STATE OF LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

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THE WATER RESOURCES COMMISSION
FIFTH REGULAR MEETING

THURSDAY, DECEMBER 18, 2014

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SOUTHWEST LOUISIANA ENTREPRENEURIAL AND
ECONOMIC DEVELOPMENT (SEED) CENTER
McNEESE STATE UNIVERSITY
4310 RYAN STREET
LAKE CHARLES, LOUISIANA

APPEARANCES

WATER RESOURCES COMMISSION MEMBERS:

HONORABLE SCOTT A. ANGELLE, CHAIRMAN

KYLE F. BALKUM

GLENN L. BRASSEAUX

JONATHAN K. CAUSEY, P.E.

DAVID B. CULPEPPER

MARK S. DAVIS

PAUL D. FREY

KAREN K. GAUTREAUX

JERRY V. GRAVES

CHARLES J. KILLEBREW, PH.D.

CHRISTOPHER P. KNOTTS, P.E.

BENJAMIN J. MALBROUGH

JAMES W. PRATT

BRADLEY E. SPICER

JAMES H. WELSH

LINDA G. ZAUNBRECHER

WATER RESOURCES COMMISSION STAFF PRESENT:

GARY SNELLGROVE

MATTHEW REONAS

APPEARANCES (CONTINUED)

PUBLIC SPEAKERS:

MATT THOMAS

HERSCHEL L. BOURQUE

NAVEEN ADUSUMILLI

LAUREN CHAUVIN

ANTHONY DUPLECHIN

CHAIRMAN ANGELLE: -- grow the economy. So we're excited to be here. And I thought we would go ahead and ask Matt to call the roll and go ahead and get started.

MR. REONAS: All right. Thank you, Mr. Chairman. And before I call the roll, I would like to clear up a couple of housekeeping details.

First and foremost, we do have coffee in the back courtesy of the SEED Center, as well as water. Downstairs, of course, is the coffee shop with snacks and all to go along.

The bathrooms, men's, down the hall to the left. Ladies, down the hall to the --

MS. HARDISON: Right.

MR. REONAS: Right.

The wireless access, for those of you that are interested, the wireless connection is SEED, S-E-E-D, and there's no password.

On that note, I will go ahead and call the roll.

Mr. Angelle?

CHAIRMAN ANGELLE: Here.

MR. REONAS: Mr. Balkum?

MR. BALKUM: Present.

MR. REONAS: Mr. Brasseaux?

MR. BRASSEAUX: Here.
MR. REONAS: Mr. Causey?
MR. CAUSEY: Present.
MR. REONAS: Mr. Cormier?
Mr. Cramond?
Mr. Culpepper?
MR. CULPEPPER: Here.
MR. REONAS: Mr. Davis?
MR. DAVIS: Here.
MR. REONAS: Mr. Dove?
Mr. Frey?
MR. FREY: Here.
MR. REONAS: Mr. -- Ms. Gautreaux?
MS. GAUTREAUX: Here.
MR. REONAS: Ms. Gonzalez?
Mr. Graves?
Mr. Killebrew?
MR. KILLEBREW: Here.
MR. REONAS: Mr. Knotts?
MR. KNOTTS: Here.
MR. REONAS: Mr. Leggett?
Mr. Long?
Mr. Malbrough?
MR. MALBROUGH: Here.
MR. REONAS: Mr. Morgan?

Mr. Owen?
Mr. Pratt?
MR. PRATT: Here.
MR. REONAS: Mr. Sagnibene?
Mr. Sawyer?
Mr. Spicer?
MR. SPICER: Here.
MR. REONAS: Mr. Welch?
MR. WELCH: Here.
MR. REONAS: Mr. Zaunbrecher?
Mrs. Zaunbrecher?
MRS. ZAUNBRECHER: Here.
MR. REONAS: Mr. Chairman, we have 14 members, which I believe -- which does make a quorum.
CHAIRMAN ANGELLE: Good. Thank you very much.
Senator Long has contacted me. There's a Joint Legislative Committee on the budget this morning of which he is a member in Baton Rouge, so he could not be here. And I know that Vince Sagnibene has that same requirement to be in Baton Rouge this morning.
It's a tough time of the year. I want to personally thank -- well, it's not a tough time

of the year. It's a great time of the year. It's a tough time of the year for folks to have this kind of meeting on their calendar. But I do, again, want to thank all of the members that serve. Many of you serve in a voluntary capacity. Some serve as a result of the agencies that you work for. And I realize that you could be doing other things as your talent level is needed across the state. But I do appreciate the fact that you continue to work in a voluntary capacity to help us on a very, very serious issue.

What I would like to do is go to Item 2, and adopt what I hear is a previous meeting summary. And, Matt, you want to kind of take us through that?

MR. REONAS: Yes, sir. Again, it was a -- in terms of the previous meeting, everybody received a copy of the summary.

Were there any -- I know we had at least one change that we made. Were there any other changes to the summary as a whole from July 30th?

CHAIRMAN ANGELLE: Do you want to explain that change to us?

MR. REONAS: It was a technical change

in terms of -- I think it was Mr. Culpepper's -- the title, geologist or engineer, geoscientist.

And, Charlotte, did we change it to --

MS. HARDISON: Geoscientist.

MR. REONAS: Geoscientist. So it was just a very, a very minor change in the terminology. So nothing, nothing major in terms of -- or substantive.

CHAIRMAN ANGELLE: And that's all been provided to the commission members in advance?

MR. REONAS: Yes, sir.

CHAIRMAN ANGELLE: We entertain a motion to approve.

Motion by Gautreaux. Second by Spicer.

Any objections? Any discussions?

Hearing none, that motion is adopted.

Item No. 3 is Mr. Kai Midboe with the Water Institute of the Gulf to give us an update on the Louisiana Water Resources Assessment for Sustainability and Energy Management.

Welcome, Mr. Midboe. And, again, thank you for your previous public service to the people of Louisiana in a variety of capacities. And we still see different memos that we kind of go back to and pull out of the file and say, oh, okay,

that's what we were thinking then. And we appreciate your work.

MR. MIDBOE: Generally people I have to say, I'm sorry, I denied your LEQ permit.

CHAIRMAN ANGELLE: We appreciate you. Okay.

MR. MIDBOE: Okay. Matt has got my slides, and I think they're loading right now.

MR. REONAS: And that's to advance, and to go back (inaudible).

MR. MIDBOE: That's our usual disclaimer. I think most of you are now fairly familiar with the Water Institute of the Gulf. We are a Section 501(c)3 non-profit organization, which means we cannot engage in politics, we cannot lobby, we can't earn a profit. What we're basically looking at trying to develop are practical applications of science and engineering to water resources. Most of you are aware we have been heavily involved in dealing with coastal issues, but we are also involved in the water issues.

Louisiana is traditionally blessed with an abundance of water. I want to say something, that I have been out of this process for basically

20 years in private practice, having served as Secretary of DEQ and Deputy Secretary of DNR, and in the Governor's office with Governor Treen. Huge, huge progress has been made on water issues. I mean, it's staggering to me to see the kind of progress you people have made. And it's largely the responsibility of this task force, this commission, and the members of it. And having been Deputy Secretary of DNR, I also want to point out the leading role that's been taken by the Office of Conservation and LDNR. I'm very proud of that.

But just because we have made progress, doesn't mean we are not without concerns. And I heard this statement made by a lady up in Iowa, and I thought it was very applicable to what we have. We don't have the broken engine light on, an engine check light on. Our system isn't broken. What we have is the warning label. We need to be very cautious with how we deal with our abundant water resources, and make sure we are taking proper care of them.

We have made, again, some significant strides toward responsible management. And I have read numerous studies that have been produced,

excellent studies. We are moving toward more comprehensive management of water.

In fact, Senate Resolution 171 has directed the Louisiana Law Institute to develop a Water Code. And that water code is going to try to look at issues right now where you have diverse management systems for both groundwater and surface water. It's going to be probably controversial. That is part of the reason I think you need to be looking toward developing a water budget.

Managing water is difficult, and it's difficult for a variety of reasons. One, it's vital to all living things and most economic activities. Thus, whatever you do concerning water is going to have major implications.

Water also has features that make it difficult to regulate. It's mobile. It moves through the hydrologic units -- hydrologic cycle. It's often not within a single boundary. So one entity, one governmental entity, doesn't have control of it. It can -- its supply can vary by year, season or location.

Importantly, a source of water can have many users, often leading to bitter conflicts over

the uses. Determining who has the right to manage, divert, use, or sell water can be very contentious. Attempts to regulate water often leads to taking rights.

So what, what's needed? Water managers require certain critical information. They need to know how much water they have. They need to know how much is being used, and how, when, and where, and what place the regular water supplies are being replenished. They want to know the amount of water that's there, where is it located, what's it input, output, and movement through surface and groundwater. How much is sustainable for various uses, both natural and human? What are the current and potential uses? And, most importantly, what is its future sustainability? And, in fact, we're talking about what the U.S. Geological Survey refers to as a Water Budget.

So we're looking at a project that I understand the, the -- has been assigned to, basically, take a look at how you go about addressing a water budget. This isn't a proposal to do a full-blown water budget. It is a proposal to develop what is the framework for doing a water budget, what needs to go into it, what information

is available to do that, that study, where do we need to find additional information.

And then after having developed that framework, having the framework, one that can be replicated across hydrologic units as needed to look at different issues. We are looking at -- this project is going to be looking at both surface and groundwater. What -- it's being funded through a -- I'm not really sure exactly what project, but it involves energy. And energy is critical in this, because right now energy is the major user of water in this state, as it is in most other states. It's largely a non-consumptive use, but it's a very important use.

Plus, if you start depleting your aquifers, you're going to dramatically increase the depth you have to drill to get water, the amount of energy needed to pump that water back out. And as water becomes more scarce and harder to find, it's going to have to be taken from farther and farther locations and moved to wherever it's going to be used. So energy plays a major role in what we are going to be looking at.

Again, the concept is to develop a system for analyzing and communicating the facts

and figures to public and key managers. The concept, again, is to be applied. How -- once we develop all this information, once we develop this approach, how you communicate it to the people who need to have that information.

Basically, the project is divided into four activities. Let me just hit all four of them rather than do one at a time.

The first activity will be to develop the framework. Develop what needs to be looked at when you start to do a water budget for a particular hydrologic unit.

The next activity is to go out and look and see what sources of information is available. The Water Institute is not involved -- doesn't want -- it wants to act in a very efficient manner. It doesn't want to try to reinvent the wheel. Where an entity has the capability, or has the science, or has whatever, we want to incorporate that into what we are doing. And then we want to identify what is missing, what other things do we need to look at. Are we properly monitoring the things that need to be monitored? So that's, that's Activity 2.

Then we are going to try to identify

specific hydrologic units to apply the framework. It's, basically, taking activity and multiplying it, Activity 1 and multiplying it by Activity 2.

We are looking at hydraulic units which are -- are not in balance. They are unbalanced; that you have, basically, more use being made of the water than you have replenishment of the water. And, again, we will be looking at groundwater and surface water.

And then, of course, the final product will be a report that describes the framework, its application to specific hydrologic units, and the resulting assessment of those water units that we looked at.

And, again, this sort of summarizes it. One of the things that we are very interested in doing is working with stakeholders. There's going to be a lot of coordination with managers and the public, trying to find out what their needs are, what they know, where sources of information are.

It's so much writing up there, it's hard to say. But, basically, we're going to come up with example that signifies results and also incorporate water supply and energy and so forth into a final product.

I went over it fairly quickly. I'm sure you have a million questions. I'll be glad to try and answer them. That's the kind of framework we are working on to get the, the project done. Final product will be a report to both CPRA and the Office of Conservation. They will review the report prior to it being issued to address any issues they may have with it.

Do we have any questions?

CHAIRMAN ANGELLE: Okay. Couple questions here.

MR. MIDBOE: Yeah.

CHAIRMAN ANGELLE: Have we already executed the contract with you all to begin work on this?

MR. MIDBOE: I checked with Gary this morning, and he said, yes, it's been signed.

CHAIRMAN ANGELLE: Okay. So in terms of the housekeeping that needed to happen, us on the State level finding the necessary financial resources, going through the procurement process, making sure that we were complying with every requirement in the law, we feel very good that we now have a signed contract. We got a contractor that's out there, and is, is prepared to execute

according to this presentation?

MR. MIDBOE: That's my understanding. Gary?

MR. SNELLGROVE: That's correct. We have, we have completed the process through an interagency exchange, an IET. The transfer of funds from the, from the funds that we were able to get through DNR through the Petroleum Violation Escrow. We took that money and sent it over to CPRA. CPRA has a corporate endeavor agreement with the non-profit Water Institute. And we are going to work with CPRA as project managers for this project. Total cost of 220, $220,000.

CHAIRMAN ANGELLE: Not only did you send money over from the Department of Natural Resources to CPRA, but, as I appreciate it, CPRA added to that amount of money; correct?

MR. SNELLGROVE: That is correct. They put up a hundred thousand under their existing agreement with The Water Institute.

CHAIRMAN ANGELLE: So we would expect in the fourth quarter of 2015, first quarter of 2016, final report.

Does the contract require -- Gary, does the contract require any periodic updates to, to

CPRA as the contracting agency?

MR. SNELLGROVE: It does, yes, sir. In the statement of work, the -- we will be getting monthly updates, as well as, of course, the final report, which will go through a formal process of review, including the agencies, both agencies.

CHAIRMAN ANGELLE: Right.

So, Mr. Midboe, one of the things I would ask is, state law requires that this commission meet at least twice a year. In some years we have met I think as high as six times a year, maybe four, but certainly we always going to meet at least twice a year to receive the information that we need, and to have the kind of debates that we need to have, and the discussions.

It would be my expectation that whether we have two, four or six, that we are receiving -- at least we have the opportunity to request and would hope that you would fulfill that request to have yourself, or staff members who are working on that, to give Commission members the kind of updates that you would expect they would want to hear.

MR. MIDBOE: Yeah, we would be honored to come and make those kind of presentations.

CHAIRMAN ANGELLE: Okay. Any questions, comments?

I believe this represents the next evolution. If it was, if it was, you know, Word Perfect 1.0 and then 2.0, and 3.0, as we are moving through the, the things, all things water right, the report that we gave to the legislature in 2012, some of the things that we did from evaluation monitoring and enforcement through the years, this represents the next evolution. We got other things that are going on in other parts of the state with regards to Senate Resolution 171 dealing with, you know, looking at the framework for a code. Again, that's another evolution going on. So a lot of evolutions going on in a lot of different times, if you would. And, you know, we, again, would, would wish you the best of luck. And we have a high, high level of expectation that we are going to get a really, really good product.

MR. MIDBOE: Yeah. And all of these things you are talking about are interrelated.

CHAIRMAN ANGELLE: Absolutely.

MR. MIDBOE: And, you know, with the information we're going to be developing will feed into all of those processes.

CHAIRMAN ANGELLE: Got you. Good enough.

MR. MIDBOE: Thank you.

CHAIRMAN ANGELLE: Okay. Hearing no questions, I'm going to go ahead and move to Item 4, and ask Dr. David Borrok with the University of Louisiana at Lafayette to lead us through a presentation on the New Study of Uses and Alternatives for the Chicot Aquifer Underlying Southwest Louisiana.

DR. BORROK: So I want to, I guess, thank the Water Commission here for inviting us to come and give this presentation. I really appreciate the opportunity to tell you about this project.

I'm David Borrok. I'm the Director of the School of Geoscience at the University of Louisiana at Lafayette. I'm also a professor of geology. And on this project we have got a large number of investigators. It's a joint project between UL-Lafayette and McNeese State University. We also have five or six students helping us out, undergraduate students on this. So I wanted to, I guess, head off and tell you a little bit about it since it has some application, I think,

particularly in this region.

