STATE OF LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

GROUND WATER RESOURCES COMMISSION
14TH REGULAR MEETING
WEDNESDAY, DECEMBER 2, 2009
11:00 A.M.
ST. TAMMANY PARISH COUNCIL CHAMBERS
21490 KOOP DRIVE
MANDEVILLE, LOUISIANA

OFFICE OF CONSERVATION
STATE OF LOUISIANA

GROUND WATER RESOURCES
COMMISSION MEETING

Report of the Commission meeting held by the Ground Water Resources Commission, on December 2nd, 2009, in Mandeville, Louisiana.

IN ATTENDANCE:
REPRESENTING THE OFFICE OF CONSERVATION:
SCOTT ANGELLE, Secretary, Natural Resources
JAMES WELSH, Commissioner of Conservation
KYLE BALKUM, Department of Wildlife and Fisheries
JAMES BURLAND, Louisiana Chemical Association, Mid-Continent Oil and Gas, LABI, Pulp and Paper Association
GLENN CAMBRE, Department of Health and Hospitals
WILLIAM DOWNS, Ground Water Resource Management
JIMMY JOHNSTON, Louisiana Wildlife Federation
MICKEY MAYS, Police Jury Association of Louisiana
PAUL MILLER, Department of Environmental Quality
EUGENE OWEN, Louisiana Rural Water Association

(IN ATTENDANCE)(CONTINUED):
GARY SNELLGROVE, Ground Water Resources Division
JOHN ADAMS, Staff Attorney, Conservation
JEFF JONES, DNR Office of Conservation
TONY DUPLECHIN, Ground Water Resources Division

REPRESENTING U.S.G.S., Louisiana Water Science Center:
JOHN LOVELACE

PUBLIC COMMENTS BY:
NARA CROWLEY, President, Save Lake Peigneve, Inc.
ALICE STEWART, Sparta Commission Member
GARY HANSON, Director, Red River Watershed Institute
BARBARA DODDS, Resident of St. Tammany

GROUND WATER RESOURCES COMMISSION

14TH REGULAR MEETING
WEDNESDAY, DECEMBER 2ND, 2009
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SECRETARY ANGELLE:
Okay. We will go ahead and call the meeting to order. Thank you all for being here. This is the regular meeting of the Ground Water Resources Commission. I want to give special thanks to Parish President Davis and the Parish Council here in St. Tammany Parish for hosting us in this fine facility. We appreciate the opportunity.
This is a continuation of our efforts to have these meetings throughout the State, and it's my understanding and I guess recollection that we have now met in Baton Rouge, we've met in Eunice, we've met in Ruston, here in St. Tammany, we've met in Minden; so things are continuing to go well for the Ground Water Commission.
I appreciate all of the service of the members. I realize again that the pay is really, really excellent for your services here, and your retirement program is even better.
Having said that, I'll ask the staff to go ahead and call roll.
MR. ADAMS:
Thank you, Mr. Chairman. My name is John Adams, and

I would like to go ahead and proceed and call roll on behalf of the Office of Conservation. Secretary Angelle?
SECRETARY ANGELLE:
Here.
MR. ADAMS:
Kyle Balkum?
MR. BALKUM:
Present.
MR. ADAMS:
Bo Bolourchi?
(NO RESPONSE)
MR. ADAMS:
James Burland?
MR. BURLAND:
Here.
MR. ADAMS:
Glenn Combre?

MR. COMBRE:
Present.
MR. ADAMS:
Gene Coleman?
(NO RESPONSE)
MR. ADAMS:
Elliott Colvin?
(NO RESPONSE)

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MR. COLVIN:
William Downs?
MR. DOWNS:
Here.
MR. ADAMS:
Paul Frey?
(NO RESPONSE)
MR. ADAMS:
Garrett Graves?
(NO RESPONSE)
MR. ADAMS:
Dan Hollingsworth?
(NO RESPONSE)
MR. ADAMS:
Jimmy Johnston?
MR. JOHNSTON:
Here.
MR. ADAMS:
Jackie Loewer?
(NO RESPONSE)
MR. ADAMS:
Mickey Mays?
MR. MAYS:
Here.
MR. ADAMS:

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Paul Miller?
MR. MILLER:
Here.
MR. ADAMS:
Eugene Owen?
MR. OWEN:
Here.
MR. ADAMS:
Kelsey Short?
(NO RESPONSE)
MR. ADAMS:
Brad Spicer?
(NO RESPONSE)
MR. ADAMS:
And James Welsh?
COMMISSIONER WELSH:
Here.
MR. ADAMS:
Mr. Chairman, ten members are required for a quorum, and we do have ten members; so we do have a quorum.
SECRETARY ANGELLE:
Thank you, sir. Item 2(a) will be the adoption of the minutes from the September 16th meetings. Mr. Adams?
MR. ADAMS:
Thank you, Mr. Chairman. Yesterday most of you -

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all of you should have received an e-mail with a copy of the minutes from the previous meeting. We would like to entertain a motion to adopt those at this time.
MR. OWEN:
So moved.
SECRETARY ANGELLE:
I'm sorry. Motion by Mr. Owen; is that correct?
MR. OWEN:
Yes.
SECRETARY ANGELLE:
Motion by Owen.
MR. BURLAND:
Second.
SECRETARY ANGELLE:
Second by Burland to adopt the minutes of the September 16th meeting. Any objections? Any discussion? Hearing none, that motion is adopted.
Item Number 3, we are happy to have with us Mr. John Lovelace who will make a presentation to us on the Southern Hills Aquifer System Outlook and Sustainability.
John, thank you for being here, and we appreciate your partnership that we have with you, sir. Ground water from the Southern Hills Aquifer System; is that right?
MR. LOVELACE:

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Yes.
SECRETARY ANGELLE:
Good to know.
MR. DUPLECHIN:
One little housekeeping item. If I could ask the members of the Commission that if they do speak, please push the bottom labeled "mic" up on your panel. When you finish speaking, please turn it off, and if you would please state your name before you start speaking for the court reporter. Thank you.
MR. LOVELACE:
Thank you for inviting me, again, to speak today. We are in the Southern Hills area. Basically most of Southeast Louisiana is encompassed in the Southern Hills Aquifer System. It's really -- the term "The Southern Hills" is sort of a catchall for all of the aquifers in Southeast Louisiana.
There are some 30-odd named aquifers in Southeast Louisiana. A lot of them are named for their locale in which they're used most prominently, and this name was actually from - come up with for a special purpose at one time as a catchall term.
Because there are some many aquifers, we've had to lump them into different groups at different times just to make it easier to talk about them, and that's what

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I'll be doing today, talking about the Southern Hills. And these different other groupings I'll mention, I'll get into later on.
But because there are so many aquifers, the presentation is going to be fairly general. There are special situations, and I'm going to touch on some of them.
Here's where the Southern Hills is. It comes to

southeast Louisiana all the way basically from the Mississippi/Louisiana State line down into the New Orleans area, over along the parishes along the Mississippi River, the industrial corridor there.

This is a bar chart of pumpage by different aquifers or aquifer systems. You see Southern Hills is one of the big producers in Louisiana, third largest under Mississippi River Alluvial and Chicot. The big difference from the Southern Hills in those two aquifers is that those are heavily used for irrigation, and the Southern Hills is primarily used for public supply and industry.

As you can see, over three-quarters of the pumpage is for public supply and industry, and it shows you that the bulk of that industrial pumpage is over in the Baton Rouge area.

When you look at pumpage by parish in Southeast

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Louisiana, it really stands out. Far and away, the heavy pumpage is in East Baton Rouge Parish. That's primarily industrial and public supply pumping. It is half of the pie. The pumpage dwarfs anything else.

There's a major feature in the Southern Hills Aquifer System that's called the Baton Rouge fault. It extends through Baton Rouge across the northern part of Lake Pontchartrain. It extends off to the west into western Louisiana, but it's not much of a feature in the aquifers there.

In Southeast Louisiana, it's actually a barrier to flow. And, generally speaking, in the Southern Hills, we have freshwater north of the Baton Rouge fault and saltwater south of the Baton Rouge fault. That's a generality. There are areas of freshwater south of the faults.

Prior to development, all of the flow in the aquifer system was pretty much southward, coming down from Mississippi, recharged until it got to the fault, and then it typically -- there's probably a little bit of leakage across the fault, but most of it was coming up through the layers and came up to land surface and discharged into springs or into streams in the area. That's why we have towns like Abita Springs, Denham Springs, Greenwell Springs. They were actually springs

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in Southeast Louisiana. And we still have quite a few flowing wells in some parts, especially Tangipahoa - in other parts of Tangipahoa, St. Tammany, and Washington Parish.

Again, here is the aquifer system. This slide is a little bit misleading in that we stopped it at the fault right there. Lots of times when we're talking about it at the office, we don't really consider south of the fault too much because there's not that much fresh ground water down there. The big water is north of the fault.

You can see the recharge area extends all the way up practically to Vicksburg. The system extends eastward over the Mississippi, sort of truncated here in the figure, seeing that line between the recharge area and the area where it's confined by clay.

If you'll look at that line there between the light and dark blue, that's kind of important there, because

north of that line, we see very little effect of pumping in general, and south of that line is where we see more water level declines.

This is an idealized cross-sectional view slice of the earth from north to south. The Southern Hills Aquifer System, this is made up of several sands divided by clay. In the Baton Rouge area, the sands were named after their depth in the Baton Rouge industrial district

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at one particular well; and so we have -- over in Baton Rouge, we have all of these sands named after their depths. When you get away from Baton Rouge further to the east, in the Florida parishes particularly, they have a bunch of other names.

But we like to kind of look at it as this idealized view, a layer cake view of alternating layers of sand and clay. You can see at the fault - south of fault, that red signifies where there's saltwater in the aquifer. It's a little saltwater along the base of the aquifers and - north of the fault.

As I've said, this is an idealized view. It really doesn't look like that in real life. It looks more like this, where we have all of these fractured clay lenses that come and go and they merge with each other, and they split apart. Again, it's often really hard to trace these sands across an area for long distances. As you can see, it's a very complex system.

A lot of the USGS studies that were done in the - back since probably the '40s through the '80s typically looked at one country - or one parish or a couple of parishes at a time, and we ended up with lots of reports that talked about different sands on these - for their area. They stopped their mapping at parish borders, and we realized after awhile that lots of times our maps

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didn't quite mesh up at the borders between these reports; so we spent a good deal of time about ten years ago to pull all of these together and try and make a comprehensive set of cross sections across the area; and this is one of the cross sections resulting from that.

This is an east/west section going through the Felicianas into St. Helena. You can see the same type of lens-like structure to the aquifers.

This map shows the depth to the base of freshwater in the aquifers. That's how deep you can go and still hit water. And the darker colors there are deeper - is deeper. The dark blue is typically 3,000 feet below sea level, and it really stands out when I show you the rest of the states that - in the way of freshwater, the deepest aquifers of anywhere in the state, down to 3,000-3,500 feet in some areas.

SECRETARY ANGELLE:

John, how does that compare to other areas in, say - I don't know - Texas or Mississippi? Three thousand would seem to still be a shallow area to still have freshwater; is that right?

MR. LOVELACE:

No. That's deep. Actually, throughout most of the rest of Louisiana, we have freshwater down to 1,000 feet.

SECRETARY ANGELLE:

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And what about in our neighboring states?
MR. LOVELACE:
I don't know off the top of my head.
SECRETARY ANGELLE:
All right.
MR. LOVELACE:
I would expect in southern Mississippi where this water system extends to would be the same.
MR. MAYS:
Can you explain a little bit? Like this fault line, is it something that's been there for a long time? Does it stand a chance of moving? Or just explain that a little bit in layman's terms, please.
MR. LOVELACE:
Sure. It's a growth fault that's -- and it's shown here on this cross section right -- let's see, right here, Baton Rouge fault. And what it is, is, the southern side of the fault is sliding down relative to the northern side; so it's a growth fault. And its placement along the fault is the -- the movement, it increases with depth.
So at the surface, there's only, you know, a few tens of foot displacement, 15 feet at the surface. You can actually see a little fault discardment there driving through Baton Rouge. It looks like a little

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hill. One side of it is a little lower.
But as you get deeper, that offset increases, so where the sands near the surface - sands closer to the surface, they're pretty well connected across the fault. And there's a little disturbance at the fault because the materials have been interrupted, disturbed, just by the movement. But deeper down, the sands are actually offset a little bit.
So you can have freshwater sand north of the fault when it hits the fault. It's actually clay south of the fault; so there's really nowhere for the water to go except up or down along that area, and it offsets what - really what makes it kind of complicated because it's different as you go laterally east or west along the fault. The interconnection is different in different areas.
In some areas, there's a connection where water is moving back and forth across the fault; in some areas, there is not. But the fault is considered still an active fault, but I think the movement in it is pretty negligible for time periods that we'd be concerned with.
Does that help answer the question?
MR. MAYS:
Yes, exactly, and I was wondering what the chances of it moving -- it's acting actually in favor of keeping

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the saltwater intrusion from going north; is that correct?
MR. LOVELACE:
Yes. It is a barrier to flow, but it is a leaky barrier, and the amount that's leaking is hard to tell until you - without doing test drilling in particular areas.
We didn't even know the fault existed until the '60s

in the USGS. It wasn't readily apparent. There just weren't that many wells. As more wells went in, we started seeing these differences, and then in the '60s and '70s, we had a test drilling program along the fault to better define it, and we found out that it was sort of a leaky barrier and realized there was an offset there. And I am going to talk about the fault in more detail later and show you more pictures.

As I've said, we've grouped all of these aquifers within the Southern Hills Aquifer System into three other sort of groupings that we've named after their equivalents in southwest Louisiana. So we have the Chicot, Evangeline and Jasper Equivalent aquifer systems.

And the shallowest sands are in the Chicot Equivalent aquifer system. These are the onces closest to the surface in the Baton Rouge area. And I'm going to refer to the Baton Rouge area several times. Typically,

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we think of East and West Baton Rouge Parish, the Felicianas, parts of St. Helena, and Livingston Parishes. We also used the same sort of aquifer nomenclature for those parishes.

So the Baton Rouge area, the Chicot, consists of three sands; the shallow, the four and six hundred-foot sands. And for the Florida parishes, which is mostly Tangipahoa, St. Tammany, and Washington, we have the Upland Terrance and Upper Ponchatoula. And then in the New Orleans, which I'm not going to dwell on too much, the only sands in the Southern Hills that have freshwater in the New Orleans area are in the Chicot Equivalent to shallower sands.

