, are useful as markers of exposure or neither. This data and information will include graphs and illustrations.

D. Outreach

The National Aquarium will engage Gulf Coast community members in the process of developing and communicating the results of a robust scientific study aimed at reducing the uncertainties when determining chronic effects of contaminants from the BP Oil Spill on Gulf Coast ecosystems. They will work with community leaders from the beginning to create a communications strategy that will inform citizens, trustees, policy makers, federal agencies, etc. on the intent, direction and results of our studies. Easy to digest materials will be created to help the community partners interpret the scientific data and create audience-appropriate resources to communicate findings. This could be in the form of printed materials, workshops/meetings, videos, interactive website applications, small exhibits, etc., - according to the specifications defined by the community partners.

Zoos and aquariums have both the capacity and the responsibility to increase public awareness of these issues and to implement conservation programs. To that end, the National Aquarium is active in marine research and conservation across many ecosystems and habitats around the world. They work to connect the public to the environmental challenges around us, beyond an individual

species. More than 1.6 million people each year visit their venues in Baltimore and in Washington, DC. By interacting with their living collections of more than 16,000 animals, people make emotional connections that open them up to learning how to preserve and protect the aquatic world. Through each of their exhibits and through science-based education programs, they teach people respect for animals and the environment, and inspire them to take action to preserve aquatic habitats.

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Senator CARDIN. Thank you, Dr. Rifkin.
Mr. Graves.

STATEMENT OF GARRET GRAVES, CHAIR, COASTAL PROTECTION AND RESTORATION AUTHORITY

Mr. GRAVES. Thank you, Mr. Chairman, Ranking Member, and Senators, I appreciate the opportunity to be here. My name is Garret Graves and I serve as the Chair of the Coastal Protection and Restoration Authority of Louisiana. It is a State agency that was created after Hurricane Katrina to be the single State entity charged with coastal sustainability, hurricane protection and other coastal resource issues in the State of Louisiana.

Mr. Chairman, I think it is important to provide some background for the conditions in coastal Louisiana prior to this disaster occurred. Going back about 80 years ago, Federal levees put on the lower Mississippi River was the primary cause of the loss of approximately 1,900 square miles of coastal wetlands, and these are jurisdictional wetlands just like you or I would have to get a permit for impacting.

There has been no mitigation done for that 1,900 square miles of loss. In addition, over the last 6 years we have been impacted by Hurricanes Katrina, Rita, Gustav and Ike that all took an extraordinary toll on our State.

I tell you that because our coastline is very different than the other 35 coastal States and territories in this Country. It is a very fragmented coastal area, with a lot of nooks and crannies. If you measure the shoreline from Mississippi to Texas, you get about 800 miles. But if you actually measure the actual tidal shoreline, it is much closer to about 8,000 miles. So it is a very, very different coastline and trying to protect that area from oil was a very extraordinary challenge.

At the same time, this coastal ecosystem is very, very productive. U.S. Fish has called it the most productive ecosystem on the continent. Approximately 90 percent of the marine species in the Gulf of Mexico are dependent upon that estuary in coastal Louisiana for at some point in their life for survivability. Ninety-eight percent of the fisheries and shellfish that are commercially harvested in the Gulf of Mexico, again, are dependent upon coastal Louisiana's wetlands and our unique estuary, where 90 percent of the fresh water that flows into the Gulf of Mexico comes through our State.

At the same time, this area is home to 5 million waterfowl, 25 million songbirds, and is the largest wintering habitat for migratory songbirds and waterfowl. So again, a very, very productive area. It is home to 70 rare, threatened and endangered species, and the coastal wetlands that we have lost played an important role not just in terms of ecosystem services, but also in terms of keeping a buffer between the Gulf of Mexico and our populated communities. We saw the impact of that after Hurricane Katrina.

On the economic side, Mr. Chairman, if you collectively look at the five Gulf States, the GDP of those areas, if it were compared to a nation, it would comprise the seventh largest economy in the world. So much economic activity is ongoing there. In coastal Louisiana alone, we have five of the top 15 ports and approximately 20 percent of the Nation's waterborne commerce comes through our

ports and river systems, which is hundreds of billions of dollars annually. And at the same time, this area produces or transports approximately one-third of the oil and gas that is consumed in the United States.

So from an economic side, the Gulf Coast, coastal Louisiana is very, very important.

Though we have had these historic challenges, we have been able to make progress in recent years. The State of Louisiana has made unprecedented investment in trying to restore our coastal wetlands. And as a matter of fact, in recent weeks the U.S. Geological Survey released a report indicating that it appears that we have created approximately 200 square miles of land, while the historical loss rate has been anywhere from 11 to 16 square miles on average over the last 80 years. We in the last 3 years have perhaps created up to 200 square miles. So we are making progress.

This oil spill came in the worst place because of the productivity of this ecosystem. And it came at the worst time because we were rebounding. We reversed the loss of the trend that had been ongoing for decades.

To give you a few spill statistics, 92 percent of the heavily and moderately oiled shorelines were in coastal Louisiana. And even today, 100 percent of the heavily, over 99 percent of the moderately, 81 percent of the light and about 96 percent of the very light shorelines oiled are still in coastal Louisiana today. Over 60 percent of the marine species, the birds, the mammals, the fish that were collected, that were injured, sick or oiled during this oil spill were collected in coastal Louisiana. So incredible impacts on our State.

I am going to flip over to the response and the NRDA side very quickly. BP is to be commended for coming to the table with their checkbook. I think it is a very, very important thing to keep in mind. They came to the table with mental health dollars, with tourism funds, seafood safety and marketing funds. And we very much appreciate that.

But I want to paint the box that we are in today. As you very well know better than I do, this Country is facing fiscal challenges. Our State is facing fiscal challenges. There is a $1 billion cap on the oil spill liability trust fund to fund oil spill response activity, including NRDA; a $1 billion cap. We are over $900 million in expenses from this disaster so far.

And so the only source of money for us in this case is BP It is the only source of funding to a large degree to fund response, to fund NRDA operations.

Mr. Chairman, I think that equation needs to be flipped over. I think that the public should be in the driver's seat. By being able to control the checkbook, you can control what is in these work plans, how the NRDA assessments are conducted, the timeline of the NRDA assessments, perhaps losing access to ephemeral data because of the negotiations ongoing with these work plans.

BP at the same time has hired armies of attorneys, of marketing firms, of P.R. campaigns, lobbyists, scientists, consultants and other experts. And we have to compete with that, the States do, the Federal Government does. And as long as we are not provided access to the funds that are needed for us to truly put up a strong

case for the public, it perhaps provides a situation where the public's resources, the public's trust is not properly represented. And I think that equation needs to be entirely flipped over.

Three other quick points. I think it is important, the question, and I know, Senator Sessions, you have an extensive legal background, what other situation do you have where the defense is allowed to govern or rein in the plaintiffs in terms of the activities they carry out through exercising their governance of the funding? I don't know of any other scenario.

The NRDA process does take too long, as has been noted. Senator Vitter and Senator Landrieu did file legislation to require a down payment. I think that is critical. Our citizens have already been victimized. Our economy has been victimized. And by allowing for a 10-year, 15-year or 20-year process for recovery of that ecosystem and those natural resources is unacceptable. And for the statutory confines to allow for that, I think that needs to be revisited.

We need to have accurate science, Senator, Mr. Chairman, we need to have accurate science and base our recovery upon that. But at the same time, we can't allow these resources to sit in a degrades State for decades. It is inexcusable to the public.

The last point I would like to make is that I know this Committee has jurisdiction over the Clean Water Act. I think I represent all Gulf States in saying that we strongly support the recommendations of the National Oil Spill Commission, Secretary Mabus and others that have recommended that those funds be returned to the Gulf States for environmental-type uses.

I don't think it is appropriate for the Federal Government to profit from the loss that has occurred in the Gulf Coast.

Thank you.

[The prepared statement of Mr. Graves follows:]

Status of the Deepwater Horizon Natural Resources Damage Assessment

United States Senate Committee on Environment and Public Works

Subcommittee on Water and Wildlife

Prepared Testimony of:

Garret Graves, Chair

Coastal Protection and Restoration Authority of Louisiana

June 28, 2011

Chairman Cardin, Ranking Member Sessions and subcommittee members, thank you for the opportunity to share Louisiana's perspective on the Natural Resource Damage Assessment (NRDA) process associated with the Deepwater Horizon disaster. My name is Garret Graves and I serve as the chair of the Coastal Protection and Restoration Authority of Louisiana (CPRA). The CPRA was established after Hurricanes Katrina and Rita to serve as the single state agency responsible for hurricane protection, flood control, ecosystem restoration and coastal resiliency. Responsibilities associated with this position include the lead NRDA trustee for the State of Louisiana. Following the 2010 oil spill, President Barack Obama appointed me to serve on the Gulf Coast Ecosystem Restoration Task Force.

The Gulf Coast is a precious resource to this nation.

The U.S. Fish and Wildlife Service has referred to coastal Louisiana as the most productive ecosystem on the continent. Commercial fishermen harvest over two billion pounds of fish and shellfish annually from the Gulf's waters. Louisiana's unique coastal estuary serves as a nursing ground for 90 percent of these fisheries and supports the lifecycle for 98 percent of the commercially-harvested species in the Gulf of Mexico.

Over 20 million Americans are employed in the Gulf of Mexico region. Many of these jobs are tied to the Gulf's resources. For example, tourism and recreation provide over 620,000 employment opportunities, the seafood industry supports hundreds of thousands of jobs and gulf workers provide up to 27 percent of domestic oil production in the Gulf of Mexico. Waters offshore Louisiana and our coastal area's energy infrastructure produce or transport up to one-third of the oil and gas consumed in the United States. The U.S. Treasury directly benefits to the tune of $5-6 billion annually from energy production in the Gulf of Mexico -- making it one of the largest revenue streams for the federal government.