It's funded by the National Science Foundation. It's in their Water Sustainability and Climate directorate. The title here, you can read, is about managing surface water to offset groundwater use.

So the motivation for this, and I think this fits very nicely in the last presentation, is largely that most people don't realize that in the southeast, including parts of Louisiana, certainly, that groundwater is being overdrafted or overused. And what that means simply is that we're using it at a rate that is unsustainable because the recharge of that aquifer system is slower than the rate at which we pull it out. So you can imagine looking down the road 50 or a hundred years, we will have some super problems if we don't think about this now. And it doesn't occur to people, because we do have such abundant rainfall comparatively anyway with the rest of the U.S., and we have relatively large amounts of surface water as well.

So just to highlight this -- I don't know if it will make -- yeah. There was a recent investigation I just wanted to show you from the

Journal of Science where they did some very careful gravimetric measurements through satellites, and over the last decade they compiled these results. And the red and yellow areas indicated here are areas where groundwater and soil moisture have gone down significantly in the last decade. So surprisingly for some, anyway, the southeast part of the U.S. is in some trouble in that area. Of course, there's other areas, and we know why. So these are areas as well.

But, of course, with that motivation, there's, there's a huge opportunity here. I think that's really what sold this project to the National Science Foundation, is that really with the abundance of surface water and rainfall that we get, if we're careful about how we manage things and look at the most efficient ways to do it, we have a real opportunity to make a difference in the long run here. Whereas, if you go out to the southwest U.S., there's really not a whole lot you can do except conserve. But right here we have the ability to revisit the way we manage surface water resources to potentially offset these withdrawals.

And just to give you an idea, this is

the same location as the previous thing I circled on the other map. You can see the darkest green is the largest amount of precipitation. So the southeast gets more precipitation than most of the other parts of the U.S.

So that brings us to the Chicot Aquifer area, and I think that's one reason why it's a great meeting for us to be able to present this. The Chicot Aquifer we were able to convince the National Science Foundation was a great place to start because it highlights both the motivation and the opportunity. It's an area where the aquifer is being overdrafted, and it's also an area where there's a lot of surface water and rainfall where we can potentially do something about it.

So the Chicot Aquifer is outlined here in yellow. These are the surface water areas that are sort of evolved in the project. So you have the Sabine River Basin, Calcasieu, Mermentau, Vermilion, Teche and even a tiny little bit of the Red River Basins up there. So that's sort of what's involved in the project.

It's a very important aquifer for Louisiana, the most used aquifer in Louisiana and

relatively large. It is being overdrafted currently. That, of course, leads to some problems. Luckily not a lot of problems currently, but we're thinking longterm with these sorts of projects. And if you look at the three main uses, this is how they're distributed in this area.

CHAIRMAN ANGELLE: David, what is the 350 million gallons per day of overdraft, what does that represent in a percentage?

DR. BORROK: Percentage of the total? I simply don't know. I guess I would look at it as at this point it's not problematic, but down the road it may be. And if you look at, I guess, century-wide, the groundwater levels in the aquifer have dropped substantially. But if you look at it on a decade basis, we're sort of stable right now. But we're looking, you know, 50 years down the road, that's probably not going to be the case if we continue.

So the goal of this study in this case is to create a geospacial modeling tool. It's one of these things I think is a lot of the talk today. Basically, looking at creating information and tools to help people make the right sorts of

decisions. That's the same sort of thing that we are doing.

We want to integrate the surface water availability, its quality and the needs of the water users to evaluate the different management scenarios. So one thing that we think is really important is to get out and talk to, to the people using the water, to find out specifically when they need water, what kind of water they need, and the quality of water they need, because we think that's important going into the decision-making process. So we will start with smaller watersheds within the Chicot area and hopefully expand out.

The components of this are going to be a social assessment then to understand the needs and attitudes of the key water users in the region. We have a sociologist actually who helped us with that component.

Integrated surface water quality database.

Some sort of a rainfall runoff type model supplemented with flow and transport models to help us determine the availability of water. The Nature Conservancy is doing some of this, and maybe we will partner with them on this part of

the project, for example.

We're also looking at expanding the historical climate record and doing some new climate projections for this region specifically. So we have people who are sort of experts in that area.

And then ultimately we are making a GIS platform for integrating all sorts of these ideas.

To give you a quick idea, this is a high-level view, very generalized here. Things may change, but it gives you a rough idea of the sort of thing we are trying to come up with.

The rainfall runoff model, basically, is an availability type model, transportation, how much rain is coming down, et cetera, et cetera, tied to how much water do we need in ecosystem services, because, obviously, you don't want to rob the environment of the water that's needed for riparian habitats and wetlands. So you have to consider that. Then we have climate projections.

So ultimately taking those things in sum, we can figure out how much available surface water is there. Then we can sort of filter that through the lens, if you will, of the water quality and user needs. As an example, User A, a

generic user, might not be able to tolerate high salinity for whatever the use may be. I guess, agricultural, for example. But perhaps, or maybe -- I guess I said that backwards. User A can tolerate any salinity, it doesn't matter, where User B can only tolerate low salinity. So different amounts of water are then available to different users based on the water quality aspects of that surface water. And then ultimately through these filters, you determine how much water is really useful to the surface for those user needs on the surface.

And then, of course, the geospatial component then can divide up that water and try and put it in the user's hands, theoretically, of course, in the most efficient way possible. So the idea would be to optimize the geographic distribution of useful water in that system. And here's, again, just a rough example of you have some water here that you might want to distribute, how far is it away from the users that can use it, and how much water can they use, and so on and so forth. And so you can look then at different management scenarios for water availability. For example, if you had a pipeline here, or a weir

here to create a, a more useable water or a new reservoir, you could then re-optimize and figure out the difference between the various optimizations that you have done to see how many users can be, I guess, satisfied with that amount of water.

So, so in closing here, we're hoping that the work can inform current and future water initiatives in Louisiana. Certainly we have a high level NSF lofty research goals that everyone has. That's one of those grants. But at the same time, we wanted this to be sort of practical and useful for our region. And I know it's a great time to do a project like this with, with the comprehensive water management plan and things like that being formed. So we wanted to draw attention to the need to look closely at the management tools for surface water, that technologies, policies and so forth that can preserve really the joints of this groundwater system.

To give you an idea, we have only been at this for four months. So I don't have a whole lot to report, but we have been pulling together necessary data, databases, talking to the

stakeholders, and, you know, figure out the challenges, needs, and things of that nature. But I just want to say that if there are things that you think we might be missing or data sets you think are very important to us, certainly contact us and then let us know, and we will try to incorporate that information.

So I really appreciate you giving me the opportunity to talk about this project, and my contact information is up there. I would really like to thank the Water Resource Commission and our investigators in the project and things we've done. I'm happy to answer questions.

CHAIRMAN ANGELLE: Mr. Davis.

MR. DAVIS: First off, who was doing the social assessment work on the team?

DR. BORROK: Well, we had two folks. One of them recently actually passed away, Bob Graham, unfortunately, passed away. Joann Derowin is helping us. She's at UL-Lafayette.

MR. DAVIS: And where do you stand on the project now, and what are the next steps that you would envision?

DR. BORROK: Well, I mean, to be quite honest, we haven't done a whole lot except gather

data. We've put the GIS framework together. We have got the, you know, computers that we need to do it. We've hired the students we need to do it. We just recently integrated the U.S. Geologic surveys, surface water -- not just surface water, but water quality data set with the EPA water quality data set, which, since they're two different databases, was a bit of a task. So we have integrated that and we have that data available.

We're next step-wise looking at now some sort of modeling, like rainfall runoff type modeling, or a starting point there of water availability.

On the social assessment, we have been talking mainly to stakeholders at this point and getting the information we need. We're still yet to talk to the individual users of the system. So that's sort of where we're at.

MR. DAVIS: And my final question is, when you're looking at the groundwater situation are you looking beyond potable aquifers into brackish (inaudible.) West into Texas you run into some of the aquifers that we would consider almost disposal sites.

DR. BORROK: Wow.

MR. DAVIS: They're viewing as water supply sites. At least, you know, for industrial and agricultural purposes, you know, with desalination and the like. Are we looking -- how complete a picture are we looking at for our groundwater?

DR. BORROK: Well, I guess, the answer to that question probably is two-fold. One aspect of it is reality, although this is a project about the groundwater, as I say, the groundwater, we're focused on primarily the surface water at this point because the idea is that it's the most efficient management of those resources. So we haven't looked in depth into the groundwater issues.

In the Chicot area that we are focused on currently, we are not looking at alternate aquifer sources. I mean, you could potentially look at, I guess, deeper, more safety brackish aquifers, and there are some perched aquifers and femoral water sources above the Chicot as well here and there, but we are not focusing on those particularly at this time.

MR. DAVIS: Thank you.

CHAIRMAN ANGELLE: Mr. Knotts.

MR. KNOTTS: Yes, sir. From a -- I'm not a geologist. From a geological perspective, would the citing of future reservoirs be out of scale from a geographic or from a, a time standpoint to look at recharging some groundwater aquifers?

DR. BORROK: Well, I know -- that's a tough one. I guess, time-wise I think certainly that's an option because, you know, we're looking at scales of sustainability of 50, a hundred years. And so having additional reservoirs and where those are located would certainly impact a project like this, is probably the short answer.

I know that the Louisiana Department of Transportation has a reservoir priority program. And so they are -- I haven't spoken with them directly, but I know they are already --

CHAIRMAN ANGELLE: You're speaking to him directly. He is, he is Mr. Reservoir DOTD Man.

DR. BORROK: I can cross that meeting off the list then.

In a little more detail certainly we should discuss, discuss that because I would like

to learn more about the program. But I am certain that that would be one area to look at, is, you know, water runs off so fast. I mean, really the management is centered around flood controls in most cases as opposed to just keeping the surface water that is in excess. So situations like that I think would be valuable probably.

MR. KNOTTS: I would like to discuss that further with you because that's kind of the things we were looking at was the strategic location of future reservoirs.

DR. BORROK: Yeah. This sort of a geospatial model is, in many ways, sort of made for that sort of citing of the water sources. So that would be great thing to talk about.

CHAIRMAN ANGELLE: Mr. Frey.

MR. FREY: You mentioned you were at a stage -- see if this is on. Check. Check.

I will just talk loud.

DR. BORROK: I can hear you.

MR. FREY: You were at a stage where you were interviewing stakeholders, and I would suggest that you make sure that you've got the farming community and coastal marshland owners involved, because those river systems in this area

from the Sabine over to Teche, Vermilion, Mermentau, Calcasieu, are all very important, both in the farming community as well as the sustaining those coastal marshlands.

DR. BORROK: Yeah.

MR. FREY: To that end.

DR. BORROK: Very good, very good advice.

We have met recently with ag extension agents and spoken about that. And they have certainly confirmed the, I guess, the sensitive nature of water, particularly for agricultural use. So we're very sensitive to that, and we will continue to talk to those agents and farmers. And, yeah, so coastal. So we'll be looking at both of those. Thanks.

CHAIRMAN ANGELLE: Mrs. Zaunbrecher.

MRS. ZAUNBRECHER: Yes. Recognizing that agriculture use is 70 percent of the groundwater, for you to be aware that we would love to use more of the surface water if it were available, if we could just get it where it needs to be.

DR. BORROK: Yeah.

MRS. ZAUNBRECHER: And as cultural

practices change, too, less water is being used on primarily rice, and we're trying to be as sustainable as possible.

DR. BORROK: Yeah. That's actually the, the exact same message we have had from the other agricultural -- the extension agents, that they and the farmers understand surface water is, really, I guess, the key to the future for the agriculture of the region, but at the same time, it's largely a proximity issue with them.

MRS. ZAUNBRECHER: And we've talked about that earlier, that surface water is a lot less expensive to access than the deep-water wells.

DR. BORROK: Oh, yeah.

MRS. ZAUNBRECHER: And so everybody would be happy. But where we live, it's very flat, as you know, and so reservoirs aren't always an option.

DR. BORROK: Yeah. Yeah. A lot of people have mentioned weirs and things of that nature as wells, special options. And, and, basically, the idea is to explore all of them, but I think you're right on target with what I have heard.

CHAIRMAN ANGELLE: It certainly makes it very important as we kind of look at surface water options, that we are mindful of the water quality that needs to be part of the equation, because nobody wants to go from a great expensive source to a cheap inferior source. That's not a solution. And so, you know, we, we are sitting at, at the intersection of all things water. And quality is certainly one of those things that we need to, we need to be aware of.

I would say to you, Dave, that thank you for being here, and we would view you as our newest partner. No one up here has a monopoly on all the solutions. And the State is going to hopefully continue to surround itself with bright, passionate folks who want to be a part of the solution. And if we do that, then, you know, we will be able to put the gold star that we checked the box for sustainability, and we would view you as part of our, of our team. And that team is constantly changing. We are always looking for new talent.

So please inject yourself with any of our agencies that are representative here. Push, wiggle your room, yourself to the table. Whatever

the meeting is, I would ask that you would kind of ask for forgiveness rather than permission to participate. You know, you have got a bright group of folks who are helping you, and there's always room at the table for, for that. So, again, thank you.

And can you tell me a little bit about the NSF -- I'm assuming it was a competitive grant?

DR. BORROK: Yeah, yeah, it is. I can't remember the statistics now, but they usually have 140 proposals or so, and there's 10 to 15 percent success rate. So we are very fortunate to have received the grant.

The exciting thing about it, and just to give you a little bit of history. My background is that I moved here to UL three years ago. I moved from a place where water sustainability is a huge issue in El Paso, Texas. I worked at University of Texas-El Paso, and I had a similar grant like this in El Paso. And you can imagine the difference between the two. But the amazing thing is, is that it's still some of the same sorts of problems in management. El Paso you can't do anything about it except conserve or

change saltwater to freshwater with desalination.

So we have a real opportunity here. And that was the exciting thing I think that the NSF decided to fund us on, is that, that opportunity that sold them. So I thank you for your kind words.

CHAIRMAN ANGELLE: Any other questions?

Okay. Thank you very much, and Merry Christmas to you.

And, Gary Snellgrove, if you could just make a note, all of the PowerPoint presentations, all the presentations if we could, following the meeting, they would be e-mailed to all the Commission members. And those --

MR. SNELLGROVE: You got it.

CHAIRMAN ANGELLE: Yeah. Okay.

Item No. 5 is Jim Pratt with the Sabine River Authority to give us an Update on Development and Management and Planning for the Sabine River Authority. Thank you, Jim.

MR. PRATT: Thank you, Mr. Chairman. Let me get this started, Mr. Chairman. And do a little introductory here.

I am Jim Pratt. Sabine River Authority is one of those few entities in Louisiana that has

jurisdiction over an entire river basin, which is Sabine River Basin. We do manage it jointly with the State of Texas since it is a bordering river. We are managed by -- or, actually, I'm managed by a Board of Commissioners that's appointed by the Governor. And, Mr. Chairman, I would like to introduce one of our Commissioners with us today that represents Calcasieu Parish, Mr. Gene Foret.

Most people when you talk about Sabine River Authority they think of Toledo Bend. That is one of our projects. The most significant project to the state today and, and continuing in to the future is a diversion canal project that we have here in Calcasieu. And I will give you -- most of the information today will be specifically about our canal system and the growth we are experiencing here in southwest Louisiana. But I do want to give you some current events with the Toledo Bend Reservoir, and what we've worked through recently in the past few years in that reference.

Again, we're one of the nine basins, river basins, in Louisiana. And it is the bordering basin with the State of Texas.

We have over the past eight years gone

through a re-licensing project with the Federal Energy Regulatory Commission. Because the Sabine River is considered a fully navigable waterway of the United States, then we had to have a license to build the dam in the early '60s for hydropower production. That puts us under a very, very broad-reaching power act. It was done back in the 1920s and '30s. It was a tremendous education process for us.