So if you look at the water use in this aquifer system, about half of it is used for industry. A lot of industries along the river are using water from the sallower sands. It's cheaper to get to. Better water is used for public supply.

You can see there's also a pretty good chunk for domestic and others. The others are mostly agricultural use or aquaculture. Because they are shallower sands, they are the cheapest to put wells into. So if the water quality is good enough for your needs, you can stop there drilling, and it can -- looking at the breakdown by parish, you can see already most pumpage is in East Baton

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Rouge Parish, about 25 million gallons per day, followed by St. James. That's mostly industrial pumpage down there, a little bit of public supply. And then the New Orleans area, most of the ground water down there is used for power generation.

And this map shows the pumping centers. These are areas where there's fairly concentrated pumping. You can see there's two in East Baton Rouge Parish, a small one in the Baton Rouge area, about five million gallons per day in Baton Rouge itself, and one industrial area in the northern part of the parish, and then over in Bogalusa, and two pretty good-sized pumping centers down in New Orleans where there's power plants.

This is a potentiometric of water level surface of the aquifer. This particular map was made back in 1980, and it's really more in the process -- we've updated it for the New Orleans area recently. We're in the process

of updating it for the rest of the area, but essentially water levels haven't changed much since then. They still look about the same.

You can see all of the squiggly lines up here in what we consider the recharge area. Water levels up there pretty much conform to land surface contours because they're conforming to recharge and flow near land surface. And you don't see really any changes in the

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flow pattern having occurred throughout this area.

You can see a cone of depression around Baton Rouge and a big cone of depression in New Orleans. The New Orleans cone is much smaller now. It's more confined. There used to be a lot more pumping of ground water down in that area, but it's really declined since the '80s, and that decline has sped up since Katrina. There's almost no ground water pumping down there now. There are, really, two power plants that are using ground water and very few other folks.

The University of New Orleans used to have -- UNO used to have several wells that they no longer use. Pretty much every one that was using ground water has gone onto the public supply system there now.

SECRETARY ANGELLE:

Is it the decline of the quality and perhaps saltwater intrusion?

MR. LOVELACE:

There are some saltwater intrusion issues down there, but, no, it's probably an economic factor more than anything.

It's cheaper to go with the public supply system and maintain their own wells. So as the wells have gotten more expensive to service and have gotten older, they've just gone off of them.

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SECRETARY ANGELLE:

But the public supply part of it is basically surface water from the river?

MR. LOVELACE:

Yes. Pretty much everything south of the Baton Rouge fault is on surface water, all the big supplies, with the exception of Ascension Parish, and parts of it are on surface water, but almost everybody -- well, all of the parishes down there are getting their water out of the Mississippi River. And that's because there's just not -- the fresh ground water supplies are too limited; there's just not enough there.

So we recently did a study of the New Orleans area, looking at ground water for emergency supplies, because it certainly wouldn't be enough to supply the whole City for any length of time at all, but it could be - you know, use wells for emergency services for the hospitals and other needs for a very short time period.

SECRETARY ANGELLE:

In the New Orleans area, if you had a chemical spill or some kind of accident on the river in the vicinity of the intakes, I'm assuming, then, there's -- you know, although that's not obviously the jurisdiction of this Committee, I'm just taking the opportunity to learn here, that there are provisions to obviously shut down, and I'm

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assuming they have multiple intakes along the river.
MR. LOVELACE:
Yes, there are intakes all along the river all the way day. Every parish has at least one, sometimes multiple. Plaquemines Parish has five intakes and Jefferson Parish has two very large ones.
The next set of sands, the Evangeline Equivalent aquifer system, is sort of the middle sands, and the Baton Rouge area, they are the 800 through 1,700-foot sands over in the Florida parishes. Now you can really see that the sands are really named after their locality in which they're kind of prominent, which are the most well used. We have Kentwood, Abita, Covington, Slidell.
When you look down at the breakdown of water use, all of that domestic use is dropped out, getting into deeper sands; so it gets more expensive to drill wells. And pretty much just the public suppliers and industry are going to spend that much money.
We don't have the agricultural water needs in the area like we have in other parts of southwest Louisiana, northeast Louisiana that are willing to spend a lot of money to drill wells.
So when you look at the breakdown by parish on there, you see Baton Rouge. It's really starting to be prominent. Over half of the water is being pumped in

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East Baton Rouge Parish from the system.
And the concentrated pumping, again, is in Baton Rouge and north of Baton Rouge up along the river industry. And then we also have some areas where we are now, Slidell and the Covington, Mandeville area that are really starting to grow as more folks move over from New Orleans.
Just over time it's really a pretty big growth area; so we have these pumping centers. But we really haven't seen any change in water levels or are not much yet in this area.
There's a water level map. I've highlighted some of the contours on here. And up here, water levels are 205 feet above land - I'm sorry, above sea level, going down to 105. 65 in this area. You don't see any cones of depression forming yet. And, again, as I've stressed, this is sort of generalized, because we're looking at several aquifers in this area; it's not the whole aquifer system. But in general, we're not really seeing any big drawdowns in this area.
You do see a very prominent cone around the Baton Rouge area. Water levels are at sea level in this area. They're probably about 140 to 150 feet below sea level right in the middle of this cone near Downtown Baton Rouge. So you can see the contours.

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These lines sort of wrap, arc, around here, and these arrows show flow directions. Essentially, pumping in this area is pulling water from - all the way over from Tangipahoa Parish towards the Baton Rouge area; so pumping in the Baton Rouge area is affecting all of the surrounding parishes here.
And we have a little - sort of a divide in Tangipahoa Parish, and across the divide, water flows out

in the other direction; so this is almost unaffected flow over in this area. The flow in southeast is -- or, I'm sorry, the western side of the aquifer is being affected by pumpage in Baton Rouge.

And if you look at it in 3D, it looks sort of like this, where you have this flow net of water funneling down towards East Baton Rouge Parish.

We've looked at rates of change in these aquifer systems. The rates in the Chicot Aquifer system were very well within the different sands; so we really couldn't produce really a coherent map there because they were so different, the different sands. We had some sands going up and some going down.

But in the Evangeline Equivalent, you have more of a trend standing out, and most of the aquifers are showing water level declines of two to three feet per year in the Baton Rouge area. This line is where -- south of this

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line, water levels are declining generally about one foot per year in the aquifers in this system. So these are the areas that are showing declines at this time. Very little change north of this line, less than a foot often. Especially in these areas, water levels are changing very little, if at all.

The deepest set of sands we've lumped into the Jasper Equivalent Aquifer System. The Baton Rouge sands are the 2,000, 2,400, and 2,800-foot sands, the Florida Parishes, the Tchefuncte, Hammond, Amite, Ramsey, and Franklinton aquifers.

Again, being the deeper sands, they're generally only tapped by industry, public supply, and power generation. You can see the bulk of the pumpage, again, is in East Baton Rouge Parish, but there's a fair amount of pumpage also in Washington and Tangipahoa Parish.

These are water levels in the 2,800-foot sand in the Amite aquifer. They're fairly representative of the other sands. You can see a cone of depression around the Baton Rouge area, a pretty big, broad cone centered north of Baton Rouge proper, near the industrial areas along the river, and we also have a cone of depression over in the Bogalusa area where the water is used for public supply and industry.

And, again, you can see how the flow direction in

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the aquifer has been affected. All the way over in Tangipahoa Parish, water is flowing in towards Baton Rouge. The cone around the Bogalusa area is very small, small and tight. It's really not affecting water too much out in this area or south of Washington Parish.

On the whole, water levels in the deeper sands are falling about a foot per year in this area, about two feet per year in the Baton Rouge area. We didn't have a whole lot of data to plot water level changes throughout this area. In Bogalusa and at least in the Amite Aquifer, water levels are falling about two and a half feet per year, right at Bogalusa edge. Up here near Amite, there is virtually no change in water levels.

So, in summary, looking at all of this on the whole, pretty much in the recharge areas - that's the northern half of the aquifer system - Felicianas, St. Helena, Washington Parish, the northern part of Tangipahoa

Parish - water levels are stable or declining at rates less than one foot per year; so we're in really good shape with those.

South of there, water levels are generally declining in one or more aquifers at a foot or more per year. That rate increases in the Baton Rouge area.

Because we have freshwater down to 3,000 feet and we typically have eight to ten aquifers in any given area in

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Southeast Louisiana north of the fault, we have a very sustainable resource here. We have freshwater in most areas for the foreseeable future. Exceptions to this in the Southern Hills are areas south of the Baton Rouge fault where freshwater supplies are limited, especially the New Orleans area and some areas along the river. That's why they typically only use ground water to supplement surface supplies. And then in the Baton Rouge area, there are issues there with saltwater encroachment, which is the next part of this discussion.

We've had a saltwater encroachment issue in Baton Rouge that we've been following for several decades. We've had a monitor network there for a long time, and we did two studies during 2004-2005 to look at encroachment.

In one of the studies, we just looked in East and West Baton Rouge Parish. This project was funded by the Capital Area Ground Water Conservation Commission. We sampled 152 wells primarily very near the fault or where we know there's saltwater in the sands and compared the data to historical data, and we found that of the ten sands in the Baton Rouge area, eight of them now have saltwater in them north of the Baton Rouge fault. That was up two more than we knew that had saltwater ten years ago.

And we also found that saltwater was increasing at

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wells - at least one well north of the fault in at least seven of the sands; so we know that there's active encroachment occurring in seven of the ten sands in the Baton Rouge area.

We also sampled wells along the fault in Livingston, St. Tammany, and Tangipahoa Parish, all in this area. We sampled wells in Slidell, Mandeville, public supply wells and a lot of other wells along the fault, and we found no indication that -- we found no saltwater except in the Franklinton Aquifer which has been there for as long as we have been sampling. We found no indication of encroachment occurring in these parishes along the fault.

Going back to that idealized version of what the aquifers look like in Baton Rouge. If the recharge area sands dipping down flowed towards the fault, traditionally the flow was towards the fault and probably holding the salt back and possibly bringing a little - pushing freshwater across the fault. Now we have pumping in the Baton Rouge area and the industrial area that's pulling saltwater across the fault towards the wells.

And this is what saltwater encroachments look like in the 1,50-foot sand. This is a cross section made, showing the actual sands at these wells at the fault. It shows salty water moving from the 1,200-foot sand across the fault into the 1,500-foot sand.

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In 1965, it was about a quarter mile from the fault. In '77, it was about a half mile away. In 1992, it was more than a mile away. In our last sampling, it was somewhere out up here. It moved past the Government Street pumping station up to the Lula station.

The salt is moving along the base of the aquifer. Saltwater is denser than freshwater; so it's hanging down at the base of the aquifer. But we don't really know how salty the water is down there, but we figure it's probably pretty salty based on the water that we're getting out of our wells.

Typically, the wells have a long screen and saltwater moves towards them. It's entering the screen at the base of the aquifer with all of this other freshwater that's moving into the screen above it, and we're getting a blend of water coming out.

For background in the Baton Rouge area and probably a lot of Southeast Louisiana, for chloride concentrations it's less than ten milligrams per liter. So whenever we see conductances for chloride concentrations over ten milligrams per liter, there's saltwater present. It's pretty easy to see.

And this is what we see when we start seeing encroachment occurring. This is a well in the 2,400-foot sand near the fault. We see the chloride concentration

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was basically around five for several decades until 1993. It's when the saltwater arrived and the chloride went steadily upward.

Back to the 1,500-foot sand. I'm talking about this because it's very important sand for public supplies in the Baton Rouge area. In 1966, we had this little small load of saltwater that had come across the fault right there. In '77, it spread. In '92, it spread more, to about a - probably about a mile square area. Now it's -- in 2005, it had moved about two miles from the fault and was impacting the pumping station here at Lula and at Government Street.

We watched chloride concentrations at wells near the fault. This one well has increased steadily up there, about 900 milligrams per liter.

The EPA has set an esthetic standard for chloride. It's not a health hazard. I guess if you were drinking brine it would be a problem. But they've set an esthetic standard, 250 milligrams per liter. That's when they think you can start tasting it in the water that you're drinking. Obviously, up at 900, you'd probably be able to taste the salt in the water. This water can be blended with other freshwater from other wells and made totally fine for uses.

You can see a little up and down here in this well,

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probably due to changes in pumping, possibly due to some efforts of Capital Area Ground Water Conservation Commission to push back the saltwater at one time by putting in what they called a connector well.

SECRETARY ANGELLE:

John, excuse me. When you're having these issues - or these observations which are as the screen indicates observation wells, are you also having problems with

public supply wells showing up with any of these issues?
MR. LOVELACE:
Yes. Our observation wells are typically wells that we've put in specifically to monitor the saltwater. Often they're screened - have smaller screens near the bottom of the aquifer, and they're close to the fault. They're usually between the fault and the public supply wells.
But we are seeing -- these are two of the public supply wells at Government Street, and you can see going back to 1970, chloride concentrations, you know, averaged about three in both of these wells, and both of them since 2005 have started up and still eight -- no, that's below our background level, but you can see this is a definite upward trend.
And given that the wells between the fault and those wells are doing - going up like this, unless there's a

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big change in the pumping dynamics, you would expect that these wells would continue to pull saltwater over and the chloride concentration would continue to go up.
SECRETARY ANGELLE:
Is there any alert system, or is that a critical health issue for -- I guess in Baton Rouge that would be a private water company as I understand it.
MR. LOVELACE:
Yes.
SECRETARY ANGELLE:
Is there an alert system? And I realize this may be at the source of the well, but maybe at the tap it's a lot less concentrated.
MR. LOVELACE:
Public supply wells can be blended with waters that don't have chloride problems so that it's not seen at the tap.
SECRETARY ANGELLE:
All right.
MR. LOVELACE:
As I said, these wells - these two wells over here, the Government Street, we're seeing saltwater showing up at this further station up here; so it's expected to probably increase at those wells and with these wells as well.

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The other sand that we're particularly concerned with, one of the other ones in the Baton Rouge area is the 2,000-foot sand. It is heavily used by industry just north of Baton Rouge, Exxon, Entergy. There are several plants along the river there.
And, again, we watched the chloride move along the base of the aquifer. And back in '66 and '77, it was still very close to the fault, we think. By '92, we had seen it popping up in this monitor well, and now it's coming as far as this public supply well. This is near the Downtown area near the Old State Capitol.
This public supply well is closer to - just north of the New State Capital, and, then, the industrial district is just a short distance away; so industry is very concerned that the saltwater will progress past here.
They pump very hard from this aquifer, and, frankly, they probably have higher standards for their chloride.

