U.S. DEPARTMENT OF COMMERCE

+ + + + +

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION (NOAA)

+ + + + +

HYDROGRAPHIC SERVICES REVIEW PANEL
PUBLIC MEETING

+ + + + +

THURSDAY
NOVEMBER 29, 2012

+ + + + +

The Panel met in Ballrooms 1 and 2 at the Astor Crowne Plaza Hotel, 739 Canal Street, New Orleans, Louisiana, at 8:30 a.m., Matt Wellslager, Chair, presiding.

PRESENT:

MATT WELLSLAGER, Chair

SCOTT PERKINS, Vice Chair
REAR ADMIRAL KEN BARBOR
LAWSON BRIGHAM, Ph.D.
JEFFREY CAROTHERS
CAPT. DEBORAH DEMPSEY
REAR ADMIRAL EVELYN FIELDS
WILLIAM HANSON

DAVID JAY, Ph.D.
GARY JEFFRESS, Ph.D.
FRANK KUDRNA, Ph.D.
CAROL LOCKHART
JOYCE MILLER
SUSAN SHINGLEDECKER

NON-VOTING MEMBERS PRESENT:
ANDY ARMSTRONG, Center for Coastal and Ocean Mapping, University of New Hampshire
JULIANA BLACKWELL, Director, National Geodetic Survey
RICHARD EDWING, Director, Center for Operational Oceanographic Products and Services
DAVID KENNEDY, Assistant Administrator, National Ocean Service

NOAA STAFF PRESENT:
REAR ADMIRAL GERD GLANG, HSRP Designated Federal Official
TIM OSBORN, Navigation Manager, Gulf of Mexico Region
MARGARET SPRING, Principal Deputy Under Secretary
CAPT. JON SWALLOW, Chief, Navigation Services Division, Office of Coast Survey
KATHY WATSON, HSRP Program Coordinator
CRAIG WOOLCOTT, NOAA/NOS/PPAD

ALSO PRESENT:
HENRI BOULET, Executive Director, LA-1 Coalition

HONORA BURAS, CPRA
JON DASLER, David Evans & Associates
RALPH DIAZ, Boh Brothers Construction
COLONEL EDWARD R. FLEMING, U.S. Army Corps of Engineers New Orleans District Commander
GARRETT GRAVES, Coastal Protection & Restoration Authority of Louisiana

CAPT. SHERRI HICKMAN, Houston Pilots
TARA LEVY, C&C Associates
JAMES MURPHY, MARAD
MIKE NITSKA, The Hydrographic Society of America, Louisiana Chapter
CAROL PARSONS RICHARDS, Coastal Protection & Restoration Authority of Louisiana

GEORGE PETRAS, U.S. Coast Guard
ANCIL TAYLOR, C.F. BEAN

TABLE OF CONTENTS

P-R-O-C-E-E-D-I-N-G-S

8:30 a.m.

CHAIR WELLSLAGER: Good morning. Welcome to Day 3. Today is going to be where we will break out in the stakeholder breakout sessions. There will be three sessions. They will upstairs. Kathy could you please give us directions again.

MS. WATSON: You go out here to the elevators and just go up one floor to M2, mezzanine 2 and walk down the hallway, the same way as the room here. Hydrographic Surveying/Charting is Bourbon room, Geospatial is in the St. Ann room. Tides, Currents & Water Levels in the St. Louis. They are all in the same corridor here. There are split charts in there.

CHAIR WELLSLAGER: Thank you. Yesterday we had stakeholder panel sessions and heard from people using the navigational services and the Geospatial and Water Levels stakeholders. These were to serve as the

ideas and the talking points for what we are going to hopefully address more and break into more specific conversations upstairs in these. The sessions will begin at 9:15 and they will last until 11:00. And again as just a refresher I was requesting that Bill Hanson would facilitate with Joyce, actually helping take notes for the Hydrographic Surveying. And Kathy, we know where these, each of these breakouts, they will have the reference to the breakout session each at each of the rooms?

MS. WATSON: Yes. You will see it.

CHAIR WELLSLAGER: Okay. For the Gary Jeffress with Carol taking the notes. The Tides and Currents, Ken Barbor with Susan the notes for the things that go on. And then we had hoped to have Admiral Fields and Frank addressing or staying in with the Hydrographic Surveying, Lawson and Jeff Carothers in the Geospatial and then David Jay and Deborah Dempsey in the Tides and Currents. And the

idea is for the general public to please attend your choice of one or several of these while we have them ongoing because its going to be interesting from what you provide to us as input as to where we are going to take and come up with some results from this or these breakout sessions.

Afterwards we will from 11:00 to 11:30 put the notes together and come up with some ideas for the recommendations, have lunch, the keynote speaker and then do debriefs in the afternoon.

We are fortunate today or very fortunate today to have a representative from the Corps of Engineers, the New England District Commander, Col. Edward Fleming available to address us on the Mississippi River Levees issues with flooding, lessons learned from Katrina and Isaac and e-navigation or electronic charting for the Mississippi River. That is a plethora of interesting topics to talk about and I

couldn't think of anyone better than yourself to do it. My request will be though since our court reporter is taking notes to either to wear electronic lesions, speak into a microphone or stand behind the podium if you would please.

COL. FLEMING: Yes sir. I'm miked. Can everybody hear me okay? Okay. Well good morning, ladies and gentlemen. Thank you for inviting me here this morning. I am Col. Ed Fleming. I command in the New Orleans District. I think there was a Freudian slip, we said the New England District. Actually, being from a place called Lowell, Massachusetts I wouldn't mind being the commander of the New England District because then I would be back in my old stomping grounds in my hometown. My dad is 86 years old, a World War II vet and still lives up in a place called Lowell, Massachusetts. I'm the youngest of seven kids. So I have six older brothers and sisters and of course

brothers-in-law and sisters-in-law and nieces and nephews and most of them are all up in the New England kind of area still. So, it was nice that Matt referenced the New England district. It kind of made my heart skip a beat there a little bit.

CHAIR WELLSLAGER: We have a lot of influence, but not that much.

COL. FLEMING: Right. However, I am very happy to be in the New Orleans District and be the New Orleans District commander. It is a great challenge. I think most of you know a little bit about the Corps but we are an organization that's about 34,000 folks around the world. We are commanded by a three star general, a guy named Lieutenant General Tom Bostick. The majority of the Corp of Engineers are civilians, Department of the Army civilians. Of the 34,000 folks there's probably only about 800 that are military. The rest of them are civilians. From the three star level we break down into divisions

around the nation, actually around the world. A division is normally commanded by a one or two star general. The division that we are in right now is the Mississippi Valley division. Some call it the long skinny division, runs all the way from Minneapolis, St. Paul all the way down to the Gulf of Mexico. So my boss is a guy named Major General John Peabody. He is dual-hatted as the president of the Mississippi River Commission and the commander of the Mississippi Valley Division of the Army of Corp of Engineers. He sits in Vicksburg. So its nice to be here in New Orleans and have my boss up in Vicksburg. I don't have to worry about. So there are nine divisions around the country. There are 44 districts. So there are 44 other colonels right me. Again one is in the New England district and of course we have one in New York City, the New York district. A lot of folks have seen that he has kind of suffered some impacts here the past couple of weeks, 60 days or so with

Hurricane Sandy. So again that's kind of a snapshot of the Corp of Engineers. My district here in New Orleans, it actually goes from the Pearl River in the East to the Calcasieu River near the Texas boundary in the West. From the Gulf in the South all the way up to kind of about on a line with Angola State Prison or kind of where the State of Louisiana kind of takes a turn and the boot comes out if you draw a straight line across there. From their South is my district. The Vicksburg District is to my North. I've got Mobile on the East and then I have of course Galveston on the West. So again that's kind of situated where we are here.

I want to talk mainly about three topics. I'm not going to get into a lot of the electronic charting. In 20 or 30 minutes I couldn't get a levees topic squeezed into a short period of time. I know you are having a lot of discussions about those things with a lot of other folks. The first two topics

are kind of extremes. In the Spring of 2011 we had a record flood along the Mississippi River. Now here we are in the Fall of 2012 and we are seeing unbelievable drought conditions. So I wanted to share with you a little bit of how those are impacting us here in the small area of Southeast Louisiana and then talk a little bit about Hurricane Isaac that we saw this past Fall and how that impacted us here in New Orleans kind of the post Katrina world that we are in here in New Orleans. So I will take some time and talk to you about those couple of things. I think I do have 30 minutes right? Until what time? So I'm suppose to be done at 9:15 right? Okay, very good.

I know a lot of you are familiar with the geography so I won't bore you with it. 41 percent of the nation drains into the Mississippi River. It is the third largest water shed in the world. And as I said there are colonels all around the country. I have

a good friend here in Pittsburgh. He continues to tell me when he flushes his toilet two weeks later it goes straight pass my office window. It is absolutely true, absolutely true. But so does my friend in Omaha, the exact thing happens with him as well. And Mike Price who was actually a West Point classmate of mine up in the St. Paul district, the same thing happens with him as well. So we are the funnel down here at the bottom with which 41 percent of the nation drains. So goes the nation, so goes New Orleans and so goes southeast Louisiana. Many of you are familiar with what happened in the Spring of 2011, but I wanted to show you a chart that this is a chart that we used in our daily briefing updates. What this shows is this shows the Mississippi River and the Calcasieu River stages. This is a snapshot on the 25th of May at 6:00 in the morning. These gauges go from north to south, from Cairo, Illinois down to New Orleans. The last three

are along the Atchafalaya River. So they are not the Mississippi River. The Mississippi River stops here at New Orleans. We will brief this every day. We can predict what the stages were or what the actual stages were as we saw them coming down. So you can see the numbers that are in red. Those are record stages. Those are record stages. Now, we used the stages you could use flow. You could a lot of different things. For this particular briefing it was a twice daily update that we do with our staff. We use stages. So you can see all the way from Cairo, Illinois where of course the Ohio River comes into the Mississippi at Cairo, Illinois. Cairo is the southernmost point of the State of Illinois and this is where the Ohio comes in. The vast majority of the water in the Mississippi River doesn't come out of the Upper Miss. It comes out of the Ohio River, probably up to 75 percent of the Lower Mississippi comes out of the Ohio. A little

bit out of the Upper Miss and a little bit out of Missouri. If any of you guys have ever been up to the head waters of the Mississippi River you can walk right across it as opposed to here where you would have a tough time walking. As a matter of fact, the Mississippi River right out of the window here is probably naturally about 220 feet deep, naturally. We don't dredge this portion of the Mississippi River. It is a naturally deep channel. So anyway, you can see here and look most of the se records were set in the 1927 flood. Of course in 1927 there was a huge flood, thousands of people died, hundreds of thousands of people were displaced and next year, the next year 1928 Congress said we are never going to let that happen again. They directed the Army Corp of Engineers to build what's called the Mississippi River and tribute Terry's program, which is still intact today. That's what allowed us, that gave us the authority to build the levees along the

Mississippi River again from Cairo, Illinois all the way to the Gulf of Mexico. So we started that in 1928. It is not just levees. It is levees, its flood walls, its backwater flooding areas, its flood ways and spillways, its pump stations, its channel improvement. If you haven't seen or haven't heard something called the mat sinking unit, what we do is we sink concrete articulated mats in certain places along the side and along the bottom of the Mississippi River. That obviously decreases the dredging that we have to do and it provides an efficient channel for navigation. Now there are other impacts as well. But the mat sinking unit and the ability to do channel improvement also comes from the 1928 Flood Control Act, again as a result of the flood of 1927. So all of these records that we set were all based on, many of them based on 1927 flood. A lot of people ask me in New Orleans we crested on the 14th of May. But we didn't crest a river until the

17th, 18th, 19th of May. How can you crest down river in New Orleans before you crest up river? There is a simple answer. It's called the Bonnet Carre Spillway. When we hit the trigger to open the Bonnet Carre Spillway we in essence set an artificial crested New Orleans that which we were not going to go higher than. Because the river levees again right outside the window here, the levees south of New Orleans downstream from New Orleans are designed to have a flow of 1.25 million cubic feet per second. A foot by a foot by a foot. 1.25 million cubic feet per second. That is the flow that is designed right outside the window here. Anything above that we open up the Bonnet Carre Spillway and we just take it off the top. We do the same thing a little bit further upstream to a place called Morganza. Okay, so Bonnet Carre Spillway, the maximum is 250,000 CFS. So if it says 1.25 million here plus 250 above Bonnet Carre is 1.5. So along Baton Rouge is

1.5 million cubic feet per second. Anything more than that, there's a spillway north of there called the Morganza Floodway. We did in fact have to open up the Morganza floodway. We can take over 600,000 through Morganza. So the levees above Morganza, over 2 million cubic feet per second. So it's a very dynamic system that was designed and constructed starting in 1928 that works wonderfully. And it's very simple. I'm going to show you a couple of pictures about that.

We talked about the Bonnet Carre Spillway. New Orleans is kind of down the map here, downstream a little bit here. So we are only about 15 miles upstream from the City of New Orleans. The Bonnet Carre Spillway is right here. It's right on the river. You open up the spillway and the water comes off the river and goes into Lake Pontchartrain. You can see the in action here. Of course this is the riverside. You can see we've got the gates almost all these gates we opened in

the Spring of 2011. Right there you see two little red cranes. Those are railroad tracks and the trains go along the railroad tracks. We've got an office building and a kind of supply area up in here. What this is, this is a series of railroad ties that are vertically standing up. Now when the river gets to about maybe plus 12 or plus 12-1/2 we start to get a little bit of overtopping, over the weir, over the low sill and that's okay because there is kind of series of channels and culverts that kind of let the water go through the spillway area. We can still use this. If you were to go out there right there you would see people out there hunting and fishing. You would see ATVs out there. You would see families out there on bicycles. This is a recreation area. This is a recreation area. There are roads across there. You can see railroad tracks. And of course there's no water there. It's dry. If you were to go out there right now, as a matter of fact if you

drive out of here on I-10, if you are leaving here and you go up north on I-10 or west on I-10 toward Baton Rouge, you will go across the Bonnet Carre Spillway. You can look on either side and see it dry and see people out there having a great time with their ATVs, and their four-wheelers and their remote control airplanes. So there are railroad ties and when we need to open it we lift up the railroad tie and lay it down on top. Again, this was designed in 1928. They constructed it and it was opened, finished in 1931. It's a very simple design and works extraordinarily. It's been open about ten times since it was first commissioned. My predecessor was a guy named Al Lee, Colonel Al Lee who is now SES in the Corp of Engineers. He opened it up in 2008. Prior to that it had been about every ten years. There were a couple of times in the 1970s, but really it had been about every ten years. So he said don't worry about Bonnet Carre, you won't have

to open it. I did that. It won't be open for another ten years. Of course here I am three years later and not only did I open up Bonnet Carre but we had to open up Morganza as well. But, this is federal property back in here. Okay. So this is in fact a spillway. And nobody lives there. There's no structures, there's no nothing. There's a couple of parish roads. But it is recreation area. Its federal property. There's no consequence to any structures anything that.