The good news is, the previous license, which was issued in -- in 1963 expired in 2013. We were issued a 50-year license, and that was issued on August 29th of 2014. The significance there is, is that typically 30-year license are the longest terms they issue now. And we had our Senator who was the Chairman of the Federal -- of the Senate Energy Committee, Senator Landrieu, and she was very adamant that they would give us a 50-year license. They did. Now we're working through the fine print.

The challenges are that in the early '60s we didn't have a Clean Water Act. We did not have Endangered Species Acts. We had to show through the process that we were in compliance with all of those acts. And that's why we did

a -- everything from your invertebrate studies to, to this different species of organisms in the Lower Sabine. And most of the emphasis was on the Lower Sabine from Toledo Bend down to Sabine Lake.

The EIS, the Environmental Impact Statement, for the Toledo Bend project, which is required, was issued a year ago, December of 2013. That is available for anybody that might want to look at that.

We have applied for a re-hearing. And the reason for that is this. Those of you that are familiar with the Toledo Bend Reservoir and the various stakeholders we have, for many, many years we had issues with hydropower versus recreation, particularly in the summer months. Back in 2003, we had an act passed in Louisiana legislature that limited hydropower production out of Toledo Bend to an elevation of 168. Previously it was designed and engineered to have a power pool of 10 feet of elevation that could be used for hydropower. That conflicted with our stakeholders who were the recreation and residents on the Toledo Bend. So that was enacted in 2003 with some specific exceptions.

Those exceptions are, in case the FERC

says we need to draw it down to inspect the face of the dam. Makes sense.

If there is basically to prevent a blackout or a brownout in the power grid, then we would go below 168.

And then, also, if we did not do that to maintain our downstream flows, and, again, we have industry down here that do rely on that.

And in addition, saltwater encroachment of the Sabine River, that regardless of the elevation at Toledo Bend, we could make some releases to mitigate that.

Also, if saltwater encroachment into our estuaries, not just Louisiana, but along the Sabine Basin on Texas and Louisiana sides.

And we've been living with that. That can work. Unfortunately, the Federal Energy Regulatory Commission reached farther. And as we interpret it, they reached into our water supply. And their exceptions were very specific that we shall maintain the reservoir elevation between 168 and 172.

They did have some exceptions, but those exceptions are as follows: Due to storm or high water events. Obviously, we can't control Mother

Nature. We would get over 172, and then we may have to go below when we are near in drought years, low flow.

Due to reservoir drawdown, again, for public works, maintenance authorized by FERC.

For releases to make our continuous requirements under Article 402. Article 402 is seasonal releases that we had to make for specific species of spawning in the river below the dam in the spring when typically we're trying to get rid of excess water. So that does not harm anyone.

For releases needed to satisfy licensee's current water supply or other downstream obligations. We interpret that if we have a new SASOL come in to Lake Charles area, we would have to go to the federal government to get authorization to put them into our water supply budget. We feel like they are stepping on state's rights, not just Louisiana, but Texas. So we are asking for a re-hearing. We think they've overlooked that. And we will keep you posted.

CHAIRMAN ANGELLE: Has anyone in the Attorney General's Office or any other administration intervened on your behalf on that issue?

MR. PRATT: No one has intervened, but they are fully aware, and we are keeping that dialogue open. We are using the, the firm of Van Ness & Feldman in Washington, D.C., which we're all familiar with, to help us with this.

Now, what it also did not address is, is that in the reservoir itself -- it seemed to be a focus on downstream. And, and they did recognize we have customers downstream that we had to release. But the "shall maintain the reservoir between 168 and 172," we have two significant industries in DeSoto Parish directly out of the reservoir. And where I plan to shut them off, when we get to the magic 168 elevation. In addition, we have numerous rural and municipal water systems that continually take water from Toledo Bend.

We think they made an oversight, but at the same time with the, with the aggressiveness of the federal government into our water business, we're not sure how that works out. But we feel like they are treading on state's rights specifically in dealing with our water supply issue. We understand the hydro, and we understand the Federal Power Act that relates to that. But

we're not willing to accept to water supply jurisdiction they have imposed.

CHAIRMAN ANGELLE: So given the fact that this is where we are -- and let's assume for purpose of this conversation that you fail to get a more favorable response and a re-hearing. Do you then get into the situation where you get into a low water event, and in order to meet the "shall" requirement of 168, you have to start denying folks who you are providing water to outside of the basin, like you talked about in DeSoto or other municipalities? You would have to start saying, in order to be in compliance with my license, I have got to tell you guys no?

MR. PRATT: That is our interpretation, Mr. Chairman. Now, if it comes down to where it's rigid, and the Federal Energy Regulatory Commission are going to continue to assert jurisdiction here, then there would be a process that we would ask for a variance, and they would hope that they would do that. But at this point in time, we have -- since we have filed for the re-hearing, today we're at the elevation of 168.2 or so. So there's not much leeway. We have been doing everything we can as far as our management

to try not to get below that so we don't broach that prior to the re-hearing. But it's, it's a very challenge that we are having. We are going to keep, obviously, this Commission and all of our administration in Baton Rouge aware of this, because it has great significance to how we future manage our water supply here in Louisiana.

CHAIRMAN ANGELLE: So help me understand. The 168 that was a part of the 2003 legislative act --

MR. PRATT: Yes, sir.

CHAIRMAN ANGELLE: -- was a number that was picked that would kind of represent a balance with regards to the recreational uses, right?

MR. PRATT: Yes, sir. And it was specific for hydropower only, because the hydropower does consume a large quantity that has an instantaneous impact on elevation.

CHAIRMAN ANGELLE: Right. So while I do understand why the legislature would take on that issue from a stakeholder's standpoint, where did the Federal Energy Regulatory Commission you believe find the authority to regulate 168 as a minimum in this way for, for their recreational balance?

MR. PRATT: Well, they had no studies or data or anything that they put in the record through this entire process, Mr. Chairman. We believe -- we want to believe it was an oversight on their part, but we're always suspect also. But the re-hearing we will be -- they will have to present their facts as to why they imposed those on us.

CHAIRMAN ANGELLE: Were there intervenors on -- in any of this --

MR. PRATT: No.

CHAIRMAN ANGELLE: -- that were pushing the 168 being hard and fast?

MR. PRATT: None. None. None.

CHAIRMAN ANGELLE: Well, I would urge you to consider asking, although, you have, you have kept folks abreast. This, obviously, has an impact beyond the Sabine River Basin.

MR. PRATT: Yes, sir.

CHAIRMAN ANGELLE: And I would urge you to consider asking the Attorney Generals of both Louisiana and Texas, because this would have a negative impact on, on the Texas situation as well, right.

MR. PRATT: They're probably even more

up in arms than we are. Even though we're up in arms, but when you consider the water situation in Texas and Louisiana, they will be right beside us fighting this all along the way.

CHAIRMAN ANGELLE: Well, I paid attention when Mark Davis made the presentation about the federal -- perhaps our biggest risk is a federal overreach.

MR. PRATT: Yes, sir.

CHAIRMAN ANGELLE: And I think it would be a mistake, a mistake, if the State of Louisiana, in addition to the Sabine River Authority, the State through its variety of agencies, not take this as the first, or a step, I should say, in that overreach, and push back really hard through intervention. And, and to the degree that you want to talk to me about that privately, and I realize that budgets are limited, but it's important for the State to be represented, not only through the SRA Louisiana, but through the other agencies as well. I feel strongly about that.

MR. PRATT: We agree with you, Mr. Chairman, and as such, we are keeping the Attorney General's Office abreast of this.

CHAIRMAN ANGELLE: Okay.

MR. PRATT: Our other focus here, of course, at southwest Louisiana is impacted from Sabine River Reservoir is our Diversion Canal system. And interesting to, to many of the presentations had previously today, in the early '70s, due to a decline in the Chicot Aquifer down here, the Department of Public Works, under DOTD now, actually built a Sabine River Diversion system. They transferred it to the Sabine River Authority in the early '80s. We have operated ever since. That actually talks about what the, the system is. It's, it's a very efficient system; 35 miles of unlined, open canals, four-and-a-half miles of underground pipelines with pumping stations and control gates. And, of course, the reason was to divert the surface water from the Sabine River into the Calcasieu, Westlake, Sulphur, Lake Charles area for agricultural, municipal and industrial needs, and the USGS still monitors all these wells. And you can look at their monitoring charts, and these industries all went on the Diversion Canal in the early '80s, the groundwater levels spiked in the Chicot Aquifer. So it's, it's proven science. We

don't have to test it. It works.

This is the outline noted. We actually take water from the Sabine River on the western border of Louisiana in the Starks area. We lift it 21 feet. The gravity flows most of the way into Sulphur. We have the control structures there. Then we split off, excuse me, into the -- you can see we have pump stations. I may have a corner here.

So that being said, it actually goes under I-10 with a pipeline servicing industries there.

Got you.

CHAIRMAN ANGELLE: How big is that pipeline?

MR. PRATT: 35 miles.

CHAIRMAN ANGELLE: The pipeline diameter?

MR. PRATT: I think it's a hundred feet. A hundred feet wide and I forgot how deep it is, Mr. Chairman.

CHAIRMAN ANGELLE: No. The pipeline that goes under the interstate.

MR. PRATT: Oh. The pipeline under the interstate? I've got people that take care of

that, Mr. Chairman.

CHAIRMAN ANGELLE: I love a man who knows how to delegate.

MR. PRATT: There you are.

This is the intake canal at the river, two-and-a-half miles north of Niblet's Bluff. You can see that we actually have to raise it from the level there. If you realize Sulphur and Westlake are not in the Sabine Basin. They are in Calcasieu. So it's a natural ridge we get over, and it's a natural flow, which is a very, very efficient system.

This is what our pumps typically look like. Pump Station 1, three of them, 50,000 gpms. We keep two -- we have availability to have -- we do have three. We can add a fourth pump if our demand requires it. They do not run 24/7. We run to get our level at our canal at a sufficient level, and then the control gates take that from that.

We actually have gone through quite a capital improvement process, I will tell you about that shortly, to modernize and take advantage of most of the technology available today.

This is the discharge. Again, it lifts

to an elevation of about .2 MSL. We have automatic sensors that keep it level in that canal.

The control gates, themselves, there's no electricity. There's nothing. They're floating. And they control the level for that 30-something miles throughout that system.

Pump Station No. 3 is located in Mossville. It's equipped with two 20,000 gpm pumps, variable speed. And those provide water to Air Liquide, Eagle US 2, Lyondell, Phillips 66 and Air Products.

Pump Station 4 is located north of the Citgo Wax plant. It has two 19,500 gpm pumps. They pump continuously, provide the pressure under 10 to CITGO, Equistar and Louisiana Pigment.

The typical crossings. We have 37. Those are inverted siphons. Understand we have parish roads, plus we have highways and all that we have to go under. Those are inverted siphons. Also, we go under the KCS Railroad tracks.

There are two to three big concrete pipes. We -- this was done back in the '70s. So you can imagine it has aged. So we're into the capital improvement and maintenance stage as we

speak.

There were and are 109 irrigation floodgates. Those are for agricultural use. When we initially put the canal system in operation, we had a significant number of agricultural customers. Actually, we had 12 in the 1980s, but for the last several years, we have only had about four of them. And they do rice and crawfish located on Canal 2 within seven miles of Pump Station 1. So they are on the western edge of our canal system. The rest is all industry.

When it was first conceived, the quantity of water needed was primarily agricultural, but we have seen over the past 40 years that transition from agricultural to industrial.

Here are our agricultural customers -- I mean, our industrial customers that we currently have contracts with. These are Air Liquide, 129,000 gallons per day; Air Products, 1.7 million; CITGO, 20 million; Phillips 66, 3.6 million; Eagle US 2, 20 million; Entergy, 21 million; Equistar, 734,000; Lake Charles Co-Gen, we have them under contract. We're questioning whether that's really going to come to pass or

not. Louisiana Pigment, 3 million; Lyondell, Matheson Tri Gas, Westlake Petro Chem, SASOL. That's our new one. They are going to be using 46 million gallons per day. As you can see, they will be our biggest customer combined over CITGO and Entergy's power plant.

Total contracted is 141 million gallons per day. Our capacity under current design is 216 million gallons per day.

Let me back up. This is -- in 2011. We saved down for our customers. We had a junction where our contracts were up for renewal. No bonds were against the system anymore. It was paid for. They wanted to see some improvements primarily for one reason, reliability. And so we agreed with them. Came up with a price structure. Understand, we're a non-budget unit of the State. We get no appropriations, no meeting, and we fund this all from enterprise funds Sabine River Authority. This is first phase of approximately 10 million dollars that we have issued bonds for, and we are in the eleventh hour of completing those. Then we will move into Phase Two. We will look at that as to whether we want to issue additional bonds or cash flows.

For instance, here's Pump Station 1 I showed you earlier that was built back in the early '70s. Upgraded those with all the latest technology. Pump Station 3, this is the remote operator's screen to where we can monitor these things 24/7, the operators in a remote area.

One of the learning curves we went through was when Hurricane Ike came up the Sabine River Basin, it pushed a storm surge of saltwater up way above our intake. We had no monitoring devices. We were happy to get the power back on at Pump Station 1, but we didn't know we were pumping saltwater in until two weeks later when that water got to the industries. We had to flush and purge the system. The good news is, because of the 35 miles of open canal, we have approximately two weeks of water in storage for all of our current industry. So if we have a power outage there, we've got two weeks to get it back on.

At our other pump stations that do actually supply the industry, we have, through our capital improvement program, installed diesel bypass pumps. So whenever the power goes out, and most all of our industry have their own power

plants internally that they can kick on during those outages. So -- but they can't -- the power does them no good if they do not have the water. So we have installed bypass pumps if our two pump stations can't serve our industries.

The siphon -- this is a typical siphon crossing. They were concrete culverts, basically, 40 plus years old. They had cracks. They had leaks. So we went through a process of de-watering and going in there and putting new liners in those siphons. And some of those siphons, one of which goes under the KCS tracks, are 72 inches in diameter. A very expensive process.

Lastly, as a result of the SASOL project, which we're all familiar with, this is the KCS rail yard. This is the existing canal system. KCS is going to have to expand this rail yard eastward, westward, and northward, and bring the discussions with them. As we speak, they are going to front the money to Sabine River Authority for $8 million of improvements because they will actually extend our siphons here out this way, and put in new bulkheads, head walls. At the same time, we had to keep the water flowing. So this

is a project we will be beginning after first of the year. Again, no cost to the State of Louisiana Sabine River Authority. We are being challenged with our administration in Baton Rouge on just how to funnel the money, but we are going to require them to put up an escrow account, and we will do the engineering and actually supervise the construction.

CHAIRMAN ANGELLE: Jim, where is SASOL footprint in relation to that site, to this picture?

MR. PRATT: It's all around this area. They have several thousand acres is my understanding. Mr. Foret, who is my Commissioner from here, may can add to that.

MR. FORET: North of that.

MR. PRATT: North of the map there.

CHAIRMAN ANGELLE: How far?

MR. FORET: Right across that canal.

MR. PRATT: They are adjacent to our canal. They are purposely adjacent to our canal.

CHAIRMAN ANGELLE: Were you, were you or anyone with your organization part of the conversation when this company was contemplating expanding its footprint in Louisiana as they were

addressing their water needs?

MR. PRATT: Absolutely. They came to us first. Came to us first.

CHAIRMAN ANGELLE: Without that diversion --

MR. PRATT: They wouldn't be here.

CHAIRMAN ANGELLE: I was hoping that would be the answer.

MR. PRATT: They would not be here.

CHAIRMAN ANGELLE: Number two, number two, without -- help me understand whether or not the construction of the dam has robbed down water --

MR. PRATT: No.

CHAIRMAN ANGELLE: Downstream. The answer is no. I was hoping that was the answer.

MR. PRATT: Here's, here's -- if you don't mind, Commissioner. This canal system is not reliable if you are just waiting on seasonal flows.