They need lower concentrations of chloride possibly than public supply for some of their needs.
As the water levels show here, you can see we have a very steep cone of depression. In the 2,000-foot sand, water levels are at 250 feet below sea level in the industrial district; and so they're bringing water from all around towards that area.
And here's where we have the saltwater leaking

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across the fault, and the flow direction is carrying it slightly west and then north towards the industrial district, which is pretty much what it looks like when we look at our movement of the saltwater. It started out here, spreading west and to the north, and it's in this area right now.
Here's that other public supply well. This is the only well that we have between the saltwater front and the industrial district. And these are not all of the wells in the area. There's a lot more wells up here. This is about all of the wells in this area that we could sample. These are just the wells that we sampled at the time. These are the southernmost industrial wells.
SECRETARY ANGELLE:
John, you would expect that to continue, obviously, with the leaking of the fault?
MR. LOVELACE:
Yes.
SECRETARY ANGELLE:
And the cone of depression, you know, obviously a big urban area that has experienced a tremendous amount of growth, you would expect that saltwater issue to get worse over time?
MR. LOVELACE:
You would expect it. There's a couple of things

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that could happen. If these two wells continue pumping water - they're public supply wells - they could be capturing a lot of the saltwater that's moving north and sort of prevent that movement - further northern movement. However, because they're at the edge of the cone, some of the saltwater has got to go by them.
SECRETARY ANGELLE:
Right.
MR. LOVELACE:
But that could slow things down. As long as that pumpage is there in the industrial district, it can continue to move from that area.
We haven't seen the higher chloride concentrations - as high a chloride concentration as we've seen in the 1,500-foot sand. Again, it's kind of hard to tell when you have salty water at the bottom blending with the freshwater as to how salty it really is. But the most we've seen in the sand is right at 250 milligrams per liter.
This is one of the wells closest to the fault. And, then, these are the two public supply wells, and you can see that the chloride has gone up and it has increased pretty steadily, one well, and there's a definite upward trend of the other well.
These downward -- these drops are probably due to

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changes in the pumping. Possibly other wells near this well could be affecting the -- this well could be possibly not being used or other wells are being pumped that are affecting this movement of saltwater right there.

COMMISSIONER WELSH:

John, is just the 2,000-foot sand so superior to the other sands that -- I mean, you're saying the 2,000-foot sand. Why not simply move to another sand that doesn't have saltwater moving across the fault?

MR. LOVELACE:

It is -- it's the main sand under the industrial area. It's the one that they -- it's the biggest, thickest sand under there. Some of the other sands may not be able to provide the amount of water that it's providing to industry.

I can guaranty you that they are looking at all of their options right now as far as where to get water in the immediate vicinity without having to pipe it in or go into the Mississippi River.

MR. JONES:

I can add to that. In the Environmental Division, we are getting requests from industry to look at in particular the 600, 800, and 1,200-foot sands, and this is in the industrial district. We've received just

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recently our second request. They are staying out of the 2,000-foot sand.

MR. LOVELACE:

So, in summary, we do have a saltwater encroachment problem in the Baton Rouge area. There is no indication that there's any problem anywhere else in southeast Louisiana. There's a little bit in the New Orleans area, but because there's so little ground water use down there, it's really not a big issue right now.

There have been a couple of models. One has been developed to look at saltwater encroachment in the 1,500-foot sand. Frank Saia (phonetic spelling) at LSU has built a model, and he's been looking at different pumping scenarios and injecting water and withdrawing water near the interface to see if saltwater can be controlled.

Our office also has been working on a model of the 2,000-foot sand to look at the rates - you know, potential future rates of movement and possible saltwater control strategics. That's it. That's sort of a generalized overview. I stress again. There are special situations in different areas of Southeast Louisiana, but with all of these sands, I didn't really have time to go into it all.

SECRETARY ANGELLE:

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Very good. Do the members have any questions for Mr. Lovelace?

MR. DOWNS:

I have a couple.

SECRETARY ANGELLE:

Mr. Downs?

MR. DOWNS:

Is the pressure gradient the same on both sides of

the fault?
MR. LOVELACE:
No, it's not. The pressure -- the water levels are much lower on the north side of the fault in general because of the pumping on the north side of the fault; so there's a big head difference --
MR. DOWNS:
I mean, that's a manmade --
MR. LOVELACE:
Right.
MR. DOWNS:
-- pressure difference, but in its natural state --
MR. LOVELACE:
In natural state, the pressure was probably about the same, because pumping primarily in the Baton Rouge area, we've lowered the water levels. That's an indication of pressure. We've decreased the pressure

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north of the fault.
Pressure is still at the pre-development level south of the fault; so you have water moving from that higher pressure south of the fault over across the fault.
MR. DOWNS:
Do you think that the saltwater -- is it possible that it's migrating up the fault plane or -- you only show juxtaposed sands in your communication, but is it possible that that pressure change could cause actual saltwater migration up the fault into finding other sands?
MR. LOVELACE:
That is possible, and it's been looked at by a couple of different university folks. A fellow at UNO, Ron Stossel, has one theory about saltwater moving up from deeper strata along the fault, and that's why we're seeing it.
A professor at LSU named Jeff Hayners (phonetic spelling) is telling us that's all wrong; it's definitely coming from salt domes south of the fault. So I don't know. I think that the sediments are fractured and stirred along the fault. There probably is some sort of vertical movement along the fault, but it's going to be hard for anyone to prove either way.
MR. DOWNS:

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Okay. Thank you.
SECRETARY ANGELLE:
Any questions?
MR. OWEN:
Mr. Chairman, I don't disagree with anything that Mr. Lovelace said, but the perspective that I would draw is the difference in perspective of flying over a combat zone at 30,000 feet and being on the front lines on the ground, and we're at the front lines on the ground.
And I think that of all of the problems with ground water distribution and use of this state, this is probably the easiest to fix, because Baton Rouge, which is the epicenter of this problem, is sitting right on the Mississippi River with plenty of water available.
The question is, who goes to what, whether it's industry or whether it's public supply? And I think that is the principle question which ultimately will have to

come home to roost here.
I can offer at a different time and place for uses that public supply should continue to use ground water and why industry should avail itself of service water.
Mr. Downs raised a question, the difference in pressure at that - at the fault. The difference in the pressure at the fault is about 150 pounds per square inch right now, and in some deeper sands, like the 1,900-foot

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sand and the 1,500-foot sand. That's a huge driving force.
I recall when Exxon about 12 or 15 years ago went from surface water - from ground water to surface water for some of its industrial purposes.
We had an almost instantaneous 40-foot rise in the ground water levels just with that reduction, which probably within itself didn't amount to more than six or seven million gallons per day, but it was noticeable all across all of our wells in East Baton Rouge Parish.
So I think the ultimate thing that -- there is another method, and that is drilling a horizontal scavenger well. I noticed that Mr. Lovelace didn't subscribe to the quantification that I've heard before, but I've heard before that the saltwater encroachment across the 1,500-foot sand and across the 2,000-foot sand are each about 700-800 gallons per minute, is the rate of encroachment.
It doesn't seem beyond the realm of possibility to me with the directional drilling techniques that we have to drill near the fault a horizontal scavenger well and scavenge that much or more as it comes across the fault. That's something that we have looked at but have never really quantified as far as cost is concerned.
But I think ultimately the thing that is going to

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have to come to roost is a decision as to whether or not public supply is a priority use as opposed to industrial supply, where - and I will qualify that, where industrial supply is available from surface water.
SECRETARY ANGELLE:
Good comments. Good comments.
MR. MAYS:
May I?
SECRETARY ANGELLE:
Yes, sir.
MR. MAYS:
I'd just like to -- Mr. Owen, I 100 percent agree with his assessment of it, and I think as we sit here and look for direction, we try to come up with a plan that -- as I understand it currently, the Commissioner has total authority to make decisions on some of this; is that correct?
SECRETARY ANGELLE:
Yes.
MR. MAYS:
And I think if you will just allow me, I guess the question would come back to the Commissioner, at what point in here -- if you'll go back to that movement of saltwater, in his opinion, at what point does he think that he needs to be involved?

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SECRETARY ANGELLE:
Before the Commissioner tries to answer that question, I was going to ask the staff a few questions on areas of ground water concern. I'm assuming that the legislation that gave the Commissioner certain authorities to establish areas of ground water concern both are quality and quantity, and we've here thus far been concerned about quality issues and quantity issues primarily in north central Louisiana.
But I'm assuming the legislation would allow the Commissioner -- certainly that's not what we're doing today, but the same questions that Mr. Mays is asking, that the legislation does allow the Commissioner to address for a quality issue is beginning to surface; is that correct?
MR. SNELLGROVE:
That's correct.
SECRETARY ANGELLE:
And the process -- the process that was used under the area of ground water concern designation, was it based on evidence that was brought forth, was it by petition, was it by interested stakeholders coming to the Commissioner asking him for that? Do you all recall what the process was used?
MR. SNELLGROVE:

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Well, perhaps the Commissioner will expand on that for you. None of us were there at the time whenever this happened. But as I appreciate it, it did come to the Commissioner as a request or an application for consideration of an area of ground water concern.
COMMISSIONER WELSH:
I think that's right. It is a petition process. It's spelled out in the law as to when would the Commissioner decide enough is enough. I guess the guidance that the law provides would be the word sustainability. When the aquifer loses its sustainability; that is, the ability to supply water to the users that have historically used the aquifer, when that happens, that would be -- and it's a case by case, but that would be the time to take action, I guess.
SECRETARY ANGELLE:
I would be hopeful that through the development of the Ground Water Management Plan - the Comprehensive Ground Water Management Plan that one of the things that would come out of that would be perhaps a requirement of the Commissioner to evaluate the vital statistics, if you would, and I don't know what those vital statistics are here today, but to establish what those vital statistics are, to measure them, to look at trends and not wait - not have the way the - perhaps the legislation was

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written out for somewhere in the petition, but that it would be the efforts of USGS, the efforts of the Department and other state agencies to gather on a regular basis kind of a report card, if you would, to then determine whether or not the state needs to act in advance of stakeholders who may not have access to the best information.
And so, you know, I think what we're doing here

today certainly has, with regards to the Baton Rouge area, raised a level to me as to, you know, following up on Mr. Owen's comments, that at a certain point in time, you know, and you were saying when is that point in time. It has to be based on the best times and the information we have.

But I'm concerned that there's not a robust enough process by which all of that information can be gathered, and that's not to say anybody's fault; it just is what it is and where we're at in management of ground water in the state at this point. But it's something that I think we are - we have been challenged to, I think, address and hopefully establish our Comprehensive Ground Water Management Plan which will do that.

Okay. Thank you very much. John, great presentation.

MR. LOVELACE:

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Thank you.

SECRETARY ANGELLE:

I appreciate all of the work that you are doing. Before we go to Item Number 3, I want to recognize, we have Mr. Pat Credeur from Louisiana Rural Water Association.

Pat, thank you for being here. You're a great partner. I appreciate all of the work that you are doing with reaching out to the member organizations that we have and working with us in the legislature. We appreciate you so much, and keep up the great work.

MR. CREDEUR:

Thank you.

SECRETARY ANGELLE:

Thank you, sir. Okay. Item Number 4, Office of Conservation. Mr. Jeff Jones will provide a Ground Water Well Notification and Evaluation Process.

This is a case study on the things that we do look at in order to evaluate, and I think this is about a 20-minute, 25-minute presentation.

MR. JONES:

Yes, sir.

SECRETARY ANGELLE:

Okay. Thank you.

MR. JONES:

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Thank you. And, again, my name is Jeffrey Jones. I'm the Assistant Director for the Environmental Division, along with Gary Snellgrove.

What I would like to do today is to review both water well evaluation processes and go through a case example. The case example in particular is Liberty Gas Storage.

First off, effective July of 2001, all individuals - or all owners interested in installing a well were required to notify the Office of Conservation of their well installations, and in order to do this, they would be also completing what's called a Form GWR-01, a Water Well Notification form.

With regard to the Water Well Notification form, this is the process. Number one, all well users have got to be submitted for review. And, again, we have two different types of wells. We have those that are

considered exempt; and that is, that would be 60-days post notification of the submittal of the form, and the non-exempt wells, and those are the ones that are effectively the industrial wells, the public supply wells. These are wells that are required -- actually, evaluations are required for each of these wells in order to evaluate whether there's any adverse effect on particularly adjacent and neighboring wells.

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After each of the forms are deemed technically complete, then - and that's the Agency approval, then we go ahead and we enter all of that information into SONRIS, which is our data management system.

At that point -- as I've said, we have our non-exempt wells. These are the public supplied, the industrial, the water wells that are drilled, like I say, irrigation, these other purposes. We need to go ahead and complete a comprehensive evaluation of each of these wells to see -- as you can see right here, to preserve and manage the resource, the ground water resource.

Number one, are there going to be affects to adjacent - to neighboring wells? And then, again, we look into the aquifer sustainability issues, and those issues include saltwater intrusion, subsidence and, in particular, areas of water level decline.

Here's an example - or a copy, actually, of the Ground Water Notification form that we use. The form in the upper left-hand corner, what we do is we actually are getting into the well use, we're getting into the fact that are we looking at 60-day prior notification - that is the non-exempt wells - or the 60-day post, which, as you see right here, we have domestic wells. We do not require evaluations on domestic wells.

Again, we're looking at wells with 400 gallons per

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day, something that is effectively -- we're not looking at adverse effects on neighboring wells. We're also looking at drought relief wells. Drought relief wells, you know, we're not going to do an evaluation. Those wells need to go in; so we're going to allow drought relief wells to go in during the period of droughts. It's got to be declared a drought. It's got to be declared either by the Governor or it's got to be declared by the state climatologist, or it's got to be declared - you've got to see it in the ground water monitoring, which is, you know, the US-declared program of drought monitoring.

And, at that point, particularly with drought relief wells -- like I say, following the drought, then, yes, they need to go ahead, submit a new registration with us, and we need to go ahead and evaluate that well, particularly if these are going to be irrigation wells. Is that irrigation well too close to another irrigation well, this type of thing; so we look at that.

And then, again, replacement wells. Replacement wells, there are a lot of different elements involved in a replacement well, but to let you know, in particular, if you're replacing a well that's, say, 40 or 50 years old, you know, are you going to be pumping at the same amount, this type of thing, generally, that's not going

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to be the case; so replacement wells are fairly -- they're rare. But those are also situations in which people go ahead and they put the well in.