This is a little bit further upstream. So you can see again in this little inset map. New Orleans is down here. The Bonnet Carre allows water to go into Lake Pontchartrain. We are up here a little bit further north. You can see, what happens here is the Mississippi River and this area will just naturally overflow with the banks into this forebay area. There is a little potato ridge levee kind of agricultural thing, private thing. This usually gets over-tucked

every year or two and this gets wet. But again this a natural process. The main line river levee of course you can see this dark black line, main line, river levee kind of goes like that. But this gets over-tucked. This is the Morganza structure right here. This is LA Highway 1 and you can see it right there, State Route 1. This is the forebay and this is of course is where some of these gates open here and some of these gates open here. The water goes into the floodway. It is a floodway. There are structures in the floodway. We don't own the property but we own an easement, a flowage easement on that property. When we built that structure we paid the property owners for that flowage easement. Every year we send a letter to the property owners and we tell them don't forget we have a flowage easement over this property. We reserve the right to put 25 feet of water on this property. We send that letter out every year. Now most of the people, there's

really very few people who live in the floodway. There are lots of what do I call it down here? Fish camps. Hunting camps or fish camps. Normally I can do probably a double-wide built up on stilts. That's kind of if you would think of a fish camp, lots of those. But there are some people that live in the area and of course as you get further down in this area along the Atchafalaya there are a couple of towns down here. There are three in particular. Two have ring levees, one doesn't. There's a little community down here called Butte La Rose. I went to a town hall meeting. So not only did we send a single letter that we are suppose to send in Spring of 2011. We sent two letters. Because don't forget. I can see it coming for weeks. I can see the slug in the river coming for weeks. We knew it was coming. So we went the second letter. I said I'm really telling you don't forget. I have the authority and we paid for this easement to send this water across your

property. So we are probably going to have to do it. So we went to a series of public meetings, town hall meetings to inform folks. We went to schools. We went to fire stations. We went to church basements. Its hard to stand up there and tell people that I'm going to put 15 feet of water over your property and that you better do something about it. I can remember being in a fire station probably not much bigger than this, a two bay fire station down in this little place called Butte La Rose, Louisiana. There were 350 people in that fire station. You could hear the gasp in the room when I told them that we were going to open up a structure and put 15 feet of water over their property. Now, fast forward to the end of the story. When we opened up the structure it was so ironic because of the, of course, the Spring 2011 flood in the Mississippi River was not caused by anything in Louisiana. It was caused by six to eight hundred percent of the normal rain in the Ohio

River Valley. We were in drought conditions down here. So it was so ironic to go by somebody's house where they would have sandbags surrounding their house but they would have a house with a sprinkler kind of weaved through the sandbags because they wanted to keep watering their lawn. It was just an unbelievable sight to think of that we were in such a drought condition but yet we were preparing for this record flood. So we didn't have 15 feet across a lot of these properties. We had about 15 inches. The main reason was the drought. So when we opened up this spillway here and this is all a gated structure. It's not railroad ties. It's more gates. So when we opened up these gates, again a crane like structure that comes across and opens these things up. When we opened these up through the floodway, the earth just sucked up that water so fast because it was just so parched and so dry. It just sucked it up so fast. So there were two or three other

reasons why we didn't get the 15 feet that we thought. The topography in the floodway has changed. Of course this had only been opened up one other time in 1973. So I only had one data point to go back to. And think about what our record keeping was like in 1973 versus what we've got now. So we were kind of flying blind. But again a lot of the water drained off to the east. There's a bayou that comes down here, Bayou Sorrel. A lot of water came into Bayou Sorrel. We did get water all the way down and then of course once you get down to this point it just mixes in with the Atchafalaya River. Once you get down here it mixes in with the Atchafalaya River and just flows all the way down to the Gulf. So we operated the Morganza structure for the second time, the first since 1973. Okay, so when you go through a record flood think of at least I know when I was a kid, there were huge heavyweight fights. You know, Tyson, not Tyson, you know you had Muhammad Ali and you

had Joe Frazier and you had Foreman. They would go 15 rounds and they were pounding each other. They were all bloody and bruised. That's what this system was like after this flood. They were just bloody and bruised and think of having the project flood of record on these levees and structures for greater than 60 days. There were sand boils. There were slides. There was damage to the structures. When you operate the Morganza structure for the first time since 1973 there's going to be some challenges when you operate something like that. Of course we do all the operations and maintenance all the time. That is funny because I was on the structure that day when we opened it up. And Russell Beauvais who is the supervisor out there said "okay Colonel, get up on in that crane and open up that gate." I said "Russell, I am not going to do that." I said "you guys haven't opened these gates for years with no water going through them, just rehearsing and practicing and doing

maintenance on them and testing them and lubing them and checking the seals. This is your super bowl. I'm not going to come in here and open up the gate. You get up there." You should see the smile on his face. He was live on CNN and he was so excited. He was going to get a chance to go in the crane and open up that gate because this was his super bowl live on CNN. I wasn't going to do it. So anyway, I know you can't read this, but we had over 450 hot spots that we monitored on a daily basis. We went out and inspected all the levees and all the structures on a daily basis. That 450 got whittled down to about 54. There were 54 items that we needed to work on and there was a supplemental that was passed. The Corp of Engineers around the country got a couple of billion dollars. The New Orleans District itself, we got 550 million to go back and do the maintenance and do the repairs on the levee systems on the structures. So we are doing it and do some

dredging as well. Because obviously the river carried lots of sediment with it all the way down. So anyway, just kind of a snapshot of over 500 million dollars of work that we did.

Okay. So now 2012. We all know we are in drought conditions all around the country. We all know that 41 percent of the nation funnels into the Mississippi River, drains into the Mississippi River. If there is nothing in that 41 percent then nothing drains into the Mississippi River, okay. So if you remember I had to open the Bonnet Carre Spillway because we were above 1.25 million cubic feet per second. I would say if you were to go out there today you would probably be in about the 150,000 to 200,000 cubic feet per second. So we are in order of magnitude less than what we were in the Spring of 2011. That causes a problem. That causes a big problem. Because as you get further down the river, the salt water wants to start to creep up the river. You don't have that flow coming

through and so now you are counter acted by the Gulf of Mexico and the tide and the salt water that wants to come up the river. In the early 1990s the Corps of Engineers deepened the Mississippi River channel. Because as I said we don't dredge up here but we dredge mainly down in the southwest area. That's way down at the bottom of the bird's foot. We deepened it from 40 to 45 feet. So we went from 40 to 45 feet. Part of the deal was we had to have some mitigation associated with that. Because we knew that salt water was going to come in more frequently. One of the mitigation, one of the things we do is when we are in a situation like this, we can barge water to lower Plaquemines Parish. Look, when you really get right down to it, the big deal is the salt water can impact the domestic water intakes. Once you get over 250 parts per million salinity, that's where the domestic water intake start to have concerns. You won't allow them to take that water in and

treat it anymore. Of course we aren't treating for salinity anyway, right? I mean the domestic water intakes don't treat for salinity. But even people who have other physical ailments can't take salinity probably 100 or 150. So there are intakes way down the Mississippi River from Plaquemines Parish that are going to be impacted. We knew this was happening. Of course we all know salt water is more dense than fresh water. So the salt water comes up the Mississippi River and it comes up in kind of a wedge formation. So you can see the wedge down here and you can see the salt water that's below. Now we know, I don't know how we know, I don't know why but we know from the total to the location where the 250 parts per million starts to impact the domestic water intakes is about 15 miles. It holds true. I don't know why, it just holds true. I'm sure one of you guys, one of you smart folks could tell me why. So we have a trigger of when we have to build this sill.

Because we know how long it takes. We know where to build it. We know where the intakes are. It just becomes a pretty easy math problem of okay, award the contract, build the sill, don't impact the intakes.

So, okay, let me keep going. That's what we did. What the sill is, is basically a levee across the Mississippi River on the bottom of the river. So that's what we did. So we ordered the contract, Great Lakes Dredging, was awarded the contract. That was a good day for some of you guys. The borrowed site was just north of the sill. We built this at approximately mile 64. So just so you know this is about river mile 90ish around the city. So, about 35 miles downstream. That's where we are building it. The borrowed site was right here. We would take, borrow up the bottom of the river, pump it and then put it in place. That would of course stop the salt water from coming upstream and that would arrest the salt water intrusion further up.

And again, because of the drought conditions, not necessarily here but we are still in a drought condition. But around the rest of the country, this is one of the impacts of something like that. Of course Great Lakes didn't pay me to say this but that's a pretty damn good job. When you give somebody a drawing like this and they end up like that and like that, that's not bad. Dredging companies are very use to dredging and they are very use to depositing material maybe in an upland or maybe in a confined disposal area or maybe in a hopper. And then dumping it somewhere. But now we are telling them to dredge it, pump it and then have this kind of hose looking thing go 90 feet below the water and put it into a formation that looks like that. So they did a pretty good job. You can see here this is the left descending bank. This is at river mile 63.8, left descending bank, right descending bank. The first order of business was to fill in this hole. There's

a 90 foot, well -90 a hole right here down to -90 that they needed to fill in. And then over here it's not as bad. So again why at 63.8? Because we know 15 miles away from there is the intake at Pointe a la Hache. So we can arrest the salt water right here. So again, I never thought I was going to be building a levee along the bottom of the Mississippi River. I'm building levees all over the place like crazy here but I never thought I was going to building one in the bottom of the Mississippi River and we did that.

Okay. Briefly on Hurricane Isaac. It is very obvious but it is one of those things we have to continue to reinforce to folks. Because everybody has a baseline. They say I didn't flood during Betsy or I didn't flood during Katrina or I didn't flood during Rita or pick a storm, you know. How can I flood during Isaac? I don't understand it. Anybody who was inside the system "the

system", the post Katrina system didn't flood. The system worked the way it was designed to work. But there were three particular locations outside that did flood. So the first reaction is "oh it had to have been because you built this big flood wall up here that that water came into my neighborhood." So we said okay we're going to go back and we obviously have plenty of models, we are going to take Hurricane Isaac and run it through the model with the system in place as it stands right now and it would take system to like it was the day before Katrina. We are going to run it through that. We are going to figure out what were the impacts due to the system. We already knew the answer because before we even designed it, we had to run these models. We can't build something that's going to induce flooding somewhere else without taking that into account in the construction. If we are going to induce flooding somewhere else, then we have to take over action to build

something or to stop that induced flooding in that somewhere else. So we already knew what the answers were going to be but we wanted to confirm. Again, one of the things is every hurricane is unique. It doesn't really matter. So we looked at, we kind of and again I don't preach to the choir but really three main characteristics of a hurricane. The track, the forward speed and the time that you have the hurricane storm forced winds. Notice they don't say anything about category. Category for me anyway and for a lot of the folks in the Greater New Orleans is interesting but that's about it. It is just interesting because it is all just based on wind speed. It is all based on, I've had lots of discussions with Rick Knabb. Dr. Knabb and I are good friends. He is the director of the hurricane center. I've told him how many times that the Saffir-Simpson scale is not useful for us anyway. It is useful for some people. But we also did go down the road,

okay well how do you change it? How do you adjust it? It's not an easy problem. So, I do feel bad for him but we have had discussions about that. But look, we all know if you are on the east side of a hurricane that's the bad side to be on, okay. That is clearly the bad side to be on. And Hurricane Isaac for the most part, the Greater Metropolitan area was on the east side of Hurricane Isaac. The second thing is the forward motion. Hurricane Isaac came through here at about six miles per hour, very, very slow in terms of hurricane standards. There was a time there where it actually stopped and moved laterally. And then of course the wind speed. We have trouble with storm forced winds in this area for about 45 hours. That's a long time that build up water and to just stack that water up. So I think I have, okay. So what we did was we said since kind of the most recent faceline for folks is Katrina, let's just do a quick snapshot of a couple of

things comparing Isaac to Katrina. Okay, so this was the Katrina path. This was the Isaac path. Here is New Orleans, Greater Metropolitan area. So again, when your path goes in this direction and you are on the eastern side and the winds are blowing counter-clockwise you are already going to have a bad day. Secondly, again Katrina came in, 17 miles per hour, pretty brisk for a hurricane and Isaac 6. So again, so okay here is, let's see here is midnight on the 29th of August, 2005 and here is 8:00 a.m. in the morning. So Katrina went from here to here in eight hours. Here is noon time on the 28th and here is 18:00 on the 29th. Now grant it, it is not a straight line distance but you can see obviously when a hurricane moves at a third of the speed of the other one, there's going to be a significant damage just due to the hurricane itself. So, but folks don't really, they want to, its hard to go to a place and talk to a person who had water up to their

rafters and explain to them that it happened because of the hurricane. They don't understand that. They don't want to like that. And I understand that. So again another series of public meetings. I have this, I get to go to all these public meetings and tell folks bad news or things that they don't want to hear. But it is an interesting responsibility. Largely the system performed as it was designed to perform. This is, this green line around the perimeter is the post Katrina Hurricane Storm Damage Risk Reduction System. That's what we call the Hurricane Storm Damage Risk Reduction System. Prior to Katrina we use to call it the Hurricane Protection System. A levee doesn't protect a thing. A levee reduces your risk. That's all it is. It is a risk reduction measure. There are lots of other ways to reduce your risk due to storm surge from a hurricane. Barrier islands, coastal wetlands, have your house built above the base flood elevation, have an

evacuation plan, listen to your local elected officials, have a full tank of gas, a levee, a flood wall, a pump station. Those are all features to reduce your risk. We had some students from Harvard who came down about two or three weeks ago. Actually its been a couple of months now. And they couldn't quite grasp the risk reduction idea and said you guys are staying here in the French quarter. They said yeah. You going to go out tonight? Yep. So this is kind of a risky place to go out right? They said yeah a little bit. I said how are you going to reduce your risk? Well one of the ladies raised her hand and said well I'm only going to take $20 and I'm going to leave the rest of my money in the hotel room. That's perfect. I mean you might not get a lot of drinks but that's way to reduce your risk. One kid raised his and said we are not going to drive but we have one person who stays at least semi-sober so he can kind of guide us all in the right direction so

we don't get into too much trouble. That's great. That's another way to reduce your risk. Of course one person raised their hand and said well I'm going to bring a gun. I said no, no, no, no. But again, its just all about risk and its about reducing risk. So I think folks had a false sense of security when they said oh there's a levee there. I can live right behind that levee. Sure you can if you want. Absolutely you can. But that is not going to protect you. That will reduce your risk and you better have other ways to also reduce your risks. Because at the end there is going to be some residual risk and you have to decide whether you want to accept that residual risk or not.