CHAIRMAN ANGELLE: Got you.

MR. PRATT: Toledo Bend Reservoir is, in fact, that. It is a reservoir of water. Now, for most of the time there's enough water to come from the tributaries below Toledo Bend Dam that we

establish with Texas the yield we can each take out of the river. But during low flow and drought, which we all have no control over, we can release water on a timely basis. We found out during 2011 and 2012 when we had our worst drought of record, that if we ran a generator two hours every other day, that gave us sufficient flow in the river at Starks, and for the Texas folks in Orange, to pick up water to put in this canal. And so we always have that background.

Now --

CHAIRMAN ANGELLE: Well --

MR. PRATT: -- a river is not necessarily the best way to convey water. Because for the amount of water we release, based on how much we really need, is about five or six times.

CHAIRMAN ANGELLE: Right. Well, I think part of the conversation about the, the South -- was it -- SASOL is a South African company, I believe?

MR. PRATT: Yes, sir.

CHAIRMAN ANGELLE: That, you know, they had a lot of choices to do.

MR. PRATT: Oh, yes.

CHAIRMAN ANGELLE: And they picked

Calcasieu Parish, which is phenomenal. But part of their conversation needs to be that it was and is the fact that our partners on the Sabine River Authority, and folks who are no longer here but were part of that generation of leaders, is, is one of the reasons, because this, this 35-mile diversion channel would not have been constructed had it not been for the original project.

MR. PRATT: That's right.

CHAIRMAN ANGELLE: And from those decisions falls a potential of $21 billion economic investment, the largest in the history of the state. And it just seems to me the State needs to celebrate the cooperation between the regions because it really is kind of a northwest/southwest global expressway here.

MR. PRATT: Yes, sir, we agree with you. And, again, over the last few years, I would say at the advent of the Haynesville Shale and our abundance of natural gas, obviously, our, our ports that are going to be shipping the gas, we have the freshwater here. I think the potential -- we are just scratching potential.

Now, SASOL did already have an ethylene plant on --

CHAIRMAN ANGELLE: Right.

MR. PRATT: -- in this area, but they use very little water and they use groundwater. But they are going to exclusively, with the expansion of that plant, to surface water.

And, again, we, we are using -- what we have contracted out only represents about -- or what we are delivering represents about 40 percent of our capacity. So we have room for growth. But, but -- and that's just the engineering constraints of the canal, itself. We always have the backup which makes the reliability there, Toledo Bend Reservoir. So the connection is very, very apparent.

CHAIRMAN ANGELLE: Is the fee, the amount that you are charging SASOL, is that a public record?

MR. PRATT: Yes, sir.

CHAIRMAN ANGELLE: And what --

MR. PRATT: We charge all of our industries the same amount, and that's based every five years we renew that based on cost of operations specifically.

CHAIRMAN ANGELLE: And what is that rate?

MR. PRATT: Twenty-three cents per thousand gallons. That's raw water.

CHAIRMAN ANGELLE: So do the math for me on what at SASOL's contracted rate, what's going to be --

MR. PRATT: About 3 million a year to the River Authority.

CHAIRMAN ANGELLE: So SASOL believes that it is appropriate public policy or appropriate policy for their company to spend $3 million --

MR. PRATT: Per year.

CHAIRMAN ANGELLE: -- per year to buy water as opposed to using groundwater?

MR. PRATT: Yes, sir. Yes, sir. And they are paying us 10 percent of that right now just to reserve it.

CHAIRMAN ANGELLE: Okay. I don't have any questions.

MR. PRATT: That concludes my discussion. Any questions?

MR. THOMAS: Can I ask a question? The first license agreement.

MR. PRATT: Yes.

MR. THOMAS: Will that prevent Texas

from taking water at Toledo Bend?

MR. PRATT: That will prevent Louisiana from taking water.

MR. THOMAS: I realize that, but does it prevent Texas--

MR. PRATT: Half the water is already Texas.

MR. THOMAS: That will prevent them from taking as part of that agreement, or no?

MR. PRATT: No. It won't affect them as far as that goes. But it can, if it comes -- I can't believe that this would make sense, but to stop anybody from taking a water supply at 168, then it's no longer a reliable supply of water. That's just where we're at.

There's always going to be contention, and we have stakeholders on the reservoir that had rather we did not enter into any more. Residents on the reservoir typically don't appreciate us releasing waters for the industry down here. So can't please everybody at one given time.

MR. THOMAS: Thank you.

MR. PRATT: Sure.

Yes, sir.

MR. BOURQUE: I have a question, or two

things. One, the Chicot could not have handled the industry that was using the water in the '60s and '70s. So without that canal, we, we -- industry would be shut down.

MR. PRATT: We would not have it.

MR. BOURQUE: Right.

MR. PRATT: We would not have the industry. You're exactly right.

MR. BOURQUE: In the '70s at about 140 feet below ground level. Now those are probably in the 70 to 80-foot. That's how much change it's done to the Chicot.

Second thing, where does the water go once it's released? It heads to Calcasieu?

MR. PRATT: Yes, sir. It's actually released into the Calcasieu Basin.

MR. BOURQUE: Does it change the sodium count throughout? Does it make any difference?

MR. PRATT: No, sir. But then, you know, our DEQ actually permits and authorizes those releases from those plants. You know, after they use -- that's all administered under DEQ.

Mark.

MR. DAVIS: The numbers you gave about the water use are very informative, but can you

tease that a little bit? How much of that is consumed, and how much of that is returned? And if it is returned, is it coming in at -- is it going to be a high, you know, temperatures or anything like that that we need to think about?

MR. PRATT: You know, Mark, I can't give you that answer. I know we can certainly come up with it. I'm on the supply end, and, again, with DEQ, I'm sure we have those quantities and water quality parameters. I will take that as an assignment.

MR. DAVIS: Thank you.

MR. CULPEPPER: Yes, sir. Have you looked at the, the effect of all that water and recharge of the Chicot, and how much might help slowdown or reverse land subsidence as a result of overdraft or the formation?

MR. PRATT: Particularly here in southwest Louisiana?

MR. CULPEPPER: Yes.

MR. PRATT: Yes, sir. What we have is the USGS gauges prior to and then up-to-date to today of the water levels in the, in the Chicot Aquifer down here. And as I said earlier, when you look in the 1980s when they put the industries

and what few agricultural customers they had on this surface water system, the water level did spike in the groundwater aquifer, and has remained higher than 1960 levels ever since.

Now, if new industry continues to come in, and we allow them to take groundwater in lieu of surface water, then we will be back to square one.

Thank you, Mr. Chairman.

CHAIRMAN ANGELLE: Thank you. Great presentation.

Okay. We go to Item No. 6, and ask Karen Gautreaux with the Nature Conservancy to update us on the Nature Conservancy's Freshwater Assessment Project.

MS. GAUTREAUX: Thank you, Mr. Chairman and Commissioners. I'm actually going to ask Dr. Bryan Piazza, our Director of Freshwater and Marine Science for the Nature Conservancy, to give the overview. We're very excited to present to you today. What I would like to do is give a little context for this project.

I guess about two-and-a-half years ago or so, Dr. Keith Ouchley and our staff were sitting around. For those that -- of you that,

that are familiar with Nature Conservancy, you probably know that we are a very science-based, site-based, consensus-based organization. And we've conserved about -- contributed to the conservation of about 300,000 acres in Louisiana with the help of private and public partners. And recognizing that water is such an important component, both quality and quantity of our rich resources in Louisiana, we started thinking, well, what kind of information do we need to make conservation strategy decisions. And then the conversation enlarged and said, well, how can we provide this great amount of information that we recognize as being valuable to decision-makers, to researchers, to stakeholder groups? And the idea of this Freshwater Assessment was born. And we are -- we started on this project a couple of years ago, and we are now what we would call we're getting pretty well functional according to the original vision, I guess. But I think one of the beauties of this project, and Bryan's going to give an overview of it, is that we want input on -- continuing from this point, but it can be updated with new information, and it can also be used for modules. So this tool we hope will be

very valuable and serve as a platform for decisions about our water resources into the future. So, again, we are very grateful.

We know, as Commissioner Angelle mentioned, we, we meet at least two times a year. So if we meet in six months, we wanted you to be aware of this, because we are getting to the -- to an important phase of this project to get your input. If you have some thoughts about modules that could be useful in water planning for whatever purpose in the future in Louisiana, we're interested in your input on that. So we thought this is a very timely opportunity, and appreciate the chance -- the opportunity to present to you today. Bryan.

DR. PIAZZA: Thank you, Karen. And thank you for inviting us to provide this update today.

I'll get right into it. So today I'm going to show you how quickly and easily we can use the best available science to inform decisions about Louisiana's freshwater resources. We have heard this all today, and you all know this. The stats on global water stress aren't good. We have seven U.S. states that are already running out of

water. We alluded to a lot of this today. I think Kai put it best when, you know, in Louisiana we have a lot of water, but the caution light is on. I really like that analogy. Because we know, as David was talking, we were -- we're overdrafting in some of our aquifer systems already. We have a $50 billion plan for restoring our coast that's dependent on stable freshwater supplies. But we also know that other states are looking for water from, from places that have a lot of water.

And so we also know, and we have heard this, about how important water is today, and how complicated -- just listening to the talk today, just how complicated these decisions are, how vital our water resources are not only to our natural wells and our natural resources here, but, but that natural wealth and our world-class wetlands, they drive our economic and cultural wealth. I mean, we just heard a great talk about that just now.

And that these decisions, if we want to keep this, this wealth and this economic and cultural wealth, and have business and birds and thriving industry coming here, we are going to

have to make a lot of really important decisions, and a lot of very complicated decisions about water moving forward.

And so that's why we developed Freshwater Network. This is an online system that provides comprehensive, scientific information about water as well as decision-support capability. It's free. It's open for use by anyone, and it's incredibly easy to use.

So all you need is an Internet connection, and you can put the power of science directly into your hands to help you with your water decisions. This, this site is actually going public today. You can get online and visit, and visit the site today. So let's zoom in here.

This Freshwater Network is custom built for individual states. I'm going to zoom in here on Louisiana. We are currently building the system in Mississippi as well. And so I'm going to zoom in here on Louisiana, and we are going to take a little tour about what we can do in Louisiana right now.

So as Karen alluded to, we started this process in 2012. We, we wanted to start informing our conservation strategies internally. We also

wanted to help what we saw down the road as this very important decision-making, this decision-making effort and water-planning effort. And so we, we talked with a number of stakeholders and partners, the universities in Louisiana, agency and non-agency experts, to say, Do we need a system like this that puts all this scientific information together, helps with decision-making to help view science to inform decisions? Here are some of our ideas; help us shape them.

We had overwhelming support for this idea, as well as we got a lot of input from stakeholders and helped shape and run down our ideas. And also a lot of stakeholders and partners provided data for our system that we now have in the system and wouldn't have had without their support.

So we started building for the next two years. This -- we had to build what was under the hood. This is a very powerful system, very complicated to, to deliver this information. We had to build relational databases, web applications, modeling, surface flow modeling capability, ability to, to consume information from groundwater models, ability to provide

decision support applications and different things. So for the next two years, we built, and we are always building on this system. So this system continues to develop through time. Just because we released it today, we are building as we speak to keep our -- this system getting more and more powerful.

So about a year ago, we released an internal development site that, that we went back to the partners and stakeholders, and we showed them our results, went through our second peer review process, and looked at some of how we were delivering information. And then today, now a year from there, we've released our first public site. But this is a circle because this process never stops. We're continually developing functionality and working with partners to reinvent and go through peer review processes, and releasing information to the demo site that we then upload to our public site. So this site, if you keep visiting it, keeps getting more and more and more powerful.

So I'm going to now lay out the entire scope of our project. So this, this system allows you to use unprecedented amounts of data about

freshwater. When the target -- when our target is fully implemented, you are going to be able to unlock information on the health of your watersheds; how much channelization or bayou or bayou straightening has occurred inside a watershed; how many canals are there; how many levees; what are the effects of dams. We'll be able to look at over 50 years of the nutrient -- of nutrient data from the Department of Environmental Quality and the EPA; over 50 years of fish data for multiple sources, including the Louisiana Department of Wildlife and Fisheries, and Tulane University, and a number of different sources. You are going to be able to look at how fish populations have changed through time, how water quality has changed through time inside of -- at multiple scales. And you are going to be able to track that information with the touch of a button.

You're also going to be able to access comprehensive information on how much water is flowing down our rivers, bayous, and streams, and how that water -- the past, present -- and how that water flow is affected by past, present, and future projected water use.

Likewise, you are going to be able to see how much water is in our -- groundwater is in our aquifer system, and how use of that water not only affects the aquifer, but how much use of that water affects the, the water flow down our rivers, bayous, and streams.

And this system interacts completely with the Nature Conservancy's Gulf of Mexico Resilience Decision Support Tool, which is an online friendly available site we built for coastal systems across all five Gulf states. So you're not only going to be able to see how our freshwater resources are doing, but you are also going to be able to see how use of that water affects our coastal wetlands and our coastal fisheries.

So now I'm going to show you what you can concurrently do, if you log on right now. First, you're going to be able to display massive amounts of data at several different scales. I alluded to some of the data, but we built the system on the back of a USGS data set that contains over 580,000 water features for Louisiana. So you'll be able to see rivers, bayous, and streams, canals, channelized streams,

reservoirs, wetlands, for example. You will also be able to see comprehensive land cover information, as well as all major protected areas, like wildlife management areas and national wildlife refuges. We just finished managing all of our water quality data, over 50 years. Very soon you are going to be able to pull up that information for any geographical area of the state.

In addition, we're building a statewide model that provides estimates of water flow in all of our bayous, rivers, and streams. So that, again, we can look at past, present and future projected use, even down to very small scales. And we're going to be able to display metrics of that information at multiple different scales. I'm going to get into that in a little bit because that's very important information for what we are talking about here.

So kind of a first level of usage. You are going to be able to take all of these data, and you are going to be able to summarize any data or metric that we have in the system at various scales.

So we built this for not only using the

hydrologic unit classification of USGS. So we'll be able to analyze at the HUC 12, which is the subwatershed. That's about 15 to 60 square miles. We are going to be able to provide surface flow estimates down to about one square mile, and we can already do that in some areas of the state.

We could also provide information at the HUC 12 layer -- watershed or subbasin scale. We can also look at LDEQ subsegments. We can look at parishes. We can look at U.S. Congressional districts. We're also looking at Louisiana precincts right now getting that information into the system. So you are going to be able to summarize by various, by various scales.

So on the screen you are showing -- we are showing just a summary at the HUC 12 layer. This is about 700 square miles. This is one of USGS's classification units. And we-- and this shows results of one of our, our tools that we built for -- to show hydrologic alterations of different kinds inside of watersheds. And this could be how much water is stored on the landscape and, and behind dams. It could be how many channelized streams there are; how much -- how many canals, or a number of different things. So

you are going to be able to see immediately what's happening in a particular watershed.

Or you can look at a number of watersheds. This is, this is a compare watersheds tool we have developed. And what you can do here is take any of those scales that I just talked about, those classifications. You can click on a number of them and return a summary of any metric that we calculated in the system. So as we keep building and building, this list of metrics gets bigger and bigger. So you are eventually going to be able to see fish populations, water quality information, surface flow metrics, you name it. So you can click and go on now, click on different watersheds, or different political boundaries, for instance, and you can get a summary of this information.

This information then is ready to insert into reports, project proposals, environmental assessment, permit reviews, white papers, you name it. So you can look at these areas. And as I said, and, and we're, we're currently trying to make -- we're working on making this information directly downloadable into a pdf. Right now it's not quite downloadable yet, but you can get this

information. And like I said, this list will keep growing and growing and growing as more information comes into the system.