Six of the nation's top 10 ports are on the Gulf Coast. With the deepening of the Panama Canal allowing the transit of larger vessels from Pacific nations, we expect this to increase. Louisiana

alone is home to five of the top 15 ports in the country. Its ports and river system currently provide maritime commerce and export capabilities to 31 states. The Mississippi River is truly America's Commerce Superhighway -- supporting hundreds of billions of dollars in cargo annually with one of the most efficient transportation mediums in our nation.

According to the Bureau of Economic Analysis , the five Gulf States' gross domestic product collectively approaches nearly $2.5 trillion. If the Gulf States constituted a country, this region would be the world's seventh largest economy. Though, I hope you are comforted by the fact that no secession plans are imminent.

This impressive economic and ecological activity has been challenged in recent years. Specifically, in Louisiana, we have been hit with Hurricanes Katrina, Rita, Gustav, and Ike in the last six years. In addition, this latest record high water event on the Mississippi River system has caused a number of tense moments. It is important to note that 40 percent of the continental United States drains through our state. From Montana, to Minnesota to portions of New York -- to two Canadian Provinces -- the Mississippi River watershed is one of the world's largest.

Despite these extraordinary challenges, Louisiana was on an upward trajectory in recent years. Our citizens were committed to a full recovery. Homes were being rebuilt, the economy was recovering and the state was making record investments to restore the ecosystem and improve the resiliency of our coastal communities. In fact, a United States Geological Survey report released just a few weeks ago indicated that our state may have actually grown by up to 200 square miles between 2008 and part of 2010. This apparent coastal wetlands restoration, recovery and accretion follows decades of coastal wetlands loss. The same USGS report confirmed that while 1900 square miles of wetlands have eroded or been lost over the last 80 years, our recent investments and coastal management improvements contribute to a successful coastal strategy.

On April 20, 2011, everything changed.

Nearly 206,000,000 gallons or 4,900,000 barrels of oil and 1,800,000 gallons of dispersants covered thousands of square miles of the Gulf and shored on hundreds of miles of our coast. According to federal data, up to 92 percent of the heavily and moderately oiled shorelines on the Gulf were in Louisiana. The same ecosystem that is called the most productive on the continent, the one that 90 percent of the marine species in the Gulf of Mexico depend upon, is now polluted. One of the nation's top recreational and commercial fishing destinations is now subject to the nation's largest offshore oil spill. The direct implications on the fishermen, charter captains, marinas, restaurants, hotels, tourism, employment opportunities, energy production, trade deficit, and Louisiana families is profound.

Even today, the Gulf Coast has approximately 205 miles of coast that has heavy, moderate, light or very light oil remaining. Of this, 185 miles are in Louisiana. This includes 100 percent of the heavily oiled areas, over 99 percent of the moderately oiled shorelines, 81 percent of the light oil coverage areas and 96 percent of the lightly oiled shorelines.

Mr. Chairman, I know that this committee is committed to assist the Gulf States in our recovery and also know that we must learn from this disaster to ensure that failures and mistakes related to the Deepwater Horizon explosion, response and recovery are not repeated.

I would first like to comment on a few items that pertain to the response and Natural Resource Damage Assessment process, then address a few Louisiana-specific issues.

While we all recognize that this spill is unprecedented, it is important to consider some of the lessons learned from the Deepwater Horizon disaster, especially for Spills of National Significance (SONS).

A thematic issue that must be addressed is the need for a fundamental role reversal between the Responsible Parties and the impacted states, federal agencies and trustees. From the

beginning of this spill and continuing today, we have witnessed the Responsible Parties exercise excessive control over the response, assessment and recovery efforts. While I commend BP for coming to and staying at the table with its checkbook, there is often a direct conflict between the interests of the public and the financial or legal liabilities of the Responsible Parties. The current statutory and regulatory structure allows the Responsible Parties to dictate conditions based upon the fact that they are funding the activity.

In the case of ongoing oil spill response activities, this has evolved even farther; it is a modern-day case of Stockholm Syndrome whereby responders are dependent upon the financial resources of and have repeatedly shown signs of empathy toward the Responsible Parties -- who hold them financially captive to the detriment of the will and best interests of the public. Examples include recent attempts to leave thousands of boom anchors in our Gulf waters where they may pose a threat to the environment, commercial and recreational fishing equipment and boating safety. Further, numerous efforts have been made to prematurely designate oiled areas as "No Further Treatment" or inappropriate endpoints for active response efforts. To date, much uncertainty exists related to Submerged Oil Mats and the current threat posed by the remaining oil during and between hurricane seasons. We must note that the current Federal On-Scene Coordinator, Captain Julia Hein, has hosted a number of recent meetings to begin tackling these challenges. We commend her for these efforts to protect the long-term interests of the public.

On the NRDA side, efforts to quantify the natural resource injury associated with a spill of this size and complexity could easily cost hundreds of millions of dollars, consist of thousands of work plans assessing various resources and take a decade or more to complete. Current NRDA efforts are funded under an informal cooperative agreement between BP and the Trustees. In effect, BP has to sign off on our assessment activities before we can begin in order for those studies to be funded by BP. In effect, this causes two problems. First, BP can delay in their review and approval of work plans thereby threatening the timely collection of ephemeral data. Second, BP can refuse to concur in assessments that are contrary to their legal interests or

make funding contingent upon the elimination of assessment activities that they view as damaging to their case. Once again, this demonstrates the leverage afforded to the Responsible Parties that are in direct conflict with the public interest. The Responsible Parties should be required to provide up front assessment costs for reasonable NRDA activities and strict timelines should be set on review and comment by the Responsible Parties for assessment activities.

The timing of the NRDA process and restoration activities also warrants review. Responsible Parties are not required to begin restoration work prior to the completion of the NRDA. Considering the inevitable legal challenges and complications associated with NRDA, it is very possible that the natural resources injured from the Deepwater Horizon disaster could remain in a degraded state for 15 years or more as the NRDA and associated legal processes evolve. While accurately quantifying injury resulting from a spill is important to guide an ultimate resolution, this current process only prolongs the victimization of the communities and ecosystem afflicted by oil spills by delaying restoration of the natural resources.

S.662 filed by Senators Vitter and Landrieu and the House companion, H.R.1228, require the Responsible Parties to make a down payment on their natural resource damage liabilities. Rather than waiting 10 years or more, these proposals would require a preliminary damage assessment then require a down payment to begin restoring impacted natural resources within the first year. We strongly support this concept and commend our delegation members for their foresight. We believe it played an important role in the recent $1 billion early restoration negotiations.

Without a mechanism to compel the Responsible Parties to begin early restoration activities, the trustees are once again at a disadvantage in negotiations. In this case, the Responsible Parties retain the leverage in any negotiation for early restoration. Natural resource trustees may be forced to agree to unfavorable terms or conditions in order to access early restoration funding from the Responsible Parties. S.662 levels the playing field between the public/trustees and the Responsible Parties.

CPRA

Numerous examples of this leverage exist. One example of the disadvantaged position of the trustees is that BP recently made a unilateral announcement that they would not fund any early restoration projects that are in areas with ongoing response operations. This condition was not in the Deepwater Horizon Early Restoration Framework Agreement, but a unilateral condition established due to the "voluntary" nature of the agreement and the control of funding afforded to BP. This now puts the Louisiana trustees in a position to either prematurely designate coastal areas as "clean" or risk not receiving any early restoration funding.

Under the circumstance, we appreciate BP recognizing the importance of early restoration, but believe that significant improvements could be made to the NRDA process to improve the public's interest.

The National Oil Spill Commission recommended that an independent science auditor be established to ensure that the Natural Resources Damage process yield restoration that truly corresponds to the loss. We strongly support this recommendation. Restoring the Gulf should not be a political process. It is a scientific process that is designed to restore the ecological baseline.

Finally, Mr. Chairman, I would be remiss if I did not mention two last issues related to this spill and recovery. First, the Water Resources Development Act of 2007 (WRDA)authorized approximately 17 ecosystem restoration projects designed to begin addressing the loss of 1900 square miles of our coastal wetlands. This coastal area is jurisdictional wetlands and should be protected. However, the majority of the historical and ongoing loss is attributable to federal action with no mitigation for these impacts. Further, every single statutory deadline in the WRDA bill has been missed. Many of these projects could lay the groundwork or inform NRDA projects. We would appreciate the committee exercising its oversight authority to prevent further delay or adverse impact as a result of these delays.

The second issue is Clean Water Act fines. Under federal law, the Responsible Parties are liable for civil penalties of up to $4300 per barrel of oil discharged into the Gulf. Navy Secretary Ray

Mabus, the National Oil Spill Commission and numerous others call for the return of 80 percent of these revenues back to environmental projects in Gulf States. EPA policies dating back ten years also support this concept. The State of Louisiana commits to use 100 percent of these funds to environmental restoration and projects. The federal government should not profit from the loss on the Gulf Coast. Senator Landrieu and Vitter have filed legislation related to this issue and current policies allow for the negotiation of settlement of these fines through Supplemental Environmental Projects without additional statutory authority. Regardless of the path taken here, we strongly support the recommendations of Secretary Mabus and the National Oil Spill Commission related to the allocation of these funds based upon need and impact rather than criteria irrelevant to the disaster and historical conditions.

We appreciate this opportunity to share our experiences with you and welcome any questions you may have.

CPRA

SUPPLEMENTAL TESTIMONY OF GARRET GRAVES, CHAIR OF THE COASTAL PROTECTION AND RESTORATION AUTHORITY OF LOUISIANA

HEARING ON STATUS OF THE DEEPWATER HORIZON NATURAL RESOURCE DAMAGE ASSESSMENT BEFORE THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS SUBCOMMITTEE ON WATER AND WILDLIFE,

JUNE 28, 2011

As a follow up to the June 28, 2011 hearing, questions from Senators Cardin and Vitter were provided in correspondence dated August 3, 2011. I am pleased to reply.