In all other instances, we require 60-day prior notification. With that prior notification, we -- like I say, we require all of the driller information, owner information, the well location, latitude, longitude, and well construction details which the driller would provide.

The most important thing here that differentiates this from what is already being provided to the DOTD at this time with the water well drillers registration forms is that we are requesting from the owner how much water is he going to be producing. Okay.

SECRETARY ANGELLE:

Jeff, I realize that this form is the responsibility of the well owner.

MR. JONES:

Yes, sir.

SECRETARY ANGELLE:

But in reality, is the well driller providing this in most cases?

MR. JONES:

The driller is in many instances providing this. And, again, we're working with drillers often times for

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that, and we encourage that, because they are going to have all of this information here. They're going to know aquifer screen. They're going to know all of this other information.

You're correct, absolutely, but we require the owners -- and, again, if the driller is the agent for the owner, yes, we will allow that signature, too, but we've got to have certification there.

Okay. To move on to the evaluation process. The evaluation process, again, let's look at in particular an irrigation well. What we would be looking at first within the evaluation form is, we are looking in particular at - are we looking at any ordinances, are we looking at any - the well being located in areas of ordinances which are -- that information is provided to us by the DEQ Aquifer Evaluation Group, also by the Source Water Assessment Program areas. That information is also provided to us by the DEQ Aquifer Evaluation Group.

We're looking at do we have -- are we having our well located in the area of the -- it's the Capital Area Ground Water Conservation Commission parishes. Are we having it located in one of those? And first we take care of the local restrictions, local, federal, state restrictions. Then we will go ahead and we move on

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beyond that. We're looking at major issues, such as saltwater encroachment. Are we located along the - say, in the Chicot Aquifer, close to the Gulf of Mexico, where we know we've had encroachment into the Chicot saltwater, or are we -- are we located in parts of Evangeline Parish or Acadia Parish or Calcashiu Parish, where we've had water level decline - significant water level decline, or, say, in the Monroe - in Watchitau Parish. Then we

are also looking at areas of land subsidence.
I have to say at this point we have not - we have not encountered areas of land subsidence where we're - you know, where we're actively looking at, like I say, any restrictions or concerns.
I will say this, that there are instances in which we have requested that land subsidence -- and we'll get to this a little bit later, but that land subsidence be monitored due to industrial production from an aquifer.
Then we move on. This is -- again, it's a four-page comprehensive evaluation. We move on, and effectively we're looking at potential interference issues between wells. Again, what we're interested in is that domestic wells not - someone not lose their water supply due to an irrigation well. We see these types of things quite often.
And what I will say is that what we'll do is, we

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will often -- we what we do is we send cautionary letters out to well owners letting them know exactly what well that we're concerned about. What we also are doing is we get to the point of do we have really any concerns with this well? Are there potential concerns, and do we need more information?
At that point, we go ahead and we request a Ground Water Use Impact Study. And, again, that's at the point where -- this is prior to any restriction or anything like that. We want to know exactly, you know, what's the production going to be, for how long, and provide us -- show us why you're not going to effect this other well. Show us why saltwater is not going to enter - or you're not going to cause an additional incursion of saltwater.
SECRETARY ANGELLE:
So if we went back to the East Baton Rouge presentation that John made earlier --
MR. JONES:
Right.
SECRETARY ANGELLE:
-- and Mr. Owen questioned, if somebody showed up with an application tomorrow to do something in a sand that had experienced ground water or saltwater intrusion, these are the kind of things that you would be --
MR. JONES:

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Absolutely.
SECRETARY ANGELLE:
-- drilling down as opposed to what we were talking about earlier. This would be on an individual basis and you would try to make those decisions --
MR. JONES:
Yes. Exactly. That's correct. Here's the case example that I wanted to discuss. Going from the very beginning of the ground water --
MR. OWEN:
Mr. Jones, before you move on.
MR. JONES:
Yes, sir.
MR. OWEN:
The one thing that is missing that I would think we could consider is, is there an affordable alternative to the use of ground water if the use is industrial? I'm

not asking about domestic, of course. But if the use is to be industrial, there is no way that I saw on this form is the state investigating any place that the alternative surface water could be availed.

It seems to me this is a reasonable sort of check on sanity that we could apply.

MR. ADAMS:

Mr. Owen, this is John Adam with the Office of

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Conservation. Whereas that may very well be something that we strive to get to, right now that's not contemplated in the law. And what Mr. Jones is describing right now is the process that we go through to evaluate an application sent to us and --

MR. OWEN:

I understand that that's not the law now, but it seems to me that is a reasonable place that we could look to in the future.

MR. ADAMS:

Yes, sir.

SECRETARY ANGELLE:

Yes, it's a great point, Mr. Owen. And one of the things that we will be discussing towards the end of the meeting is that, and I want to bring about where I think we may be going in advance of this legislative sessions, is there tends to be some percolation going on on perhaps some comprehensive ground water legislation perhaps for discussion next session.

Your suggestion to me brings forth the obvious problem in legislation today that gives the Commissioner the authority to manage ground water but no authority either for us or the Commissioner to manage surface water.

And, in fact, there's been a lot of conversation -

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I've been advised by the Attorney General's Office - on some of those questions as to who owns surface water, who has the right to take it, when can he take it, do they owe anything to the public because it is a public thing. And these are not questions that we've hereto had to answer before in Louisiana that we are going to begin to wrestle with over the coming months and years.

And if you recall, one of the things we did when we put together our Scope of Services, we looked for - we're looking for a contractor to help us with potential surface water suggestions to ground water - you know, to solve ground water problems.

So I want to continue to encourage all of the Board members and especially compliment Mr. Owen today for bringing that issue up, because that issue is not one of the questions that is on there. We recognize that. And if we're going to look at ground water and surface water together. Certainly we're going to have to get to a point where we're asking those questions.

But then when we do find that, in fact, there is a surface water solution, under what authority and what guidelines or what principles as you said earlier in your previous testimony do we say, okay, Company A, you can't use ground water, you need to go to surface water, but Company B you can see use it, and then that begins to

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ration a public resource that hadn't been rationed hereto before, but our time is here.

COMMISSIONER WELSH:

I think we focused on that issue in 2008 when we issued the directive to the operators in the Haynesville Shale area up in northwest Louisiana. We did not say you cannot use ground water anymore, but we strongly encouraged them to try to find alternate sources of water. And we went further than that. We identified what we were talking about, the Red River, Toledo Bend, ponds, streams, bayous, whatever, in lieu of the aquifers up there. And to go further than that, I think probably the Commissioner of Conservation will have to have some kind of statutory authority to do that.

I guess the general perception is they have a right to the water just like everybody else, but we've identified a situation up in northwest Louisiana; the aquifers are not capable, really, of suppling the volumes of water that were needed. And something really had to be done; so the company pretty much voluntarily has done that; they followed our suggestions.

MR. OWEN:

I absolutely agree that under the present statute industry has the exact same legal right to avail itself of ground water as public supply, but I think that what

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we're going to have to do is to figure out a way for -- if we insist on using industrial purposes surface water where it's economically feasible, then we're going to have to figure a concurrent way to even the economic tables if that industrial supply from the surface costs more than the industrial supply for ground water. The only place I know of it can come from is a tax on ground water.

I think this is so essential that we are going to have to look toward some future legislation that sets the economic tables on an even keel by that technique and then goes ahead and moves industry toward surface supply and move public supply toward ground water.

MR. BURLAND:

Mr. Chairman, if I might enter this debate. Not that I'm the only one on the Commission that's representing industrials, but I want to caution the Commission as we proceed forward in this debate that the law already gives public water supply and domestic supply somewhat of a priority in the scheme of the statutory regulation - and regulations.

What is less clear, I guess, as we move forward is how we ration the water supply that's available to us in the future. But I will not necessarily agree that it's just the industrials that need to take the hit. I would

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venture to say that any new user in an area might be required to go through this kind of evaluation with regard to surface water alternatives.

Why Mr. Owen believes that ground water is the exclusive right and domain of the public users and not domestic, agricultural or industrial users is a little uncertain to me. And I don't want to start that debate between who gets what and when, but we need to keep in

mind that in some areas of this state industrial use is the majority use in these aquifers, but in other parts of the state, the public supply is the majority user in those areas especially over in this area.

So to say that the largest user of the resource in an aquifer would not be prohibited from continuing to use and draw down the resource while industrial or other users would be prohibited from doing so is not the solution that I'm seeing.

It seems to me that we either start restricting the largest users in a category in an aquifer or we start restricting all users or go through that evaluation process using economic cost benefit ratios. And I like that part in the Scope of Services, by the way, that talks about the economics, because I think that's what Mr. Owen brings into this. It is more expensive to use surface water than ground water; otherwise, we'd be doing

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it.

I heard no discussion with regard to Mr. Lovelace's presentation with regard to the benefit or the use or alternative use of the Mississippi Alluvial Aquifer which runs right through Baton Rouge, and yet industry and the public supply both seem to favor the deeper sands in the other aquifers, and that is an alternative probably use as well.

So I'm not sure the evaluation process is complete until we, perhaps, amend the laws to include not only alternative surface water areas but alternative aquifers that are nearby and may be of some use at lesser costs than moving to actual surface water treatments.

So I was hesitant to join in this debate today about who should get what, when, where in the future, but I want to make it clear that the industrials would not necessarily favor a user fee and share that fee all by themselves when there are other large users and other types of users that are using the water in this state.

And, actually, there are some that are exempt from registration in this state, and it kind of reminds me of the EPA battles over ozone and the smog, where we forgot about the trees for a while and we forgot about the automobiles for a while and we concentrated on the industrials, and we found later that it's about a third

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contribution from each.

And until we get all of the facts on the table with regard to how many unregistered domestic well users are out there that in total draw down these aquifers and how much other use, you know, that aren't required to register as much as the industrials or the public suppliers, I think we're premature in starting to make recommendations as to who should do what. That's all I have to say.

MR. OWEN:

I may have misspoken, Mr. Chairman. I thought I said that the equalization would be applied as a tax on ground water usage to offset any increase on surface water. If I said it backward, I didn't intend to.

SECRETARY ANGELLE:

Again, all great discussions, and certainly as we wrestle with these issues, I do believe that it is

important for this to be the epicenter of public policy for ground water as we would approach a legislative body all throughout the state where we would vet it here, we would discuss it, we would debate it, and we would keep in mind sustainability and quality as an issue.

There are certain logical ways to skin that cat. Today is not intended to decide those issues but certainly intended to put them on the table and get us

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thinking; so I'm glad that Mr. Owen woke up his neighbor over there and got him going. And that really was great. I appreciate it.

MR. BURLAND:

Thank you, Chairman.

MR. JONES:

And, again, to continue with the example of a complete evaluation, in particular, a very - a complicated evaluation, not one which we run across often. I will say this. We are dealing with other gas storage facilities throughout the state, and this example has become the example for all of the other companies as well.

The first thing that we do, of course, is we complete that entire ground water evaluation checklist which we just reviewed and discussed also, and what we identified as issues were saltwater encroachment, potential water level decline and land subsidence.

As a result, we did also what's not often requested; and that is, request and review. We requested a ground water use impact study from Liberty Gas Storage, and they went ahead, and we'll take a look at it. That's what we have a copy of on the right-hand side here. It's the front page of the Ground Water Use Impact Study that they provided.

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We'll move on. Just to let you know that, of course, in the future, we completed our review and then we went on to approve the work described in the study.

The site is located here within Cameron Parish, and it's located right adjacent to and east. This is at the Hackberry Dome area at Black Lake, and it's also two and a half miles approximately, two and a half to three miles west of the Town of Hackberry, and the Town of Hackberry, of course, west of Lake Calcasieu.

This next map shows all of the various wells located within the Hackberry area and the location of the Liberty Gas Storage proposed solution mining wells. And what we have here is we have located a legend of all of the various types of wells. We have our public supply wells for the Town of Hackberry located right here, at the Town of Hackberry, but we have a number of other types of wells located here as well as what was used within the study that Liberty Gas provided, were oil test wells and logs from all of those wells. We have a tremendous number of cross sections.

By the way, this entire report is presented on a CD in your packets for your review. It includes a dozen 11x17 maps of which this is a portion. But, again, it's the kind of work that we require, and it required others that are requesting a similar type of water use or well

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installation program.
Okay. This next slide is actually showing you the executive summary; wherein, we have required within our impact study these various questions to be answered, and that's exactly what this report actually has done.
What we were interested in is what, for instance, is the maximum drawdown in the entire aquifer, what are we going to be dealing with there? And what has been presented through Modflow, which the Office of Conservation Environmental Division, we do have the complete program which we use to test the results of the Modflow modeling, ground water modeling that was provided by the consultant.
And what we do is also -- this example right here is just what we were talking about. It shows the projected drawdown in the 500 -- again, we're looking at both the 500-foot zones and the 700-foot zones because those are the two zones that Liberty Gas has requested to use for mining the - mining the salt cavern.
This is the 500-foot zone, and at a rate -- this is a rate -- again, this is pumping a thousand gallons per minute with two 500-foot zone wells, and this is for the full three-year program. The wells will no longer be used after three years; they're completely shut down.
But we're looking at perhaps 13 or 14 feet of

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drawdown would be experienced within the 500-foot aquifer just outside the Town of Hackberry.
And, again, let's all understand, we're not talking about drawdown within the Chicot itself because the head of the Chicot Aquifer is 100 to 200 feet above the top of the aquifer itself.
Again, to move on, we also require that they go ahead and provide us a -- because of the saltwater encroachment to the south, we looked at the -- again, using USGS maps, using all of the literature we have available, there are very - I must tell you, very, very few wells in this area. There are none effectively south or in the Town of Hackberry in the 700-foot zone, but there are -- based on the 200-foot zone - the number of wells in the 200-foot zone, we saw that the -- it's actually the plume of saltwater within the 200-foot zone. We're also expecting and moving that down to the 500-foot zone. It's about 200 - I'm sorry, about two and a half miles south of the location.
And in order for us to make sure that we don't have any saltwater encroachment -- again, when we look at the pump rates for the wells, we look at the duration, the three-year duration, we didn't see a potential that saltwater would be moved from that distance, two and a half miles south, to, say, up and toward the Town of

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Hackberry wells.
And in order to do that, we requested that Liberty Gas Storage provide us a ground water quality monitoring plan; wherein, they monitor wells that are south at the site. We have wells that are south of the site, wells that are east of the site. And those wells east of the site, I'll show you now.
The wells east of the site, and this is the

monitoring plan, are the two Town of Hackberry public supply wells. If we see any -- and, again, this is the depth of the wells, all right, within the 500-foot sand. These are the depths of the proposed Liberty Gas Storage wells.