This is another tool we developed that's available now. This performs custom analyses. We call this Drawn and Report. So you can take your mouse, outline any project boundary that you want, and you will instantly get a summary of any metric that we've calculated in the system. So you don't have to, to stay to those predefined boundary areas. So, so you can get a summary. And this information also is ready to insert into reports. And this is great for project citing, or looking at project proposals, things like that.

So I want to switch gears a little bit. This is also -- what I'm going to show you right now is also available. We -- the thing that really makes this system innovative is we did a few things because we built this system for decision-making, specifically for decision-making and to support that process. So I'm going to show you a couple of things right now that, that we've developed for that purpose.

So the first thing is that any analysis in our system can be simultaneously done in two

windows at the same time. So in, in this instance -- so anything that we have in the system. So up here on the screen, I'm just showing -- I think this is the amount of channelized streams that we have by, by parish on the left, and by LDEQ subsegment on the right. These are two pretty important delineations in Louisiana for decision-making. And, and so you can do these two analyses.

Then this -- so what we have done this for, is so that two different stakeholders or partners can put up information and get this information simultaneously so they can talk about how this information pertains to maybe their interest or maybe a project that they are working on together. And, and really facilitate communication about this -- about the decision or the data that are being, that are being displayed in the system.

So what you can do then is that you can not only discuss the information as it is on the screen, but this information is downloadable as a report, or you can send a web link to anyone, to anyone's computer, Smartphone, or tablet anywhere in the world. And when they click on that link,

this exact same screen would come up. They would be seeing exactly what you're seeing. So if you're on the phone, if you're on a conference call, you can send this information if you click on it, and they're immediately seeing exactly what you're seeing. So it promotes really remote stakeholder relations and decision-making in remote locations as well so everybody doesn't have to be at the table.

One thing I forgot to mention early is that we have a Search By Address. So anyone can use this system. It doesn't have to be just decision-makers. You can go in, you can put your address in, and you can see what watershed you're in, any kind of information, right around your house, right around your camp, right around where you work. We -- business can use this. We have developed it so that it's useful by anyone.

Now, the second thing we did to facilitate decision-making is we built the system to function with apps. Karen called them modules, but it's, it's plug ins. It's the same thing. And that's apps just like on your phone. So just like on your phone, these apps are designed to take massive amounts of data, provide either a

modeling, use a model or an analysis to take that massive amount of data and to transform it into a useful and user-friendly result.

So the other thing we can do then is so we can facilitate decision-making, we can custom make these things. So that if, if someone has a decision question or something that they are working on in their agency, or they're a planner or whatever, we can develop a custom app that, that gets right -- uses the data that is needed for that question and gets right at that question and, and presents a result.

The other thing we can do in the system is, is we can provide virtual workspaces that are password protected, for instance. So you can, you can develop apps and put them in a virtue workspace. So for water planning, for water budgeting as Kai was talking about earlier, we can actually develop the, the virtual -- the computer workspace for that to happen. So that you could use the science, target the questions, build the apps, and actually develop that environment that maybe has, has technical analyses or something that would be different from what's on the public site.

So I have showed you already three apps that we have. We have the hydrologic alterations; we have the drawn report; and we have the watershed comparison apps already in the system. Now I want to show you a couple of apps that are very close to development and very important for Louisiana.

The first is the surface flow app. I talked about the surface flow modeling we are going to be able to do, or that we already can do. These are the areas that we have already modeled. We are developing actually a surface flow model for the entire state of Mississippi as well. So we modeled the Pearl -- we have already finished the Pearl River Basin all the way from the source. That entire HUC 6 basin is finished. We have already done the Lower Ouachita and also the Sabine.

So, so what the flow app is going to do is be able to return information based on our surface flow, be able to return metrics and be able for a user to go in and, and work with the information from the surface flow model. And because surface flow modeling is important -- so important in Louisiana, I want to talk about our

surface flow modeling capability just a little bit more. But this app is on -- currently on our internal development site. We will be releasing it after a peer-review process. It will be publicly released. So when you go on the site, and you get into Louisiana, you are going to see on the left side of the screen, after we finish the peer review, you will see an icon like this that says surface flow, and you will be able to interact with that surface flow modeling. And as we complete the balance of the state, this app will continue to get more and more -- have more and more functionality.

So I'm going to talk really quickly about what we're doing with flow. We are working with the Research Triangle Institute International. They are in North Carolina. We are applying their waterfall model to Louisiana and to Mississippi. They have already used waterfall to model in North Carolina and a large part of the South Atlantic. So we've brought it into the Gulf of Mexico.

The first thing we are going to be able to do is be able to provide time series surface flow estimates and generate metrics at multiple

scales. So, for instance, we will be able to generate the flow estimates down to a square mile. We'll be able to return estimates at any of those geographical boundaries that I showed earlier.

So what metrics will we be able to calculate? We can right now -- we have developed the capability to calculate any of the USGS eFlow metrics. There's over a hundred of those. We can also calculate any of the index of hydraulic alteration metrics. There's about 64 of those. We can calculate commonly -- some commonly used metrics that are used for -- in regulatory programs, like the 7Q10, the 7Q2 which looked at seven-day average low flow over a return period of either 10 years or two years. And we can also generate a number of metrics -- I'm going to show you a couple of them -- that look at land use change, flow ecology relationships, or water use intensity, and can be used for water budgeting.

So this is one metric that we can calculate right now. This looks at how much water is being removed from our waterways, and how much water is being returned to our waterways. So it's a consumptive/nonconsumptive use. It's that type metric. And so what we can do is we can look at

water use intensity, and then we can look at how much water is being -- withdrawn from our surface water bodies and either returned or not returned. We can also look at the timing of return. And we can determine whether -- how those areas are doing in terms of water use intensity, and we can, we can very easily return a map that very easily shows which areas are stressed currently in red, which areas are on the verge of stress in yellow, and which areas are okay in green. And this, this is a result of some flow modeling we've completed in the Lower Ouachita. So we are going to be able to generate information that, that we can cross-check with some of the feedback we get from other efforts. We can then put this information on the screen and make sure that everything is lining up, and we can look at hotspots for water use intensity, and this can be used as part of the water budgeting process.

This is another analysis that provides estimates of how changes in land use affect flow. My point in this is that we can use this incredibly detailed scientific information and create an application that turns this into something that you can plug and play, that you can

ask a question, use this complicated information, and return a result. And this looks at -- up here this is in the Lower Ouachita -- portion of the Lower Ouachita, HUC 6, up in north Louisiana. And this looks at how an area that has been converted -- that was, you know, predevelopment was floodplain forest and then turned into an agricultural system. So it changed from one that stored water on the landscape and released it slowly to one that was designed to get water off the landscape as quickly as possible. Now -- then we can look at on the bottom how that affects flow.

We can also take this one step further. If it's deemed useful, we can take it one step further and we can develop the capability to estimate any future changes in landscape, such as conservation, or, or, or agricultural development or whatever, and we can estimate what those future changes in flow would be. So somebody would be using this information but never know that they were using that information.

And perhaps most importantly for our discussions about water planning, is that we can, we can now -- we have and will be able to very

shortly for the entire state have all the information, the technical information that we need to calculate water budgets. We'll have the consumptive versus nonconsumptive use information. We can ask the question how's water being used upstream, and is there enough left for our downstream needs. And this is very important.

One thing that I haven't mentioned yet is that we have also took some time and resources and developed functionality to look at groundwater and surface water connectivity. So we essentially built a doorway in our model so that we can now take USGS groundwater models and run them, and put the output of those through the doorway into our surface flow models. So now we can, we can estimate not only the interaction between surface and groundwater, but we can start testing some scenarios about water use. And we actually developed this and tested it for the Sparta Aquifer system, and we found that by incorporating groundwater information into our model, we were able to statistically significantly improve the bit of the model, of the surface flow model. And that's important for two reasons.

First, it tells us that there's a lot of

interaction in some of our waterways, between our aquifers and our waterways. And, second, it tells us that if we don't incorporate groundwater information into our water budgets, we could either be overestimating or underestimating our resources in the budget process.

This is very quickly just an example of one of those water budget metrics. We can ask this question, and, and we can look at how much water is available now, estimate future uses, and run scenarios and determine how much water will be available in the future down to very small scales.

And a very, very important thing is that we can custom-build apps with anyone. We built this system as a plug-and-play system. So we could set the app right in place. And -- and I want to highlight one of the things we're currently doing. We're right now working with Natural Resources Conservation Service on an application that helps them -- that uses you and interacts with over 50 years of water quality data from DEQ and from EPA. And we're going, we're going to help them target their conservation partnerships with agricultural producers to try to, to manage nutrients. That's just --

And so I want to wind up right now by giving you -- I've showed you what we can do. I have showed you a couple of important apps that we have close to development. The last thing I want to do is give you a timeline for where we are on our -- what we are developing currently, and when it will be finished. And, and with the idea that we can add apps, and we would like to expand this list by working with you to, to help you with water budgeting, water planning, or whatever the needs may be.

So the first thing, the Flow App, as I said, it's on our development site. It will be released soon after peer review.

We will complete the flow modeling for the entire State of Louisiana and for Mississippi by July.

We're aiming to finish the app that we are working on with NRCS that I just told you by September.

And we are also working on some applications that look at water use upstream and the effects on downstream -- on coastal resources. We are going to try to have that completed, a beta version of that, by late 2015.

And we are working now on, on managing and getting the 50 years of fish information managed and into an application that allows people to interact and look at trends of fisheries, of fish communities through time, and to get at some indication of our aquatic systems. And as we develop our flow modeling, we'll be able to start working on -- we're working on some pilot flow ecology, how does flow affect these communities. We are working on some of that right now. And that app will -- we will continue to develop functionality in that after we get it finished.

So I just want to leave this up. You can go to either of these sites. They are live as of today. And you can get information. If you -- we would love to partner with -- we're actually working with ULL on -- we have talked to them about incorporating into their project. We are very interested in incorporating this science into the, the great talks you have heard today. And I learned a lot already today that got my wheels turning on how we can make this even better and more useful for Louisiana, because that's our goal here. So consider us part of the team, and thank you very much.

CHAIRMAN ANGELLE: Questions? Mr. Pratt?

MR. PRATT: Yeah. Bryan, in looking at this, you know, of course, the question is, is that -- you're looking at, at probably historical and, and maybe current data. But when you got a situation like the Sabine Basin, and, and they have -- or the Federal Energy Regulatory Commission has mandated some changes in our operations and releases, well, you don't pick those up until it actually happens.

DR. PIAZZA: Yes.

MR. PRATT: And so how do we make that connection as to -- you know, I guess what I'm saying is, how can we collaborate? And it's just not, you know, our basin. I mean, all of these basins. There's going to be events taking place that, that will impact parameters within your models. And I guess what I'm saying, your model is only going to be as good as the data that you have.

DR. PIAZZA: Right.

MR. PRATT: And I don't know how you can reach necessarily all of the, the specifics. But, you know, from, from a higher level, it's a great

tool, and, and I can see it being great benefit to us. But at the same time, we need to compare notes so that you know what we are doing.

DR. PIAZZA: So two things. The beauty of the system is that we can work from that high level.

MR. PRATT: Yeah.

DR. PIAZZA: We can also scale down very close.

The second thing is when you were doing your talk, I leaned over to my colleague and said, we need to make a trip over, because this is highly complicated the way you're holding water, releasing water, storing water for, for the future. It's very complicated stuff, and there's a lot in this. I mean, there's legal ramifications, there's socioeconomic ramifications, there's ecological. And so I think working together would be great. And we can talk offline on how to do that.

MR. PRATT: Yeah.

DR. PIAZZA: But that message went two ways, because I picked the same up when you were talking.

MR. PRATT: Okay. Thank you.

MR. ADUSUMILLI: Bryan, I think I'll follow what Jim has to say. The model, the modeling is perfect. Good. It looks good. But from addition-making standpoint let's say we're talking about water use for (inaudible). Use a model like that. It's as good as the data is, but can we make additions how much water survives for the next season, what are the river flows, so on and so forth. So I think what, what is the way that we could work on that kind of communication, and use this model to make addition like that, and give first-hand information to producer on field? Say, okay, this is the water that's available, and you got to make a crop decision based on what you've got.

DR. PIAZZA: That's right. And that's exactly the point. That we're providing a first estimate of -- this is for gauged and ungauged streams, right. So this is a first estimate. We're not saying this is the answer. We're saying, we're saying this is the best modeling information. Now how can we work together? A perfect example is with David, and is getting in and saying, all right, we have this information available. You're working at a smaller scale.

How can we put this information into your project, and then how can we work on it together to make -- to take our investment and help you push your investment farther? Because we already have some information, and how can we make this very relevant to the questions you have?

So that's part of, of this whole effort, and that's part of why we make this so modular. So that we can take this. And, and we have done this with the communities, for instance, on the Gulf of Mexico coast where we have gone into communities in our coastal system, and they said, wow, you have great data, but we have some very site-specific data that we think would be useful. Let's -- help us -- and their situation was help us protect our infrastructure with sea level rise. So it's a coastal question.

But we went in and we said, okay, let's build that app. Let's take your very specific information, add it to ours, and then we make something that's useful for you. So that's one of our, our main objectives here, is to provide something that we can continually improve on. Not saying this is the way it is, but here's our first estimate, and let's all go forward, because this

information doesn't exist for the state.

So we're saying, here it is, let's work together, and let's make this better and better and better.

So I'm happy to talk to anyone offline about how we can do that because we're very interested in that.

Are there any other questions?

CHAIRMAN ANGELLE: Bryan, I want to thank you for a really robust presentation. And I know that you and I have visited before, and I appreciate all the work that you are doing. Certainly, Karen, I would say to the Nature Conservancy, obviously, there's a lot of dollars that are invested in getting to this point. And you had a choice to call it a proprietary product, and, and shop it around to see if you could get some sponsorship for it, but what you chose to do instead is make it available to the public in a public capacity and a public space. And that's phenomenal.

So, you know, on behalf of the Water Resource Commission, please share with Nature Conservancy management how much we appreciate it. I think it is, again, you know, as I said to

Bryan -- was it -- I'm sorry. David, I said to David earlier, that David was the newest member of our partnership and our team. And before the ink was dry on that statement, you know, you, you also are a new member of our team. And we would ask that you would be very aggressive in seeking out all the folks here, and interact. And, again, nobody has a monopoly on, you know, all the answers. I'm very confident, after I have kind of been in this spot for now some four years, that we finally have got some traction, and some wheels are rolling, and we're surrounding ourselves with smart people, and stakeholders are paying attention, and we are not pushing the panic button with both hands and causing fear, but we are trying to be smart. And I appreciate you being a part of that.

DR. PIAZZA: Thank you. And I would like to thank my team, because I'm standing up here, but this is the effort of a lot of people besides myself.

CHAIRMAN ANGELLE: Absolutely.

DR. PIAZZA: Thank you.

CHAIRMAN ANGELLE: Question for Kyle -- by Kyle Balkum.

MR. BALKUM: Bryan, I appreciate that presentation. You spoke so fast, my brain hurts.

DR. PIAZZA: Yeah, I'm sorry. I get fired up.

MR. BALKUM: Look, really, really impressive.

A quick question. Any chance for a tutorial, or is there -- will there be an online tutorial with it with the different modules?

DR. PIAZZA: Yeah, there will be.

MR. BALKUM: Okay.

DR. PIAZZA: There will be both -- we're following the model of we will develop a tutorial and a user guide. Also, all of our methods, all the meta data, where we got everything, is, is available on site. And we will develop a user guide. We will also probably eventually develop a training program. We're doing that for our Gulf of Mexico products. So we will probably follow that model.

MR. BALKUM: And a quick comment. You know, as Nat Resource managers, when we're making -- whether we're developing water budgets, as Mr. Midboe had discussed earlier, or we're looking at maybe a proposed user that's going to

use a lot of water, you know, we can oftentimes quantify industry and business use of water, quantify what our citizens need for drinking water, but quantifying the need of our ecosystems, our aquatic life, the wildlife, sustain those habitats, and not to mention our recreational users.