Questions from Senator Cardin:

Question 1. Transparency and Public Participation

To what extent has the assessment process been conducted to ensure transparency and public participation? How will the restoration efforts address the issues of transparency and public participation? Are there certain methods of public engagement that are not currently being employed that should be employed in the future to maximize transparency and public participation in this process?

Answer 1:

The natural resource damage assessment (NRDA) Trustees for the Deepwater Horizon (DWH) Oil Spill are committed to both transparency and public participation. Thousands of pieces of raw data and over 90 finalized work plans are publicly available at http://www.gulfspillrestoration.noaa.gov/oil-spill/gulf-spill-data/. Over 60 Louisiana-signed work plans can be found at http://losco-dwh.com/viewworkplans.aspx., and more information will be made publically available as additional work plans are finalized and raw data is quality checked.

The State of Louisiana has been aggressive in efforts to educate and solicit input from the public. To date, Louisiana's oil spill team has conducted or participated in an estimated 100 public and outreach meetings to inform and facilitate dialogue with stakeholders. This includes public meetings to educate the public on the NRDA process, regularly scheduled meetings with all coastal parish presidents, legislative hearings and briefings, community leader dialogue, outreach to non-governmental organizations, participation in conferences, and meetings with the fishing community, tribal representatives and landowners. Further, the lead trustee agency, the Coastal Protection and Restoration Authority, has hosted at least one public meeting per month since the oil spill. A listing of many of these Louisiana public meetings and NRDA updates and the presentations given at the meetings can be found at http://losco-dwh.com/ArchivedEvents.aspx.

Louisiana, through its Regional Restoration Planning Program, has been

soliciting restoration project ideas from the public for the past 10 years. Specific to DWH, Louisiana has worked with coastal stakeholders over the past year through a variety of public outreach and coordination efforts to build a master list of potential projects for both early and final restoration of the State's natural resources injured by the spill. Through this process, we have received over 300 project proposals totaling over $15 billion. Louisiana is committed to continuing these outreach efforts. These projects will reflect the ideas, input and support of a variety of coastal stakeholders. In addition to these outreach efforts, the Trustees will publically provide all draft and final restoration plans and any other environmental compliance documents, including the Trustees' Programmatic Environmental Impact Statement (PEIS), for public review and comment.

Although an unprecedented amount of information has been provided to the public and the media, the Trustees continue to develop outreach and engagement tools to better facilitate the dissemination of information.

Question 2. Long-term effects

We heard testimony discussing how scientific modeling is being used to predict long-term impacts and ensure that long-term damages are included in the expected settlement. Do you believe that scientific analysis and modeling is sufficient to assess long-term impacts with confidence? How ought the trustees balance the need for evaluation of long-term damages with the need to begin timely restoration planning and implementation.

Answer 2:

The Gulf of Mexico is one of the most productive ecosystems in the world. In the case of the DWH disaster, there are a number of unique circumstances. These include the volume of oil released, the depth of the release, the subsea application of dispersants, the volume of dispersants, the duration of the release and many, many other factors. There were many records and "firsts" associated with this disaster.

Modeling tools and techniques have improved since the Exxon Valdez spill and the early days when federal and state agencies began assessing natural resource damages with more regularity. The Trustees, working with the scientific and academic community, have made strides in predicting long-term damages with better models based on more accurate baseline data. However, a spill of the size and nature of DWH in an ecosystem as dynamic as the Gulf of Mexico stretches the ability of our scientific predictive capabilities. Some of the models that may be used in the DWH NRDA have been developed over many years, applied repeatedly, and validated in the field. Others may be developed specifically for this NRDA, but will have robust datasets to inform and validate the models. For others, the Trustees may have to rely on best professional judgment, ranges of predictions, or reasonable but protective assumptions. Thankfully, the state and federal trustee agencies have been able to pool both local and national resources and knowledge, and have established strong working relationships to meet this challenge.

We know from experience that adverse effects from a significant environmental insult, like the DWH oil spill, may not only *last* for many years, but may not even *appear* for many years – waiting from one to five generations before manifesting. Species population-level effects in particular may require 5 -10 years or more to detect with any confidence. That is why it is imperative that BP stay true to its word to do and fund scientific studies to understand the full long-term consequences of the DWH spill.

On the other hand, it is certainly not in the public's interest for our resources to sit in a degraded state for decades and to delay restoration and replacement of resources we know to be injured – especially in the fragile environment of the Louisiana coastline. This recognition is reflected in the recent $1 billion agreement between the Trustees and BP to begin pursuing early restoration projects so that damages do not continue to compound while the assessment is ongoing. These and continued early restoration efforts must continue on a parallel track with the long-term damage assessment to achieve restoration of Gulf Coast resources and truly compensate the public for damages that have resulted from this disaster.

Finally, some tools that could be employed during settlement discussions could include a robust re-opener provision and compensation for unidentified impacts that may manifest or be identified after settlement.

Question 3. Independent Scientific Auditor

Why have trustees chosen not to engage an independent scientific auditor? In your opinion, what would the benefits and the drawbacks be to engaging such an independent auditor?

Answer 3:

The Oil Pollution Act requires projects funded with Natural Resource Damage recoveries to restore, replace or acquire the equivalent of natural resources injured as a result of the discharge of oil. Congress, and in some instances such as Louisiana, state legislatures have entrusted Trustees with the responsibility of selecting such projects. Trustees have been carrying out this responsibility for over twenty years with few, if any, successful challenges to their decisions.

In addition, for this case, the Trustees have engaged some of the foremost experts in NRDA, which is a highly specialized field combining biological sciences, chemistry, geomorphology, toxicology and economics, among other disciplines, to help them quantify injuries and scale those injuries to appropriate restoration. Between the five Gulf Coast states, USFW, NOAA, and the universities and scientists that the Trustees have engaged to assist in this NRDA, there are numerous experts with regional, and most importantly, local knowledge of the impacted resources. The unprecedented public interest provides an added layer of scrutiny, as envisioned by OPA and its implementing regulations. Finally, it is important to consider that the Trustee Council consists of seven independent entities. As envisioned by Congress, some degree of checks and balances exists through this structure.

Although there is no guarantee that decisions made by an independent scientific auditor would be better received than decisions made by the Trustees, there is one instance in which an independent scientific auditor could be a very valuable aid in ensuring that restoration projects match natural resource injury as opposed to simple equal allocation across Trustees. As I previously stated in my testimony before this Subcommittee, restoring the Gulf should not be a political process. It is a scientific process that is designed to restore the ecological baseline. We must have restoration that truly corresponds to the loss. As the National Oil Spill Commission recognized, restoration should be apolitical and an independent auditor may help in this regard.

Question 4. Low-level Contamination.

How would you respond to testimony suggesting that, by not employing certain technology that detects and concentrates low levels of oil, the current estimations of damage underestimate the true impacts on natural resources?

Answer 4:

Louisiana shares the Senator's concern that the DWH Natural Resource Damage Assessment include consideration of low-level contamination, as such levels have been shown to have harmful effects on exposed organisms.

It is my understanding that the Trustees have thoroughly considered and in some instances used the types of passive devices identified by Dr. Rifken during his testimony at the June 28 hearing, such as semi-permeable membrane devices(SPMDs), in their effort to characterize the nature and extent of contamination caused by the DWH oil spill. Throughout this NRDA, thousands of water and sediment samples, among others, have been collected using thoroughly tested and vetted technologies, and have been or are being analyzed in laboratories with very low detection limits to accurately determine the concentrations of DWH oil-related compounds in the environment.

To ensure that true impacts to natural resources are not underestimated, the Trustees are engaged in recon missions and literature reviews to test out various technologies and methodologies for use in NRDA work plans. Independent scientists are encouraged to bring new ideas to the Trustees, and based upon a certain methodology's robustness and ability to hold up in court, among many other factors, the methodology may be incorporated by the Trustees.

Questions from Senator Vitter:

Question 1:

One of the things I think people here in Washington and perhaps a good portion of the rest of the country don't understand is the relationship between offshore energy production and coastal restoration funding. It's not just the Federal Treasury that is being

adversely impacted by the permitting challenges at the Interior Department. Can you discuss for this committee the impact of the moratorium on GOMESA funding and revenue to Gulf producing states for restoration.

Answer 1:

The impact of the moratorium on the Gulf of Mexico Energy Security Act of 2006 (GOMESA) revenue streams to the Gulf producing States will be significant.

After years of attempting to establish some sort of parity between the treatment of onshore energy production revenues and offshore production revenues, Congress passed the Gulf of Mexico Energy Security Act (GOMESA) in 2006. GOMESA provided for the sharing of a limited amount of revenues from prospective offshore energy production in the Gulf of Mexico. The citizens of Louisiana overwhelmingly adopted a constitutional amendment to dedicate any revenues from offshore energy to ecosystem restoration, coastal protection and mitigating the impacts of offshore energy production. Therefore, the moratorium and reduction in new offshore energy production has actually resulted in an adverse impact to our ecosystem restoration and coastal protection efforts.

The State of Louisiana is clearly on record in requesting the Department of the Interior to document and mitigate for the cumulative impacts of offshore energy production on Louisiana's coastal area. The lack of action by the federal agency combined with this effort to cut off these mitigation and ecosystem restoration funds will result in additional damage to Louisiana's coastal environment.

Question 2:

It's no secret that there were disproportional impacts on states from the spill. My guess would be that funding for NRDA restoration efforts would be apportioned based on those impacts. Can you discuss whether that has been the case and your experience thus far?