And, again, you see the wells that are to the south. Here are the wells that are to the south. And, again, if we're looking, like I say, to the south, two and a half miles to the south, that's the worst-case scenario for the plume, the saltwater plume to be located.

Moving on. If chlorides were to be found through testing in any of the wells that we looked at before -- there's the Town of Hackberry wells or, you know, the wells to the south. This is a private land owner, Liberty Gas Storage. They've made arrangements to go ahead and sample those wells.

If chlorides increase were detected, then

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immediately we require that they go ahead and follow through a mitigation plan. And the mitigation plan is effectively they stop pumping from the 500, they immediately test -- they test the aquifer, they test again, they follow through, again, each of the steps that we have listed here. This is the -- these are the action steps.

And, again, all of this in constant communication with us, and, again, this includes the 700-foot sand as well. We don't want to see -- even though the 700-foot sand at this location is considered somewhat brackish, we're really going to find out fairly soon because the test well is going in and those results will be available. The test, by the way, will be converted to -- it will be converted to a piezometer in order to measure the water levels within the 700-foot sand.

Moving on. We took all of this information, we reviewed it, and this was -- effectively, our approval letter is in order. It is in order to implement the plan that we worked approximately eight months with Liberty Gas Storage to complete, the entire study and all of the work that was done. We ordered them to go ahead and implement the plan exactly as it was all laid out.

And, again, we're looking forward to, like I say, to continuing the work, receiving quarterly ground water

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monitoring reports from them and monitoring the progress of this operation.

And as I said earlier, this is the same program that we would be entering into with any other project or facility doing this type of - you know, this type of an operation with all of these various parameters, which is saltwater encroachment and potential subsidence. Thank you.

SECRETARY ANGELLE:

Good job. Questions?

MR. MAYS:

I'd like to ask a couple of questions. First I would like to commend you on a job well done in showing us this. This is the first time I've seen some of this.

There are some questions that come to my mind that you may have addressed and it may be in here and I missed it, but if over the -- Mr. Lovelace, maybe he can help

explain it. In a course of three years, there's a 14-foot drawdown. I don't know exactly how to put that in perspective, but after they cease doing that, will they go back?
MR. JONES:
Yes, sir.
MR. MAYS:
It will go back?

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MR. JONES:
It will rebound. That's correct.
MR. MAYS:
And my understanding of saltwater intrusion, it can't be reversed; so --
MR. JONES:
That's correct. That's correct. And again --
MR. MAYS:
What effect past this is it -- or is it going to have an effect of past where the monitoring well is from an intrusion standpoint?
MR. JONES:
You say any effect? And, again, we will not know -- we don't know exactly where -- like I say, we're working off of USGS maps right now, and we are giving it a worst-case scenario.
In the wells that we do have within the 700-foot, the 500, the 200 -- again, the wells that we have directly in our area, like I said, they're -- yes, they're not two and a half miles to the south. That would be the preferable -- if I could have a well nest down there and exactly locate this salt - like I say, this plume of intrusion, we would do that, but, again, that's effectively prohibitive. There are no wells farther to the south in that area. And this is

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projected -- it's projected by wells that were monitored and tested by the USGS several years ago.
MR. MAYS:
I guess I'll rephrase my question.
MR. JONES:
I'm sorry.
MR. MAYS:
In the event that there are saltwater intrusion and these wells are closer to the source there, will there be any effect - long-term effect from saltwater intrusion? Like what will you do if you monitor and there is saltwater intrusion? There's not an -- you will have more saltwater, correct?
MR. JONES:
Everything would be shut down.
MR. MAYS:
And you can't correct what's been done.
MR. JONES:
Well, what you're saying is -- and I'm not aware of any way of correcting what has been done, that's correct. Again, what we would do is, like I say, there would be no more pumpage from that location. We're not expecting -- and, again, we're not expecting that.
We completed our complete scientific study, and based on drawdown and based on the very small cone of

depression that we see there, we're not seeing an effect two and a half miles to the south, and this is why -- like I say, we're being extremely conservative by having these wells to the south of the facility during the monitoring, but we are not expecting any effect at all on the saltwater plume. Do you understand?

MR. MAYS:

Yes, I understand what you're saying.

MR. JONES:

Yeah. Like I say, I got off on the wrong track, I'm sorry, previously.

MR. MAYS:

Thank you.

MR. SNELLGROVE:

And, Jeff, this is Gary Snellgrove for the record. I would also add that the monitoring will indicate chloride increases should they occur which they're not expected to, but if they do, it won't be a situation where -- we don't expect it to be a situation where that chloride concentration would go from baseline of being good useable water to an unusable situation. It would be -- what we would expect to find would be more of a gradual; so you've got an opportunity there to mitigate it should you find a slight increase in the chlorides concentration.

And that's where -- understand this process. This is not -- this process is not a closed process at this point. This order is requiring the operator as they are developing this process to keep us in the loop and notify us, and we're going to get information and data that comes in, and at any point in time, if we need to invoke our statutory rights to restrict ground water usage, we can do so.

But this tool right here that we have that we've used through the statutes is to gain more information because of what Jeff had mentioned earlier; we simply do not know exactly where that saltwater line is.

And so this is a conservative approach to get good scientific information with real world situation where there is real users out there using water. And that southernmost well Jeff is talking about is the furthest in that front in that area that we can find that we can get some good data from.

So, again, we intend to -- if we see elevations coming and we -- I'm sure the water well owner there will also let us know if he's experiencing any increases. So we believe this is a sound approach, and we worked very diligently both with Liberty Gas and internally to get to this point where we're at, and we appreciate Liberty's input.

MR. JOHNSTON:

How many of these applications have y'all went through this year in '09?

MR. JONES:

This year we received from Atmos Energy -- and, again, they're scattered all over the state. Arcadia Gas Storage, Atmos Energy, Perryville Gas - and, again, Atmos and Perryville, both of them in Franklinton Parish -

Acadia, Bienville Parish. Let's see. Those three right there, they are the ones that really come to mind within - you know, within this year so far. And we've worked, like I say, with some facilities.

I want you to know that we've -- for instance, Arcadia Gas Storage, we're looking into wells. They're actually going to Wilcox Aquifer as opposed to any more wells that are Sparta.

We have approved mining wells in the Sparta. We approved one last year. But to let you know, this year we have approved three wells that are at 900 feet separated from the Sparta with a real thick plate, and they're doing that out of concern for the Sparta Aquifer, as well, you know, for conservation purposes as well, just as Liberty Gas Storage is looking at conservation. They might as well use the 700-foot sand which is brackish as opposed to attempting to use everything from

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the 500 Chicot.

MR. BALKUM:

This is Kyle Balkum. What triggers the use or the need for ground water use impact study?

MR. JONES:

Okay. Those were the issues that we had seen in the evaluation prior; and that is, potential subsidence, that's potential saltwater encroachment, that's areas of water level decline. Are we located in, like I say, one of those areas right outside of Lake Charles or in the Monroe area? And then we're also -- like I say, those are the three main points, and also interference; are we looking at interference with other wells in the area?

If we're looking at any of those issues - sometimes it's just maybe one issue - we will request how are you going to prevent, you know, your operation of your well from effecting that public supply well, you know, that's a quarter of a mile away based on your pump rate?

MR. BALKUM:

And the applicant is required to conduct a review and provide it to the Office of Conservation?

MR. JONES:

Absolutely, a complete study with modeling --

MR. BURLAND:

Y'all provide the rigorous peer-review, technical

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review?

MR. JONES:

Yes, we do. We sure do.

SECRETARY ANGELLE:

Jeff, how long has this progress been in place?

MR. JONES:

This exact -- I will say this: The evaluation checklists, we completed and developed and devised effectively in -- there were other checklists prior to this, but this one that we're looking at was April of 2008. And we took every single one of the elements on those four pages directly from the existing regulations and, again, the existing law. We moved through the law, through the regulations, Louisiana Administrative Code, section by section to develop that and in answering all of the questions.

SECRETARY ANGELLE:

And while that's important to be complying with those requirements, when you take a look at the resource itself as we're trying to protect and conserve the ground water resources, knowing what you know, is that process that you put up here and detailed to us, would you say it's one of the more robust ones in the nation from what you know?

MR. JONES:

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From what I know, it is. It is extremely comprehensive. And, again, others, I would say this, I -- it is. Thank you.

SECRETARY ANGELLE:

Well, good enough. And we will certainly get that tested when we go through our ground water - putting together our Ground Water Management Plan, because, as you know, that's one of the things that we're asking our consultant to do, is compare what we do to best manage the practices across the nation and help us --

MR. JONES:

Yes, sir.

MR. OWEN:

Mr. Chairman, may I just tack onto this. I'd like to commend Mr. Jones on a very comprehensive approach. I would ask one question that might be included in the future of considerations of this type. How close to the surface does the salt dome come, and then to follow up with that, which side of the salt dome in this case relative to the Town of Hackberry which is the concern here is the new wells to be located?

Because what I believe should be considered is the shadowing effect of the dome itself if it penetrates through the aquifer. And, for instance, in this case, if the dome penetrates through the aquifer and the wells are

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located on the east side of the dome, then these models generally consider a infinite aquifer in all directions and that wouldn't be the case --

MR. JONES:

You're right.

MR. OWEN:

-- in these wells by the dome.

MR. JONES:

That's correct. I agree with you absolutely. Part of the whole program of modeling, it would be a -- as they say in the model, a boundary condition.

MR. OWEN:

Correct.

SECRETARY ANGELLE:

Okay. Thank you, Mr. Jones. We'll move on to Item Number 5, in particular the Commission Member Ground Water Resources Program Update, and 5(a) is the first one, and that is a update on development of Statewide Ground Water Management Plan.

MR. JONES:

I forgot I was next.

SECRETARY ANGELLE:

Yes, sir.

MR. JONES:

Yes. This shows you the time line, and, again, as

of yesterday, yesterday we received three proposals, and presently those proposals, we got with our contracts and grants people again yesterday afternoon when the bidding ended at 3:00 and then this morning. We got back in touch with Rita Huskins (phonetic spelling) in Contracts and Grants, and what she said is that they are presently reviewing the three proposals for administrative completeness.

As soon as that process is complete, we will be getting the proposals. The group of us that are going to be reviewing the proposals will get together, and we will come up with - like I say, with, you know, some discussions with regarding the different proposals.

And in accordance with the existing schedule, we're looking at December 7th as being the date for oral presentations, and we're looking at -- it's effectively December the 11th we're making the recommendation of who will be chosen for the job.

This shows, of course, the plan itself and the schedule, and, again, those who are going to be making the, you know, the decision, the group.

SECRETARY ANGELLE:

Thank you, sir.

MR. BURLAND:

Mr. Chairman?

SECRETARY ANGELLE:

Yes.

MR. BURLAND:

May I ask a question of Mr. Jones? I know it's late. Mr. Jones, Jimmy Burland.

MR. JONES:

Yes.

MR. BURLAND:

I know it's late in the process and this is not meant to impede in any way the progress of the Management Plan, but I notice that there's really no input. You know, we have this advisory task force that has really had a little trouble making quorums lately because there's not much for them to do, and it seems to me this would be a good place during the development of this plan, especially looking at tasks 3 through 7, that the consultant, whoever that may ultimately be, would be able to at least consult or advise or meet with them to develop the recommendations based on some input from this advisory counsel.

Is that anticipated under this, or do we need to amend or in any way negotiate with the provider to have at least our task force -- I mean, that's 30 or 50 groups of technical people that -- and I'm looking at anything from financial criteria to tax incentives to all these

improvements and recommendations.

Will we rely just on the consultant to bring those forward, or can we somehow incorporate our task force to --

SECRETARY ANGELLE:

I'll try to answer that. One of the things that we talked about is obviously not only reaching out to that group but also the Rural Water Association and parish

governments, police juries, municipalities; so there will be a lot of that kind of work that will go on. So I very much will be a part of it.

Obviously, we don't want to have something that we wouldn't want to embrace as our statewide management plan only to have our stakeholders come to our first meeting to say, well, nobody called me and I don't agree with what you've got in the report and we have to go back to the drawing board; so good point. But I think we're there.

Okay. 5(b). Mr. Snellgrove?

MR. SNELLGROVE:

Thank you, Chairman. Okay. We're just going to go through real quickly here now the follow-up to the Katrina and Rita Water Well Damage Assessment. We mentioned that at the last Commission meeting, and we've done some things since that time. We report on that.

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We talked about the Haynesville Shale, give an update on the frac water supply activity up there, touched base on the Sparta areas ground water concern, the monthly ground water use reports that come in and where we're at with that process, go through the water well notification, provide a brief update on that and the enforcement of it and public outreach.

So, first of all, to touch base on the Katrina and Rita Water Well Damage Assessment Report, this slide right here shows a breakdown by parish and by - what was reported as being either a high, moderate, or low risk of water wells that were in these parishes that may pose an environmental situation should storm surge ever return in that area where these wells could potentially be the conduit of surface waters or contamination entering into the aquifers.

So, as we see, there's 20 high risk, there are 154 moderate, and 1,708 considered to be low risk for the parishes that are essentially south of I-10.

Orleans Parish is reporting four of the high risk. There's three in Calcasieu, three in Cameron, one in Iberia, four here and around near St. Tammany, and five in Vermillion Parish.

Breaking it down further here by the well type, there's three -- there's actually three charts. These

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two are showing the high and moderate risk and breaking them down by parishes; so in here looking at the high risk, most of which you can see, of course, are 18 are being reported statewide of being domestic wells.

Of the moderate risk, again, domestic wells are showing at 145 across the parishes. And low risk, again, was as expected, were the domestic water well owners that we're showing as being the highest with some irrigation.

SECRETARY ANGELLE:

Before you go on, could you tell us real quickly the process that was used and the funding source for this?

MR. SNELLGROVE:

Okay. The process, as I appreciate it, came through the Louisiana Recovery Authority by way -- the funding came by way of the Department of Health and Hospitals through their Office of Public Health revolving - water power revolving loan fund.

At that time, this contract was around $600,000, of which we had a million and some of the administrative costs associated with that, but the bottom line is 600,000 is what we - is what the contract was led for and included at that - basically at that amount. And the report was provided after the contractor went out and did field research.

SECRETARY ANGELLE:

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So we had physical inspections on 1,700 or 2,000 so wells?