Can this tool -- and I'm sure you touched on it in your presentation -- will this tool also allow us to identify what are those needs for the ecosystem when we also -- we already know the needs for business and --

DR. PIAZZA: Yes. I didn't include that because I would have had to talk even faster, but we call it the flow ecology relationships. We're already developing, a student at Southern Illinois University through the National Science Foundation, they're a partner on this project, he is, as we speak, developing -- taking our full information from those areas that I showed you that we modeled in state, and, and all of the history and the information that, that your agency provided as well as all our other partners, and we're looking to see how those communities have changed over time and getting relationships on

just that. How much water do we need to leave in a stream so that we don't kill all the fish and we can still use, use that water and, and for, for different uses?

And then the other capability that I talked about with Dr. Ouchley was the ability to start looking at that groundwater/surface water interaction. That's where that comes in. Well, basically, we have seen that there's a time that we are drawing down a bayou too much, but maybe that's a time when we need to switch. If their capability is there, to switch to groundwater until we get our seasonal flows back up, and then maybe we can switch back over to surface water. So we're investigating all of those questions right now. Our pilot project is working on that right now. We will probably begin to implement a state-wide investigation of that using our flow data as soon as the surface flow models are completed in July.

MR. BALKUM: Excellent.

DR. PIAZZA: And I will keep you up-to-date on, on that. And I really want to thank your agency for all the data and support that we have gotten for the project.

Is that it? Thank you very much.

CHAIRMAN ANGELLE: Okay. Seeing no other questions, again, thank you very much.

We will move on to Item 7, which Matthew Reonas will give us an update on Agency Water Management and Regulatory Actions.

MR. REONAS: All right. Thank you, Mr. Chairman.

For the record, I would like, would like to note that we have 15 members here so -- rather than 14. So pardon my miscounting there. Don't hold it against me.

I would like to go ahead and give sort of an update today on -- we had a couple of agency updates that were submitted to us as part of this presentation, as well as an update from the Office of Conservation on, on our groundwater management review process.

First up, first update is from CPRA, Coastal Protection and Restoration Authority. These are listed projects that were submitted by the CPRA Board in their meeting. I think it was here in this very room, wasn't it, Chuck?

DR. KILLEBREW: Yes.

MR. REONAS: In November. For

consideration for funding under the councils like the Restoration Component of the RESTORE Act. So these are projects that the State of Louisiana is submitting for funding out of the RESTORE Act.

The Golden Triangle Marsh would create -- Creation Project would create 600 acres of new wetland habitat within Bayou Sauvage National Wildlife Refuge just east of New Orleans. Estimated cost of about $50 million.

The Mississippi River Reintroduction into the Maurepas Swamp Project. Again, that's the name sort of implies, would help maintain about 45,000 acres of land over 50 years by, by diverting water or reintroducing Mississippi River water into the Maurepas Swamp. Again, protecting about 45,000 acres. That's in the regional subbasin there at a cost of about $187 million.

The Biloxi Marsh Living Shoreline Project. Again, all these notes are -- all the fact sheets and plan proposals are here at this -- at the website below, listed below online. So, so for review by, by -- in more detail by everyone.

Biloxi Marsh Living Shoreline to create a bioengineered marsh oyster reefs. So create approximately 45 -- 47,000 feet of oyster barrier

along the Eastern Shore of Biloxi Marsh east of the MR-GO in New Orleans area at a cost of about $57 million.

The West Grand Terre Beach Project. Again, to restore dunes and back barrier marsh on West Grand Terre Island or Grand Terre Island. A cost of about $65 million.

And the Lower Mississippi River Management Program is more, more of a study or review of, of past management practices, and how those should be altered in light of, you know, recent developments and more data and more knowledge about the subject.

Chuck, anything on -- does that sufficiently cover it?

DR. KILLEBREW: Yeah. Let me just comment that these projects are significant, I think, in another way. They, they really represent CPRAs choices for initial funding under the RESTORE Act. And as well-known, that act was established as a mechanism for funding in the Gulf region for restoration of ecosystems and local economies based on the amount of damage done by the, the Deep Water Horizon oil spill.

We're looking at partial funding from

the RESTORE Act at best for all of these projects. Most of them have other funding sources, so it's multiple funding for them. And I might add, too, that these are long-term, large-scale projects that are not going to happen overnight. For example, the, the Reintroduction of River Water into Maurepas Swamp Project has been on the books for about 20 years now. I can recall talking about that when I first came into state government.

But at any rate, the RESTORE Act funds will be used. There's going to be about $800 million deposited into a category for funding for these in the next two years. So we are going to see some money right away. In 2015 we are going to have about 30 percent of that amount available so that monies will be coming in.

After these funds are, are provided on a long-term basis and subject to ongoing litigation in the oil spill project, the State could realize potentially about 1 billion to $4.9 billion long-term from that source. And that will certainly -- that will, of course, depend on how the, how the Court rules on the damages for the spill and what actions were taken or not taken.

So I just want to mention that. This is just the beginning, really. This is the first, first cut.

And, and on a long-term basis, there are other projects that will be funded. They're on a higher priority list held right now in abeyance until we can see some funding coming in.

MR. REONAS: Thank you, sir.

The next update is from the Department of Agriculture and Forestry. This is sort of an update on the southeast -- a project that northeast Louisiana, in coordination with various entities in Arkansas as well as -- and southeast Arkansas. It's a study for a project to introduce Arkansas River water into some local water ships, the Boeuf River, Bayou Bartholomew, in those subbasins for ecosystem restoration as well as for irrigation supply.

Again, a study project that's being done by the Corp of Engineers. Arkansas Natural Resources has chipped in some money along with a water distribution district in southeast Arkansas. And the local Soil and Water Conservation Districts in northeast Louisiana banded together and formed the northeast, Northeast Louisiana Surface Water Management Committee to funnel

another 150,000 into this study project. It's just getting underway, but, of course, the issues up there are issues all across Louisiana. It's a huge farming district. Approximately a billion and a half dollars annually in terms of crop, in terms of crop value. You have ecosystem stream degradation, ecosystem degradation, drought issues, saltwater encroachment supply problems. So these are all -- this is a study to sort of see if this is a feasible project for development down the road. And this was, again, submitted from Department of Agriculture and Forestry. Mr. Spicer, if you...

MR. SPICER: All right. If there's any questions, I would be glad to try to answer them. But this is also -- and Chris may want to address this, regarding -- this is part of the Red River Compact area. And so we're trying to achieve what the compact has required ever since it was approved back in the '80s to get a portion of that water out of Arkansas in these streams that you mentioned earlier, and this may achieve that if the water is available out of the Arkansas River. They plan on moving that water about 60 miles south of Pine Bluff, southeast Pine Bluff, into

these streams that's already in existence. So that would gravity flow. Pump it out of the river now, gravity flow it into southeast Arkansas and northeast Louisiana.

Chris, did you --

MR. KNOTTS: Right. Some people may not realize, but the Red River Compact is the four-state interstate compact with Texas, Oklahoma, Arkansas and Louisiana. As always, we're on the bottom end. We receive our flows from the other three reaches. We don't give water to anybody. But per the Compact, there are named streams that when the flows get to a certain minimum, the upstream entity has to demonstrate to the downstream entity that they are getting a certain percentage of the flow that's coming in.

This study is part of that in the northeast Louisiana where we pressed the State of Arkansas to demonstrate to the State of Louisiana that we were getting the flow we were entitled to. This study is aimed at trying to get that. We agreed to do that. If this doesn't work out, we will pursue other measures. But that's part of the we think you have a lot of water, but you -- some places you really don't.

MR. REONAS: Right. And having traveled in that area extensively, I mean, I can attest first-hand to how much agriculture is up there across the board. So what a huge impact it is on the state.

I guess, any comments on these two before I move into, into Office of Conservation update?

All right. This is -- again, this is an update from my agency. This is --

CHAIRMAN ANGELLE: Just to be clear. Are we on Item 8 now? Are you moving to Item 8?

MR. REONAS: No, sir. This is all sort of part of the agency update.

CHAIRMAN ANGELLE: All right.

MR. REONAS: So this is -- being that we are here in Lake Charles today. Again, with the expected industrial development of the region, we thought it would be important to talk about or to sort of go through a process of review of the groundwater management, how we manage groundwater in Louisiana through the Office of Conservation. Of course, groundwater is important for Lake Charles and southwest Louisiana. You have two of the largest consumers of groundwater in the state

in Jeff Davis and Acadia Parish. Of course, we have already heard talks today about uses of the Chicot Aquifer, Sabine River Diversion Canal and the importance for industry and agriculture. So, so this is more of a refresher, I guess, for the Commission and the audience on how we manage groundwater in the Office of Conservation.

In particular, I guess, because in Lake Charles and southwest Louisiana there is this projected massive increase in industrial development. This is a note from the Baton Rouge Business Report a couple months back. Of course, our main source of -- one of our main sources of info in Baton Rouge. I'm sure Lake Charles is more attuned into it, but expect $73 billion in announced industrial projects, which exceeds the capital investment of cities like Dallas, Atlanta, and Baton Rouge over the next five years. And with that, of course, industrial development, a huge surge of population growth. The estimates -- again, these are going to vary over time, but a jump from potentially 6500 new workers in August of 2014 later this year to 10,000 plus in August of 2015. And then potentially an expected total of 25,000 temporary workers and some 20,000

permanent workers potentially with all their families right over the next decade or so.

That's going to be a huge increase not only, of course, in jobs and tax revenue, but also in demand on water resources. Of course, we're looking at surface water. We're looking at groundwater. Water for industrial processes; water for public supply. Where is that water going to come from? Might Sabine River Diversion Canal? Groundwater? We are already taking -- and one of the reasons we thought this might be important to review here in Lake Charles was because we are already fielding calls regarding water sourcing in the area. So, so it's an important issue and one that we are going to be very much -- Office of Conservation very attuned to over, over the coming years.

Just to kind of give background. Again, the Office of Conservation is vested by law with very wide authority to regulate groundwater patrols in the state within certain bounds. For instance, the installation of most water wells, industrial, irrigation, public supply, there are a few exempt classes, but these are the big boys, the largest high-volume consumers. Installation

of most water wells require 60-day prior notification to allow us, the Office of Conservation, to put together an evaluative process, to evaluate the use and its impact. What the Office of Conservation does when they get these notifications, we'll conduct an evaluation on the proposed withdrawals, on the potential impacts, within an area view. Where are these people presenting? Where are these entities proposing to pull groundwater from, and what's the impact going to be? And we have a whole set of guidelines that we work from in terms of, in terms of making this evaluation. And then, of course, at the end of the evaluation process, we're either going to have action that we are going to request be taken, or, or no action.

And I'll just, for example sake, I'm just going to have one for our geologist pull up -- create a fictitious -- this is, for the well drillers in the room, this is not, this is not a real irrigation well. But create a fictitious irrigation supply well request in Jeff Davis Parish where Ryan, of course, one of the top two -- Jeff Davis is first or second, I can't recall, in terms of groundwater use in the state.

So it's a already well-established pattern of use in that particular parish.

So ABC Farms No. 1 here in Jeff Davis Parish. What we are going to look at, first, we're going to create an area of review based on aquifer transitivity general use in the area. This is a quarter-mile buffer zone that was created, our geologist created, for ABC Farms No. 1. There it is right there.

And what -- this is, this is utilizing our DNR SONRIS/GIS system. Most of you are probably familiar with it. And this enables us to really pull all the known registered wells in a particular area and look at their use, their status, whether they're active, inactive, plugged and abandoned, right, to get a better concept of what's going on in a particular area.

What we are looking for, again, four main areas: Adverse impact on neighboring wells. All these guys right here. How's, how's the pull from this particular well built to impact those?

Are there known water quality or environmental contamination issues that would impact, right, water -- groundwater use from this particular well?

Are those known saltwater encroachment issues, right, that would, perhaps, be exacerbated by, right, pull from this particular well?

Now, likewise, are there known water level decline or subsidence issues?

Of course, in Jeff Davis, you do have a tremendous pull of groundwater. So those are all, in this particular area, that's something we would look at very strongly.

Here you can see a close-up sort of our area of review. Again, a quarter-mile buffer around it. What, what SONRIS enables us to do is to pull up, right, all the surrounding wells. And here they are, all the different wells, their status, their depth. The -- if we have volumes, there's the diameter of the well itself. All this information is there for us to review as part of our process, our evaluation process. And that will help us, of course, again, understand what the impact would be of this particular proposed well and what action might be necessary for us, Office of Conservation, to make sure that this well doesn't have a negative impact on other neighboring wells.

CHAIRMAN ANGELLE: Let me ask you a

question.

MR. REONAS: Yes, sir.

CHAIRMAN ANGELLE: Inasmuch as every landowner has a right of capture, and I'm assuming this kind of -- since this is an irrigation well. Okay. So, so what happens if, if you, you find that in your evaluation the proposed well is going to have a negative impact on someone that's already there?

MR. REONAS: Well, I'm going to get to that in the following slides, if that --

CHAIRMAN ANGELLE: Okay. Sure.

MR. REONAS: Okay. Another great tool that we have in terms of outside DNR SONRIS system is the Expanded Statewide Monitoring Network that this Commission helped push through, and Office of Conservation, DNR, were able to secure funding for. This is a, a tremendous system. Again, as this Commission noted in its 2012 report, the State's monitoring network, groundwater monitoring network, had degraded significantly since the 1980s. Basically, we lost our understanding of really or, or a comprehensive understanding of what our groundwater sources -- the health of our groundwater systems across the state.

The process here, what USGS, DNR/USGS partnership, has provided is up-to-date information, greater well density. More than 500, more than 500 wells in this network across the state were added into a comprehensive network. More comprehensive statewide coverage. That is, the original process was for energy development, or the original network as it was conceived was for energy development; that is, looking for water use issues in shale-play areas around the state, the Tuscaloosa Marine Shale, Haynesville. When those were added into the already existing USGS networks, again, we get this total of more than 500 wells across the state where we're actively pulling data on a quarterly, sometimes daily realtime basis. And from that, of course, new potentiometric maps are going to be able -- up-to-date potentiometric maps are going to be available going forward.

Again, I'm just going to walk you through the portal here as I did with, as I did with our SONRIS system.

You would just go to USGS, Louisiana Water Science Center, their front page, down here, Groundwater under WaterWatch, and that will pull

you up the network, the statewide network. And what you see here, all the wells are listed and the various status across the state. The color key provides relative water level, right, from very low to satisfactory. The symbols provide measurement schedule; that is, quarterly, continuous, and so on.

As you can see, a lot of the, a lot of the wells around the state are still sort of a dark gray, which basically means we don't have enough data, enough of a data set, enough measurement, for USGS to really make a call as to the relevant water level. Is this low; is it high; is it about right historically?

CHAIRMAN ANGELLE: Are those gray ones part of the 532 number?

MR. REONAS: Yes. Yes. And those are -- most of those were added as part of, as part of the DNR/USGS Expanded Statewide Monitoring Network.

CHAIRMAN ANGELLE: How many of them are gray?

MR. REONAS: Well, I would have to -- probably 200 or so. I would have to look at them.

CHAIRMAN ANGELLE: So 40 percent of our

532 is not yielding data that is usable at this point?

MR. REONAS: Well, we've got at least eight borders we've got -- we've got two years of data in right now with the Expanded Network. And, and at the end of this, a third year, we will have 12, 12 borders in. So I wouldn't say it's not usable. It's just USGS, by their standards, don't feel that it's a long enough data set, right, within their standards. Some of these wells go back 80 years.

So in that big picture perspective, USGS, you know, has their criteria. But in terms of useable data, I mean, eight cores, two years' worth of data, we can start making evaluations based on that.