Answer 2:

Louisiana agrees that the impacts of the spill were disproportional among the impacted states and believes, based on any methodology for determining ecological impacts, that Louisiana was by far the most impacted trustee. Due to a lack of confirmed and processed data at the time the $1 billion early restoration allocation agreement was reached in the fall of 2010, the Trustees chose not to apportion the majority of these funds based on observed impacts. Notably, however, the allocation agreement for this early restoration down payment apportions $700 million equally among the 7 trustees and an additional $300 million to be allocated by the federal trustees to the states based on ecological impact. Louisiana is confident that the majority of this discretionary allocation will be directed to address the disproportional impacts in our state. This $300 million reflects the Trustees' position and agreement that funding for NRDA restoration should be proportional based upon the ecological impacts of each trustee. We anticipate that future down payments and any negotiated settlement will reflect updated NRDA data

sets at the time that confirm that the majority of NRDA damages occurred in coastal Louisiana.

Question 3:

In your testimony you discuss some of the complications with negotiating with BP on recovery assessment funding. Can you give some specific examples of the challenges you have faced in the process?

Answer 3:

Although BP is currently the only Responsible Party cooperating with and providing funds for the DWH NRDA work of the Trustees, the Trustees have faced a number of challenges in negotiating cooperative/joint studies with BP. BP has continually held up studies for weeks while teams of contractors, BP staff, and inside and outside attorneys review work plans and approve comments - sometimes only minor comments – even when the field work must be done immediately before the data are gone forever.

In one instance, the Trustees presented BP with a work plan to assess injury to diamondback terrapins in late 2010, and provided a revised version of the plan to BP in early January of 2011. BP did not even provide a response to the plan until late March. When BP finally did respond, it stated that it would only fund the plan if the Trustees agreed to reduce the scope of work to cover only ¼ of the number of study sites called for in the Trustee-proposed plan. The Trustees attempted to redesign the plan, but BP ultimately rejected the redesign and offered no alternative method(s) under which the plan could proceed. At this point in time, the terrapin breeding season had begun and it was too late to get out into the field under the broader plan envisioned by the Trustees.

In another instance, the Trustees proposed a LiDAR plan for mapping the vegetative edge of Louisiana's coastline to aid in the assessment of land loss and natural resource injury caused by the spill. Discussions began with BP in December, and after months of commenting and conference calls, BP had still not agreed to fund the study. Water levels were only low enough to accomplish the study within a very short time window, and in February, the Trustees were forced to proceed independently without BP, using up limited state funds to accomplish the Trustees' objective. Since then, BP continues to wordsmith and provide comments to the Trustees in a protracted review of the study, sometimes allowing a month or more to pass between sets of comments. Although the data has been collected, to date, BP has not reimbursed the Trustees for costs associated with the study.

More broadly, to date, BP has simply declined to fund any work plans designed to look for physiological, genetic or biochemical biomarkers, or clues, about how organisms, such as fish, birds, marine mammals and turtles may be exposed to and affected by oil and dispersants. They have also to date refused to fund work plans designed to look for evidence of oil constituents where it is very likely to be found in

fish, in the bile and liver. As a result, the Trustees are forced to pool limited state and federal resources to independently fund work to assess the true nature and scope of injuries to natural resources caused by the spill.

The control afforded by the Responsible Parties through the funding process is simply contrary to the public interest and favors the parties that caused this environmental disaster.

Question 4:

In terms of getting recovery projects moving at a pace you would like to see what do you anticipate the impact of the initial $1 billion investment from BP will be?

Answer 4:

The State of Louisiana believes that this down payment is a good first step and we commend BP for agreeing to fund early restoration. While these negotiations did not proceed with the expediency desired by our trustees, we believe that these early actions are in the best interest of all parties.

Time will only tell what impact the $1 billion early restoration funding will have in terms of moving restoration projects along more quickly. The intent of the funding was certainly to move projects quickly to implementation, and the Trustees have worked hard with their respective stakeholders to get projects ready for discussion with BP. However, BP can ultimately reject any of the projects. If BP is unreasonable or dilatory in the negotiation process, the $1 billion early restoration down payment could be no help at all. Unfortunately, we have already seen at least one example of BP trying to use early restoration project funding to leverage other issues of contention: BP has indicated that it will not fund early restoration projects unless they are located in an area where it has been agreed that no further response actions are required. This would exclude much of Louisiana's impacted area and force Louisiana to agree to allow response efforts to end in the project area – even if response efforts are still necessary – in order for BP to consider funding an early restoration project in that area. This unilateral requirement on the part of BP was not included in the early restoration framework agreement and would result in delayed and fewer projects in the most impacted state. This is unacceptable. Louisiana is committed to getting restoration projects implemented as quickly as possible but will not be bullied by BP in the process.

SUPPLEMENTAL TESTIMONY OF GARRET GRAVES, CHAIR OF THE COASTAL PROTECTION AND RESTORATION AUTHORITY OF LOUISIANA

HEARING ON STATUS OF THE DEEPWATER HORIZON NATURAL RESOURCE DAMAGE ASSESSMENT BEFORE THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS SUBCOMMITTEE ON WATER AND WILDLIFE,

JUNE 28, 2011

At the June 28, 2011 hearing, Senator Whitehouse raised the following question: "If we are going to address the issues that we face in our oceans and along our coasts, how much do we need to improve our baseline research capability, our awareness of what is going on out there, and what are the best methods to do it?"

Chairman Cardin, Ranking Member Sessions, Senator Whitehouse and Subcommittee members, I'd like to take this opportunity to respond to this very important question and to state that Louisiana appreciates the Subcommittee's interest and concern for our ability to understand the issues we face in the oceans and on our coasts, especially when it comes to our ability to respond to incidents such as the Deepwater Horizon oil spill.

Other panelists discussed the need for baseline research related to the present condition of coastal and oceanic resources to inform resource management decisions and other purposes. This supplemental testimony focuses specifically on the need for baseline information in the context of Natural Resource Damage (NRD) claims.

On the Gulf Coast and nationally, we generally have much better data and understanding of baseline than we did back in 1990 after the Exxon Valdez spill, when the natural resource trustees first started pursuing NRD claims in earnest.

There is no doubt that back then, responding to major spills and assessing damages was complicated by the lack of baseline data and a lack of assessment tools. Since then, however, the natural resource trustees have built up a wealth of knowledge that has been gained through every spill we have responded to in Louisiana and across the nation, and our current work on the Deepwater Horizon NRD assessment is bearing this out.

In fact, we know more about the impact of oil and response activities in nearshore systems than we did back when the Exxon Valdez incident occurred - especially when it comes to coastal wetland ecosystems.

State and federal Trustees, however, will always strive for better baseline data. Therefore, I recommend a number of measures:

1. To take better advantage of the wealth of information that has been collected with public dollars, the federal trustees should be asked to create centralized references, databases and indices so that federal and state trustees can easily determine what information exists and what the data gaps are for various areas and resources. They should also be encouraged to incorporate state or local sources of information in those repositories or references as much as possible. This is not a trivial task and will require funding to ensure it happens. The task should be conceptualized and implemented in close coordination with state trustees across the country.

2. The needs of the NRD program should be taken into account in designing and implementing data gathering efforts by any government agency. While the government has many and sometimes competing needs for data, where a certain method of quantification could serve both core missions and NRD purposes, that method should be preferred. Most science agencies, however, are not aware of the NRD program and its particular needs. As a result, opportunities for gathering data that could be useful for NRD cases are lost.

3. The effort to obtain baseline data should not be solely a federal function. Federal dollars could in most instances be better spent by supporting state and local entities' efforts to design and implement appropriate studies. States, for example, know what areas and resources are most vulnerable to oil spills and most important to our ecosystems and economies. States also have the expertise to identify data needs and determine efficient means of meeting those needs.

   Generally speaking, states are also the lead or sole trustees in most NRD cases, and therefore have a compelling need for baseline information.

For all these reasons, the Senate should provide funding for state efforts to build NRD capacity, in particular baseline monitoring, which will expedite resolution of NRD claims and restoration of injured resources.

Thank you for the opportunity to submit this supplementary testimony.

Senator CARDIN. Thank you very much for your testimony.

Mr. Shattuck.

STATEMENT OF R. COOPER SHATTUCK, CHAIRMAN, EXECUTIVE COMMITTEE, NRDA TRUSTEE COUNCIL, LEGAL ADVISER TO GOVERNOR BENTLEY

Mr. SHATTUCK. Thank you, Chairman Cardin, Ranking Member Sessions, Members of the Subcommittee. Thank you for the opportunity to speak today.

Thank you, Senator Sessions, for that most gracious introduction.

I won't bore you with the statistics for the significance and the size of the oil spill, which we all know too well. Suffice it to say it was unprecedented. It has impacted five States along the Gulf Coast and the Gulf of Mexico itself, which is one of the United States' greatest resources. Impacts to the Gulf include commercially important aquatic life; endangered or threatened species of turtles, birds and marine mammals; habitat use; migration patterns and erosion; and most significantly, the loss of use of these resources.

The Gulf is an essential habitat for countless species of fish and shellfish; contains numerous species of marine mammals, many of which are protected or endangered; turtles; marshes that provide feeding and nesting habitat for offshore, near-shore and marsh birds. And the presence of oil in these habitats may lead to decreased habitat use in the area, altered migration patterns, altered food availability, and disrupted life cycles.

The oil may also cause plants to die, whose roots stabilize the soils and thus lead to erosion.

And this is not to mention the loss of use of these resources, which for Alabama, like many of the other States along the Gulf Coast, is a significant factor.

Travel-related expenditures in just one of our counties has been reduced by $500 million as a result of the impact of the oil spill. Commercial seafood landings, as Senator Sessions pointed out, are down 50 percent from 2009.

The response to the spill from a natural resources perspective has also been unprecedented. The NRDA Trustees have secured $1 billion from BP for early restoration projects in the Gulf. The fact that the Trustees and the responsible party have even attempted to address early restoration of this magnitude is extraordinary.