Anyway, post Katrina system, 14.6 billion dollars was authorized and appropriated and fully funded up front. Lots of discussions about what's going to happen with Sandy and what are we going to do as a nation in the kind of post-Sandy world in the

Greater New York City area. I will tell you one of the ways that we were able to -- look this flood wall right here, this was the first part of this system that was authorized to be studied in 1955. Authorized to be studied in 1955 and authorized for construction in 1968. This was the first part of the system right here. Then there was a few more after that. A little more after that. Some more after that. When we get to the point on August 29, 2005 where Katrina hit, we were about 60 percent complete over here and about 40 percent complete over here. How do you go from the 50s/60s to August 29, 2005 and only be halfway done? There are a multitude of reasons but I tell you one of the biggest reasons is incremental funding. We nearly get a million this year and two million next year and maybe get nothing the year after that because its not a project that's a priority either of a particular administration or a particular Congress or we were sued by a lot

of different folks over these, a lot of these levees and structures. So when you get sued and you get enjoined and you sit around and twiddle your thumbs for a few years. So again, there's a multitude of reasons why but it's a fact. This system was about 50 percent plus or minus complete when Katrina hit. Now from August 30, 2005 until last summer 2011, we got it complete. How was that? Again we have 14.6 billion dollars up front fully funded, get to work. That's one reason. The second reason and I'm already five minutes over. The second reason is we had alternate NEPA arrangements. CEQ authorized us to use what's called an IER or and individual environmental report as opposed to an EIS. So we are still going through the NEPA process. We are still holding our public meetings. We are still disclosing all our impacts. We are still mitigating for all our impacts. But we don't have to wait for a rod before we go into construction. So, if we had to go through an

EIS, there's about 400 contracts, 400 different projects in this systems. We would have had to have done probably 400 different EISs. What we end up doing again, so you can take a reach like this and instead of doing a couple of half dozen EISs here, we did one IER. Disclose the impacts not only to the environment but to the public nature. The streets, the traffic, hauling debris, the noise, etc. etc. like you normally would but instead of doing it in an EIS we did it in an IER. Anyway, Isaac performed the design and the perimeter system is largely complete. There are two or three small areas I'm still working on. You know one model left for the contractor to come in and place this concrete wall. He's got to get in because that's his only access. Otherwise, he's got to go ten miles down through the gate and ten miles back. So there's a couple of areas. But we've got even HESCOs. I know you can't see this very well, but just one example. This is

Nancy Allen. Nancy stands 5'1". This was the old wall. This is the new wall. So we had a unit of measure was one Nancy. This flood wall was almost one Nancy and this flood wall was about three Nancys. So, I mean I can spend more time just talking about the comparison and the differences pre-Katrina and post-Katrina. It is an unfair comparison. You really can't even compare the two systems.

Okay, so I didn't talk about charting. I didn't talk in depth about a lot of things and I probably left some things out. But in the essence of time I think I will just ask if you have any questions and if not, you know how to get a hold of me. I'm more than happy to come back or meet you at some other place. A couple of New Orleans folks or at least some folks around Louisiana area who now how to get a hold of me.

CHAIR WELLSLAGER: Any questions for Col. Fleming? Well thank you.

MEMBER MILLER: Yes. When do you

take the sill down?

COL. FLEMING: We do not deconstruct the sill. We let mother nature do that. It's had to, it was built twice before. It usually takes about a year for mother nature to do her business and take it down. But you know if you look at the forecast that we are seeing around the country for what this winter and next spring are going to look like, it's not promising for any drought relief. So, we are, we stand ready to rebuild it if it needs to be rebuilt or let mother nature do its thing. But again we were on a daily basis going out and taking salinity level checks. We are not doing that anymore. We are only out there probably about once a week. And again, the local parishes are all checking their salinity levels. But about a year is what it takes to get back to normal. There's one in the back over there.

MR. BOULET: Yes, there's --

COURT REPORTER: Could you use a

microphone please?

MR. BOULET: Yes, there' a lot of concern with folks in the Mississippi coast that the levee system going around New Orleans, we put them at greater risk, especially with the folks in Hancock County. What is your thoughts on that?

COL. FLEMING: Again, going back to the modeling that we did not only pre-Katrina but post-Isaac. What the question is about is behind this picture as you go out of Orleans East, Hancock County is probably not more than 30 miles probably away from this part of New Orleans. And what impact does this system, does this flood wall levee system have on that area? And again when did the studies, it was on the order of an inch or two, a couple of inches. So what we did is we ran, just like with Hurricane Isaac, we ran Isaac through without the system and then Isaac with the system. When you compare what you saw that gives on the order of an inch or

two. Folks will say that's not even within the margin of error of your model. But when you compare one model to another model, you can get, model versus model, you can get pretty good results. If you are going to compare a model to a real world kind of situation, yeah you can't get down to the inches. But the impact on Hancock County, as well as the impact on folks down here who are on the east bank, outside the system, and again this area is Braithwaite. This is the area that had some pretty severe flooding at Hurricane Isaac. These were people who had top of the rafters up to their second floor. One guy said it wasn't too bad. I only had water up to the kitchen counter. He said, but my kitchen is on the second floor. He lived down here in Braithwaite. The worst, the highest difference was down in this area. This is the West Closure Complex. You can see a very small picture over here. This is the largest drainage pump station in the world

right there. We put out about 19,000 CFS. That will fill an Olympic-size swimming pool in three second. This is the largest gate in the nation. So you've got the combination of the largest gate in the nation with the largest pump station in the world right here. So clearly you are going to see some localized impacts because that didn't use to be here. Now, I will tell you that all this water that we pump out here, was already coming out here anyway. There are pump stations along the Harvey and Algiers Canals, okay. That water was being pumped into the Harvey and Algiers Canals and into the Intercoastal Waterway and all we did was put a gate there and then pump it over the gate. It is still the same amount of water that's coming down those two canals. It is just we are transferring it. Once we close the gate to stop the storm surge, we are also stopping the rainwater from coming out. So we've got to pump it over the top of the gate. But clearly when you are on the flood

side of the largest drainage pump station in the world, you are going to see some localized impacts of maybe a foot but that's a non-community, non-residential area. It is kind of out in the bayou and it spreads out when you get out to some of the other places.

CHAIR WELLSLAGER: Ken?

MEMBER BARBOR: I realize you didn't touch on any of this, but do you have a very short snippet on IENC, ENC issues or comments?

COL. FLEMING: I guess what I would say we were talking outside earlier is don't do enough of it. Don't have it in the right format. Everybody wants it in a different format. Have made lots of great strides. Still a lot more progress to be made. Funding is not an issue. Lots of stakeholders involved. The feedback I get of whether it's the pilots, Capt. Mike Lorino, I think he came in and talked to you guys yesterday or some of the other industry folks, Sean Duffy or even the dredging industry. Its usable and it

works but we probably need to put some more effort into it. I know that was broad general.

CHAIR WELLSLAGER: Okay. Well thank you very much.

COL. FLEMING: Thanks.

CHAIR WELLSLAGER: And its that time. If we would please collect your thoughts and let's go upstairs. For those who have -- hi Sherri. It's good to see you. For those of the public that have just joined us this morning, there is a sign up sheet in the back. We have one of three sessions that will be taking place upstairs on 2M. Correct? If you take the elevator. And they are Hydrographic Surveying, Geospatial and Tides and Currents. If you would please sign in and then join in one of these three breakout sessions. It would be greatly appreciated. And let's go.

(Whereupon the foregoing matter went off the record at 9:27 a.m. and went back

on the record at 12:07 p.m.)

CHAIR WELLSLAGER: The way I kind of botched the first introduction instead of New Orleans saying New England, I think I'm going to pass the torch to Tim Osborn and ask for him to do the introductions for us instead. So, Mr. Osborn, if you would.

MR. OSBORN: No, we very much appreciate and hope that this third day has been productive. I would like to turn this over immediately to Garrett Graves. Garrett is the governor's appointee in charge of its coastal protection and restoration activities. He was also very pivotal and very involved with Deep Water Horizon and has really been at the forefront in terms of establishing adhesive master plan in terms of looking forward in the state's efforts in terms of preservation and restoration of its coastal resources. Garrett is a native. In fact his father actually is an engineer and actually has a firm right there in Baton Rouge. So he

knows very well issues that we have talked about as well, elevation, water levels. He's also at the forefront in terms of dealing with hurricanes like we just saw with Hurricane Isaac. So I would like to thank and I would like to introduce him. I would ask Garrett to come and address the panel right now and Garrett thank you very much.

MR. GRAVES: Thank you. All right. Thanks for the opportunity to be here today. On the way over here I had a bunch of great ideas. The whole ride over here I started changing the PowerPoint. Here we go. So thanks again. So, I think it is a pretty neat picture because it shows just how incredible the water is in Louisiana. It literally just comes out what appears to be pores all over Louisiana. This is a really cool slide deck that I stole from NOAA earth systems research laboratory in Boulder. This shows you what North America, what the North America continent looked like about 60 million years

ago. You can see the bottom of the Mississippi River system is somewhere perhaps near present day Missouri. If you watch as a roll forward in about five million year increments, this is ten, so you can go 60 million years ago, 50 million years ago. So you can see how it just filled in that whole area. 40 million years ago, 30, 20, 10 and today. So the point here is that the Mississippi River literally created the State of Louisiana. It created Mississippi. It created much of the southeastern portion of the United States. So we are literally a deltaic plain. We are a product of the river here. So looking today at the Gulf Coast. The Gulf Coast collectively has a gross domestic product of about 2.4 trillion dollars, which is just an extraordinary amount of money. It is about 30 percent of the nation's GDP and perhaps it has something to do with all of these secession petitions that you are seeing out there now. But what is

really amazing is when you look at this on a global scale, collectively the five Gulf states are about the seventh largest economy in the world. 8.3 million jobs in the Gulf Coast region. And showing you what's happening with the population trends while the nation's population has increased about 52 percent since about 1970. The Gulf Coast population has actually increased approximately double that number. So pivoting back over to the deltaic plain. This is the bottom of what is known as the Atchafalaya River which is the other portion of the Mississippi River system over to the west of where we are today. As you can see, this is actually an uninterrupted delta. This process is continuing largely. So we continue to have land building in the Atchafalaya delta today. This amazing water shed encompasses about 31 states and two Canadian provinces that all come down and funnel down through Louisiana through the lower Mississippi River system and

the Atchafalaya River system. So as this delta processes are occurring or the land is building, we are actually part of sediments from 31 states and two Canadian provinces. Zooming in a little bit more on just the Louisiana facts. In Louisiana today, we have about five of the top 15 PORTS in the nation and our waterways, facilitate about 20 percent of all maritime commerce in this country through the Mississippi, the Atchafalaya and the Gulf and Coastal Waterway. On the fishery side, when we get into these things a little bit more, but top producer of commercial seafood in the continental United States of course behind Alaska but I think they weight their crabs to beat us. Migratory flyway, this is the largest wintering habitat for migratory birds in the United States. Similar to that map showing the water shed, that's the same trends that the birds take as they come down. The Gulf of Mexico collectively produces about 54 percent of the nation's

domestic oil and 52 percent of the natural gas. Of that somewhere in the neighborhood of about 75 to 80 percent is produced offshore, our coast and on the tourism side. I've got a slide on that which I will show in a minute of about 10 billion dollars in tourism activities. But five of the top 15 ports in the nation. As I noted accommodating about 20 percent of the nation's maritime commerce and included the number one tonnage port in the western hemisphere which is the Port of South Louisiana. So, here's a slide that shows the volume of domestic water born commerce in the United States. This shows you that the thinner the lines, the lower the volume of traffic. You have these puny lines out here in California and on the East Coast. Then look at this massive line coming up the Mississippi River system, Missouri and the Ohio just showing you how incredibly reliant upon the maritime transportation that our nation is and these extraordinary volumes that comparatively

around the country.

A few things here are pretty amazing. So historically Thomas Jefferson as many of you know, 200 years ago, told Monroe and Livingston, go acquire New Orleans. At the time our young nation consisted largely of only this area, excluding the Florida area. So he said go buy New Orleans. And Thomas Jefferson 200 years ago realized that 3/8s of the produce that must pass the market had to come through that gateway or this gateway of New Orleans in order to access the market. So he understood at the time strategically that our young nation had to have New Orleans for its future growth and its sustainability. So the rest of the story is, is that ultimately Money and Livingston were authorized and as dollars appropriated to go acquire New Orleans and the Floridas and that was it. The New Orleans and the Floridas. New Orleans was really the goal but the Floridas were thrown in and so they were suppose to buy this and

this. And as a result, you guys know the rest of that story. 200 years ago, the entire Louisiana purchase was acquired. Interestingly folks think that Louisiana has ethics problems that it is our fault. I just want to make note that these guys didn't have the authority or the money to do it and they did it. So Louisiana's ethical problems are based upon some inherited issues. But pretty amazing Thomas Jefferson, 200 years ago, was exactly right. 31 states we can access the maritime commerce. The Mississippi River is the least expensive, the most efficient means of transportation in the United States and it allows us to compete globally with some of our products that we otherwise would not be able to compete. Because of lower transportation cost we can now compete.

This shows you truck traffic. So kind of the intermodal aspects of this as well. This is truck traffic from PORTS of New York, New Jersey. Once again the thicker the

red lines, the higher the volume of traffic. Here's the PORTS of Long Beach. Here is Houston. You can see pretty good coverage across all 48 states in the lower U.S. and there's New Orleans. So you can see very disburse coverage across the United States. Then here's all the ports in Louisiana. And so you know once again, just going five of the top 15 ports of the country, 20 percent of the nation's maritime commerce. This place is amazing in regard to trade and intermobile transportation systems. A lot of people look at us and say, wow, you guys are geniuses listening to those statistics. But the reality is we have an incredible strategic events that even we can't screw up.

So going over to the fisheries side. Going over to the fisheries side. I noted earlier the top producer of continental, excuse me, of commercial seafood in the continental U.S. and that's about 26 percent. We produce more shrimp, oysters, crawfish and

blue crabs than anywhere else. I have to get quick notation because you guys know and you are going to catch me. On oysters we are actually number two behind Washington State right now because of the oil spill. But I do feel confident that we will be back to number one in a few years hopefully.

I talked about the Mississippi River flyway and similar to the way that watershed shaped you can see how this is it. The largest wintering habitat for migratory waterfowl right there in Costal Louisiana. So pretty amazing.

And then on the energy side. Just to give you a picture of what it looks like. This is the pipeline system in the Gulf of Mexico. I don't know the current statistic. I know as of about ten years ago, three-fourths of the offshore energy platforms in the world were in the Gulf of Mexico. So, showing you just an amazing energy infrastructure in the Gulf of Mexico. If you

lay those pipelines end on end they would circle the equator. Number one producer of domestic oil. Number two of natural gas. Number two producer refining capacity behind the State of Texas. The only place in the United States where you can offload a supertanker is offshore Louisiana, the Louisiana Offshore Oil Port, or LOOP. That's it right there. The only place in the nation you can do it. Here's another statistic that's pretty interesting. Many of you may know that in accordance with the Mineral Leasing Act, Mineral Lands Leasing Act, state share and approximately 50 percent of the revenue generated from onshore energy production on federal lands. And then an additional 40 percent goes into the reclamation fund as you may know that is for water projects largely in those same states. Once you get offshore, which in the case of Louisiana and Mississippi is three miles offshore our coast it becomes federal waters

where 100 percent of the money goes to the U.S. Treasury. In Louisiana, we estimate that is about five billion dollars annually that goes to the U.S. Treasury. The State of Louisiana, just to be fair, under the Gulf of Mexico Energy Security Act did receive a check for $24,000 last year. So, we get virtually nothing. But the disparity is pretty amazing. For onshore federal lands versus offshore, the states of Wyoming and New Mexico are two of the top recipients. I believe it was New Mexico that's receiving close to about a billion dollars a year from that. In the State of Louisiana I think it is important to note that we passed the constitutional amendment that passed the state with the highest margin of any constitutional amendment in our state's history that dedicates any revenues received by the state from offshore energy production to our costal restoration and coastal community resilience efforts in the state. I am going to show a master plan

in a few minutes.