MR. SNELLGROVE:

More so, yes, sir. Not all wells -- of course, not all of them were identified as being a problem well. This just represents those wells that were identified as having some level of a risk. And so once that was established, you know, basically going door to door and assessing - you know, land assessing these areas, the contractor along with conservation inspection, you know, went out and then compiled this report and identified exactly where these wells are located and where it was feasible, and I believe in most cases it was feasible, the well was -- part of the contract was to -- once they did identify a high-risk well or a well, say, that had the top knocked off or it was uncapped, they were required by the contract to go ahead and put at least a temporary cap on the well to, of course, prevent any migration, downward migration.

So what we're reporting here -- and we did go through that last time at the last meeting, but what we didn't get with you on with the Commission is what actions have we done. So with this information, what we have done here is recently - well, about a month back, we notified the Louisiana Recovery Authority of these facts,

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and our agency, Conservation, is committed to doing what we can do at this point, which is to go out and send out notification to the water well owners that have been identified as having the high and moderate risk, and certainly initially we did the low risk, but as I matter of priority, we wanted to go and seek this out.

Now, latest development in discussions with the Louisiana Recovery Authority, you know, we are hopefully maybe in a position where we could seek some funding because we recognize that being that most of these are domestic - being that many of them were areas that were difficult to locate and find and somewhat remote, we may have difficulty getting some of the more problematic wells or getting the well owner to actually initiate something to take care of the problem.

So I'm working with Louisiana Recovery Authority at this point at the direction of the Chair and the Secretary. We are seeking funding, perhaps, to initiate a plug and abandonment procedure or repair type of process to address the problematic wells.

SECRETARY ANGELLE:

I'm glad you're doing that, and, obviously, this kind of, I think, highlights the need to make sure that we have a very aggressive well registration program in this state and whether we are issuing permits - we have

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exempt or non-exempt - we still need to have a database that shows where every well is in this state, so that when we have an event -- and this is just one type of event. I'm certain there are other type of events, as all of these -- as I appreciate it, in layman's terms, all of these wells are straws into a public aquifer, and if they are damaged and they potentially could contaminate, then whether it's a privately-owned well or not, the public has a right to intervene in my mind to make sure that the greater aquifer is not damaged.

And hopefully what we can do here is find a funding source, because, obviously, it is going to be very difficult for some domestic owner who may have lost everything. And if you take a look at where the high risk are, Calcasieu, Cameron, Orleans, Vermillion, you know, to have lost everything through a storm event and then to get a letter from the Regulator saying, by the way, you need to spend "X" amount of dollars for flooding or abandoning your well because of the potential damage that it might have to the aquifer brings on its own challenges.

And so as we try to find -- and I don't think this is a lot of money for the Louisiana Recovery Authority to consider as a total, but, obviously, individual members of the public would perhaps have a hard time coming up

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with their own resources.

So I would continue to push you to urge you to work very aggressively with the LRA. I think this is a wise use of LRA money to make sure that we can get on top of this.

MR. SNELLGROVE:

Yes, sir. Thank you. A little brief update on the Haynesville Shale activity. Between now and the last time we met, I believe we even may have conceptionally began this process, but we have now entered into the phase where we have implemented and now we will have the ability to enforce mandatory frac water supply, drilling in frac water supply source and volume reporting, and we do that by means of a forum that was already in existence for work history post drilling and completion of wells that are completed and permitted by the Office of Conservation, oil and gas wells, that is.

So we'll capture that information, and we can certainly use that information to give us a snapshot in time and to develop as to where we are with our efforts to encourage alternative resources other than ground water from the Wilcox Aquifer. We can use this information now as a baseline to see where we are and see where we need to head.

We also have addressed concerns or complaints of

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instances where we're getting reports that domestic water well owners may be using or selling their water for non-domestic or fracing purposes; so we have initiated a guidance policy or statement inside of the office that addresses this situation. And essentially what it says is, is that, you know, a domestic water well, although as Jeff had mentioned earlier, it may be exempt from prior evaluation or our involvement and post registration is

only required whenever you change that well's use to another purpose, in this activity, this other purpose; i.e., used as an industrial - for an industrial purpose, is not absolved from our evaluation process.

So, therefore, water well owners that have domestic wells that want to do this first must notify us and provide us the details and the technical information so that we can evaluate it by the process Jeff had mentioned earlier, and then we would, at that point, issue a decision as to whether or not we need additional information. If it's in an area where the Wilcox may be - it may be an aggregated situation, maybe somebody nearby was already using the water and there may be an impact to them, or if it's in an area remote enough or what have you and their proposed use won't pose a problem, then we will complete the process by notifying them dually.

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And, thirdly, for Haynesville Shale activity, November the 20th, we did issue -- well, we promulgated a rule that became effective November 20th, and that rule allows for the temporary use of certain E&P waste fluids to be used for fracing purposes; for instance, produce water or, you know, reserve pit fluids that may be being used for frac water supplies.

So that is now -- the last time I believe I reported that it was in the works, if you will, and that the promulgation date was the 20th. Well, it's now coming, and it's now in practice.

SECRETARY ANGELLE:

So, Mr. Snellgrove, on your WH-1 form where you are now requiring companies to provide information on the supply source and the volume of water they're using, if this rule that you are talking about now as is in place now, will you perhaps - and it was done to alleviate demand on ground water resources, you would hope to be able to see over time on that report where companies are showing you that they are using these alternative or other non-traditional sources of water for fracing; is that correct?

MR. SNELLGROVE:

That is correct. Not only will they be reported there on the WH-1, but it will also be reported on form

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ENG16 which will also capture certain waste types that have been used or that -- the ENG16 form is basically a waste disposition report; and, so, they will capture that information there also.

SECRETARY ANGELLE:

Right.

MR. SNELLGROVE:

And we have a third mechanism, that when the material is moved off site from one location to another, to the location of where the well will be fraced, we're going to at least in the interim require that the operator report the movement of that material from point A to point B via the form UIC-28 which is the E&P Waste manifest.

SECRETARY ANGELLE:

I've got you.

MR. SNELLGROVE:

So we've got many tracking mechanisms in place.
SECRETARY ANGELLE:
Now, are we going to have a way to provide information to the Ground Water Commission? Obviously, we don't have a baseline because we never required this information to be reported. I'm talking about the WH-1, the source of water and the volume of water. We never had that before.

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When this information comes on the WH-1, will it be inputted into a data management system that we can begin to report maybe quarterly or every six months to --
MR. SNELLGROVE:
Certainly. Yes. We've already created a database, and we are currently adding the information into the database. There will be a lag time, as you can appreciate, but also we have set a process in place to capture historical data.
SECRETARY ANGELLE:
Right.
MR. SNELLGROVE:
Although we don't have the WH-1 in effect until, I think, September the 15th, effective October 1 by Enforcement, prior to that, we sent out a letter requesting voluntarily for source, volume and supply.
SECRETARY ANGELLE:
At that baseline I would just put - just for a second argue that that baseline will be - it will certainly be valuable, but it will be less than total; in that, it will be a more voluntary deal, where this is now a rule as a matter of getting a drilling permit in the State of Louisiana. And it's my understanding that a company has to complete this form to its fullest, and over a period of a year, we will know when a company is

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saying that they are now using 90 percent of their water for fracing is coming from alternative ground water or surface waters. And I appreciate the opportunity to read that.
I think there's a lot of progress that has been made. But when you tell me that it's 90 percent, I will believe it a little bit more than, you know, from a company making -- I'm glad the companies are doing those things, but I believe it's the Regulator's responsibility to capture that information and so on. I'll be very, very intrigued to see over a period of time, you know, what kind of numbers they --
MR. SNELLGROVE:
Yes, sir. And a good point too, yes, voluntary information. That information may not be -- just logically it won't be as reliable, if you will, as certainly something that we would require for them to sign their name and certify that it's accurate to the best of their knowledge and something that is enforceable, but it will add to the whole picture, I believe, you know, historical as well -- you know, I fully expect that we will have a lot of fun drawing trend lines and seeing where we're going and putting some stats together.
MR. MAYS:

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Gary, this is only for Haynesville fracing, because I think I sent an e-mail to what's going on in Lincoln Parish where some of the wells there were similar frac jobs in amounts of water being used, but we're not in the Haynesville Shale.

MR. SNELLGROVE:

I don't believe that that WH-1 form is restricted to just the Haynesville Shale. I believe that the form is requiring all oil and gas operations in the state that are using hydraulic fracturing to report the source and the volume of the sources of water that is used for fracing; so I believe that scenario should be captured also.

MR. MAYS:

So the operator or the owner of the well is on line for this information?

MR. SNELLGROVE:

Yes, sir.

MR. MAYS:

And I should be able to contact you and say this company, where did this water come from that they used for this well?

MR. SNELLGROVE:

When they complete the well, they have a certain time period to complete the form --

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MR. MAYS:

But this is an existing well, --

MR. SNELLGROVE:

Okay.

MR. MAYS:

-- that they're going back and they're doing a frac job on.

MR. SNELLGROVE:

Okay.

MR. MAYS:

And I was telling William about it earlier, that I'm not familiar with this process; so --

MR. SNELLGROVE:

That's a really good question. All frac jobs are required to be permitted by the Office of Conservation; so, therefore, this form captures not just a new well being drill and completing a frac, but also existing wells that they're refracing. So, yes, sir, it should capture it. It should have it there.

MR. MAYS:

So I will be able to find out where that water came from?

SECRETARY ANGELLE:

We are going to have our first test case there, my brother.

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MR. MAYS:

We may have an example for the next meeting here.

SECRETARY ANGELLE:

Although the title says Haynesville Shale Frac Water, just kind of reading the rules, because I was a little bit confused, I thought it was only for Haynesville Shale as you did. In reading the report here, it is for all frac applications regardless of where

it is in the state.
So we just kind of tend to think frac and Haynesville is the same, but you're right. But, you know, maybe you will be the test case to see if we can find out that information.
MR. MAYS:
That water supposedly did come out of an area of concern also.
MR. SNELLGROVE:
It's under investigation.
MR. MAYS:
Okay.
MR. SNELLGROVE:
I can provide more details of where we're at, and we haven't concluded yet, but we appreciate you reporting that information to us.
MR. BALKUM:

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Gary, Kyle here. I know over the last several months the Galveston - I'm sorry, the Vicksburg District of the Army Corps of Engineers has been authorizing use of water withdrawals, surface water withdrawals. They could be a source of historic information if this order is just effective October 1st.
I know we have looked at a number of those applications, dozens of them.
MR. SNELLGROVE:
Really?
MR. BALKUM:
And it may be worth touching base with that agency.
MR. SNELLGROVE:
Yes. I appreciate that. We were aware of one. I mean, that was the first. I think Chesapeake had obtained the first to use water from the Red River, and we were provided a copy of the Corp's permit. But I believe there have been several since then, but kind of -- it hasn't been brought to our attention; so I certainly appreciate that. And they do report on there the volumes that they're pulling out of the river?
MR. BALKUM:
I believe so.
MR. SNELLGROVE:
Okay. Well, we'll take a look at that. We

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appreciate it.
SECRETARY ANGELLE:
On this report you would capture those - you would capture that kind of information?
MR. SNELLGROVE:
It would be reported as to what went down in the well, and it may be more important information on the WH-1 as to exactly what was brought to the site and used.
SECRETARY ANGELLE:
Right.
MR. SNELLGROVE:
But it will be interesting to see what the Corps is allowing to be, you know, pulled out of the - you know, as far as volumes go.
SECRETARY ANGELLE:
So what you're saying is you're capturing the actual volume that's injected. There could have been four times

that amount that was actually removed, but we would not know that because we don't have a system of capturing that right now.
MR. SNELLGROVE:
Yes. That is a possibility.
SECRETARY ANGELLE:
All right. Okay. That goes to surface mater management. The State doesn't have a whole bunch of

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legislation on it.
MR. SNELLGROVE:
Okay. And this is some positive feedback we got from the media in our efforts to regulate and provide guidance and direction to oil and gas industry. Again, this was published, I believe, by Ms. Welborn in the Shreveport Times, and it was a very positive article, and we certainly appreciate that.
This was the guidance statement that I alluded to earlier about clarification for water wells - domestic wells being used to produce water for industrial purposes or non-domestic purposes.
So, again, reiterating the fact that water well owners can do this activity. The statute doesn't prohibit them from doing it. Recognized, though, however, if you do intend to do that as a domestic water well owner, then you must provide us that notification so that we can go through the evaluation process to make sure the aquifer sustainability and the nearby water well users are not heavily impacted.
And here was another positive news clip that came out as a result of the Commissioner's efforts to initiate this process. And this is a news release that was provided effective as well to communicate the fact that we had promulgated the rule for temporary use of E&P

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waste fluids for frac supply.
Okay. And moving into the areas of ground water concern. We initiated a process earlier this year, much earlier this year, around February of 2009; whereby, we really dove deep into ground water monthly use reports that were provided - that have been provided following the issuance of the Commissioner's order for the three areas of ground water concern in the Sparta areas, in the areas of the Sparta.
And in doing so, coupled with the fact that we had recently been provided a new tool which was the ability to enforce statutory laws and our regulations, we felt impowered to really get deeply involved with this process and did so, and we issued, you know, several - many compliance orders to active water well owners in these three areas of ground water concern that either were not reporting or had not registered their water wells with our agency.
And, basically, at the time when we started this process in February of 2009, we had less than 50 percent of the active wells out there reporting on a monthly basis, and we had about 60 percent wells not reporting and about a little less than - a little bit greater than 50 percent of the well owners that weren't reporting. So it is -- you know, I'm pleased to say today that we have

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closed that gap and we have 100 percent of water well owners that are in the three areas of ground water concern registered with our agency, and we are right around 99.75 percent complete on gathering all of the data points from the issuance of the order to date - you know, as near as we can be to date, with a two-month lag in the reporting, but we're there.

The database is complete. And we're continuing, of course, our efforts to assure that reports are being timely submitted into the office and reviewed and the data is being QAQC'd, you know, as it comes in and populating our database so that we will have at this point in time a good solid year of what we believe to be reliable baseline information for water consumption or water use from those who are required to report to our agency.

SECRETARY ANGELLE:

Do you know how many active registered water wells that are subject to your reporting requirement in these areas?

MR. SNELLGROVE:

We've got 177 that are currently registered that are required to report.

SECRETARY ANGELLE:

By rule, there are 177 wells because of their size?

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MR. SNELLGROVE:

All wells are required to report with the exception of domestic as the order was written.