Again, I'll take the example from Jeff Davis Parish. And here you can, you can click it. It will pull you down to Jeff Davis, the region. Here's Jeff Davis right here. Neighboring parishes all around. It lists all the, all the wells. And, again, you can pull down even more right into your individual well. And this has all the relevant data, the measurement set.

This particular well, again, is one of

those that has 80 years. I think the first, the first measurement was in, in the 1930s at some point in time, 1938. And it will give you all the measurements, will even graph out the measurements over time. Okay. So 1938 was roughly 1940, 70 plus years of measurements. And you can see, here's 1940, right. The water level through time, right, that's drawn down extensively. And that's, and that's what you would expect in that particular parish with the heavy withdrawals of groundwater.

Again, so all this will go into not only the SONRIS information, right, but we're utilizing, right, this expanded monitoring network, the wells, the network wells around the state, as part of our evaluation process which gets us to the action point. Another one -- I'll skip this.

The Water Use Program, also from USGS, which provides -- previously was every five years. Basically, an evaluation of water use by aquifer, by basin, and by parish. As part of this Expanded Network Program, we're getting it for -- on a yearly basis, which provides a lot better coverage of different trends within that five-year period.

MS. CHAUVIN: I have a question.

MR. REONAS: Yes.

MS. CHAUVIN: The expanded monitoring is based on a oil and gas in Tuscaloosa Shale, that's where y'all are focusing on?

MR. REONAS: Right.

MS. CHAUVIN: And then you are using it for usage. Does that view -- would that usage reflect only in an area --

MR. REONAS: This is actually -- the Water Use Program was, was actually run through DOTD previously. And all this did was just basically bring it from five years to, to one year. So this was a program that's already in existence.

MS. CHAUVIN: So they weren't -- they're not using the additional wells that were added?

MR. REONAS: Well, I guess it's two different -- they are connected, the two different programs, but they have a process, actually, in terms of, of providing -- soliciting usage numbers from individual companies, farms, industries, things like that, that was already in place. Actually, they use Office of Conservation authority, right, to solicit that information on

groundwater use around the state.

MS. CHAUVIN: So you're not using the monitoring network?

MR. REONAS: Oh, no, no. We are using those. But this is for water use. The monitoring network is primarily for water level and water quality, chlorides, you know, saltwater encroachment. So in terms of it's -- in some ways it's two different programs. So...

So we'll use this as well, and this will give sort of a big picture view of water use in a parish, or in a aquifer, or by a basin. Again, by public supply, industrial, power generation, general irrigation, total groundwater use, and total surface water use. Again, in Jeff Davis Parish you have a heavy, heavy rice irrigation, agricultural irrigation use of groundwater. So we'll take all this into account as well, which brings us to our action.

Again, Office of Conservation has wide authority in regulating groundwater use in the state. In most cases, or in many cases, no action is necessary, and this is what this letter is. This is actually a public supply well request from Calcasieu Parish from 2012. Office of

Conservation completed the review, provided -- based on data available to us, has been determined that the water withdrawal from the well would not have an adverse impact. There are no issues that we are aware of. However, we reserve the right, again, to review this at a later date.

However -- okay. That's a no action.

The action side, of course, based on all the criteria that we evaluated previously, could lead to restrict -- restricted or limited withdrawals.

Requirement of spacing safeguards; that is, moving a well into different areas away from other wells.

Alternative source studies requiring additional information, especially monitoring of water level and water quality.

As part of the management plan, implementing triggers; that is, if the water level hits a certain stage or, or level, right, that you would cease, cease draw -- cease drawdown and let, let the aquifer recharge.

Also, of course, developing a mitigation plan.

And here's an example of an action

letter from that. This is from Lincoln Parish, was oil and gas activity in Lincoln Parish. Again, that's primarily in Sparta. Lindsey, you can attest to that.

So the things we require, a detailed report of all efforts by WildHorse to secure surface water in lieu of groundwater. And this goes back to the Office of Conservation's advisories going back to the Haynesville Shale. Commissioner Welsh issued advisories that oil and gas, oil and gas producers look to surface water rather than groundwater. Again, recognizing that some of the aquifers around the state, especially in north Louisiana, have management challenges.

CHAIRMAN ANGELLE: So, Matt, can we go back to the actions. Are you -- are there additional slides that can -- I don't want to cut you off, but I want to get into the decision-making process. Do you have additional slides on that?

MR. REONAS: Just this one.

CHAIRMAN ANGELLE: Okay. So in terms of the value to this Board to know that, two things. Number one, that there's a process?

MR. REONAS: Yes.

CHAIRMAN ANGELLE: It's comprehensive?
MR. REONAS: Yes.
CHAIRMAN ANGELLE: It's robust? It's based on science?
MR. REONAS: That's correct.
CHAIRMAN ANGELLE: You've convinced me that we got that done.
MR. REONAS: Yes, sir.
CHAIRMAN ANGELLE: I want to have some conversation with you about --
MR. REONAS: Okay.
CHAIRMAN ANGELLE: -- the authority that exists.
MR. REONAS: Yes.
CHAIRMAN ANGELLE: And the actions that can be taken pursuant to that authority.
MR. REONAS: Yes, sir.
CHAIRMAN ANGELLE: I've got a couple questions for you.
MR. REONAS: Okay.
CHAIRMAN ANGELLE: I'm assuming that all domestic wells are exempt from any of this. That the 60-day notice requirement does apply, but if Farmer Brown or Boudreaux or Thibodeaux is drilling a water well, there's no, there's no real

big deal as far as that's concerned.

MR. REONAS: All wells have to be registered.

CHAIRMAN ANGELLE: Is that a yes or no on domestic wells?

MR. REONAS: On domestic wells, yes, sir.

CHAIRMAN ANGELLE: So we start with a population of all the wells, and then we have, I'm assuming in terms of number of wells, a large population of those wells that are exempt from this process?

MR. REONAS: Right, from the prior notification, yes, sir.

CHAIRMAN ANGELLE: So if a domestic well notification comes in, do you do this kind of robust study on them?

MR. REONAS: Usually those would not have an impact, but we could if, if we needed to.

CHAIRMAN ANGELLE: But do you?

MR. REONAS: Not to my knowledge.

CHAIRMAN ANGELLE: Okay. So, so we start with a hundred, a hundred percent. Can you tell me what percent of applications we get are domestic wells?

MR. REONAS: I don't have those numbers.
CHAIRMAN ANGELLE: Does anybody?
MR. REONAS: I can get those for you.
CHAIRMAN ANGELLE: Can anybody have that?
MR. SNELLGROVE: What category are you looking for? Domestic wells?
MR. REONAS: Right.
MR. SNELLGROVE: Probably about 2500 or so. Percent wise.
CHAIRMAN ANGELLE: Percent wise.
MR. SNELLGROVE: Four thousand annually. Total number of UR wells that are installed.
CHAIRMAN ANGELLE: So is that 60?
MR. SNELLGROVE: Percentage of domestic.
CHAIRMAN ANGELLE: So 60 percent, 60 percent of the applications or the notifications kind of go onto this side?
All right. So the remaining, the remaining 40 percent fall into irrigation?
MR. REONAS: Right.
CHAIRMAN ANGELLE: Industrial? Public water supply? Right.
MR. REONAS: Right.
CHAIRMAN ANGELLE: Help me fill in the

blanks.

MR. REONAS: Yes, sir. Also, frac supply, which counts as industrial.

CHAIRMAN ANGELLE: Is there a separate category for frac supply, or is --

MR. REONAS: No. Counts as industrial, yes, sir.

CHAIRMAN ANGELLE: So industrial? Public water supply?

MR. REONAS: Irrigation.

CHAIRMAN ANGELLE: Irrigation. So is it fair to say that this process applies mostly to those type of wells?

MR. REONAS: Yes, that's correct.

MR. SNELLGROVE: And the reason why is because these are the large-volume wells.

CHAIRMAN ANGELLE: Got you. So the --

MR. SNELLGROVE: That's the small, small --

CHAIRMAN ANGELLE: Got you. I'm asking some rhetorical questions to kind of frame it up for everybody.

MR. REONAS: Yes, sir.

CHAIRMAN ANGELLE: Okay. So in the process when, when -- what is this, the ABC Farm

Company made an application?

MR. REONAS: Right. Yes, sir.

CHAIRMAN ANGELLE: Okay. So I guess this is also for the attorneys here. So the ABC Farm Company makes it application. And through the process of application of science, you say, whoa, wait a minute, we got a problem here.

MR. REONAS: Right.

CHAIRMAN ANGELLE: And we may have a saltwater encroachment issue that may come up here if we drill at this well, we may have a subsidence issue with this well, all those things, right?

What authority exists -- is it a first-come-first-serve basis? So, so does the Commissioner have authority to then say to, to the next well owner in line, you have to do things different?

MR. REONAS: Well, the Commissioner is authority. Now, of course, we are a right-of-capture state. So if you put a well -- I want to put a well in my backyard, I'm going to put it in there, and any water I pump up to the surface is going to be mine and mine alone. I can do whatever I want with it. However, if I damage the environment or damage the aquifer because of

known, right, environmental issues, saltwater encroachment, subsidence because too much pump as you're coming to press in and you're getting the aquifer is being, basically, crushed from the, the layers above, right. The Office of Conservation has authority to protect the environment. That's our goal.

CHAIRMAN ANGELLE: So do you protect the environment through the next guy in line, or through everybody that's already in line?

MR. SNELLGROVE: That would depend. With the Governor, I mean -- the Commissioner has the broad authority to issue different -- he has different tools. This is just one tool for a site-by-site, case-by-case analysis evaluation. If there's an issue in an area, and it's bigger than just one --

MR. REONAS: Well.

MR. SNELLGROVE: -- well, one use, we can, we can look at issuing an emergency. We can be very restrictive and prohibitive of use to bring the system back into sustainability, or we can look at entertaining applications for areas of groundwater concern right down to north Louisiana.

CHAIRMAN ANGELLE: Right. I get when

you have the area of groundwater concern, and, and that box has been checked, and now there's this caution light that's gone off that says, all right, it's big, it's broad, it's public, it's been identified. That's not what I'm asking, and I appreciate you going there.

But what I'm saying is, we've got the ABC Farm Company that wants a well. And they've made application, and you have done, you have done your work. There's no area of groundwater concern. There's no -- any of those things don't exist. But when you, when you run it through your science, you see, whoa, wait a minute here, I'm not sure this is sustainable.

MR. SNELLGROVE: So if somebody -- if BCD comes in next-door to ABC, after ABC has already gone through our process, and he sends us prior notification, we would look at it and see that he may be in too close proximity to ABC. So, therefore, he -- we would impose some type of restriction because this other guy, he's already in there.

CHAIRMAN ANGELLE: That's what I'm trying -- I'm trying -- so, so... You answered my question.

MR. SNELLGROVE: Next guy's going to be regulated.

CHAIRMAN ANGELLE: So if you get in the room and the door closes, you all right, because everybody else is on the outside?

MR. SNELLGROVE: That's the way it's set up.

CHAIRMAN ANGELLE: I'm trying to make sure we totally understand what's going on. That that right -- you don't have any right, any legal authority, to go back to the five or six or seven that are cumulatively impacting the situation?

MR. SNELLGROVE: No, we do. We do have a right to do that if it's determined that there's an issue in the area more generally speaking.

CHAIRMAN ANGELLE: Okay. But just in -- again, not going into area of groundwater concern, but just in that general area, if Farmer Brown shows up and he wants his well to be drilled, and he makes his application, and you look at it, and you say that's a little bit too much, you'd rather do it, we don't -- we think we're going to have some problems, you then impose a limit on that person who is making that application as opposed to everybody --

MR. SNELLGROVE: Right.

CHAIRMAN ANGELLE: -- who is going to be impacted by that; correct?

MR. REONAS: Yes, BCD well would have to be limited. We couldn't retroactively go back and limit ABC and everybody else that was there before.

CHAIRMAN ANGELLE: I'm sorry, but that was a lot of questions to get to that point. I was trying.

I didn't give up.

MR. REONAS: The important thing is we got there.

So our action, in the action letter, again, this was, this was a oil and gas activity in Lincoln Parish. Again, based on our knowledge of aquifers around the state, especially in north Louisiana, as far as the Carrizo-Wilcox, the Commissioner issues advisories like recommending that the oil and gas companies for their oil, for their energy exploration needs, pursue surface water sources to the extent practicable. And we have had great response to that. We have also issued that to the Tuscaloosa Marine Shale. Oil and gas companies have been very responsive.

So that is basically where that is coming from, right. "Secure surface water in lieu of groundwater." Show us that you have made that effort.

The other one was, again, because of, again, local issues in Chicot Aquifer, detailed groundwater use impact study and plan to describe the proposed maximum drawdown addresses water level decline and potential well interference issues. Give us some data that we could use. And, of course, we could also impose monitoring and other issues and other requirements as part of the process.

In terms of recent -- just to kind of -- we went over this at the last Commission meeting in July. Since then in terms of water well notification enforcement, we have had a reorganization of the section to streamline efficiency. We have also issued 43 compliance orders issued to water well drillers, and five to water wells owners, 51 notices of violation to submit prior notification as well. And, again, this is just an example on those of the particular citation.

And, again, contact information, my boss

here, Gary Snellgrove. And any questions sort of on through the overall process?

CHAIRMAN ANGELLE: Mr. Frey?

MR. FREY: Turn it on first.

MR. REONAS: Yeah, turn it on first.

MR. FREY: All right. I've got it on.

CHAIRMAN ANGELLE: Operator error.

MR. FREY: Commissioner Angelle opened the can. So I'm going to kick it down the road a little bit.

In looking at the ABC Farm thing, I notice a number of the domestic wells. I don't know if that was an example or an actual.

MR. REONAS: It was an example. A fictitious.

MR. FREY: It's just fictitious?

MR. REONAS: Yes, sir.

MR. FREY: You showed the number of domestic wells that were now P & A'd, and it made me wonder, just thinking about where I was born and raised in a rural area where just about everybody had their own water well. Now, you have rural water systems that are supplying their public water supply, and a lot of those wells have since been abandoned.

Do we have numbers that can go back and look at, you know, 1960s and '70s, how many domestic supply wells we had versus the number of rural water systems now in effect, and comparing those? That may not be available. I don't know. It triggered that thought.

MR. REONAS: The State did not have water well registration requirements until the mid 1980s, 1985, I believe. So anything done before then is -- now, of course, we work all the time, as wells come to our knowledge, we work to get those registered and in the system. But there could be -- there probably are tens of thousands of, like you say, every tenant farmer or small-time farmer across the state probably had a water well at some point in time. And you're talking about thousands and thousands of people. And so those wells are still out there.

Many of them -- I probably -- I'm pretty sure I have some right behind my house. I mean, literally I can look out the back window and look at them. I'm pretty sure those are not registered because they were built in the 1970s. And that's all across the state, especially in rural areas.

Now, of course, what we have seen -- and

we have the stats on this in terms of the number of well registrations -- what you have seen since Katrina, Katrina and Rita especially, has been a tremendous dropoff in the number of domestic well registrations because of the expansion of the rural water supply system. So that's, that's a fact. We have got data and statistics on that.

CHAIRMAN ANGELLE: But I guess I would jump in and say while it's always important for resource managers to have data, and we've been working on that, I think the reality of it all is that although it may be a lot of wells and it maybe 10,000, whatever number somebody wants to throw out there, the use of that as it bears to the total, the volume, is extremely small. And so, obviously, it would be good to know.

My concern, actually, is, is more to -- for the environmental concern because they all, basically, are, if you would, straws within, you know, drinking straws into, into an aquifer. But I kind of struggle with that whole issue of since we, since we, you know, the State got into it, what year you said, '80?

MR. REONAS: '85.

CHAIRMAN ANGELLE: And we don't have all

that data, and we try to go back and get it. It's worth trying to get it. But at the same time, I think you've got to just basically say, understand they were all very small users.