But I talked about tourism. This was prior to Hurricane Katrina. One of the top, New Orleans is one of the top destinations in the country. About 9.3 billion dollars to the economy in 2010. We are as I recall the fourth top recreational fishing destination in the United States and I talked about the commercial seafood earlier.

So wow, this place is amazing. The energy, the seafood, the tourism, the transportation is pretty amazing. But at the same time look at what is happening to this same area that has all this incredible productivity. Whether it is ecological or it is economic productivity, look at what is happening. This red area represents the land loss. You guys are right around here. I guess I am too. So this red area represents the land loss we have experienced in Louisiana. That is about 1,900 square miles. 1,900 square miles is larger than the State of

Rhode Island. It encompasses all of the land in the State of Delaware. So you can imagine how those guys would feel if they were wiped off the map. Well our state is slowly being wiped off the map. We have experienced land loss rates anywhere from about 11 square miles per year up to and in excess of about 200 square miles per year since the 1930s. What happened? Well, I have a slide a little bit later in the deck showing but prior to the 1930s, the Mississippi River and the Atchafalaya River would go through what is known as a delta switching about 1,200 years on average. The river would find a shorter course to the Gulf of Mexico about every 1,200 years and it would build a delta in the areas where the river's alignment was. So it built all this area that would sway back and it would just go back and forth and find a shorter route to the Gulf. In the Spring when you would have higher flows on the banks and just continue to build this delta. Well in

1927 we had the largest flood in our nation's history. So in 1928 Congress came in and responded and authorized what is known as Mississippi River Tributaries Program. One of the most successful public works projects in our nation's history from two perspectives. Number one, that project has successfully maintained a deep draft navigation channel in between those two levies. Very important. You no longer have both captains driving up looking for the river here and delta switch to here and say these guys are wondering what to do. Its between the levees. Number two is we have not had additional riverine flooding in this state since those levees were built. So very, very successful from this perspectives. At the same time it had caused the greatest wetlands loss in the nation and caused extraordinary environmental and ecological consequences to our state as I noted with the 1,900 square miles of land loss. What does that look like? This is an area to the

southwest of where we are today. A lot of people look at it and say oh look, birds and fish. People live here. Thousands of people live here. Cocodrie, Dulac, Montegut, Chauvin, Pointe-aux-Chenes. People live in this area. Watch what happens over a 17-year period? By the way these are roads. These are bayous but they are roads. They go here and here into these areas as well. 17 years watch what happens. Just giving you an idea, giving you an idea of what that looks like on a little bit more micro scale. So I talked about the 1,900 square miles of land loss we've experienced over the last 80 years. If you look prospectively we could lose up to 1,750 square miles over the next 50 years or for those of you math whizzes, just realize that this is a greater rate of land loss than we historically experienced. All of these areas would be lost in the red over the next 50 years without aggressive action. This shows that you today we are experiencing

somewhere in the range of about 16 square miles of land loss per year on average. This shows you that in the 2042 time frame that would drop down to about 51 square miles of land per year. And I believe that, Henri Boulet spoke to you guys earlier about some of the economic consequences of that. This translates some of that land loss into a little bit more realistic situation. This area right here which is again, you guys are here. This is over to the east of where we are now. This would be about 20 to 25 feet of water above ground level in a 100 year hurricane. 20 to 25 feet. This would be about 12 to 20 feet of water above ground level in a 100-year hurricane. This would be five to ten feet of water above ground in this area here. So giving you an idea of what this looks like and how that additional loss translates into very, very powerful statistics. 23.4 billion dollars in annual flood losses, again without aggressive action.

So I showed you 50 years land loss. This was an LSU study done by Blum and Roberts in 2009 as I recall. This shows about 100 years what happens with Louisiana with sea-level rise subsidence and some additional erosion challenges. New Orleans would roughly be an island or part of a peninsula perhaps on the Mississippi River levees as opposed to what we largely look like today. So this trajectory that we are on is obviously, poses some challenges for our state to say the least.

What we did this year and we started this about two years prior is we released our Coastal Master Plan. This is the second plan that's ever been done for the State of Louisiana. The first one was in 2007. This plan took realistic objectives, flood control ecosystem sustainability, cultural sustainability, recognizing that we have a working coast in Louisiana and industry sustainability. It took all of those objectives that looked at realistic resource

constraints. How much fresh water do we actually have in order to nourish or sustain the right salinity levels in Coastal Louisiana?

How much sediment is now coming down the Mississippi River system? Keep in mind with all the locks and damns that were built up in the upper system, the Missouri, the Ohio River. And what's a realistic dollar figure? If I had to put a dollar figure on a 2007 plan, I would say its probably around 300 billion dollars, which I don't think is realistic, though I do believe our folks deserve it. So we put constraints in there. We believe that we have somewhere around perhaps 40 to 50 percent of the sediment coming down the river today as we did historically. We recognize that the level of water, the volumes of water that are needed to continue to sustain deep draft navigation. So any diversions we would do would be in excess of that amount. And then lastly, after going

through extraordinary calculations, we set upon a rather round dollar figure, as it came out. Fifty billion dollars over a 50 year period is our financial constraint.

So here is the plan. This plan is comprised of structural protection: levees, flood walls, flood gates. And everything you see here going to sediment diversion and marsh creation. So it's structural, it's non-structural. It includes things like relocating communities. It includes things like elevating homes, because we recognize, as hard as it is for us to say this, we can't even -- we are not going to get ourselves back to 1930s footprint. But we can't even sustain what we have today. So we literally have to draw a line in the sand. And we have to have people below that line and go to those communities and tell them that we can't save you, as much as you deserve it and as much as we would like to.

And so this plan was submitted to

Louisiana legislature and it passed unanimously, believe it or not, after much dialogue, through four legislative committees and the full House and the full Senate. What we did to develop this plan ultimately is we went in, we broke it out into five basins. We went in to each basin. We said, okay, look. We want to do hurricane protection. We want to do coastal restoration or ecosystem restoration. But we also understand that you can have adverse consequences from those objectives, like the objective to prevent river flooding and have a stable navigation channel. We trashed the environment. So we don't want to have those adverse consequences.

So we went into all of these communities and we began working on identifying the priorities for them. We are a shrimping community. We are an oyster community. We like bird watching. We have oil and gas production. What are your objectives? And we worked with them to

develop the best projects or portfolio projects that most efficiently met those objectives.

This shows you all the work we have done historically and all the work we are going to do prospectively. It shows you that the plan calls for levees. The plan calls for restoring historic ridges or cheniers as they are called in southwest Louisiana. Marsh creation, reconnecting the Mississippi River to its adjacent and historic wetlands and plains.

For the first time ever we took seven different modeling, seven different models and integrated them into one system to where you didn't just look at a project and determine what does this do in regard to wetland morphology. We were able to take projects and project portfolios and determine what it did in regard to wetland morphology but also how that impacted risk assessment or protection.

And so were able to take these objectives that the communities identified in each one of the basins and sort of fine tune it as we ran the different projects or project portfolios through these models.

Here is one of the objectives. This is when the Bonnet Carre Spillway was opened, sending about 300,000 cubic feet of water per second from the Mississippi River into Lake Pontchartrain. You can see all the sediment that's wasted. And this is all the sediment that is coming out of the Mississippi River. All of this being entrained within the levee systems and going into the deep waters and not allowing that delta process to continue.

This shows you all of the historic distributaries of the Mississippi River and showing you how by putting those levees and sequestering all of the sediment in the two systems you have prevented the sediments from getting to all of these areas. What our plan

calls for, recognizing that you have two million people that live in south Louisiana. You can't just open up all those historic distributaries. We have targeted diversions that would be run in concert depending upon the excess fresh water you add and where your salinity levels, based upon our extensive monitoring system, shows we need the additional fresh water.

Pivoting over into some of the other challenges or issues that I think are very live for your group and what you guys are working on with regard to hydrographic surveys. Some of the key things that we've got to do, is we have to figure out where can we establish borrow sites in the Mississippi River. Where are the sites that have access borrow? Where are the sites that are refilling? What are the trends that we are seeing in the Mississippi River system? Geotechnical investigation and exploration of sand resources in the lower Mississippi River.

We are trying to develop a network or a pipeline system coming off the Mississippi River whereby when the Corp of Engineers spends 100 million dollars annually between Baton Rouge and the Gulf dredging the river, they can plug into this pipeline system and pump the sediment out into areas where we have sediment-starved areas.

We are currently doing that right now with Lake Hermitage which is down lower river on the west side below where we are. This was a great project we did with NOAA/EPA. We were able to commingle about four different funding sources from state, federal, including stimulus dollars. We have created about 760 acres mining sediment in the Mississippi River. Think about this. We are taking sediment out of the river that the navigation industry needs removed from the river.

I'll move on. So just to give you an example of what this looks like. We have had areas that historically have been borrow

areas that have just historically replenished. As a result of the changes in the Mississippi River, the growing point bar and in other situations, we found in some cases that these areas that historically replenished are changing and they are not replenishing as rapid of a rate, or in other cases you are getting additional over burden in areas that historically didn't experience it.

So in going through our projects, you can see as we look at the different borrowed sources in the river, the importance of surveys and data coming from NOAA to make us aware of the trends that are occurring in the Mississippi River. I want to make note here that -- and I intended to do this earlier, I apologize. I talked about the importance of our river system and maritime commerce for the entire nation. When you look at what happened in Hurricane Isaac, we had this amazing maritime transportation system that was impeded or at least in question. You

had areas like Port Fourchon, which is a top energy port in the nation that was literally frozen and NOAA came in within about five days, did all the surveys of the critical navigation channels that we needed and allowed us to be able to get these port systems and this navigation system back online, which allowed us to again service 31 states with maritime commerce, allowed Port Fourchon, which services approximately 90 percent of the offshore platforms in the Gulf of Mexico, to get back online as well.

So I will jump over to the oil spill. So the Deepwater Horizon oil spill. The last thing I wanted to talk about for a few minutes. This is a Coast Guard data set that the Congressional Research Service put together that shows you since 1973, so maybe the last 40 years, shows you the cumulative volumes of oil that were spilled each year. This is just an amazing perspective of the Deepwater Horizon. This shows you that you

had somewhere around 20 million gallons of oil spilled, cumulatively, every spill that happened since 1975, every spill that happened. There is the Valdez bump right there. So this shows you the trend, this red line shows you the trend and the number of spills that were happening each year. So clearly you see a downward trend in volume. You see a downward trend in actual spill events. This was Hurricane Katrina which was another, obviously, anomaly like Valdez and others, but I just wanted to point out that statistic.

Deepwater Horizon released in excess of 200 million gallons of oil, or ten times the highest spill that's occurred in coastal waters over the last 40 years. A lot of folks talked about NRDA, and I've read -- I'm one of the trustees for Louisiana but I've read all these articles in the paper about how they want to settle for 15 billion dollars which at the time which was going to be global

coverage for criminal, for civil, under Clean Water Act and for NRDA. Not suggesting that this is an accurate translation but I just think looking at a blunt instrument is sort of where your brackets may be in a spill. If you took the barrels of oil that were spilled, and for example Exxon Valdez, you look at the note payment that occurred and you adjust it for inflation, you get about $5,800 a barrel in regard to ecological restoration of the Valdez spill. If you translated that to the numbers in Deepwater Horizon, just for the natural resource damage costs you would be looking at 28 billion dollars.

One of the more recent spills, the Cosco Busan in California, Oakland Bay, which call me biased but I'm going to argue that the Gulf of Mexico is more ecologically productive than Oakland Bay. Sorry, guys, the truth hurts sometimes. One hundred and thirty billion dollars in NRDA payments. So you can see why I think there probably were some

challenges, as Attorney General Holder noted at a recent press conference in regard to reaching global peace here.

This is the Clean Water Act on the civil side, which is an entirely separate packet that would be added to the NRDA, and you can see some of the ranges doing the same calculation as was done in the previous.

Here's another thing, just a pretty amazing statistic just to put things in perspective in the case of Louisiana. If you measure our shoreline smoothly from Texas to Mississippi we have about 400 miles of shoreline. According to NOAA, if you measure the tidal shoreline, here you about 7,700 miles of tidal shoreline. So if you look at the difference in the Gulf states it's really amazing, which is really complicated our ability to respond to the spill. Can you imagine trying to lay out 40 million feet of boom in an oil spill? The total boom that was put out in the Gulf of Mexico in the probably

first month after the spill, I'm going to take a wild guess and say it was somewhere probably near one to two million feet of boom. So clearly extraordinary challenges.

In addition to the natural resource damages, which are clearly a liability that are outstanding, and civil penalties associated with the Clean Water Act. Congress passed the RESTORE Act in late June, President signed it in early July, that allocates the funds to the states. There was the recent announcement by the attorney general of criminal settlement, 2.4 billion dollars was set aside for restoration activities in the Gulf states. Of that 1.2 billion was to come to the State of Louisiana for barrier islands and river diversions which explicitly mentions our state master plan for investment of those dollars.

So, we are going to be making investments. All of the investigations we will be making through the criminal

settlement, the civil penalties, the NRDA and Natural Resource Damage Process, all of these will be filtered through our master plan process in Louisiana. And of course abiding by the regulatory requirements of NRDA and those under the RESTORE Act.

One other note is that our state legislature did pass a law last year which directs all of our RESTORE Act dollars to our master plan, as well, for coastal sustainability in the state of Louisiana.

This shows you the volumes of oil that were experienced along the shorelines from Deepwater Horizon and our state. What we've done in trying to figure out how we are going to take these criminal dollars, these NRDA dollars, these Clean Water Act, the RESTORE funds. We've gone across each of the basins -- or actually in this one is broken down into three. We've developed, begun developing preliminary plans for restoration associated with the spills. You can see the

projects we have on the bottom left here that we are trying to begin looking at feasability on these projects. And importantly I want to note, because you guys are NOAA, that you may remember that slide I did earlier showing you all the historic distributaries, look edlike a spider web coming out of the Mississippi River. We are looking at a number of diversions. Because you guys are NOAA I just wanted to note that NOAA has expressed some concern about us reconnecting the Mississippi River because you are going to impact fisheries, which I'm not going to argue with. The fisheries will be pushed out. Because we are experiencing land loss, there is increased fish habitat, which is a fascinating concept and we certainly support fish habitat but we also like people habitat and that's land.

So we have got to re-establish a sustainable system. Think about the nap I showed you from 2100 that shows all of this being under water. Our studies have shown

that when you do connect the Mississippi River to these adjacent historic distributaries, you absolutely freshen these areas. Closer to how they were freshened historically. The fish don't die. The fish relocate. And this is a critical part of our overall plan.