The sum secured for early restoration alone is larger than the entire NRDA restoration process for the *Exxon Valdez* spill. Under the framework for early restoration, each Trustee, the five States and the Department of Interior and NOAA will select and implement $100 million in projects, with the remaining $300 million used for projects selected by NOAA and the Department of Interior from proposals submitted by the State Trustees.

This agreement would not have been possible without the combined and concerted efforts of all of the Trustees working together. With so many resources and agencies involved in this daunting, but incredibly important task, it is essential to ensure continuing cooperation and coordination to guarantee that restoration of our natural resources is carried out to the benefit of all, both from an

early restoration perspective and for the long-term benefit of the Gulf as a whole.

In order to manage these early restoration processes and continue the assessment that has been ongoing for some time, the Trustee Council has formed an Executive Committee. The committee is made up of representatives from each of the Trustees. We have also created subcommittees dedicated to specific tasks as part of our charge, each of which is chaired by a representative of the trustees.

The executive committees themselves work together to make sure that each Trustee is represented in an equal and balanced manner, to ensure that the priorities and goals of all Trustees are achieved.

The resource assessment process and early restoration project selection present many challenges, given the magnitude of this disaster, its widespread impact, and the number of parties involved. Each State was impacted differently and all may have unique priorities for the needed restoration, as may each Federal agency.

Even within a State or agency, there will be different approaches and ideas about how to meet these needs and achieve these goals. After all, restoration on this scale has never been done before. All of the different perspectives and ideas have the potential to lead to many disagreements over how best to assess the damages sustained and how best to spend the funds to restore our natural resources.

Such disagreements could easily manifest themselves between the States, between the States and the Federal Government, and between the different Federal agencies, or between Democrats and Republicans. However, we must be reminded that the natural resources do not share our notions of boundaries and borders. A fish does not realize when it crosses from the waters of Mississippi into Alabama, or from State waters to Federal waters.

Wetlands do not begin an end indiscriminately at State borders, but instead cross them. An oyster does not know whether it sits in the waters of a red State or a blue State.

Just as it was necessary for us to frame our initial discussions in fairness for the common good of all, we will be challenged to eliminate disputes based on our boundaries and maintain our focus on the ultimate goal of restoring the Gulf of Mexico's natural resources and hold the responsible party responsible.

But we have created and experienced the precedent that will allow us to accomplish just that. From the beginning of this disaster, it was essential that the States and Federal Government work together through the response and cleanup process and we did. And as we began the monumental task of assessing the extend of the injuries to our natural resources, the need for cooperation became pronounced, and we have done just that.

Obtaining $1 billion for early restoration projects set new standards for our ability to tackle obstacles and succeed by uniting for a common good. The cooperation between the five States is unprecedented, and the cooperation between the States and the Federal agencies has likewise been unprecedented, and the need continues.

We simply must remain united against the responsible party to see that the damages caused by this disaster are indeed corrected and restored.

The communication and cooperation has and will continue as we select early restoration projects. Though the full extent of the damages to the resources is not yet known, all agree that there must be a nexus between the oil spill, the injury and the projected benefits of the project. Cooperation is not only necessary for the selection of the projects, but the implementation of them as well.

I would like to report that the process is going well. We have challenged ourselves to some fairly demanding timelines. Our plan is to select an initial set of early restoration projects in July of this year. Even as early restoration projects are selected, negotiated and implemented, the NRDA process will continue in order to determine the full extent of the damage to our resources and our long-term restoration plans.

Thus far, the NRDA process must be measured as a tremendous success. We have secured an historic sum of money within a year of the tragedy which created this assessment, and the monumental task continues as to what will undoubtedly result in the most widespread and thorough analysis of a significantly large ecosystem as has ever been attempted.

All of this is unprecedented. We rest assured that if the successes of this process are to continue, such cooperation that we have experienced between the States, the Federal Government and all of the agencies affected will not be a luxury, but will be a necessity.

I am confident that it will continue, and everything that has made this process unprecedented will create a precedent by which future cooperative efforts will be possible.

Thank you.

[The prepared statement of Mr. Shattuck follows:]

WRITTEN STATEMENT

BY COOPER SHATTUCK, CHAIRMAN

NRDA TRUSTEE COUNCIL EXECUTIVE COMMITTEE

AND

LEGAL ADVISOR FOR ROBERT BENTLEY,

GOVERNOR OF ALABAMA

TO THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

SUBCOMMITTEE ON WATER AND WILDLIFE

UNITED STATES SENATE

JUNE 28, 2011

Chairman Cardin, Ranking Member Sessions, members of the subcommittee, I would like to thank you for the opportunity to speak with you today. My name is Cooper Shattuck, and I am Chairman of the NRDA Trustee Council Executive Committee and Legal Advisor for Robert Bentley, Governor of Alabama.

The NRDA Process Generally and Early Restoration

As you know, the NRDA process was created after the *Exxon Valdez* oil spill in Alaska. In 1989 the *Exxon Valdez* ran aground and spilled 11 million gallons of crude oil affecting a surface area of approximately 75,000 square miles. The trust ultimately established to restore the natural resources in the area consisted of $900 million monitored by a council consisting of three state trustees from Alaska and three federal

trustees. The *Exxon Valdez* spill was the largest spill in U.S. history until the BP oil spill in the Gulf. The restoration process for the *Exxon Valdez* spill is still continuing today, over twenty years later.

The explosion aboard the Deepwater Horizon platform caused a spill of 5 million barrels (approximately 210 million gallons) of oil – almost 20 times larger than the *Exxon Valdez*. This spill is unprecedented. Five states along with the Gulf of Mexico itself have all been adversely affected though the exact extent of the damage is still unknown. Impacts to the Gulf include commercially important aquatic life; endangered or threatened species of turtles, birds, and marine mammals; habitat use, migration patterns, and erosion; and current Gulf Restoration projects.

The Gulf is an essential fish habitat for countless species of fish and shellfish. The Gulf contains over 21 species of marine mammals which are protected, six of which are endangered. Five species of turtles live in the Gulf, four of which are threatened/endangered; and the only nesting beaches for the Kemp's ridley turtles are in the western Gulf of Mexico. The marshes which border the Gulf of Mexico are the feeding and nesting habitat for many species of offshore, nearshore, and marsh birds. The presence of the oil in these habitats may lead to decreased habitat use in the area, altered migration patterns, altered food availability, and disrupted life cycles. The oil may also cause plants to die, whose roots stabilize the soil, and thus lead to erosion.

The response to the spill from a natural resources perspective has also been unprecedented. The NRDA Trustees have secured $1 billion from BP for Early Restoration Projects in the Gulf. The fact that the Trustees and the responsible party have even attempted to address early restoration of this magnitude is extraordinary. The sum

secured for early restoration alone is larger than the entire NRDA restoration process for the *Exxon Valdez* spill. Under the Framework Agreement for Early Restoration, each trustee (Alabama, Mississippi, Louisiana, Florida, Texas, Department of the Interior, and NOAA) will select and implement $100 million in projects. The remaining $300 million will be used for projects selected by NOAA and the Department of the Interior from proposals submitted by the State Trustees.

This Agreement would not have been possible without the combined and concerted efforts of all Trustees. With so many resources and agencies involved in this daunting but incredibly important task, it is essential to ensure continuing cooperation and coordination to guarantee that restoration of our natural resources is carried out to the benefit of all – both from an early restoration perspective and in the long run.

In order to manage the early restoration process and continue the assessment that has been ongoing for some time, the Trustee Council has formed an Executive Committee. The committee is made up of representatives from each of the Trustees. We have also created committees dedicated to legal work, assessment and science, restoration planning, and public affairs. Each committee is composed of a representative from each of the Trustees. The Executive Committee and committees will work together to make certain that each Trustee is represented in an equal and balanced manner to ensure that the priorities and goals of all of the Trustees are achieved.

Challenges of Restoration, Including Early Restoration Project Selection

The Resource Assessment process and Early Restoration Project selection present many challenges given the magnitude of this disaster, its widespread impact and the

number of parties involved. Each state was impacted differently and all may have unique priorities for the needed restoration. Each state may very well have its own goals for restoration as may each federal agency. Even within a state or agency, there will be different approaches and ideas about how to meet these needs and achieve these goals. After all, restoration on this scale has never been done before. All of the different perspectives and ideas have the potential to lead to many disagreements over how best to assess the damages sustained and how best to spend the funds to restore our natural resources. Such disagreements could easily manifest themselves between the states, the states and the federal government, the different federal agencies, or Democrats and Republicans.

However, we are reminded that the natural resources do not share our notions of boundaries and borders. A fish does not realize it crosses from the waters of Mississippi to Alabama or from state waters to federal waters. Wetlands do not begin and end at state borders, but cross the lines indiscriminately. An oyster does not know whether it sits in the waters of a red state or a blue state. Just as it was necessary for us to frame our initial discussions in fairness for the common good of all, we will be challenged to eliminate disputes based on our boundaries and maintain our focus on the ultimate goal of restoring the Gulf of Mexico's natural resources back to their status prior to the oil spill. But, we have created and experienced the precedent that will allow us to accomplish just that.

Overcoming the Challenges of Early Restoration and the NRDA Process

From the beginning of the disaster it was essential that the states and the federal government work together through the response and clean-up process. We did. As we

began the monumental task of assessing the extent of the injuries to our natural resources, the need for cooperation became pronounced. And, we have done it. Obtaining $1 billion for early restoration projects set new standards for our ability to tackle obstacles and succeed by uniting for a common good. The cooperation between the five states is unprecedented; as is the cooperation and support between the states and the federal agencies. The need for cooperation continues as we make plans to implement early restoration projects. And, it does. We simply must continue united to overcome the real problem – the extensive damage to one of our nation's greatest natural resources, the Gulf of Mexico. The uniqueness of the many challenges presented only makes cooperation more imperative to ensure adequate and effective implementation of NRDA and thus provide for the long-term recovery of the Gulf's natural resources.