MR. FREY: Well, I think as we, you know, look at a water budget in the future, or the potential for one, we know we need all that kind of information. Because I remember when we had the, we had the workshop in Baton Rouge a couple years ago, or whatever -- and I don't think he's here, Mr. Pat Credeur, rural water gentleman. I remember Pat making a statement, I wrote it down somewhere and I dug in my notes and I couldn't find it. But he talked about the amount of leakage that occurs from these rural water systems. And that stuck in my mind, too. I mean, we need to get a handle on that and figure out how we correct that problem because, you know, we can't afford to have leakage occurring in these systems.

The other thing is there are a number of rural water systems now that don't, that don't -- they meter at their facility but the actual consumer doesn't have any metering device. They just pay a flat charge.

CHAIRMAN ANGELLE: So one of the things on that issue, the 2012 report to the legislature kind of identified that issue. And one of the things that we are working on is a, is a fiscal policy that says all systems above a certain size have to have a master meter, and have to have some leak monitoring kind of system before they could be eligible for the next round of capital outlay and/or federal funds. So not trying to be, you know, penalizing folks, because some folks would say, well, I need that money to fix my problem. So we got a chicken and an egg and I get that. We ought to try to work around that. But all rural water systems are built with either federal or state money in addition to ratepayer money, and it can't be built without that federal money and that state money. It's just not possible.

And so the concept we had was, well, let's put a requirement, if you want this money, you're going to -- we're going to make you do certain things so we can manage the resource better. I think we're -- that's starting to kind of be part of the culture of the operation, but there's a little pushback there. That was a good point. You know, we -- if it's 10 percent of

leakage, then, you know, that is something that we need to cap.

Chris.

MR. BOURQUE: I bring one thing up. Calcasieu Parish, Lafayette Parish, a lot of rural areas of Baton Rouge have a lot of abandoned wells. These wells were made in the '50s. And an average well will last 30 years. After that, it's no good. It needs to be abandoned. And water wells (inaudible) contamination. And irrigation is just as bad.

We have a protection like, like real estate, when properties change, real estate tends to make sure (inaudible). So it's a small issue that's getting attended to. We went back with DOTD and tried to get something built after these hurricanes come in to look for this, but we don't have it. And (inaudible) force anyone to plug a well. It's just very dangerous. It's there. It's going to be an issue in years to come.

I would suggest or ask some of these rural waters once they come in, get the money to abandon wells when they do the service water. They don't. Nobody wants to do that. They just want to (inaudible) and so on.

CHAIRMAN ANGELLE: Well, I don't think -- I think you make some good points. I don't think anybody says that we don't want to get the funding to, to provide money for abandonment of local wells. What I would say is they are scratching the coin to get enough money to build the system that they need to build, and there's really no leftover money to go ahead and, and take care of the abandonment of those wells.

And I think a lot of homeowners who go from water wells to being a part of a rural system still want to have that water well in the backyard for other uses. And, and I know we did as a kid. That's what happened to us. Okay. Until such time that it was like, you know, we've got to spend some money on the well, and it was, like, well, just let it go.

And, you know, my hope is that through transactions, through the legal, through, through real estate transactions -- you know, I know that DHH is doing an incredible job on, on the sewer systems. And when you go to make a transaction on a home, if you had an old sewer system in there, as I appreciate it, there's -- the closing attorneys are saying you have got to upgrade that

sewer system at this time, or the property can't be sold. So over time those things happen.

You bring up a good point. And I don't think there's an easy solution. I just think we've got to just, you know, keep plowing the field one row at a time. And before you know it, we're going to miss a few weeds, but we will come back and get them.

MR. BOURQUE: Also have NRCS that puts out money to abandon wells. People apply for this. If it's a big funding thing, well, the funds are getting a little low, but in the last 10, 12 years, they have invested a lot of money back to farmers to upgrade, make better wells, and dispose of them. A house has only got five or 10 feet of conduit between the water. Irrigation well's got 80 feet of big stuff that could take 500 gallons a day, thousand gallons a minute back into the system.

CHAIRMAN ANGELLE: Good point. Okay.

Any other questions?

I want to move on to Item 8. And my hope was that we would, we would go through 8 in a very abbreviated manner, and get to 9 so we can take some public comments and be on our way.

MR. REONAS: Yes, sir. Your, your hope will be fulfilled in that regard.

This is -- the Commission issued out yesterday afternoon an update on the 2012 report. We have done two of these in the past, in June of 2013 and then again last January, January of 2014, where we took the 2012 interim report to the legislature on groundwater management, went back through and looked at the major issues, the recommendations that the commission, the Groundwater Resources Commission, now, of course, this Commission, made at that point in time and, and evaluated progress towards meeting those recommendations.

So we sent out this, which is sort of the most recent one for January of 2015, basically, again, revisiting all the recommendations that were made back in 2012. Progress forced those. Of course, a lot of those at the time were concrete -- were concrete recommendations. Many of those have been achieved. Progress towards all have been made, at least to the best of our abilities based on budget, and staff, and other agency considerations. And what I would like to -- I

would like to task the Commission with, if possible -- I know that's really your duty, Mr. Chairman -- was to review these, go back and look at -- review this one, go back and reference the 2012 report, the 2013 update, the 2014 update, see where we're at, send us any comments, recommendations.

Again, you know, we have gone through this three times now. We have done everything we can do to this point in time based on our staff, and budget, and all those things. And so I know a lot of these are, are still in progress. I won't say unfulfilled because we have, we have taken the time to try to meet each one of the recommendations to the best of our ability. Take that into consideration. We would like to get comments back by January 16th, which is Friday. Friday, January 16th close of business. And then do as we have done with the previous reports, finish it up, include those comments, and send them over to the Natural Resource Committees in the legislature, in the House of Representatives and Senate. So...

CHAIRMAN ANGELLE: Thank you very much. I had a chance to look at it. I thought y'all did

a great job. And it does represent a body of work over time that, again, you just keep plowing the field one row at a time, and you continue to do that, and as the State feels, it's capability over time without pushing the panic button. So I appreciate you doing that.

We will move to Item No. 9.

MR. DUPLECHIN: Can I ask a question?

CHAIRMAN ANGELLE: Yes, sir.

MR. DUPLECHIN: Matt, is that a public document, or is that just for the Water Commission's review?

CHAIRMAN ANGELLE: I'm fine to let anybody have it.

MR. DUPLECHIN: Yeah, I would like to have it.

MR. REONAS: Yeah, I tell you what. We will post it on the website, send it out to the distribution list and go from there.

CHAIRMAN ANGELLE: As a draft.

MR. REONAS: Yes, as a draft.

CHAIRMAN ANGELLE: Item No. 9, Review of Surface Water Management in Louisiana.

I don't want to put you on a time limit, but what are you thinking about, Jim?

MR. DEVITT: Five to 10 minutes.

CHAIRMAN ANGELLE: Okay. I'm going to hold you to seven.

MR. DEVITT: This is to touch up on the Surface Water Management Program. Just to remind you of this Commission's duties, statutory duties, and responsibilities for surface water. This comes directly from the statute. A lot of it is fact gathering, inventorying, investigating, et cetera. Just a reminder.

Two primary ongoing processes going on with, with the Department of Natural Resources and surface water. One is coordinating comments, and the other is dealing with surface water agreements. So the surface water agreements, you can see from this chart, primarily are coming from oil and gas drilling as far as the number of agreements we have done (inaudible).

That bottom one is, I think, dealing with Natchitoches.

CHAIRMAN ANGELLE: Is this a time period?

MR. DEVITT: This is from 2010 through, through --

CHAIRMAN ANGELLE: Go back.

MR. DEVITT: I'm sorry?

CHAIRMAN ANGELLE: Can you tell me of those 79, how many have brought forth a economic development study to show the value of what they are doing so they would not require --

MR. DEVITT: Give you --

MR. SNELLGROVE: About half.

CHAIRMAN ANGELLE: About half?

MR. DEVITT: Yeah.

So we had some new legislation this spring. Senator Long on Act 285 which essentially renewed the life of the Surface Water Management Program through 2016.

And then State Representative Jim Thompson introduced an amendment to the Surface Water Management Act adopted as Act 556. What that act did was stated the State shall be reimbursed at a fair market value for bodies of water managed by the Department of Wildlife and Fisheries and determined to be negatively impacted, and then it set the rate in statute at 15 cents per thousand.

The act requires that payments for water withdrawn from designated water bodies be made to a particular fund. And the act requires that

those funds be used to combat invasive aquatic vegetation, such as Water Hyacinth, Hydrillia, and Giant Salvinia.

That act limits the options for compensation to the State. And this says you can -- that you can't make an economic benefit, you have got to pay cash. Again, those water bodies as designated by Wildlife and Fisheries, Office of Fisheries. And then the statute says the funds preferably are to be used on the body of water from which the revenue is generated. These are the bodies that were designated for 2014 as negatively impacted.

CHAIRMAN ANGELLE: It only applies to the bodies of water that are managed by Wildlife and Fisheries; is that what it said? Back up.

MR. DEVITT: Yes, it does.

CHAIRMAN ANGELLE: So do you know which bodies those are?

MR. DEVITT: Essentially all of the bodies within the state. Kyle might be able to tell me that there's some that don't but I can't think --

CHAIRMAN ANGELLE: So go back, go back to the slide that showed the 76. Go backwards.

MR. DEVITT: Go backwards.

CHAIRMAN ANGELLE: So when Thomas answered the question that of the 79, half of them were shown economic and development impacts as the compensation to the state. Based on Thompson's law and based on your opinion that all of the bodies of water are affected by that act, that now the State is not able to take economic development impacts for compensation, or there's an "and" in there?

MR. DEVITT: It has to be -- there's an "and." They have to be managed by Wildlife and Fisheries and determined to be a negative impact.

CHAIRMAN ANGELLE: So the ones that you just brought up are the only ones that -- so you have identified these as the ones that are negatively impacted by invasive vegetation, and that's the only place today that that statute applies to?

MR. DEVITT: Yes.

CHAIRMAN ANGELLE: Okay. I can't imagine you got a whole bunch of withdrawals coming from a lot of that stuff.

So how do you, how do you compete with the legislation? I'm assuming that Jim Pratt

wants his 20 cents?

MR. PRATT: Well, and that's what I'm saying. You all don't do the water withdrawals for Toledo Bend. We do. Always have. And that legislation didn't apply to the Sabine River.

CHAIRMAN ANGELLE: Okay. That's fine.

MR. PRATT: So you're getting nothing there. Although Wildlife and Fisheries is probably there today with some effort on, on Salvinia.

CHAIRMAN ANGELLE: Right. Okay.

MR. DEVITT: Okay. This is four years of Surface Water Agreement showing 2011 and 2013 we had a lot of agreements done. This year hadn't been too bad. And if you look at the numbers on the bottom, as far as volume requested, you'll see that this year actually exceeds 2011, even though the number of agreements were greater in 2011.

CHAIRMAN ANGELLE: And the statute said when you have those affected lakes, you have to charge a rate of 15 cents?

MR. DEVITT: That's correct.

CHAIRMAN ANGELLE: And you said 20 earlier?

MR. PRATT: No. For Toledo Bend it's

15. That's where your 15.

CHAIRMAN ANGELLE: That's where he got it from? Okay. Good.

MR. DEVITT: This is showing the locations of where we have had agreements and by color by year.

Moving on to the multi-agency commenting. The legislature sends various bodies who have authority over water. You see them listed there. And then in 2010 a Memorandum of Understanding between DEQ, Wildlife and Fisheries, and DNR was enacted for some broad policy reasons, avoid duplicated efforts, streamlining government efficiencies, that increased the state commenting process, protects the resources.

Typical instances that trigger that coordination would be a request for state review and comments, surface water agreements, multi-agency comments, federal agency actions, such as the Corp, such as 10 permit application.

And then this shows the number of water permits where we have coordinated comments of multistates -- multi-agencies for the state.

CHAIRMAN ANGELLE: Kyle, how are things going with regards to you guys receiving the

permits, and request for comments, and coordinating of all that?

MR. BALKUM: In regards to the (inaudible), I think it works well. We have a single point of contact within the agency that Thomas Van Bursa works with. He distributes comments internally, and then collects those comments and gets them back to DNR. So seems to be working pretty well.

CHAIRMAN ANGELLE: Didn't you -- last meeting you mentioned some of the issues that you were going through in, in the Florida Parishes on scenic streams?

MR. BALKUM: In a short period of time, we received six scenic river permit applications for water withdrawals on designated scenic steams in our Florida Parishes. Those water withdrawals were to frac -- for frac wells. And five of those water withdrawals were withdrawn. One of those --

CHAIRMAN ANGELLE: Withdrawn by the applicant?

MR. BALKUM: Withdrawn by the applicant. One of those permit applications ultimately was denied because another water source was available.

CHAIRMAN ANGELLE: Got you. Did those

original six come in through the process at DNR, then get shipped out to you or Scenics, or directly to you?

MR. BALKUM: They came directly to us. They must have had knowledge of our scenic rivers program, applied directly to us.

CHAIRMAN ANGELLE: So the Memorandum of Understanding carves out Scenic, and you, you all have, you all have complete jurisdiction over Scenic? You have veto authority on Scenics?

MR. BALKUM: Correct, there are statutes and rules and regulation. We have that authority to regulate water withdrawals on designated natural scenic rivers.

CHAIRMAN ANGELLE: Got you. Got you. Got you.

MR. DEVITT: All right.

CHAIRMAN ANGELLE: Eight minutes.

MR. DEVITT: I went over.

CHAIRMAN ANGELLE: All right. We will go ahead and open the meeting up for public comments.

Anybody that wants to make a public comment, just approach the podium, introduce yourself for the record, and have at it.

Looks like we are going to get out of here at the right time.

So any other Commission members have comments, want to address any issues?

MR. SPICER: I make a motion.

CHAIRMAN ANGELLE: You make a motion to what?

MR. SPICER: To adjourn.

CHAIRMAN ANGELLE: Oh, okay.

MR. DAVIS: Also, I wanted to make one announcement.

CHAIRMAN ANGELLE: Yes, sir.

MR. DAVIS: That is, that, that every spring our law students at Tulane Law School put on an Environmental and Energy Law Summit. One of the keynote speakers -- this will be on Friday, February 27th, will be Mrs. Pat Mulroy, who until a year ago was sort of the Director of Water Resources in southern Nevada. If there's anybody who understands, you know, what's going on in water management, and, and interstate demand on water, it would be Pat Mulroy. I would invite you all to attend.

CHAIRMAN ANGELLE: So we will wait on that e-mail?

MR. DAVIS: Yes.

CHAIRMAN ANGELLE: So just to summarize a couple of things. I think there are, in any, you know, approach to these kind of meetings, there are peaks and valleys. And, you know, just from my standpoint, we're kind of, from the administration, the Commission here, kind of in a valley as we're waiting now for a lot of folks to bring back information. I thought, you know, last couple two or three years, a lot, a lot of activity. But just today we learned that there's a group working -- because the legislature passed Senate Resolution 171, there's a group of people who are working to -- with the weekend Law Institute on water. We've got the Nature Conservancy on Freshwater Assessment. We've got ULL and McNeese working together on Natural Science Foundation. We funded USGS for the additional monitoring. We've got the Water Institute working on a water budget. To me it's been a phenomenon run, a lot of different things. And, again, I want to congratulate everybody, and thank you.

We have a motion to adjourn by Spicer. And a second --

MR. PRATT: Second.
CHAIRMAN ANGELLE: -- by Pratt.
Any objection?
Hearing none, motion is adopted.
(Meeting concluded.)

CERTIFICATE

I certify that said meeting was transcribed from video recording only, and is a true and correct transcription to the best of my ability and understanding, having not been present at the proceeding.

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DONNA T. CHANDLER, CCR, RMR, CRR