To give you a quick example. Under our master plan it is 50 billion dollars. About 20 billion dollars of that is dedicated to marsh creation. Taking sediment and pumping marsh. With that 20 billion dollars, we are going to build about 250 square miles of marsh. With these diversions we are going to spend just over 4 billion dollars and we are going to create about 360 square miles of land for a much more efficient investment for restoration activities.

Over in southeast Louisiana you can see once again the connection of the river to the adjacent areas. Additional planning and investments we will making or hope to make through oil spill dollars include a number of

other uses, including human use, which is required under the Natural Resources Damage Assessment process and many other important investments.

And last slide here, just making note that this map on the left here is an older map from the 1800s of our state and then you can see 2100 where we potentially go without aggressive action. So two futures here. There you go.

(Applause.)

CHAIR WELLSLAGER: Fascinating. A lot going one and I'm sure you could have easily talked for another two or three hours. That is a lot of information that was coming to us incredibly quick. Would we be able to get a copy of that PowerPoint presentation that we would like to put on to our HSRP website for this meeting?

MR. GRAVES: Absolutely, sure.

CHAIR WELLSLAGER: It'd be very nice to have. Thank you. Are there any

questions that we would like to ask? Phil?

MEMBER HANSON: Garrett, you guys really been a lead on this and having a master plan of course is essential and really puts you guys in a position to be shovel-ready for the projects as they come out and the funding becomes available. For this group, which is more the mapping, hydrographic side, we are also looking at research and being able to map accurately so you guys can make projections what's it going to really be like in 2100 as the work takes place. You mentioned science and research as potential uses. Is there -- how realistic is that? Is there a big push within the state to do that? And is that something we can help?

MR. GRAVES: There is. As a matter of fact, we recently stood up the Water Institute of the Gulf, which is a independent, not for profit entity. The president and CEO is Chip Groat who was a USGS director under President Clinton and President Bush. We

initially in Louisiana had developed our own internal science capability. And the more we worked on it, we realized that we didn't want to have science in-house because folks were going to be pressured, or potentially get into political pressure, for providing the answers that were most politically palatable rather than those that were accurate. So we put it all external. And then we have sort of like a national labs with the Department of Defense relationship where we sign a 10-year contract to x dollars over x years. Here are the tasks we would like you to fulfill whether it is horizon science, applied science, emergency science, data monitoring. We have made a long-term financial commitment. Looking historically over our projects, we spend somewhere around 11 percent of our project budgets on science-related issues, addressing uncertainties. So, as we move forward with -- and should these larger dollars come in through RESTORE Act, NRDA, our intent is to

take programmatically 11 percent or some other number and put that, dedicate that to research science and technology so we can ensure as we are re-plumbing south Louisiana we do it in a manner that's going to meet the objectives that we have. So short answer, yes.

CHAIR WELLSLAGER: I've got a question for you. In a way I'm kind of confused, which isn't anything new, but with what you've got with the master plan, will it in any way affect what's being done with the levee systems in and around the New Orleans area, and specifically the Bonnet Carre Spillway and how that's used at the time when the critical flow of the Mississippi exceeds some staggering number. But to do what it sounds like you are doing right now, or with the master plan that you are planning to do, you are trying to let the Mississippi go back to what its natural courses were. Am I mistaken?

MR. GRAVES: Absolutely. And so

this is an existing diversion but it's in place solely for flood protection. The capacity of the Mississippi River above New Orleans is greater than it is through New Orleans. So this is sort of a pressure relief valve to send the water out through Lake Pontchartrain, Lake Borgne and the Gulf.

And so, since this diversion structure actually exists today, and since you are having extraordinary land loss or ecological loss and productivity drop in this LaBranche Wetlands, a rich cypress-tupelo swamp in this area. But one of the projects that we are looking at doing is basically cutting a hole in the guide in the Bonnet Carre Spillway to allow water and sediment to divert out into these swamp areas that have saltwater intrusion from Lake Pontchartrain. In regard to the New Orleans area levees, what our master plan calls for is largely not to do anything in regard to poking holes or obstructing or modifying those levees in any

way, except that the current level of protection that the levees in New Orleans provide is about 100 year protection. Under our master plan, we would increase that to about 500 year level protection.

CHAIR WELLSLAGER: Anybody else? Okay. Well thank you once again. Very, very informative. You have quite a bit going on and I wish you the best of luck.

MR. GRAVES: Thank you very much and I appreciate the opportunity to be here.

CHAIR WELLSLAGER: Okay. Next on our agenda is one o'clock. We are going to start to have the stakeholder debriefs. So we have about ten to 15 minutes for that. So why don't we get up, stretch around, get the blood flowing and then we will meet back here at one o'clock so we can start discussing the debriefs with the breakout sessions.

(Whereupon the foregoing matter went off the record at 12:47 p.m. and went back on the record at 1:04 p.m.)

CHAIR WELLSLAGER: Okay. It is now time, drum roll please, for the stakeholder debriefs to the HSRP and discussions. Before we get into that, I was quite pleased when I started walking around and looking in each of the different breakout sessions because I was terribly concerned last night, not thinking we were going to really have a public input to the sessions, and I when I walked around it seemed like there was active conversation going on in each of the three sessions. And that was pleasing for me to see. But I'm going to throw a question out and I'm curious now. As a panel, did you see these breakout sessions as a productive way of getting information and simulating different things?

And if so this will be something we can continue to do. But if not, then we will need to look at trying to come up with other ways that we can arrive at talking points or specific points and then we can address to the

NOAA administration. Again, was this, in your opinion, something productive and should we continue to do it? Kenneth.

MEMBER BARBOR: Yes, I found it most productive. Again, we had a reasonably diverse group that I think the one thing that these breakout sessions do are clearly enables the less bold or outspoken people to get their points across. Which we rarely do have people come to the mic in the open public sessions unless they have a very big agenda to carry. I thought it was good from that standpoint.

CHAIR WELLSLAGER: Gary.

MEMBER JEFFRESS: Yes, Matt. I thought it was extremely useful and it allows us to focus in on the particular topic and get to the meat of it and say how do we build a recommendation out of what we are talking about. It was very helpful. And having local input was extremely valuable as well.

MEMBER DEMPSEY: I think if we provide multiple formats for delivering the

message, I think the more useful it is and you are going to get that feedback.

CHAIR WELLSLAGER: The thought had been put in to having the sign-up sheets, not necessarily the sign-up sheets but each of the breakout sessions being specifically outlined on one and then having points that the panel members could, when they get in, have written out to try to drive the conversations. Were any of those filled out and did you have anything like that to actually use for input? Or was it kind of just a get in and start talking and things fed off on those on themselves? It was a thought and I thought it was a good idea at the time. It still might be something that we can try to do later because it does define what we've got going in the breakout sessions and we just thought it might be an idea where the users might come up with some thoughts and ideas learned.

All right. So the first I guess we could look at would be the debriefing from the

hydrographic surveying. Bill, would you mind? The Bourbon room, yes.

MEMBER HANSON: With help and assistance from Joyce we'll make it through this. We had several points that came up in different ways but the themes were there. One of the things that really came up is particularly here at Louisiana but also in other parts of the Gulf is the need for shallow water data. The focus has been on deep water and with the oil patch work and the fisheries and including the coastal restoration work it's not quite sure the data they are using or how they get it and how decisions are being made.

So, it appears to be a lot of commercial work being done, third party at the state level, DNR level. We note the oil patch does a lot of their own work. And if there is someway we can tap into and accumulate that data, in addition to making it somewhat of a priority with NOAA. Maybe we can get some of

that data provided.

That data is important also for storm surge models and very critical for the impacts on the things that Garrett showed in the inundation models and also some of the projects we build. When we build the barrier islands or the marsh restorations they try to stabilize it with vegetation that's sensitive to a couple of tenths of water elevations. And in area like this, in the subsiding it seems a lot of decisions are being off of some pretty raw assumptions.

We talked a lot about subsidence maps, the maps being charting land that is now under water. I think that is probably a common thing to hear about. And in sediment movement, Garrett talked on that as well. Colonel Fleming didn't talk about that as much this morning but one of the big issues facing the Mississippi River is going ahead and taking that sand that we typically dump at sea in deep water and using it to build marsh and

wetlands protection.

But you have to be able to track that because there is competing uses. The water sill where we borrow the material for that water sill is also the site the state wants to use for some of their restoration work. So there are competing uses there.

Data sharing, and this kind of comes a little bit under the discussion of with a budget or no budget and how are you going to handle things doing more with less, less with less. Or if you want to be optimistic, like I prefer to be, more with more. And so if you start off looking at where we stand right now, which is limited budget and NOAA is not the only one in that boat. You know that. State agencies are the same way as well as the Corps. Is how do you share the data? How do you compile all the information that's being done from all the sources non-NOAA? And how do you get that information to NOAA in some type of a usable

form? There's no well-known central data organization or repository. We had a thought that if we are going to kind of combine some of these surveys and maybe use them, wouldn't it be nice if there was some pre-planning as we -- it might be a little optimistic but if you have a state going out and hiring a contractor, survey contractor, wouldn't it be nice if NOAA knew about it or the Corps knew about it or if NMFS knew about it and they wanted to take some extra measurements to hitchhike on the boat and make sure of that.

IOCM becomes a concept, an idea. Use of Corps of Engineers surveys. Obviously we do surveys on all deep water channel projects that we do. We also do it on coastal restoration projects in the borrow areas. Our data goes right to the Corps and I understand some of it is usable for NOAA and some of it is not. Maybe there is an opportunity on a national basis. I know you guys try this and obviously every district is different. Nobody

knows that better than we do, because we have to contract with them as well. But we do know that its not an insurmountable issue. You can get there if you are patient and consistent yourself in order to get the Corps to play ball.

As far as the state or other entities, perhaps some type of guidelines from NOAA, some outreach, to let them know just exactly what is it you are looking for instead of getting the data after the fact and then that's not what we need. Let's provide something up front. Maybe that's where the pre-planning comes into play.

Something we talked about in Alaska as well is the crowd sourcing, using vessels of opportunity. And then perhaps taking another look at the standards. Obviously that's got legal and political implications as well. But at the end of the day, having data, particularly where there is no data, is important. And if it is just a matter of

getting some standards out there, maybe improve the lessor standards and maybe just take a look at some of the critical standards that NOAA has and see just how important they are.

And then it seemed like it was important to our group that there be some type of a regional meeting, perhaps using somebody like a Tim Osborn to get with the stakeholders in the area, all the folks who might be doing surveys, and just put them in a room and see what everybody is doing, what their thoughts are, how much flexibility they have to improve their standards, improve their work, and then how much they have an opportunity to piggyback on what each others needs are. It would be more appropriate we thought for that meeting to be led by NOAA.

Let's see. One of the thoughts that came up in comments was Alaska obviously is kind of the bright, shining star. Everybody wants to talk about the Alaska

initiative in terms of charting. I want to be careful that we don't forget the grunt work or the high profile, the necessary work that is being done, like in the Gulf. Whether it is shallow water, deep water, borrow sources, working with other agencies.

And doing that, again, you start talking about the funding issues. Obviously in a budget limited situation like you are in now, you've got to look at collaboration. You've got to look at doing more with less or less with less. But what we really want to think about is being, as we use the word shovel-ready when it comes to construction. When it comes to research, maybe be study ready. Maybe have your list of projects that you want to do, and I think you've probably got that. You've got a long list of projects you would like to do once you got some funding. But also survey ready. What projects, for instance, if the State of Louisiana comes up with 15 billion, 80 percent

of 15 billion dollars from their coastal program. They can't spend that money on projects, dredging projects right away, unfortunately. But they are looking long-term. They are looking at sustainable. They are talking about a water institute to make this sustainable long-term initiative. And if NOAA had their list of projects and their list of capabilities and things that they could do to help Louisiana, Mississippi, Alabama, Florida and Texas out in terms of their data and their engineering needs, their mapping needs, then perhaps a million dollars here and a million dollars really gets lost in the shuffle. Yet the products you provide through NOAA are critical to everything they are trying to do.

Then we had some -- gotten some good discussions about NOAA products and making them usable. It wasn't exactly the hydrographic survey part but I think it does apply to a lot of what we talk about here over

the last couple of days, is the NOAA brand. And how do we help be your ambassadors -- and you do put out good products. You've got a great reputation here, as you saw. You've got some fans, folks willing to be your advocates as well and a lot of it has to do because you listen to them. And we need to continue to do that and continue to showcase the products that NOAA provides.

Joyce, any other panel members have anything you want to add? What did I miss?

MEMBER MILLER: Just clarifying --

COURT REPORTER: Could you turn on the microphone please?

MEMBER MILLER: Clarifying the regional meeting. When we talked about it was, the nav managers do a great job and often serve as data centralization but you might consider something similar for a NOAA data coordinator in a region or something. A lot of the discussion some of the state representatives had was the difficulty in

finding out what data is there, where to get it. Not just hydrographic data but all kinds of it.

MEMBER HANSON: There's a lot of stakeholders and we tend to talk about NOAA and the Corp, NOAA and another federal agency. But in the modern era, there are a lot more stakeholders out there than just the federal agencies. The more we can do to reach out to them as your users, I think we will have a better idea of what products to provide.

CHAIR WELLSLAGER: Frank.

MEMBER KUDRNA: I would just add that I thought it was, in answer to your question, Matt, I think it was good and useful and it allowed us to after getting briefed on a subject to delve into some recommendations afterwards. I thought they were useful and they are productive, certainly this one was.

CHAIR WELLSLAGER: Well, I guess I have a question for Admiral Glang. Alaska seems to be, as it has been stated, the last

frontier. With the deepening of the Panama Canal and the Panama ships coming in, there will be obviously needs to update approaches, harbor entrances, general areas that are somehow going to need to be prioritized. If we have as NOAA our facilities in Alaska, is there a mechanism where we might be able to re-divert something from either the Atlantic Marine Center or what steps could be taken to start looking at ways that we could do hydrographic surveys in areas of the United States other than Alaska?

ADMIRAL GLANG: I guess I am not totally clear on the question. A significant portion of our dress survey backlog effort, our contract survey effort takes place here in the Gulf. The focus has been on the critical navigation areas. If you look through that activities report I think we try to in a very general way show you how much work we've gotten done here and the primary focus has been for the deeper draft vessels. When to

re-survey an area would be driven by a change in usage and by how rapidly that area change is naturally occurring or man made change might occur. So what you are suggesting look at re-survey requirement for the Panamax, for the post-Panamax-class ships. That's something we probably have to look at. I think we are just now starting to see some of these studies point to where those, where that kind of ship traffic might go. So that is certainly something to take note of. So getting back to your premise which was should we look at re-allocating where our survey assets are working. That's a dynamic thing anyways. We re-evaluate that. But again we kind of have a balance now that tries to address our current hydro priorities. Just because you don't see a NOAA ship down here doesn't mean we don't have a lot of survey work going on. This is where most of our contract effort is expended. Did I answer that okay?

CHAIR WELLSLAGER: That's perfect, actually. Frank.