The communication and cooperation has and will continue as we select and implement the Early Restoration Projects. Though the full extent of the damage to the resources is not yet known, all agree that there must be a nexus between the oil spill, the injury and the projected benefits of the projects. We must also work together as we evaluate and negotiate the offsets to the ultimate resource damage assessment that should be attributed to the projects. Cooperation is not only necessary for the selection of the projects, but for the implementation of them as well.

The process is going well. We have challenged ourselves with some fairly demanding timelines. Our plan is to select an initial set of projects in July of this year.

Even as the Early Restoration projects are selected, negotiated and implemented, the NRDA process will continue in order to determine the full extent of the damage to our resources and our long-term restoration plan.

Thus far, the NRDA process must be measured as a tremendous success. Though the magnitude of the spill, the damage, the affected resources, the affected parties and divergent interests are all unparalleled, we have overcome every obstacle which has appeared thus far. We have secured a historic sum of money within a year of the tragedy which created the need for this assessment. The monumental assessment task continues in what will undoubtedly result in the most widespread and thorough analysis of a significantly large ecosystem ever attempted. Nevertheless, the damage done to our natural resources will begin to be addressed as soon as this year. All of this is unprecedented. The level of cooperation between the states, between the states and the federal government, and between the federal agencies involved has likewise been unprecedented. We rest assured that if the success of the process is to continue, such cooperation will not be a luxury, but a necessity. I am confident that it will continue and everything that makes this process unprecedented will create a precedent by which future cooperative efforts will be possible. Thank you.

Senator WHITEHOUSE.

[Presiding] Thank you, Mr. Shattuck.

Since I will be chairing the remainder of the hearing and will therefore by definition be here until the end, I will not insist that my distinguished Ranking Member wait through my questioning, but I will yield to him so that he may proceed.

Senator SESSIONS. Thank you, Mr. Chairman. We have done this before on the Judiciary Subcommittee that you and I participated in as Ranking and Chair.

Mr. Shattuck, thank you for your comments. I am pleased to see the emphasis on collaboration and cooperation and openness in the process. The only flip side of that coin a bit is somebody in charge and can we make sure it happens on time? But you have already selected projects that would commence before the year is out. Is that correct?

Mr. SHATTUCK. We are in the process of selecting projects. We hope to have the selected by the end of July, to be implemented before the end of this year. Yes.

Senator SESSIONS. And of the 80 trustees, do they vote individually? Is that how decisions are made on these projects?

Mr. SHATTUCK. Yes, sir. Each Trustee, and there are seven, one from each State, one from NOAA and one from the Department of Interior. Each have a vote on selecting a project. Projects are selected by a majority vote and then we will move forward with the process of negotiating with BP the offsets for those projects.

Senator SESSIONS. Back to a fundamental question on the NRDA process. To what extent do you consider it, and the trustees, to what extent do you consider that the process to make the region entirely whole? Or is it just a part of it?

Mr. SHATTUCK. It is just a part, unfortunately. It addresses only the damages to natural resources, and that is its limit. And unfortunately, the damages that Alabama has sustained, for example, are much greater than that. Though many of the damages we have sustained are tied to the loss of our natural resources and the loss of use of our natural resources, the NRDA process doesn't address those economic losses for individuals, businesses or the State itself.

Senator SESSIONS. Well, I know Governor Mabus was very clear on that in his report, which is really dealing, I suppose, more with the Oil Spill Act damages that eventually have to be paid by BP under the Oil Spill Act. But he noted this section outlined a proposal for Congress to create a new Gulf Coast Recovery Council that would be funded in part by civil penalties collected under the Act and which would work to facilitate environmental restoration and economic recovery and attend to the health issues arising from the spill.

Is that what you understand that will be the next project or another project that could be going on contemporaneously with this project?

Mr. SHATTUCK. Yes, sir. And we hope that Congress will consider giving the States, as Mr. Graves pointed out, 80 percent of the Clean Water Act funds that might ultimately be assessed to address all of those losses, whether they are environmental or economic.

Senator SESSIONS. And whereas there has been some language in the legislation I have seen that proposed giving States a certain proportion by State, most of the money as I have seen in the legislation will be based on an overall need process. Is that what most of the legislation says?

Mr. SHATTUCK. That is what I understand.

Senator SESSIONS. I would just comment on a number of things. I felt very strongly that this accident should not have happened. And I think the reports are showing that. I feel very strongly that the responsible party, the one that by law signs, no matter whether subcontractors are liable or not, they are responsible for all of the damages, and that is BP And they are responsible to their last dollar of their corporate existence, as far as I am concerned.

I think they have moved forward and in some ways been very helpful in this $1 billion. I think they were not legally required to produce it this soon. Is that correct?

Mr. SHATTUCK. That is correct.

Senator SESSIONS. I thought that was a positive step on their behalf of sustained and unprecedented damage and the size of the spill. And I would note that I am very unhappy that there was not the kind of capping mechanism already constructed that you would have thought the oil company would have had to shut this thing off shortly after it happened.

Now, Mr. Reilly on the part of the commission, and Mr. Rifkin, was that the commission you served on with Mr. Reilly? You did?

Well, he testified here a month or so ago that there now has been designed a cap that could be put over any blowout like this that would in a matter of days be able to capture that. Is that your understanding?

Mr. BOESCH. Senator Sessions, that is correct. There are two industry groups that have developed that capacity. And if you remember the controversies over the permits reassuming the deep water drilling, a large part of the demonstration to meet these new requirements was to demonstrate that they had this deep water containment capability.

So after those two groups developed that they had the capacity satisfactory to the assessment of the Department of the Interior, it was at that point that they granted the permit to resume deep water drilling.

Senator SESSIONS. Well, Mr. Graham Reilly, former head of EPA, did testify. He thought that had the capacity to be done in a matter of days. So we went 90 some odd days. How many days? Almost 90 days of pouring oil that really was a thing that is most concerning about it.

So, Mr. Chairman, I do think that we have learned a tremendous amount from this process. The United States has benefited dramatically from the production of oil and gas from the Gulf. It needs that oil and gas for our economy, jobs and growth. I hope that we will be able to continue it. We have learned how to remediate and I think we have learned how to stop an accident if it ever were to happen again, and frankly should not have happened the first time. But I do believe we have a capability now to shut it off.

So hopefully, the Gulf Coast area is ready to go forward in the future. We want to fix our economic problems that have been se-

vere. And we also want to use this as an opportunity for, as I know you share, an assessment, a baseline and future projection for a more productive and environmentally positive environment on our coast.

Thank you for participating and allowing me to participate in this hearing.

Senator WHITEHOUSE. Thank you, Senator Sessions.

I think we learned a lot from this incident about the status of our baseline research along our coasts and oceans. Senator Vitter was very eloquent a little while ago on how far behind we are on the stock assessments and how dated most of those are in areas in which coastal flooding and weather events and increasing ocean levels and all of that are affecting what can happen along the shores, and the development capacity of the shoreline and what needs to be protected and buttressed. And we seem to be way behind on LIDAR studies. Our physical oceanography, we seem to have a far from robust baseline in terms of our currents and temperatures.

If we are going to address the issues that we face in our oceans and along our coasts, how much do we need to improve our baseline research capability, our awareness of what is going on out there, and what are the best methods to do it?

And I will go right across the table. This is not a Gulf-specific question. This is a generic question.

Dr. Boesch.

Mr. BOESCH. Yes, Senator, I couldn't agree with you more. We need to have better information about our national ocean to make prudent decisions about it. Since the commission did focus on the Gulf, let me make just a few comments.

First of all, we were shocked to see that as the industry moved into deep water over really only the last 20 years, the really spectacular new technology, there was not the investment by our government in understanding that environment. So at the time this was taking place, the investment in studies of that Gulf of Mexico environment were actually declining.

To redress that, we recommend that not only for oil and gas development, but for all kinds of energy development around our coasts whether it is oil and gas in the Alaskan Arctic or wind power in the Mid-Atlantic, we should have a better capacity, since we were just talking about energy issues, to understand the environment.

So our recommendation is that there should be a really modest fee, if you will, recognizing the Federal deficit problem, there should be a modest fee to the industry much like a State would have a severance tax, that would pay for the appropriate regulation and the appropriate studies to support that going forward, so that you would have a predictable support base to sustain those studies.

One final thing, as you know, Senator Whitehouse, since you have been a champion of this, there is this great interest and move around our Country to create ocean observing systems, where we can continuously, using modern technologies, monitor the State of the ocean. If any part of our national ocean needs an integrated ocean observing system, it is the Gulf of Mexico, with the great economic engine that it is in oil and gas production, shipping, fish-

eries, all of the conflicting uses. And again, we have the resources with that industry and we have the infrastructure, all of the platforms that exist out in the Gulf of Mexico, to have a first-rate, innovative observing system that will help us make decisions going forward.

Senator WHITEHOUSE. Thank you, Doctor.

Dean Leinen, again, with respect to the adequacy of our current research baseline on oceans and coasts and what you would recommend to improve it.

Ms. LEINEN. Well, I think that Dr. Boesch has spoken eloquently about the Gulf. I will branch out a little further from there. That lack of ability to understand not only the conditions as they stand today, but also the processes that evolve over decades, is a real hindrance to our ability to make good decisions, whether it is the decline of the winter flounder in Rhode Island or whether it is the increase in diseases that humans get that we see in the wild dolphin in Florida.

We have very little ability to go back and understand what the causes of those features are.

When you compare this to weather, we understand how much changing weather influences the economy. But I think that we haven't realized how much that lack of knowledge and lack of predictability about the oceans affects our competitiveness, our ability to use resources wisely, and our ability to prepare for the changes that we will see in the future.

So it is a need for baselines. It is a need for understanding evolving processes as well.