SECRETARY ANGELLE:

Right. And those 177 wells are scattered throughout the three areas of ground water concern?

MR. SNELLGROVE:

Correct.

SECRETARY ANGELLE:

And as of your last check, you had 98 percent?

MR. SNELLGROVE:

Yes. We've got about two -- we've got three wells where we've gotten some data - some holes in the historical data. They're reporting currently, but when we went back and reviewed, I've got about 27 voids in the database that has about 8,000 cell spaces to fill in; so we're almost there.

And on my way up here, I contacted the staff member who was reviewing it, and he's actively trying to get those few remaining cell spaces.

SECRETARY ANGELLE:

When you started this where were you, when you said you may be back in February?

MR. SNELLGROVE:

Yes. Back in February, we had -- of the 177 wells

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that are registered that we know need to report, we had 69 new wells. In other words, we had 108 wells that were reporting and 69 new wells that have been added.

SECRETARY ANGELLE:

So you had 108 that were reporting and you had 69 wells that were already permitted at the time but were not reporting to you on the quarterly or monthly basis of their production?

MR. SNELLGROVE:
Yes, sir.
SECRETARY ANGELLE:
Well, that's obviously very critical, because we can't manage the resources unless we have that data; so I want to compliment you all for running those folks literally down and getting them to get you the information.
I know Mr. Mays has got to be very, very happy to hear that we can now begin to create a baseline, and, you know, we need to be very aggressive with folks that the Commissioner has said by order are required to report to us, and we ought never ever get to a point where we have, you know, 69 and whatever the number was.
And, you know, whether it's 98, 99 percent, there will always be somebody who will not fill it out on time - I understand that - but, you know, whatever tools

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that are necessary -- you know, we talked about earlier today saltwater intrusion, and we need to be concerned about that, but we have three areas of ground water concern. They're all in that area, and we need to make sure that folks who are responsible for reporting are reporting so that the Commissioner can then have the baseline information he needs to make additional management decisions or the Ground Water Commission can make recommendations.
So congratulations on a job well done. I know we've been pushing real hard on getting that done, and I want to compliment you on that.
MR. SNELLGROVE:
Well, thank you.
MR. BURLAND:
Jimmy Burland. Is that a compilation that can be sent to us on a periodic basis, or are you getting it monthly by company and then are you -- other than the database, are you quarterly or semi-annually compiling that into some list or format that we could look at?
MR. SNELLGROVE:
Yes, sir. Right now all of the data that we get on monthly reports, it goes into our SONRIS database, and, you know, we run several reports on our own. I'm able to tell you how many cells I'm needing to fill in; but,

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surely, yes --
MR. BURLAND:
So if we contacted you about a specific area of concern, you could send us that data?
MR. SNELLGROVE:
We can break it down by the area of concern. We can go about it all kind of different ways. It isn't a sort-and-filter process. We've actually got it also into an Excel spreadsheet that we're working with actively now.
MR. BURLAND:
That's great to hear. Thank you.
MR. SNELLGROVE:
Yes, sir.
MR. MAYS:
I'd just like to thank you too as one of the -- we've been working so hard to try to come up with an

alternative source in Lincoln Parish, and our data we questioned because it's estimates, and there are no meters on a lot of these wells; so -- and this is a self-reporting thing, but I think maybe even the way it works now we will get some better statistics, if you will, of what our actual use is there.

I was going to ask the same question; can our consultants and engineers that are preparing a - us for

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what, you know, would be an alternative water supply in our area, can they have access to that data --

MR. SNELLGROVE:

Certainly.

MR. MAYS:

-- so they can update their --

SECRETARY ANGELLE:

Yes. One of the things I'm going to suggest that we look at after we, you know, get our arms around the volume of the self-reporting unmetered stuff is to actually do some field audits where we would actually, perhaps, pay for the installation of a meter and after a period of time compare that to historical reporting.

Everybody needs to know that there are some consequences for reporting information that is less than accurate if we're making management decisions based on that. And, you know, when you are operating in an area of ground water concern, perhaps the law of the land should be - I'm not suggesting it is - but perhaps it should be that you be required to also meter it. And we're not there yet and maybe we don't have to be there, but certainly I think we ought to have audits to make sure that the information is accurate.

MR. MAYS:

And thanks, Gary, for a job well done. We

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appreciate you getting us started in this.

MR. SNELLGROVE:

Yes, sir.

MR. JOHNSTON:

Let me ask one question. We saw these numbers in USGS concerning usage. Has there been any crossover between what you're doing here and what they're doing?

SECRETARY ANGELLE:

Do you mean the crossover about the millions of gallons per day coming out? Well, I did have a question and perhaps we can get John back up or whatever. I'm assuming that's a lot of estimates as well.

Why don't you come up, John. When you took a look at the different aquifers and you were talking about Ascension Parish, you know, you had all of the parishes and the pumpage and everything, I'm assume that is based on some best estimates.

MR. LOVELACE:

Some. We have a couple of different things. We have a program where we're getting monthly data from what we call major users. Those are industries, public supplies, power plants that are pulling more than a million gallons per day combined use of ground water --

SECRETARY ANGELLE:

And that's because they are just voluntarily

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complying with your requests to provide that information?
MR. LOVELACE:
Well, DOTD has the authority to collect that data, and we're sort of capitalizing on that through DOTD, but it is, you know, a little arm twisting semi --
SECRETARY ANGELLE:
We've got a ways to go before --
MR. LOVELACE:
-- some of it is estimates.
SECRETARY ANGELLE:
Thank you.
MR. JOHNSTON:
I like your idea about why not put meters on these suckers.
SECRETARY ANGELLE:
Well, it cost money to get - you know, for an industry to install those meters, and we don't want to be arbitrary and capricious about how we do it, but, you know, if we're going to select a few to do it, then maybe we would find a resource to do it and we would go and check it and then - to see whether or not the data that we have is close to what we're getting. But, anyway, thank you, John. I appreciate it.
MR. SNELLGROVE:
Moving forward on down the update here for the

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Commission is an item involving our audit process, a two-year audit with one year thereafter, to go into every parish in the state and review those wells that have been registered with DOTD compared with those that have been registered with DNR and those that haven't.
Of course, we can omit this process, and now those that haven't received compliance orders require that they provide the information to us so that we can update our database and evaluate when necessary even though the well has been in the ground. We're still not removed from that evaluation process on what they are reporting that they're going to do with the water when they get it out, that being the use and the volume.
So where we're at today is right on target. We've concluded our audit for November, and we're now moving into December with the Washita and Morehouse, and Union Parishes.
And specific to this area, we will be moving into the southeastern portion of the state. As you can see here, St. Tammany is going to be in March, working back, Tangipahoa and Washington, St. Helena and Livingston in February and East Baton Rouge, West Baton Rouge, East and West Feliciana coming up in January, February, March.
And I made this point because all along the way it's not been our intention to find you out; it's been our

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intention to come back and report to these public hearings - public meetings the fact that we are going through this process, and if we do find that you're not compliant, then we will issue a compliance order.
But the purpose of me going over this over and over again at these meetings is so that if there is a water well owner out there that has not complied and he gets ahead of the schedule and he sends something in

voluntarily, if you will, to right a wrong, then we're not going to issue the compliance order, obviously.
We're going to go ahead and get them in -- you know, resolve the situation, get the paperwork in, allow us to review and evaluate and close the process and get that water well owner in compliance.
So our message is to please come to us so that we can -- you know, so that we can resolve it.
SECRETARY ANGELLE:
Do you know the number of wells off the top of your head that were in the DOTD database from the driller's perspective but were not in the DNR basis from the well owner's perspective?
MR. SNELLGROVE:
Yeah. That's a good question, and I haven't been -- parish by parish, we've got these numbers. And they range from, you know, 30-40 in some of the parishes where

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there's not a lot of water well activity to in the hundreds.
SECRETARY ANGELLE:
So, again, that whole process is designed to just get every well in the system so that if we have to contact a well owner like we had to do with the hurricane assessment, we would have that data.
If, for whatever reason, we have some issue of contamination or whatever, we're just trying to -- you know, this is not designed to penalize people. Perhaps the rules were a little bit more relaxed at that time. Basically just get your paperwork in, help us fill this out, get this all on the database. But as far -- we have a system now. I'm assuming that that won't - we won't allow that number of unregistered well owners to swell to the level that it did, because right now --
MR. SNELLGROVE:
In part what you're saying is absolutely correct. Yes, we want -- we need to know -- we need them in our database for several reasons. One, to know that they exist so that when we evaluate a new well coming into their neighbor, if you will, in their area, that they're on radar and their rights are protected by being on the registration.
Secondly, we also need to have these water well

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owners that have drilled, the non-exempt wells, the irrigation wells, the industrial wells, and the public supply wells, they need to be evaluated. They're already in the ground.
However, you know, the act requires that we evaluate these wells; so -- and they may be such that they located a well in an area that is causing a problem today so - and we need to be aware of that and they need to be aware of that; and so it has that purpose too.
And, then, of course, moving forward, we're hoping that coupled with our public education and outreach and awareness efforts that we've coupled with and partnered with other agencies - and I will get to that in a little bit - and just the mere fact that we're probably touching, you know, through this process the majority of those who will be, again, repeating this process, especially on the industry side, but the public supply

side more importantly and the agricultural community.
SECRETARY ANGELLE:
When we get to January 1 and DNR and DOTD working towards this Memorandum of Understanding, I know we're going to be briefed on a little later, when we had a well driller make an application at DOTD and the well owner responsible to make application at DNR from January 1, 2010, if we're able to do what we think we're trying to

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do here, then when you get an application from a well driller and for lack of know exactly the process, not wanting to get into the weeds, we're going to be able to call a time out right away as opposed to waiting and then going back and having to do the audit after the fact.
MR. SNELLGROVE:
We certainly believe as staff that we have a large room to improve that process, where the water well driller may be more actively involved in this prior notification certainly of a post notification for domestic water wells, which this audit process doesn't even touch. I mean, it doesn't touch -- if it would touch the domestic, we would be sending out thousands of compliance notices.
But, yes, we do believe that by combining the two that we can certainly find some efficiencies in this water well notification and registration process, absolutely.
So here we are with the southeast Louisiana. They are moving forward. We are on target. So we are going to continue to do this. We've got dedicated personnel, and it takes a lot of time and effort for us to do this.
So, again, we're out here encouraging it as much as we can. Doing all of this paperwork is a necessary thing, but it certainly would be -- we prefer to do it

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without the issuance of a compliance order and well owners coming in voluntarily; so encourage to get the message out to come to us with their water level notifications.
The two areas that we discussed in the past, and I mentioned this in a meeting - the last meeting. We had two fronts we want to open up on our public ed and outreach process, and that would be to reach out to the public supply water well owners and to the agricultural community, because we have found - our statistics show that these are the two groups that for whatever reason, you know, we've got a great discrepancy between what's been reported at DOTD and what should have been reported to us. So we've got the enforcement activity going on, but we also have an aggressive campaign to get out and get the message out.
On the public outreach side - or on the public supply side, we sent out, you know, 1,299 letters to all that we've identified through the Department of Health and Hospitals' database for who they have got registered at their agency as public supply water well owners.
We felt that at this point in time their database was going to be the most accurate to get the addresses needed to get the mail out; and so we used their database. We worked with OPH, and they've been very

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helpful in helping us get this process done.

All of the letters have been mailed out. We've gotten really good feedback. Unfortunately, a lot of the -- some of the feedback we have gotten is still public supply owners don't know that they have to go through this process. That's the unfortunate thing. But we believe that with these efforts and the massive mail out and this outreach that we've done that we should have crossed this bridge now of knowledge. They know we're here; they know we exist; they've provided to us the notification; they've been very compliant; and so we're on the fast track with them to get them up to speed.

We also met with the Natural Resources Conservation Services group in Alexandria in October. On October 28th, we met with these folks. We contacted them through their hierarchy, and we were advised that we come together and educate their district engineers; so we did.

We went and we put together a powerpoint presentation. Jeff Jones, Tony Duplechin and myself went and sat down in a setting that was a very open dialogue and a very productive dialogue, and that they didn't quite realize that we have a role to play but certainly were very interested and very interested in that their process requires when they loan money out to the agricultural community that all local, state and federal

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laws have been complied with.

So it was an enlightenment on their part that we did exist and that not complying with us is a violation of the state laws; and so we had a very interested audience and an active audience.

And so we went through that process and gave them the tools that they so desperately need to get the message out.

This is just one example of what we left them with, but it's a flowchart process that -- it gets you out of the weeds, if you will, because there are a lot of weeds when it comes to evaluation and notification and who does what, when, where and who's exempt and who's not.

So we put together this as a means - on one page, easy to read, easy to flow, something that the NRCS engineers can provide to potential water well owners so that they can know who to call. And what you don't see on this little chart here is, of course, our contact information, but for powerpoint purposes this thing was put together without that information, but certainly the ones that they have and that they've been provided has our phone numbers and who to contact so that these - their potential clients, their loan applicants, the irrigation water well owners can get with us so that they can provide us the prior notification we can evaluate and

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get them in compliance and move forward.

So a very productive meeting we had with the NRCS, and we have received, as Jeff is nodding, several, several water well owners as a result of this. The NRCS has routed several of them to us so far; so it's working. We know the message is getting out there.

And then, of course, secondly, we're going to get the LSU Ag Center. We have already made contact with

them. They are definitely interested in what we have to say and what we want to present. And we certainly will provide them the flowchart, and we both committed verbally to do something here in the next couple of months. And that would take care of at least an initial process for public outreach with the agricultural community.

And one other item that we -- since our last meeting, we had some interest in stakeholders being notified when we get notification of water well locations; so we've, you know, at the direction of the Secretary and with his advice, we met with our IT group, information technology group, and they were able to pretty quickly here put together an e-mail distribution process, such that whenever we receive a water well notification, it gets inputted into our database, and when we hit the send button, it automatically generates

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an e-mail that will notify all 64 parishes and any other stakeholder who wants to be notified.

So if you have an interest in this process today, please give me your e-mail and we will include you in this process, and we -- let me back up a little bit. We delineate the process by a specific parish or parishes that you're interested in seeing. It's not going to give you all of them unless you want them all.

SECRETARY ANGELLE:

That's good work, Gary. And one of the things I know we're trying to get done and I think perhaps Mr. Credeur has offered to help us, what we're trying to do is avoid no surprises. When we get an application, let interested stakeholders know our first level was 64 parishes and - you know, so this is going to parish government, to the Police Jury for the most part, probably not meeting a whole bunch, but yet good to pass that information along for them to know.