MEMBER KUDRNA: We discussed that in our group. We understand the priorities are the primary navigation channels where the vessels are coming in are the first priority. But one of the issues was in our previous reports, we talked about 100 year backlog at 10,000 square miles I believe a year. It is really 3,500 square miles in recent times. The simple math is we've got a 285 year backlog instead of a 100 year backlog. That really doesn't do anything less than four meters of depth. One of the things that was pointed out here in the Gulf is that with subsidence taking place, you have pipelines that are exposed in these shallow waters and you have a lot of the oil service vessels traveling in these service vessels, traveling in these shallow areas. So there are some potentials for significant problems we think existing in these shallow areas where you have

subsidence and exposure so some of these pipelines along the way. So it's a -- and we understand the priority for the main shipping canals but there are issues that could result in problems or disasters in other areas.

CHAIR WELLSLAGER: Joyce.

MEMBER MILLER: Follow up on that. I guess one question I had given that pretty much what everyone was talking about was the criticality of the shallow waters is how do -- I mean perhaps its not the topic for HSRP or navigation services although as Frank said that there are certainly navigation issues, commercial and so forth, in those areas. But how do we get to incorporating this need for shallow services, and we saw it in Alaska too, into sort of the priorities for Coast Survey? Just sort of a general question.

CAPT. SWALLOW: We brought it up a few times in there. The IOCM is an opportunity for that. Map one is used many times. Talk about needing storm surge

modeling, we need trajectory modeling. We also need the shallow area surveyed for navigation. So to me that could be, that's like an opportunity for the panel. We've got the authorization. The IOCM bill, there hasn't been any funding behind it. So that could be one avenue to get that recognized. That's kind of what I was feeling.

MEMBER HANSON: Perhaps the opportunity there is I mentioned the shallow water areas is being critical to this region. But in the future for our industry is where we take most of the material to deep water and discharge it there. Most of our projects nowadays have some level of beneficial use. And a lot of that is shallow water disposal. So you see more and more of that in areas in New York and California, Florida. That's not just a Gulf Coast issue. So its probably something we need to address more nationally than just a regional.

CHAIR WELLSLAGER: Okay, thank

you, Bill. That was very good. Interesting. Our next would be the Geospatial. So Gary, would you mind?

MEMBER JEFFRESS: Good afternoon. We had a very lively group. We were focused on geospatial positioning. So naturally our thoughts went straight to the National Spatial Reference System which NGS hosts. And of course there's really no problem with horizontal positioning. The GPS and the Corps' network have that down pat. So the problem really is elevation. How do we extract good elevation from a National Spatial Reference System which is now totally focused on the Corps' network and GPS observations. Terrestrial leveling is far to expensive now to carry elevations across the countryside. So now surveyors and engineers, they are heavily using GPS to transfer elevations. To do that effectively relative to sea level, which approximates the geoid, we need to know where the geoid is. So NGS is addressing this

with the GRAV-D program. But unfortunately the GRAV-D program under the current funding levels is stretched out to 2022 before we see any substantial results. So what do we do in the meantime? This problem is highlighted here in Louisiana, where the majority of benchmarks, historical benchmarks were put in using traditional terrestrial leveling many years ago which was very precise at the time, has been pretty much decimated by subsidence and fairly radical subsidence rates. We see here in New Orleans around about ten centimeters a year, which is really -- renders a benchmark pretty useless pretty quickly. So, Louisiana has set up its own cause network which is part of the national cause system and we saw presentations from Cliff and Josh -- well, Cliff is off-site and also Josh, these guys from LSU, just to remind you, attended this session and they further told us of stories of how local surveyors are having a hard time using GPS to establish elevations

particularly when the geoid model changes from time to time. So we discussed the differences between the geoid 09 model and the geoid 2012 model. And in some places they reported there is up to one or two feet differences, which is somewhat confusing for surveyors when the models change and their elevations change. But that's just an artifact of the fact of the historic data and GRAV-D is going to improve all of this but that's going to take some time. We also discussed NGS' use of the airborne gravity data that has already been observed particularly along the coast here in the Gulf. They can and do produce beta versions for regional use. We encourage NGS to continue to do that to make these regional beta versions of updated geoid models for folks like Cliff and Josh at LSU to use and to test. The main problem is the fact that the GRAV-D program is such a long time line. Ways to reduce that time line harks back again to funding and funding levels. We also

identified that there are a lot of users of GPS, particularly surveyors and mappers and engineers, that are not fully versed in how GRAV-D is going to help them do their jobs. We particularly mentioned ASPRS, the MAPS organization and the National Society of Professional Surveyors do not use their influence on Congress to improve NGS funding and GRAV-D funding. The problem there is that a lot of those folks aren't educated enough in geodesy to fully understand the importance of GRAV-D and how it directly relates to their own workplace. So we would like to encourage a little bit more education and outreach to not just the public but also professionals to assist us in educating Congress of the value that we will get out of the GRAV-D program. We actually, Carol was nice enough to type up actual recommendations that we could use for the HSRP. And I will read the first one here. HSRP recognizes the importance and critical nature of the GRAV-D program and recommends an

accelerated completion of this program. This project affects accurate elevation measurements which in turn effect innundation models, storm impact and emergency response. This issue is seen as a high priority and should be reviewed in collaboration with SeaGrant and the IOOS FACA and potentially the new NGAC FACA which is National Geospatial Advisory Committee, which comes under the purview of the Department of Interior. We know some folks on that FACA. Gary Thompson who is the chief geodetic surveyor for North Carolina. Jack Dangermond who is the owner of Esri. We decided it would be a good idea for our FACA to communicate with these other FACAs and suggest that they get behind their height mod, GRAV-D and the height mod programs as added support. So we also recommend that HSRP letters be copied to the chair of each of these FACAs, if you don't mind Matt. And actually also send them electronic versions so they can e-mail out to their members.

And we also saw the need to try to get the public involved in GRAV-D but that's a little bit of a stretch. If professionals don't get it, how can the public get it?

But there is obviously a connection between the public's now realizing through the various Gulf hurricanes and the big Hurricane Sandy in New York City and the relationship with sea level rise. We've seen several articles in the press just the last couple of weeks on sea level rise. And how do we get the connection between sea level rise and using GPS to get accurate elevations of the topography along the coast so that those who live along the coast can get a better idea of what their risks are in terms of the sea level rise and the impact of storm surges. So we don't know how to do that but that's what we would like to do.

Greater public campaign to increase Congress' awareness of importance of high accuracy and the GRAV-D program as a

foundation for this. In addition, outreach to flood plain managers and reinsurance companies that they understand the risk of inaccuracies in zero height measurements. That is height measurements from zero. Zero being mean sea level. And also to maintain outreach to the survey community to increase awareness and confidence in the geoid models and NGS products. I know NGS tries to do as much as they can to do that. I know they visit each state society's annual conventions. Many, many times I've seen NGS employees at surveying professional meetings. They do as much as they can. But I think its up to the surveying and mapping professions to educate themselves better on how geodesy directly affects what they do on a day-to-day basis. So that pretty much sums up what we talked about. Did I miss anything? Carol? Scott? Jeff?

MEMBER CAROTHERS: The only thing I would like to say from the stakeholders, that's when they were in the room, they were

concerned with the different geoid 12 model, 12 A or B or whatever. I got the impression they may not themselves, two guys are with us, believe there are errors in the model but that the perception of the community of surveyors may have thought there were errors in the model. I don't believe there are errors in the model. That is a perception I think that came out of that meeting.

MEMBER JEFFRESS: Yes, just to highlight that. They gave the impression that surveyors treat GPS as a black box and if one geoid model gives a different result from another geoid model it must be an NGS's fault, which is not true, which just demonstrates their lack of understanding. It is comparing apples and oranges based on the quality of the data that goes into one model and the other model. They just don't get it.

CHAIR WELLSLAGER: Carol?

MEMBER LOCKHART: Carol Lockhart. I guess the other thing that's clear. I mean

our job is made very easy because their stakeholders had a very clear message both yesterday in the panel and today again in the breakout session. But what was also clear in this process is that NGS has a very good handle on its priorities and what is required. The obvious issue that underlies all of this is still funding. I think in the stakeholder breakout session it was often referred that NGS was the red-headed stepchild and that more funding needed to be put towards NGS's part of NOAA and that's not something we specifically wrote down here because I think NGS understands its priorities very well. All we can really do is encourage this program and the use of GRAV-D.

CHAIR WELLSLAGER: Some of the things that I can say in support for NGS. They have a very active height modernization group that has monthly conference call meetings that usually about two to two and a half hours in length, where we discuss

specific things going on within the National Geodetic Survey and the states who are all attending the meeting explain things that are going on with them in their meetings as well. And its been informative because a lot seems to be going on and we've addressed issues with the new geoid model. I think one of the things and this is actually in support of your recommendations with education, more times often than not this little black box as you indicated gives you elevations. And its like a computer and the computer gives you some kind of a readout and by God its right, you know. There's no questions asked. I saw it on TV. If I saw it on TV you know its got to be the gospel truth, right? And one of the things that my office has done in support of our realtime network is develop a very good spatial network or, I'm sorry, passive network in the state where we can as we are going out and collecting data, tie into some local control. We can see yes in fact geoid does

agree because our readings that we've collected on unknown sites are thus but the readings we've collect on known sites are this and they agree within the published parameters to within what we expect to be acceptable tolerances of say two centimeters. And I got the impression from the meeting yesterday that while these individuals are going out and they are doing work, they are collecting data and they might see a change in elevations, there's really never been any work done to quality assess the information that they are collecting in the field as to is it good by occupying known reference sites. So the need for passive networks is there. I think public outreach is one of the definite needs for this group because while NGS is doing a lot and the ACSM has been doing a lot with their meetings, it's still something that you constantly have to teach people how to work with things. Because unfortunately that black box has made everybody a geodesist whether they know its

happening or not. And that's probably the farthest thing from the truth. And there is a lot of money tied up with the numbers that come out of that thing because elevations are so critical. And I really think that for whatever it's worth the education part as well as the beta copies of the geoid are crucial for something like this for the recommendations. Do you want to add anything to that? No. Okay, well Gary, thank you. Thank you very much. And Mr. Barbor.

MEMBER BARBOR: Our group, I think I'm hearing a lot of the similar sorts of things coming out of the other stakeholders' groups. We did have a very energetic group with plenty of input. Again much of that input does come down in the more, better, faster category which I think we did some little outreach education on. Again, we are working within constraints and missions and authorities that may not necessarily get them exactly what they want, more better and

faster. But within that one of the aspects was PORTS, which clearly falls within our tides, water levels and currents range. And what was a very broad discussion, we pulled one very actionable aspect of it out and that is to, in terms of accessibility of the existing port system, we heard that yesterday and it was amplified in our breakout group. If that datastream can be accessed via AIS it would be of big importance to the pilots coming in. They could look at one box and left to the software manufacturers of the Raven or whatever other thing to integrate that into that software. But it is a Coast Guard responsibility to implement that AIS feed and about the only thing we came up with was if we could use the influence through the CMTS and the e-nav initiatives to say this is something that Coast Guard needs up in their priority list. And in particular would be a reasonably lo-hanging fruit anywhere there is a VTS that is available which happens to be

here in a very few other PORTS. But at least from a New Orleans standpoint it would be a quick implementation.

Further into PORTS a little more of an education sort of thing and perhaps Rich has taken this way. When you talk PORTS at any place they say well gee it would be really nice if we had. There is no limit to what, one, what they want, but there is also no limit to what they have, could have if they were willing to fund and integrate it and co-ops being reasonably available and anxious to ensure a proper integration and implementation of current sensors, visibility sensors, air gaps or other meteorological or oceanographic sensing things. It really does, the impetus lies on the local activity to make that request an effort of co-ops and the local activity to find out what is really needed and how to get it implemented and local activity's responsibility to figure out how to pay for it and maintain it. But I think from an outreach

and education standpoint continuing to make sure that it a very clear business model and users know how it works. Also from the more, better, faster much like the hydrographic section our group says we really do need shallow water bathymetry to support better modeling, to help science understand what's going on in these high-subsidence areas and of course we need the modeling to provide improved current and innundation and the models that these folks down here are very, very interested in having the data and understanding the impact on their area. And like the hydrographic section there is the opportunity with RESTORE funds that working together with the state and federal experts and stakeholders to ensure that there is a coordinated, appropriately resourced and appropriately focused and directed actions to get those data available to the models and to the people. A very low hanging fruit and easy one but there is a request for more training

in respect to how Co-ops wishes tide data to be obtained and the suggestion was they do internal training and open that internal training up to other interested parties within the resources available, i.e. classrooms and the like. Again when they are doing their internal training to people within Co-ops to make that publically known so other people that have responsibilities for putting in tide gauges associated with hydrographic surveys could come in and avail themselves of that training.

And then finally with Henri and our group we had this impassioned plea again. Outside the remit of our group in particular but again this goes to the administrator so it does have authority over the National Marine Fisheries Service and again what we heard from Gary. This desire to try to reclaim and restore some of the wetlands is being hindered by the concern over the destruction of current fish habitat and the need for overabundance of

studies to show the impact when in reality it is just making different fish habitats and moving the current ones out. That evaluation to the impediments there needs to be dealt with and dealt with quickly so that these shovel-ready projects can move forward and restore the lands of coastal Louisiana. That was our group. Thank you.

CHAIR WELLSLAGER: That's interesting, especially that last topic. It's one that I have a feeling is going to be addressed at other locations as well. Maybe not to the extent that you are going to see here. And it is a good recommendation to have but within the bylaws or call it what you want for the HSRP. Is something like this a recommendation that we could make to NOAA administration since it is addressing the National Marine Fisheries? And I'm just throwing that out to any of the federal types because I don't know.

ADMIRAL GLANG: So in the process

of developing your letter to the administrator, what you found the last time was to try and boil your points to the administration down so they are, I don't want to say minimum but so that they are easily absorbed. So there's going to be an iteration here when you develop the letter and how much do you want to be telling the administration, number one. Number two, if there is room for this, you could certainly talk about what you heard at the meeting. So this kind of thing would be relevant to describe to the administrator here are the kinds of issues we heard about. So I wouldn't discourage you from mentioning it but I would ask that you kind of look overall, how much are we telling the administration. If you feel this is important then you make room for it. But be sure to describe the issue as fully as you can. That may require going back to the notes. That would be my suggestion is you could certainly talk about the kinds of things

you heard. There were lots of things we've heard that are sort of outside the domain of hydrography, charting and geodesy but nevertheless important to the region.

MEMBER HANSON: I was just going to follow up on that because it is exactly, that's why we need that shallow water data. Decisions are being made on a lot of issues besides just depth and transit. It's the coastal restoration, whether its NMFS or Fish and Wildlife or state-level organizations. They are all making big decisions on questionable data.

MEMBER FIELDS: Matt, I think that what Bill just said could be a way of incorporating that into the letter as things that we heard to support the shallow-water concerns.

MEMBER HANSON: That's another question. The letter that we write, recommendations, is that or can that go to the state as well? The reason I say that is

because the state is going to be a major stakeholder when the funding comes. That's going to be perhaps a customer or partner in a lot of these issues.