Senator WHITEHOUSE. I will followup on these questions with the remaining witnesses, but my questioning time at this point has expired and our Chairman has returned. So I will yield to the Chairman and then perhaps the Chairman will give us another round afterwards so that we can continue this line of inquiry.

Senator CARDIN.

[Presiding] Let me thank Senator Whitehouse. I apologize for having to leave. We have the Jim Cole nomination on the floor for Deputy Attorney General, as I know Senator Sessions is aware and Senator Whitehouse, both from the Judiciary Committee. So I added to that debate a little bit on the floor.

I want to continue on this baseline issue, but I would like to get the views of Mr. Graves and Mr. Shattuck as to whether you believe there are adequate resources available to you as Trustees to get the type of independent technical support to make the type of assessments that we have confidence are the best that we possibly can.

The baseline is a very difficult challenge. No one denies that. But having the resources available to get the independent type of verification review and technical assistance, to me, would be very important. Do you believe the Trustees have adequate resources here?

Mr. SHATTUCK. Well, there are never enough resources, to be honest, but I don't think that we have been impacted or that the process has suffered in a detrimental way at this point from a lack of resources. And I think part of that is the economic incentive that BP has to see that this process is funded, which sounds

counterintuitive, but I think BP wisely has determined that if they do not fund it at this point, then they are going to pay for it in the long run and it is going to cost even more.

So as long as we have that economic incentive for them, we both benefit from it, in a way, because the studies are done. But who knows? We aren't finished yet and it could be at some point we are hampered by lack of resources if BP decides to cut them off.

And our State, Alabama, is strapped financially. We are in dire financial straits and we don't have the capacity to sponsor studies of the Gulf of Mexico or even to the resources that we have on our own. It is simply not there.

Mr. GRAVES. Mr. Chairman, I would say that I think there are resource issues. And just to lay out, under the current statutory confines for how this would work, if we wanted to try and assess the impact on red fish in the Gulf of Mexico, we have to develop a work plan for how that assessment would be conducted. And we have to go present that to BP, and then there is a negotiation process.

I am going to embellish this just to give you an idea of what we have to go through. But during that negotiation, they can say, well, we don't really like the area where you have chosen to do this assessment. We think you ought to go to West Texas. And we say, well, wait a minute. There wasn't oil in West Texas. They say, well, if you want the money, then you need to do it in West Texas.

And so you are in a very difficult situation because of the box I tried to describe earlier where, as Mr. Shattuck indicated, the States have fiscal challenges. The Federal Government does. There is a $1 billion cap on the oil spill liability trust fund that we are very close to hitting.

And so BP is, to a large degree, the only funding source there. And if you want access to those dollars, you have to have a negotiation and they have to agree to fund it.

Senator CARDIN. That seems to be the problem.

Dr. Boesch, it seems to me that your recommendations really deal with that by suggesting there needs to be independent, scientific auditor available to verify that in fact we are using independent judgment here.

Elaborate a little bit more on that and whether you think we are implementing that recommendation?

Mr. BOESCH. I think having such audit independent assessment is valuable for a number of reasons. First of all, for the public confidence that the right thing is being done all the way around. Second, as we begin the restoration efforts, there is going to be a requirement to make sure, as Mr. Shattuck indicated, that this nexus between the damage and the restoration, to the degree possible, is there.

And having that independently evaluated I think is important because imagine, as he indicated, there are five States, each with their own independent, their unique problems and approaches to restoration, which is fine. But at the end of the day, they all have to meet that same standard.

So absent that, it becomes a problem as we want to court, to adjudication of this, not only between the Trustees and the responsible party, but by third parties who might hypothetically come in

and say, well, the money that BP gave you really wasn't used to redress this damage; you used it for some other way, so it shouldn't be counted against the amount that BP is responsible for.

For all those reasons, and I think the most important reason is to make sure that what we do with restoration is as effective as we can be. That independent evaluation I think is important.

And you ask the question to the agencies, and they do have lots of technical experts, but of course the technical experts work for the people within the agencies. So having someone who is independent, having a group that is independent of that I think adds real value and accountability to the process.

Senator CARDIN. I would just observe this is a similar issue that came up at our first hearing, whether we would have the capacity. I just think the process itself has an inherent conflict because of the funding source and the desire, quite frankly, to have a cooperative relationship with the responsible party. That makes sense. If you can do it, save time and save uncertainty and gets things moving. But on the other hand, you need to have the independence to move in the directions you think you need to.

And Mr. Graves, you raise a very important concern as to the selection of the site is critical to the assessment.

So I am not sure we have quite gotten there yet. I think there is a real commitment on behalf of the trustees to get independent scientific information, but the funding sources and the process itself is challenging. And if you don't have adequate baseline information, it is hard to make an accurate assessment.

And there, I think Dr. Rifkin, you have really come in and provided some real substantial help on the technology, and I am glad to see EPA is at least using the information that you made available. I hope it will be successful, that we will be able to get a more accurate assessment of the current damage.

Have you had any further indications from EPA?

Mr. RIFKIND. First of all, I would like to say that the methodology that we are using was developed by the USGS way over a decade ago and has been used by Federal agencies for many years. So this isn't just something a few scientists came up with recently. It is, however, not being used in the Gulf as part of the NRDA process, which is a shame. EPA has acknowledged the value in using these devices.

But since everyone was talking about funding, it is difficult to obtain that funding either from EPA or from NOAA or from other organizations. So we are in a position now where we are going to have limited data, which is going to be more sophisticated and significant; more sophisticated than what is currently being used in the NRDA process and very significant in attempting to quantify chronic damages in the Gulf.

But again, we are very limited in what we can do because of the lack of funding.

Senator CARDIN. Thank you.

Senator Sessions.

Senator SESSIONS. Thank you, Mr. Chairman. I appreciate this opportunity, and I don't think I have another round of questions.

I believe it is an excellent panel. It is indeed an excellent panel. We are beginning to have a congressional response to the damage

that the Gulf has sustained. We will work our way through that hopefully sooner, rather than later.

And I thank you for your leadership.

And Senator Boxer, our Chairman of the full Committee, has also given a good bit of her time and attention to this, and her leadership can help us lead to a successful conclusion.

Senator CARDIN. Thank you. I concur completely with our leadership of this Committee. I think that it has focused from the beginning on trying to get the right thing done and to move it as quickly and as completely as we can.

Senator Boxer has been very encouraging to this Subcommittee Chair to move forward on these issues.

Senator Whitehouse.

Senator WHITEHOUSE. I just wanted to give the remaining witnesses a chance to answer my earlier question, which had to do with what I perceive to be the inadequacy of the baseline research, and if you agree that is a problem, what can we be doing nationally to improve it. Again, not just specific to the Gulf, but including the Gulf.

Mr. RIFKIND. Well, first and foremost, I think the question is spot on, and it is a very difficult, complicated issue. Baseline for an impacted area such as Sarasota Bay is different than the baseline you will find currently along parts of the coast of Louisiana and Alabama because of previous spills.

And from my point of view, in order to get an adequate baseline, which is critical, the right information needs to be obtained periodically and monitored periodically, so that when a spill occurs, the baseline is there. It is too late after a spill.

And today, that is what we are always doing. We are always trying to find a baseline someplace where the spill hasn't existed, which in fact is not scientifically useful because that is not the area that we are going to be looking at.

So I think the agencies responsible for collecting data such as NOAA and EPA and Fish and Wildlife Service and other Federal agencies need to continually look and monitor, or look to and monitor certain water bodies such as the Gulf so if there is another disaster, that baseline will be available before and not concerns about it after the spill itself.

Senator WHITEHOUSE. Mr. Graves.

Mr. GRAVES. Thank you, Senator. I often pretend to be expert in various fields of my job, but I certainly know the limits of my expertise. If I were to ask that question, I think one of the first things I would do is probably e-mail Dr. Boesch and ask him his thoughts. So I would largely defer to him, in addition to our internal folks. And if it is OK with you, I would prefer to respond in writing.

Senator WHITEHOUSE. Mr. Shattuck.

Mr Shattuck. Sure. I am not scientist either, but I think there is a fine line. Disasters like this give us 20/20 hindsight vision, and it would have been great to have a better baseline, but we have to work with what we have. And what we learned from that is that it would be great to have a more extensive baseline study throughout the Country just in case something like this happens again.

But again, I know that you all are battling limited resources, as are we, and there is a fine line and balance of how much can we afford to do, versus addressing more immediate plans. And that is a risky endeavor, but it is one that economics might force upon us.

Senator WHITEHOUSE. And clearly a good deal of this research is done at the State level and through States, through what in Rhode Island is called the Coastal Resources Management Council, for instance.

And as States find their budgets slaughtered, it is hard to imagine that this will improve. And the Federal funding environment is one that is looking at cuts. And so I think it is important that we try to find new and lasting sources of funding so that we are not as ill-informed about the actual status of our oceans and coasts as we are right now. In many respects, we are flying blind in certain areas.

And so I appreciate the testimony of all the witnesses.

The only other point I would like to raise briefly, it hasn't come up yet and I don't know if it is a problem. There is a concern that when you get to a major incident like this and you have a responsible party that is pretty evident, and there is a lot of money at stake, one of the first things that they do is go in and buy up all the science; put as many scientists as they can under contract with whatever it takes to get them. And then they can dole out which ones they want, and the other ones they just have bought their silence, more or less.

Have you seen that as a problem? And is that something we need to attend to?

I guess I will go to Mr. Graves for that.

Mr. GRAVES. Senator, it absolutely is an issue. Everything from the attorneys we were interviewing back in May to some of the consultants, scientists and other experts. Many of them were conflicted out either by pre-spill contracts or there certainly was a big rush by the responsible parties to pick those folks up. It absolutely has been an issue.

Thankfully, one of the major areas of science where we needed assistance we were able to work our an agreement with the Federal Government to share a consultant there, but I think it is an issue.