CHAIR WELLSLAGER: I was looking at my general counsel down there and to be honest with you I don't see any reason why that really couldn't be. I could cc this letter while its going to NOAA administration and specific addressees there. As a matter of fact I think I did send a letter of recommendation to a couple of individuals with the State of Alaska with the last one. So, coming to Louisiana shouldn't be a problem.

VICE CHAIR PERKINS: By definition, the letter's a matter of public record and it gets posted on the HSRB website so further distribution of it shouldn't be an issue.

CHAIR WELLSLAGER: Right. Good suggestion. Thank you, Ken. Well, okay. So we've had three different reports and I think all three reports in a way reiterate many

things that we've had in the past but still need to be addressed. And I will throw the ball out to the committee now. What should we as a group, now that we've heard recommendations from the three different breakout committees, what as a group do we feel as -- what do we as a group feel are important points that need to be brought to the attention of the administrator? And I'll start with Admiral Barbor.

MEMBER BARBOR: I think -- again, picking up on what I've hard in at least two if not all three groups is this IOCM issue. It is broader than navigation hydrography. It is integrated ocean and coastal mapping. It impacts these shallow areas and it is, does fall within our remit I believe and if that needs to be a vibrant vital aspect of this branch of NOAA and plays an important role as RESTORE Act money starts coming in hopefully to observe, monitor and map the near-shore environment. I think IOCM could be a very

pivotal connecting thing between all three of our groups.

MEMBER MILLER: It could be part of IOCM. I totally second that. I think IOCM has been a little bit less active than might have been hoped but if we can get behind saying we think it is important, particularly for the shallow water issue because its clear that it's never going to be on coast survey's ten most wanted list. I mean its not in the priority list at this point. But I think a second issue that's very related is just like we heard in Alaska and every place else is data centralization. You know, having the ability to know who's collecting data, find the data and get it out. Perhaps we want to make a recommendation that NOAA consider regional data managers or that it really, from my experience at Hawaii, data management really is on a regional basis almost. And not that the role of NGDC or any of the other elements but having someone in a region that

knows all those databases, knows how to use them, knows how we get to the data that you need, is really important. So, I would say sort of data centralization or integration, whatever you want to call it.

CHAIR WELLSLAGER: We were involved with that conversation. I know of at least one, possibly two coastal service centers. Is there a coastal service center in the Gulf area? Do you know? The Charleston one is five states and I don't think it is involved in any part. Gary, do you know if there is anything like a coastal service center, a data warehousing or clearinghouse?

MEMBER JEFFRESS: Our organization is a member of the Gulf Coast Ocean Observing System's Regional Association which is set up under IU. We've gone through a big exercise in data warehousing physical parameters associated with ocean observing systems around the Gulf. They are just starting into water quality. But that's an initiative under IU

and not coastal services.

CHAIR WELLSLAGER: Right. Go on, Jon, for the record.

MR. DASLER: I just wanted to point out Todd Davison from Coastal Services Center is at Stennis. It is more of an outreach but there's no data repository there. It is more of an outreach effort.

CHAIR WELLSLAGER: Are there plans, do you know, at the Stennis location for something like that? Kim?

MEMBER BARBOR: They've got the national coastal data. NCDDC, yes. So data development center, which is meant to be not necessarily repository but a funnel to the appropriate repositories and data analysis and data formatting sort of thing. So, that is available and it's national, not regional, but clearly it has a regional flavor to it. I think those sorts of issues -- you've got to have some sort of meta-data, easy accessibility to what's available.

CHAIR WELLSLAGER: So we have IOCM and shallow water mapping issues which yes, I agree, is very important data centralization. With geospatial I think we can collectively agree that elevations are important and a geoid model as created by GRAV-D will be good, but in the interim creating data copies that would be available for the users to work with would be one. And general continued education and outreach through the national Geodetic surveys, height modernization program and any other professional organization that would be holding conferences would be something else. Am I right?

ADMIRAL GLANG: I want to be a little bit more provocative and got back to the IOCM issue because IOCM is really a term to describe a way of thinking. It is about integrating efforts across multiple agencies, multiple mapping entities in our case, in particular, so that you can leverage partnerships in each other's mapping efforts.

So you are going to have to be a little bit more specific about how you see IOCM applying here. I think it's fair for the panel to turn around and ask questions of NOAA in order to better understand how IOCM may or may not work or be applicable here. So that's something else to think about. You could do that in a separate letter. Certainly the other FACAs have done that. We have an IOCM program coordinator. We have an IOCM effort. It's not funded. We take it out of our base. It is essentially a massive communications effort that's leading towards developing a lot of interagency relationships. They have produced an IOCM mapping standard that does exist, sort of the next piece of that may be to socialize that better. Most of the IOCM efforts has been directed at the federal partners because I think that's the way the legislation reads. The opportunity to engage with state partners on mapping issues. In particular, sea floor mapping like what you are talking about here.

We have a few really good examples. The most recent one is the Long Island Sound project that's been underway with the states of Connecticut and New York. So that's a really interesting project that we could provide you some background on. Not so recent now was the successful project with the State of California that resulted in a lot of mapping work getting done in the state waters of California through Fugro. So I think we need to nail, we need to sharpen our focus a little bit on what we mean by IOCM and how that might apply. We don't have the ability to flex in a massive way and engage states broadly. So we probably need to think about it a little bit more and it's fair to form that in a series, as a series of questions if you will, so we can better refine what it is we are talking about here. That is my observation.

MEMBER BARBOR: Well, let me try to focus. Assuming, and I think it's a fair assumption, that RESTORE does come to fruition

and somewhere in the ten to 20 billion dollar range. Each of these five Gulf coastal states will have some, two to five million dollars a year for observing, monitoring and mapping their coastal environment. That sounds like a IOCM should be focused and ready to respond to or engage in that group of desperate entities that are going to go out and try to do something with that sort of money.

ADMIRAL GLANG: Do you seek, Admiral Barbor, an effort where the five states perhaps would coordinate on their state mapping needs? Will it be state by state? For us, it's important to understand what is the requirement and how do our resources apply to those requirements? I mean our primary focus is safety of navigation, and we don't have enough beams to paint outside those lines. So that's a real challenge for us. What we are in a position to do, like we did with California and Long Island Sound, is facilitate partnerships where you can leverage

each other's dollars and the different partners work to achieve what they do either by mandate or what they can do, what they need to do to achieve their science. It is a big collaboration, if you will. So, who takes the lead in organizing something like that?

MEMBER BARBOR: And maybe, she is busy writing. I think the key here and again, it comes into IOCM framework, there are going to be people out there that are going to say the most important thing I can do is go out and map the oyster reefs. Someone else is going to go out and say the most important thing I need is to get some level of bathymetry so I can do boundary conditions for an inundation model. So you are going to have a number of different approaches that will involve this observing, monitoring, and mapping this environment down here and it is going to be different by state. It will be, they've got a master plan that they are working to. They may be able to talk very

specifically on how that first two million dollars they get is going to be spent on whatever level. But I think it's the sort of thing that if only in terms of an outreach, that there is that presence there, so those data that are collected are collected in the best manner and in the most readily useful way to a number of projects, be it the safety of navigation or modeling or habitat. This is going to happen, it's probably potentially going to happen sooner rather than later, and I think it has the real potential for going in all directions unless there is a fair amount of engagement.

MS. PARSONS RICHARD: My name is Carol Parsons Richards. I am with Coastal Protection and Restoration Authority. You met my boss. Garrett's my boss. I just wanted to mention I agree with you. The states are going to have different needs and different priorities. But I think that there is a really good coordinating mechanism through the

Gulf of Mexico Alliance that NOAA is involved in. The states are really involved in that. It's been an absolutely essential tool for the five Gulf states to communicate with each other. I think the primary, I've been involved in it for about three years and I think the biggest positive that I see out of that organization is that it has really allowed the different states to reduce duplication and leverage on things. The leveraging and the reduction of duplication has been amazing. And as a state personnel you don't often get paid to learn about other states and who your counterparts are in other states. That organization has allowed us to do that. So, that might just be one mechanism. I know with a lot of the other oil spill funds, the Gulf of Mexico Alliance has planned on being heavily involved. So that might just be some organization we could tap into that I think would help.

CHAIR WELLSLAGER: Don't go away.

MS. PARSONS RICHARDS: Okay.

CHAIR WELLSLAGER: Do you see NOAA was involved with that and if so who with NOAA or what part of NOAA? Do you know?

MS. PARSONS RICHARDS: Yes, I'm sure Tim could answer that.

MR. OSBORN: I apologize. A lot of it is OCRM, coastal zone management. Some is actually NOAA headquarters and the GOMA, G-O-M-A. I can get you the roster of the NOAA attendees. I think, to verify or to confirm, its really been one of the few planning entities where Gulf states from Florida to Texas actually have in an organized way met and actually talked about similar issues, plus also issues that are particular to their state, to make decisions on broad policy issues. I think this is obviously going to an operational thing which will be new ground but at least it has got the people at the table.

CHAIR WELLSLAGER: Go.

ADMIRAL GLANG: I think there's a

really good recommendation being formed here that the panel could make to NOAA. It is just a matter of crafting the language. When the panel makes recommendations to NOAA what I like to know is, how can I respond to this recommendation and how can I, for those that I'm responsible for, how can I show progress? How can I prove to the panel that we've made progress on it? So, if the panel's recommendation were for instance to be that NOAA's IOCM program work with the Gulf of Mexico Alliance, and I'm just making this up off the top of my head, to understand regional shallow water mapping requirements. Then somebody wordsmith that a little bit further. That's an actionable recommendation that we would be happy to work on.

MEMBER MILLER: Associated with that could it be, I mean that's very specific and I think excellent. But you were talking about IOCM being on a federal or a national level. Does IOCM need to consider having

perhaps regional bodies like the California, Oregon, Washington Alliance, like the Long Island Sound Alliance etc. or the Gulf of Mexico? Some component of IOCM focus on a regional level? I don't know.

ADMIRAL GLANG: At Coast Survey, we have two and a half people devoted to IOCM. So I would be happy to have an IOCM presentation for you all for the next meeting so you get a feel for the range of issues and the size of the tasks they have before them. There is an awful lot of interagency stuff. There's a heavy emphasis on the variety of arctic focus activities where IOCM participates. They've just got a lot going on. I think that's worth communicating to the panel and kind of take it from there.

CHAIR WELLSLAGER: Okay. What we've got now and I think with what we can put together as the panel for writing this after the fact, wordsmithing can be done and we'll have I think a good letter of recommendation

to be going out. Let's see, what else. David, please.

MEMBER JAY: One issue that came up during our session that hasn't appeared yet here. The gentleman from the VTS system mentioned that they would like to go from the traditional way the river was run in terms of elevations, this many feet at the Carrolton gauge we've got to do this, to, the current is thus and so here. That means we need to change our operation, making the significant point that the currents really matter to the vessel operators and the inference from the elevation is sort of an indirect one. The air gap data helped. They would like more sensors, which is an issue that we've discussed. But the other piece of that he was saying was, well, you know, we don't understand quite how the Doppler profiler data that we get here relates to the currents out in the channel or a mile downstream or wherever. This of course is a modeling issue.

We can't really tell people that well, those people need to talk to each other more. It does seem to be that it is often a problem that IOS will eventually get to modeling some areas that PORTS won't. PORTS and IOS can work together. It seems like PORTS and IOS cooperation is a national issue. We've got this particular flavor of it today. I'm not quite sure what the actionable item is here, but it seems like a lot of places disconnect here. I know Rich is working hard to address this but it's not simple. It does seem important.

CHAIR WELLSLAGER: And I understand that. I also think when we are talking about PORTS yesterday. In the planning stages for that specific things are addressed as far as the PORTS needs. Correct, Rich? And what people are interested in at that location. Would something like a fog sensor or -- and you may have said this yesterday. If you did, I apologize, but you will be saying it again.

Can something like an air gap sensor be tied in to a PORTS system?

MR. EDWING: Right now when we add an air gap sensor it is part of PORTS. That's the only way we do them now.

CHAIR WELLSLAGER: With respect to the fog and visibility, that was another request that was made.

MR. EDWING: Right, same thing. So I mean we heard a lot of request for additional sensors in the breakout session today as well as the last couple of days. It's easy to do. There just needs to be the funding there to do that. PORTS is a menu-driven system. There's a suite of sensors you can choose from to meet your local needs but there has to be the funding to establish them and maintain them.

CHAIR WELLSLAGER: So I guess David, in answer to your statement, that's pretty much something that's already available. So I don't know if it would

actually be something we would want to put into the letter of recommendation since --

MEMBER JAY: David Jay. This is not about, just about sensors. It is about sensors and models. Both on the level that the users need to understand how they work together but also they can't understand that if there isn't a model in place at the particular location. That gets to IOS and PORTS coordination because PORTS isn't going to provide all the models.

CHAIR WELLSLAGER: Right. So I guess I'm having a hard time getting around what it was that you were saying. Was the recommendation that models be created based on data that then could be used for ship port navigation?

MEMBER JAY: Well, the PORTS and IOS need to coordinate better to meet the needs of all of the users, navigation being one of them. It's not a one-way problem. IOS is not all that organized in a lot of places

and is underfunded as it PORTS. Everybody is underfunded here. There doesn't appear to be a lot of communication either.

ADMIRAL GLANG: Mr. Chair, I had another thought on the modeling piece because one of the things that struck me, and I've had this idea in the past. I really don't understand well enough all the different models and how they are used and where people fit in. But I do know that coast survey does have a significant modeling effort. We operationalize the northern Gulf of Mexico, the operational forecast system is one example. I know that within NOAA there is, there are a variety of modeling efforts that are coordinated through I think it's called the coastal storm surge modeling effort. But I would propose that we provide the panel with some material on that as a starting point.

CHAIR WELLSLAGER: Should that be addressed in a letter to you for distribution coming from the panel so that we could have

that information distributed? Me writing a letter to you saying, would you please send out?

MEMBER JAY: If we are in DC, we could perhaps have a presentation from the people at the lab that do the modeling.

ADMIRAL GLANG: I think the most constructive, the best idea would be perhaps to have a briefing in DC at the next meeting because I could bring in the subject matter experts. I could get you some background material in the meantime. I'm just not sure how well that would work as a stand-alone product. I'm pretty sure we could get a really good briefing from our modeling folks because they do coordinate with coops and especially with the Weather Service as well as with the Navy in some of their modeling effort.

CHAIR WELLSLAGER: Okay. Scott?

VICE CHAIR PERKINS: Admiral, would it be possible to do a webinar or a WebEx in

advance of the briefing so that we can maybe climb a portion of the learning curve? We might be able to be a bit more interactive and ask better questions and get more from the live briefing if we have a primer.

ADMIRAL GLANG: I agree, Scott. I think that's a great idea. That's a thought I had last night as well. We ought to be looking at improving our intercessional communications and a webinar maybe a way to do that. There is a process we have to go through, of course, but if we convene the full panel we have to go through an FRN but it certainly would be a cheap way to get a technical brief to the panel, it would be a one hour thing.

CHAIR WELLSLAGER: Kathy.

MS. WATSON: Admiral, as long it's considered administrative which is discussing like topical agenda issues, things like that, where you are not seeking public comment then you do not have to do it FRN. So we can do a

WebEx meeting.

ADMIRAL GLANG: Okay. So let's do that. Let's take that for an action.

CHAIR WELLSLAGER: Sounds like a good idea.

ADMIRAL GLANG: You want to restate the action?

CHAIR WELLSLAGER: Scott, why don't you restate the action.

VICE CHAIR PERKINS: This is Scott. The action will be to conduct a WebEx type seminar to help the panel understand the storm surge model in advance of the live briefing at our next regular scheduled meeting.

ADMIRAL GLANG: Okay, we can do that.

MS. WATSON: Got it.

CHAIR WELLSLAGER: Anything else? Tim, are you getting ready to make a presentation?

MR. OSBORN: No, I was actually doing as I was told by Kathy and saving

everything to a flash drive.

CHAIR WELLSLAGER: Ah, very good. Well, it was brought to my attention that since we don't have a public discussion period that as things get wrapped up we might actually be able to close early. So I'm sorely tempted to say if we want to skip our break right now and we are running very much ahead of schedule, we could do that and the idea would be to discuss what we've got for -- I guess we do have a public comment period. I missed that. My bad. I misunderstood you.

MS. WATSON: You do have to offer a public comment period, but you can move the time up for that and ask anyone now, 15 minutes.

CHAIR WELLSLAGER: Okay. So, I need to make, in 15 minutes we would have something like that. Is that what you are saying?

MS. WATSON: No. All you have to do is just ask if you want to do it now,

public comment period, there's 15 minutes available.

CHAIR WELLSLAGER: With our public available right now, would anyone like to address the panel and discuss anything? No, very good. Okay.

MS. WATSON: You can close it.

CHAIR WELLSLAGER: The ad hoc committee for the last couple of days we have not actually met about what was going to be discussed from this meeting. This was going to be something that was going to be done after we discussed from the breakout sessions what was done. So there really hasn't been a chance to put together any thoughts for paper yet. But thank you for bringing that up. But that does bring up another session. There was a meeting that was held this morning and Frank, would you be kind enough to enlighten us on some of the thoughts that came up for what we are going to discuss with our spring meeting?

MEMBER KUDRNA: Yes. For the spring meeting, we are talking about Washington. We are talking about inviting the House PORTS Committee, we are talking about possibly connecting that to some meetings maybe the following day with the chairman and vice-chairman with OMB and any other locations that are appropriate. We bring folks in and focus on the Washington scene during that meeting. In preparation for that, we talked about a position paper of our recommendations and even though I don't remember exactly what I said yesterday, but the theme was to focus on jobs, the economy, post-Panamax, vessels and northwest passage and the kinds of needs that are going to occur. Then tying that to our recent top list of items and restructuring that in a kind of simple clear-cut form. We had a brief discussion on that this morning. I am going to take a first cut at that and route it back to our committee and then to the chairman for the full panel shortly.

Hopefully by e-mails we will be able to clean that up to something we'll have available for that meeting. Scott, do you want to add anything regarding the meeting to your discussions?

VICE CHAIR PERKINS: No, just coincidentally while you were reporting I did get communication from the NGAC on their meeting date. So they have meeting dates in March and in May. So they plan to put their calendar out so that the concept of trying to coordinate our next meeting with someone else's meeting. We are gathering input on that in the last 24 hours. So, we'll distribute something back out after we get those target dates and then try to identify which makes the most sense.

CHAIR WELLSLAGER: And help me out for a little bit. There was talk as I remember about having two different locations for the meetings. We were going to have it at one location on day one, was it say the

Commerce Building?

VICE CHAIR PERKINS: Thank you for the reminder on that. We discussed a two day meeting. Day one being at NOAA, at Commerce, 14th and Constitution. And then day two being in the Rayburn Building in one of the public meeting rooms available in Rayburn. That way depending on who we get identified as speakers and topics. So using IOCM for example, if we have an IOCM briefing then it may make sense to have that on day two at Rayburn where we can invite the appropriate staffers to sit in.

CHAIR WELLSLAGER: There was also discussion about the timing of the meeting. I remember when we first started talking about this we were looking at the first week in March. And one point was brought to note that needs to be addressed by this full panel, and that was in the timing of this as is stated in the bylaws for the HSRP, you can have two meetings. Well, for the 2013 fiscal year this is our first meeting. If we had our next one

in March, say the first week in March, that's four months away. That would be very early on and we would not be able to have our next meeting until the start of the next fiscal year which would be 2014 which would be after October 1 and with the start of the year it's not going to happen until probably the first, at the earliest to my estimation the first week in November. So if we go March, April, May, June, July, August, September, October, November, we are talking eight months between the first and the second meeting. That's actually quite a bit of time space. I think momentum would be lost. We are slowly building ad hoc committees, program committees, executive committees. I don't really think that would be something we should do. Because of that, my thoughts were to look at trying to schedule this a little bit later either in the month of March or preferably some time in April. It would be interesting, no, not interesting, it would be relevant and

required that Congress still be in session but -- Scott, was it not something that you mentioned, that there is going to be a certain period of time when everybody is up there at budget time?

VICE CHAIR PERKINS: March is typically the busiest month for visits to the Hill. So going back beyond March may be beneficial just so that we don't lost in the noise of 20 plus visitors a day into each congressional office. The NGAC, so the National Geospatial Advisory Committee is targeted May 29 and 30 for their meeting dates. That's right after the holiday. So that would put us pretty close on that six month schedule. Yes, Jeff.

MEMBER CAROTHERS: I seem to remember we talked about maybe meeting when Congress is not in session so we would have more access to the staffers, they would have more time to meet with us.

VICE CHAIR PERKINS: Admiral Fields

did put that on the table. There's a pro and con to that. I would say meeting concurrently with another relevant FACA maybe is more important than the congressional schedule. Because staffers will be available whether the Congress is back in the district or not. Take that as given. May 29 to 30, though, that's right after the Memorial Day holiday so you can pretty reasonably predict Congress will not be in session and will be back in home districts that week.

CHAIR WELLSLAGER: In addition to that we have in the past discussed locations for the meetings that would be following the Spring meeting and it would be thought provoking to hear from the panel where they collectively should think or would think would be a good possible location. Unfortunately I don't have a digital copy of this so that we could put it up onto the screen. But going backwards from May of 2012, Anchorage was our last meeting. Norfolk, Virginia, Hawaii,

Portland, Oregon, Providence, Rhode Island. So we are back at May around 2010 in Providence, Rhode Island. We had the meeting in Duluth, Great Lakes, September, Baltimore, which was April of 2009, Tampa, which was a Gulf Coast meeting which we are now having here. So we've covered the Gulf Coast I think quite effectively. The West Coast and San Francisco we had a July 2008 meeting. Miami 2008 in March. DC was in 2007. Alaska was back in 2006 and I'm not sure where it was in Alaska, probably Anchorage again. Durham, New Hampshire, San Diego was April 2005. Norfolk was November 2004. We've had one in Norfolk since. New York Harbor and Washington DC. It would be I think very interesting, possibly even enlightening, to have something up in the New York Harbor area with the effects of Sandy as it has come through. It wouldn't necessarily have to be in New York. It could be at Sandy Hook or some of the other areas, if they had the facilities there to be able to

do something. New York Harbor would be the next possible location. It is a shame the Coast Guard shut down the facilities at Governor's Island because that would have been the perfect spot to have something, the sanctuary outside of the city that never sleeps. That was one thought that came to mind. In reviewing this another thought that I had is I don't see anything in the Southeast United States. Charleston, Savannah, those areas. It's been a while since going south of Norfolk, Virginia. And then Miami down in the far south which was in 2008. I don't think we've had anything.

MS. WATSON: Excuse me, Chair.

CHAIR WELLSLAGER: There we go, thank you. There's our list of the meeting locations. So one possibility I think would be something like the New York City area. But I will open the floor up to other locations that the panel thinks would be a good place to consider for the Fall meeting.

MEMBER CAROTHERS: Jeff Carothers. I think New York would be a great place after Sandy. That would give enough time to kind of rebuild and stuff and see what products, you know, if NOAA was up there, Johnny on the spot to see if that information was useful a year later.

CHAIR WELLSLAGER: Carol.

MEMBER LOCKHART: I just wanted to second that opinion. I agree that New York would be an appropriate place.

CHAIR WELLSLAGER: Bill.

MEMBER HANSON: If I could throw an alternate in. Next Fall there will be a major deepening project underway in Miami if you want to talk about Panama Canal impacts.

CHAIR WELLSLAGER: Talk about what?

MEMBER HANSON: Panama Canal impacts, Charleston, Jacksonville, Savannah are all looking at deepening as well. So if you thought about the southeast. New York is also a wonderful place because they have

deepened, completed with their deepening project and perhaps in the throes of raising their bridge, the Bayonne Bridge, to actually be able to use the draft.

CHAIR WELLSLAGER: And Frank, I'm not discounting the idea of The Great Lakes either. If you were going to be able to look into something like that, that would still be good information to have.

MEMBER KUDRNA: It may be different for this year because generally those are summer cruises. So if we are talking about a Fall meeting that probably is not a good one for the next round.

CHAIR WELLSLAGER: Okay. And Admiral Glang was actually talking about us going to Quebec, wasn't he?

ADMIRAL GLANG: I don't think so.

CHAIR WELLSLAGER: Not seriously. I did want to point out that timing wise, the second meeting for fiscal year 2013 will be in -- that's our DC area meeting. So this next

meeting that you are talking about, the Fall meeting, will actually fall or be scheduled for October/November time frame. So keep that in mind. We are only able to finance two of these panel meetings per year.

MEMBER JAY: David Jay. It doesn't look like we've been to LA/Santa Monica and that's certainly a major commercial harbor. Also probably effected by Panamax traffic, post-Panamax traffic.

CHAIR WELLSLAGER: You're saying they don't want to see the Panamax.

MEMBER HANSON: They want to talk about rail and land sites.

CHAIR WELLSLAGER: Oh yes, New Orleans, thank you.

ADMIRAL GLANG: Mr. Chair, I would propose that panel members agree to sort of evaluate and brainstorm the Fall meeting location by correspondence, take that on as an action. Pick a date by when we need to have an answer. Kathy, when do you usually start

your planning, how far in advance?

MS. WATSON: Well, it's best to have these every six months apart for the acquisition process and the timing for the funding, it is also best to do it in late April/May or any time after mid-October to November.

CHAIR WELLSLAGER: Okay, so if I just heard you correctly and if this is November now then if we do late April/early May that would probably be the best time for getting things together for our Spring meeting on the hill?

MS. WATSON: Correct, but I need planning information months in advance. I need decisions of location, where you are going to be, kind of what you are going to do. I have to submit all this acquisition information at least 60 days, sometimes 90 days in advance. So that's three months for an acquisition to get approved.

VICE CHAIR PERKINS: This is Scott.

I just got another e-mail. The IOOS Advisory Committee is planning to hold a Summer 2013 meeting in the Great Lakes Region. They haven't set a date yet. So, we are already looking beyond that into 2014, but I'll share that information when I get the dates because maybe Frank and I can go on a Great Lakes cruise with them.

ADMIRAL GLANG: Mr. Chair.

VICE CHAIR PERKINS: With fishing poles.

ADMIRAL GLANG: Let me point out if we wanted to interact with the IOOS FACA, it doesn't necessarily need to be the full FACA perhaps. There are some FACA members who are in the DC area. You may want to consider extending an invitation to whoever is available from that FACA for the Spring meeting. Just an idea.

VICE CHAIR PERKINS: Jessica, their assistant DFO, has communicated they are definitely interested in coordinating with us

and not stepping on top of toes for booking over top of each other. I think we have a line of communication open there now.

MEMBER KUDRNA: I was going to suggest Rick Spinrad as the chair of it. I think he is the guy you would like to have there and even if he had to plug in by phone or some other sort of connection method. I think he would be a really good one. Mr. Chairman, can I make a motion. I think we should get a, we've selected Washington. We are going to let Kathy and Scott identify some optional dates, do a Doodle poll, lock up dates and do the same for a Fall meeting and then do collectively with that a survey for a location for the Fall meeting also. So, information and we lock dates and lock a second location pretty quickly.

CHAIR WELLSLAGER: I think that's a very good idea. Kathy, do you like that?

MS. WATSON: Yes.

CHAIR WELLSLAGER: Say it again.

ADMIRAL GLANG: A doodle poll. Kathy have you used a doodle poll?

MS. WATSON: I'm sorry?

ADMIRAL GLANG: Have you used a doodle poll feature in Google?

MS. WATSON: No.

MEMBER KUDRNA: It's about 12 foot high and it measures water elevations.

[Laughter]

MS. WATSON: You can direct that Rich Edwing, water levels.

CHAIR WELLSLAGER: Okay. That's been - Jon.

CAPT. SWALLOW: I was just going to say, on the nav manager's side, we've kicked around like where HSRPs would be. So if it comes down to like a couple of places, I can have them come up with a list of like issues and stuff. Like Savannah came up from one of our guys thought it would be good because the Panamax ship is coming in there. Some PORTS issues in Georgia, close to Charleston because

of CFC. I can have the guys gather some of that information for a couple of PORTS if you like and send it around to help the decision making. If a couple of people are thinking about it rather than holding it down to that.

CHAIR WELLSLAGER: Okay. Yes, that would be good. I think two sides, I would say Savannah and New York Harbor but I feel pretty sure that New York is going to be the location based on what we have seen happen and nav response team is going up and doing the work and what we've got. But that would be very helpful to look at. Thank you.

Are there any other topics, issues, thoughts that we would like to address or you would like to address at this time? Mr. DFO? Rich? Juliana? All right then. I thank you very much for a very productive meeting. This has been interesting and we've got further ideas that we can work on and direction that we've got. It is beneficial. I will await to see some things from Kathy about the dates,

putting together the survey to what the dates we can meet at and locations and forward information from you, Scott, about the FACAs and the dates. If that's fine, then, I would offer the motion that we adjourn, but I will need a second.

MEMBER CAROTHERS: One quick question before we adjourn. Frank, you are going to put together something for the next meeting and then we will pass it around?

MEMBER KUDRNA: Yes.

MEMBER CAROTHERS: Between our group this morning?

MEMBER KUDRNA: That's going to go back to the committee. We will do an edit and get it to the full panel.

MEMBER CAROTHERS: Okay. Do we need to do that quickly so that Kathy can start making arrangements?

MEMBER KUDRNA: I will.

MEMBER CAROTHERS: Okay.

CHAIR WELLSLAGER: Okay, very good.

Thank you very much. I will say - Kathy.

MS. WATSON: Chair, I'd like to come back and let you know. What I will do when I get back to Coast Survey with our IT for your working groups and your committees to get a specific like group listserv so that all of you can use that instead of sending separate e-mails. Would that make it easier?

CHAIR WELLSLAGER: Yes.

MS. WATSON: Okay.

CHAIR WELLSLAGER: Thank you. Meeting adjourned.

(Whereupon the above-entitled meeting was adjourned at 2:44 p.m.)

C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Hydrographic Services Review Panel

Before: DOC/NOAA

Date: 11-29-12

Place: New Orleans, LA

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

Neal R. Gross

Court Reporter