Senator CARDIN. Again, let me thank all of you for your testimony and for your work in this area. This is a continuing interest to this Committee and its oversight responsibility.

Obviously, we have to get this right. The stakes are very, very high for all of us. It affects our entire Country, not just the directly impacted regions.

So we have got to get this right. We need to learn from how we handled previous environmental damage areas and we need to make sure that we can justify the process at the end of the day as being in the best interests.

One of the encouraging signs, let me just point out that it seemed, and it was a point that you raised, Dr. Boesch, dealt with the long-term issues. It looks like that as this is moving forward, there is sensitivity that the final assessment include monitoring to make sure that we carry out the intended restoration that we thought.

It looks like we have made progress since our first hearing on that issue because that was raised immediately that there would be damage for a long time to come that may not be quite as well defined by the time agreements are reached. It seems like there is sensitivity among the Trustees to make sure that is included in the long-term solution.

So let me again compliment all of you for your work and we will look forward to continuing to work with you.

With that, the Subcommittee will stand adjourned.

[Whereupon, at 12 p.m., the subcommittee was adjourned.]

[Additional material submitted for the record follows.]

STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Thank you, Senator Cardin, for conducting today's subcommittee hearing to discuss the difficult and extensive process of determining natural resource damages stemming from BP's Deepwater Horizon disaster. As the Committee of Jurisdiction, one of our fundamental roles is to provide oversight of the Natural Resource Damage Assessment (NRDA) process. I look forward to getting an update on the assessment and a thoughtful discussion on some of those issues today.

Today our committee welcomes two panels of witnesses, Federal and non-Federal, that have diverse and unique experiences to share. I'm particularly happy to have witnesses from the Gulf Coast such as Cooper Shattuck, Chairman of the Executive Committee of the NRDA Trustee Council, and Garrett Graves, Chair of the Coastal Protection and Restoration Authority, State of Louisiana.

As many of you may know, my initial reaction to the Administration's response was critical, as noted in my report entitled, "Failure of Leadership: President Obama and the Flawed Federal Response to the BP Disaster". Perhaps time will tell us that the greatest threat to the Gulf came from the Obama administration's regulatory overreach on offshore drilling.

While we still do not know the full extent of the effects from BP's Deepwater Horizon spill, we owe it to the Gulf region and the American people to carefully examine the effectiveness of the Federal response. I hope that this hearing today will be a positive step in that direction.

Statement of the Northwest Florida Tourist Development Council Coalition

Submitted by Dawn Moliterno, Executive Director Beaches of South Walton Tourist Development Council
to
The Senate Environment and Public Works Committee - Subcommittee on Water and Wildlife

Hearing on the "Status of the Deepwater Horizon Natural Resource Damage Assessment"
June 28, 2011, 10 a.m.

Thank you, Chairman Cardin and Ranking Member Sessions for the opportunity to share with your Subcommittee a local perspective of what is needed as part of the Deepwater Horizon Natural Resource Damage Assessment (NRDA).

The Deepwater Horizon disaster on April 20, 2010 impacted Northwest Florida's Coastal Counties in many ways, and the long-term effects of this event have yet to be determined. The eight coastal counties: Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, and Wakulla, have all experienced damages to their natural resources that have adversely impacted each of their respective coastal regions. To ensure that Northwest Florida remains unified in our recovery efforts, we have created the Northwest Florida Tourist Development Council Coalition, which is comprised of counties in our region that are concerned with the environmental consequences for our communities.

In Northwest Florida, these eight counties feature unique natural resources related to the Gulf of Mexico and its shoreline. Pristine beaches, coastal dune lakes, and other geographically-specific features have served to distinguish these counties as a destination for tourists and new residents alike. Additionally, much of our economy relies on these same natural resources. Whether it is fishing, seafood restaurants, or the charter boat industry, the Gulf is a critical part of life to the residents of these eight counties.

Without question, the oil spill impacted all of these resources. While the responsible party has been forthcoming with grant money to help market and advertise for tourism within the region, providing adequate compensation for lost or damaged natural resources is equally important to the long-term recovery of our region. Without these unique resources that our area is known for, many of the communities in Northwest Florida may never return to the vibrant economies they experienced before the oil spill.

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The initial allocation of $1 billion dollars to early cleanup and restoration under the NRDA is a good beginning. It does not, however, provide the long-term solution to this problem that the region needs. Each state has been allocated $100 million dollars of this money and that amount will likely only scratch the surface of what is needed to restore and replace the damaged resources in Northwest Florida. Additionally, it is our hope that the Natural Resource Trustees will discuss partnership opportunities with the affected States so that larger-scale restoration projects can become a reality.

It is important that BP's voluntary contribution towards early restoration under NRDA be monitored to ensure that projects that are significant to local environmental restoration are sufficiently funded and constructed in a way that provides adequate benefit to the community. As the initial projects are authorized, it is important to look at what other long-term, large-scale projects are necessary and to encourage voluntary contributions towards those projects, as well.

Thank you again Chairman Cardin, Ranking Members Sessions, and other members of the Subcommittee on Water and Wildlife for allowing me the opportunity to represent Northwest Florida's Tourist Development Council Coalition before your Subcommittee. I am hopeful that you will continue to seek input from those who are directly impacted by the Deepwater Horizon Natural Resource Damage Assessment.

Sincerely,

Dawn Moliterno
Executive Director

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Dawn A. Moliterno was appointed the Executive Director of the Beaches of South Walton Tourist Development Council in April of 2010 by the Walton County Board of County Commissioners. Since that time, she has been instrumental in directing the Beaches of South Walton through the Gulf oil spill situation and has provided proactive leadership to the industry to help mitigate losses to the tourism industry.

The Beaches of South Walton is a premier tourist destination located along Northwest Florida's Gulf Coast. Ms. Moliterno manages an annual budget of $11 million. She oversees the strategic development and implementation of all research, marketing and communications plans. Her role also includes extensive communication and consensus building with the governing board of County Commissioners and a nine-member tourism related board and the community.

Ms. Moliterno was recently appointed to The Governor's Gulf Oil Spill Economic Recovery Task Force along with 25 other community leaders throughout the state. Ms. Moliterno was appointed to the Northwest Florida Beaches International Airport Authority in 2009, and was very instrumental in the opening of the new airport. She also played an integral role in helping to secure Southwest Airlines at this airport, which will serve the region with 8 flights daily.

Ms. Moliterno joined the Walton Area Chamber of Commerce & the Walton Area Chamber of Commerce Foundation as President and CEO in October of 2005. The Walton Area Chamber services over 1,300 business members throughout the region representing over 27,000 employees. The Walton Area Chamber Foundation provides programs and services that enrich the lives of the residents in our community ranging from the creation of a Workforce Housing Resource Center to a Leadership Development Program.

Recently, through Dawn's leadership The Walton Area Chamber embarked on a new initiative in conjunction with Walton County, City of DeFuniak Springs, and the City of Paxton to create the Walton County Economic Development Alliance. The EDA is the driving force for collaborative leadership, leveraged by public and private members, working to retain and attract businesses, promote sustainable development, address infrastructure challenges, and improve the quality of life.

Dawn A. Moliterno has been supporting, growing and developing organizations for many years. She founded Introspect Associates, Ltd. out of a growing desire to help organizations sustain profitability and success and to help bridge the gap between non- profit and for-profit organizations. She sold the business upon relocation to the Gulf Coast. As a business strategist

she has over 16 years' experience in leading organizations through competitive challenges, organizational change, transformational leadership, strategic planning, marketing, membership development including retention and sales.

Dawn's career started in the Shopping Center/Retail Industry working for the Cafaro Company as a Corporate Marketing Manager and Company Spokesman for 10 years. The Cafaro Company was the 7th largest shopping center developer in the country. She moved on to apply her marketing, communication and strategic development skills to the chamber of commerce arena and took her Regional Chamber from 1604 members to over 2500 in four short years. Dawn served as Vice President of Marketing & Membership and had oversight of all membership, marketing, strategic partner relationships, product development, sales and advertising efforts for the Regional Chamber.

She often was called upon to support many other chambers while working at the Regional Chamber, because her efforts lead the team to winning over 15 national awards. Four years later, Dawn continued to meet the needs of associations and chambers across the country by launching Introspect Associates, Ltd. Introspect Associates, Ltd. built the reputation as an industry leader and expert.

Dawn serves on numerous boards throughout the area such as Northwest Florida Beaches International Airport, Okaloosa/Walton Workforce Development Board, West Florida Regional Planning Council CEDS Committee (Comprehensive Economic Development Strategy), and Scenic Corridor Association. She has presented at a number of speaking and training events on behalf of ACCE throughout the country including their National Leadership Conference, Regional Education Conferences and Dialogue teleconferencing series. She has authored an industry book published by ACCE and registered with the Library of Congress. Dawn has also taught and presented for the U.S. Chamber at their Institute, and at a number of State Chamber Conferences.

The Florida Public Relations Association's (FPRA) Northwest Florida Coast Chapter named Dawn their Person of the Year in 2008. Each year, the Northwest Florida Coast Chapter of FPRA recognizes a person or professional who has made a significant contribution within the field of public relations or in the community. This person is usually someone outside the public relations profession who has made notable contributions to the community and has employed PR strategies and tactics.

In addition, Dawn was selected by Florida Senator Don Gaetz and other Congressional leaders to represent Northwest Florida at the 2008 Leadership for Women in Business Conference. On September 22, 2008 the Honorable Jeff Miller of the First District of Florida recognized Dawn in the Congressional Record for her achievements and contribution to Northwest Florida.

Dawn and her family relocated to Miramar Beach, Florida in 2005 after residing in Canfield, Ohio and Scottsdale, Arizona for a number of years. She attended Scottsdale University, and is certified in leadership development and training through many well-known leadership organizations. She and her husband founded a leadership development program that was the first

of its kind nationally and is certified by three college universities. She serves on numerous Boards' throughout the area.

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