The second thing is, there are going to be water districts, and there are a lot of water districts in the state, and we're trying to get our arms around those water districts so that we can again be the epicenter of all that information, send that e-mail out not only to the Police Jury but also if there's a water district in there, and that water district will probably be a little

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bit more excited to receive that information than would the Police Jury with all of the things that they have going on.

If there are other groups that we need, if you all want to know what is going on in certain areas, it's all electronic; it's not a manual thing. So try to continue to put that information out there.

MR. SNELLGROVE:

Just generally, the first e-mail goes out telling you we received it, and then the second e-mail goes out whenever we have approved it. So realize the first e-mail on this particular application, more than likely what you can view may change, because as we evaluate and we review the form, there may be missing information, there may be information that is unclear; so we get all of that cleaned up. On the second e-mail is whenever we tell you we've concluded our approval.

SECRETARY ANGELLE:
Good job. Item Number 5(G), Mr. John Adams to update us on the Memorandum of Understanding.
MR. SNELLGROVE:
Okay. I've got one other item. I'm sorry. I want to apologize, but I did want to make mention under the public ed outreach part of this program, just real briefly. We have in the recent past here, the last

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couple of months, been in communication with an industrial operator in one of the three areas of ground water concern, the Sparta Aquifer. And in our discussions with that group, we found that we had interest and they had interest in implementing a voluntary ground water conservation effort, and here today, Mr. Perry and Mr. Ray, are representatives from Flakeboard Company.
And in our discussions with them, they have come to realize that, you know, we all are sharing this ground water up there, and they have a process that uses ground water, but they recognize that they have some opportunity to conserve that resource.
So as we were discussing more and more about it, they're one of the groups who provide to us monthly usage data; and so, you know, we both have a vested interest in a voluntary effort such that we can quantify water conservation efforts.
So I believe, you know, these gentlemen here are very motivated to assist this process of water conservation out there, and what we want to do, taking their lead and partnering with them, we want to expand that beyond just Flakewood, but reach out to others, invite other state voters, other industry out there to join in on this effort, because, you know, just a few

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examples as we were sitting around the table talking about this, some very low-lying fruit is out there, and we feel like that can make a significant impact on water conservations in the Sparta areas of ground water concern.
But one thing that we didn't want to do is capture that and quantify it. And so I believe Flakeboard is at least reporting back to me now that they're very committed to putting some flow meters on their wells. And as they implement these conservation efforts, they will be able to - we will be able to definitively quantify where they are today and where they're going.
SECRETARY ANGELLE:
Well, thank y'all gentlemen for doing the right thing and voluntarily contributing to the state.
Perhaps at a certain time, Mr. Snellgrove, we could perhaps have a presentation from the company, if that would be appropriate. If it's not appropriate today, it would be appropriate at a meeting.
I'm certainly leaving it up to you to help guide us, but obviously to understand the details of what they are doing and to see if we can capture it, package it, export it to everybody else would be a great thing.
MR. MAYS:
Maybe the next time we meet in North Louisiana --

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SECRETARY ANGELLE:
Is that a hint?
MR. MAYS:
Save us that four-and-a-half-hour drive. We will have a presentation for them, and thank y'all for coming, and I was not aware of this. Thanks.
SECRETARY ANGELLE:
Okay. Thank you very much. Item 5(G), Mr. Adams.
MR. ADAMS:
Thank you, Mr. Chairman. As most of you recall from our last meeting, I updated you on Act 437 of the 2009 regular session of the legislature, which essentially it's an ongoing streamlining effort, and it requires the water drillers programs to be transferred from the Department of Transportation and Development to the Department of Natural Resources Office of Conservation.
At that time, what had taken place was the staff of Office of Conservation had drafted a Memorandum of Understanding and sent it to the Department of Transportation and Development for review.
Since then, they have reviewed it. They sent a set of comments back to the Office of Conservation. We evaluated that and have set up a meeting to work out the finer points, the last few details between the two secretaries, between Secretary Angelle and Secretary

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Ankner.
That meeting is scheduled for December 14th; so we expect that either on or within a few days shortly after December 14th to have the Memorandum of Understanding signed by all parties and effective ready for January 1st.
Basically, that's the status. Any questions? (No response) Thank you.
SECRETARY ANGELLE:
Thank you. Yes, that meeting is Monday, and we should have it all hopefully completed, and it will be the next step in comprehensive ground water management.
Okay. That takes care of those items. We are now on Item Number 6. Our next meeting date is scheduled -- I think, Mr. Burland, you had requested kind of more of a scheduled meeting, and I think we were able to accomplish that.
Hopefully there has been e-mail communications with our staff and aid. I guess that must be, what; the first Wednesday of the month that has been selected? And I will work with you on your comment there.
And, so, we are going -- it looks like we're going to do a north Louisiana visit in February. We will work with you on the location. Members of my staff here, if you will, begin to start putting that together and mark

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your calendars for that date. Okay.
And we will go ahead and open up the meeting to public comments. Any members of the public that wish to speak, if you would, please come forward. Introduce yourself for the record, and we're happy to hear from you.
NARA CROWLEY:
Good afternoon. Thank you. Nara Crowley from Save

Lake Peigneve, and I want to say, first of all, thank you for the opportunity to speak, and you're doing a marvelous job. Everybody is working really hard, and I am really impressed.

I won't keep you too long. I just have a couple of questions and comments. First I wanted to ask Gary Snellgrove, the wells that were investigated, are they public or domestic wells or both or. . .

MR. SNELLGROVE:

Which wells in particular?

NARA CROWLEY:

In the parishes that you were checking after the hurricanes.

MR. SNELLGROVE:

Okay. It was all wells that were registered with DOTD.

NARA CROWLEY:

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Okay. So that would be --

SECRETARY ANGELLE:

Are you asking if the inspection reports are public records?

NARA CROWLEY:

No, no. I'm asking if the wells themselves were non-domestic wells or. . .

MR. SNELLGROVE:

Yes. Industrial wells, irrigation wells, all wells that were registered and could have been identified were evaluated.

NARA CROWLEY:

Okay. Thanks. That's all I needed to know about that. Thank you. And the other question I had was for Mr. Jones. In regards to the Liberty Storage, do you know how much water they are withdrawing per day?

MR. JONES:

Yes. Effectively we're looking at from each of the aquifers 2,000 gallons per minute, which is the equivalent of close to three million gallons per day.

NARA CROWLEY:

Okay. And that's all they're withdrawing?

MR. JONES:

That's from each of the two zones.

NARA CROWLEY:

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Okay. So three million from each of the two areas?

MR. JONES:

Yes. Right.

NARA CROWLEY:

Okay. Thank you. And, of course, everybody knows that I'm involved with Safe Lake Peigneve and the Jefferson Island, and I know you're very tired of seeing me up here, but next week we have our Mineral Board meeting and voting.

This is a very awkward situation for us, because here we are opposing the operational agreement that is proposed by the state. But we have issues, and I guess Mr. Owen is well aware and he's involved in this, because we had areas of contaminants that are coming that we're very concerned about, both saltwater intrusion and an area north of the aquifer that involves contaminants.

We're really very worried about the approval of this

agreement because it will be three million gallons of drinking water and two million gallons of non-drinking water, but the operational agreement also specifies that if the company needs more drinking water, they can request additional drinking water, and we are very concerned, even with the current withdraw being an issue that's going to contaminate the aquifer in our area.
I'm asking -- we're not trying to stop -- well, yes,

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we are trying to stop this project because we personally are involved and we don't want this project to go through in this area. We've repeatedly asked for them to move to another salt dome, but one of the issues that you brought up today as far as the approval, even if the company goes and gets a environmental study, a ground water study, it's usually after they've made the purchase of the property where they are going to develop.
And it's almost a moot point, because if you're paying for a study, undoubtedly, the study is going to be favorable or an impartial study. And we have a difference of opinion.
We have experts that completely disagree with what's going on in the study that they have provided this company has studied, and what we've been asking for is an environmental impact study to make sure that this is not going to impact the ground water, the Chicot Aquifer.
So we're here again. The last month -- the last session, Steven Langlinais gave a presentation, and since that time, we had additional information which was the contaminants that are being introduced into the aquifer. There's a plume of contaminants and it's coming in from the north.
So we're asking for your support in terms of if you would be so kind as to support us when speaking to the

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mineral board. And I apologize to the State and to Commissioner Welsh and to the group because you are the ones that want this operational agreement to go through, but we feel that this operational agreement is not written in the best interest of everyone concerned, and we are the state; the people are the state. So thank you for this opportunity.
SECRETARY ANGELLE:
Thank you.
ALICE STEWART:
I'm Alice Stewart, and I serve on the Sparta Commission and the Claiborne Parish Watershed District Commission, and you're probably tired of hearing from me too, but we also have concerns, myself and some other citizens.
With other citizens, I'm very hopeful that this Commission will come up with some good water policy for Louisiana, clear goals, evidence-based objectives, action plans with time lines, accountability, and I emphasize stakeholder involvement that makes good use of local initiatives and resources. It sounds like this process is under way.
Eight years ago, Dr. Roland, water resources specialist and economist, spoke on Louisiana water law at a national conference. He listed three courses of action

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with attentive outcomes: Denial with study only, recognition with permitting systems, and, finally, reconciliation with state, local cooperation and acquisition of new potable water sources because conservation alone will be insufficient.

Louisiana is at the permitting stage. Mr. Jones here today and Mr. Owen's comments expressed some of my concerns and those of others that have addressed them in some degree in the Sparta area. I want to give a citizen's perspective, though.

Our citizens are becoming informed about our Sparta problem, that our aquifer has been declining for years at a rate of one to four feet a year, the greatest decline in eastern parishes, which are experiencing related saltwater encroachment. So many of our citizens were stunned when the Office of Conservation permitted another two million gallons per pay to be withdrawn over four to five years to leach the Bienville Parish Salt Dome for natural gas storage.

That is two percent of the Sparta's sustainable yield. It adds more than 10 percent to the current overdraft. We read the well permit letters, the words "should not adversely affect water withdrawals from other registered wells in the area." The implicit single criteria is immediate effect on wells in close proximity,

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which seems to ignore the effect and distant wells and in the long term an aquifer recovery.

We're missing to mention of existence or absence of economic feasible surface water alternatives. Were these considered? We wonder because we have Lake Claiborne which has a 60-million-gallons-a-day yield which is only 15 miles away from the salt doe in Arcadia.

And piping by my calculations would result in water costing maybe $5 per thousand gallons which might be shared with the poultry industry and perhaps public supply. But we wondered, was there collaborative consideration? Maybe this wasn't feasible. But was there collaborative consideration of these alternatives?

And I really think that state and local collaboration is needed, sitting down in conference and talking together about how we can solve this problem. I hear a lot about state involvement. I hear little about bringing in the hard work that is going on right now at the local level to help solve our water problems. Joining hands, we can do great things, I believe.

And in my service on the Watershed District Commission, oil and gas companies have come to us to ask for Letters of No Objection to lay pipelines, and they supply us with environmental impact information that we request, and we're glad after reading through that to

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issue those letters of no objection. We don't know whether we have authority; the oil and gas companies don't know whether we have authority. We are among many entities that are asking the Attorney General for an opinion on that.

But there's a spirit of wanting to know and working together there, and the nicest thing that comes out of that is that when our citizens call, and they do call,

what are they doing? They're using water? Are they using Sparta water and how much and why? And when they call our watershed district, we're able to answer their questions; and that's really, really important.

We get questions that probably many of you don't, because we're local and people know about us, and it helps when we work with you.

I want to ask Gary Hanson too - he's here today - to comment about his institution's hard work to bring local entities together in northwest Louisiana to solve water problems, some of which are similar to the Sparta problem; so we're working together to some extent.

I want to give two illustrations of the problems when we don't collaborate: Citizens are getting mixed messages when there's two million gallons of water permitted to be withdrawn from our aquifer and we're asking them to be careful how they brush their teeth and

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use water for brushing their teeth.

Now, they all fit together, but we don't have a plan to explain how it fits together, and one citizen called our watershed district very indignant, saying that the pipeline company was using Sparta water, which it was, to wash streets, when Lake Claiborne's water was only a mile away. Why, he asked. And he talked to many, many in the community about that.

The Water System Board member remarked at a public meeting after our watershed district that he was very happy for the windfall to his water system when a pipeline company was paying for the Sparta water, but he asked, isn't there a plan to conserve Sparta water going on?

Well, I continue to ask that myself and look forward to continuing to work on water matters with you folks and appreciate all that you are doing and that you are working to develop a really good, solid plan for Louisiana water management. Thank you.

SECRETARY ANGELLE:

Thank you.

GARY HANSON:

I'm Gary Hanson. I'm the Director of the Red River Watershed Management Institute at LSU Shreveport. That is a system-wide institute. We have been working for

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about ten years on water issues in the Red River overall watershed.

Some of the things I would like to say right off the bat is I'm extremely happy the way the Office of Conservation, the Commissioner, Scott Angelle, the Head of DNR, is really putting an effort to solve these problems. We've needed this for a long time.

A lot of good things have happened in the last year. I appreciate Gary Snellgrove and Jim coming up and talking to the Commission awhile back, and we would like to see you come up some more.

We also have another committee. It's the Water Resource Committee of Northwest Louisiana which we formed in 2004. Coming out of being a member on the ground water task force, I was invited to help put together a local organization of several parishes, and parish administrators actually asked me to do this; so we formed

this committee. And it is a committee. It's a voluntary committee. There's no statutory authority whatsoever, but we've been working very closely with the problems that are up there.

One of the things I would like to say is, and it's been overlooked, is that Haynesville Shale is what -- I use the term explosion. No one has seen anything like this in the United States in 68 years.

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Every agency has been struggling to try to get their hands around this. The industry has been trying to get their hands around this. The public has been trying to do that, the press articles have gone from pretty critical to quite complimentary as shown earlier because some things are getting done.

The committee that -- we formed another committee, an ad hoc committee to the watershed institute to work towards getting water for the industry out of the Red River. It sounds like a simple issue, but after six months of trying to get that done, I was able to work together with the Red River Waterway Commission Executive Director.

We pulled together a series of meetings with - on the local side, Levee Board members, Water Transfer people, oil and gas operators, but we pulled together the field people, and we called the Corps in, and they sent eight high-level managers total to meet with us on these meetings.

The first meeting was called to just try to get together and teach each side what is going on. The Corps didn't really understand what oil and gas is about, and the oil and gas people really didn't understand what the Corps' problems were; so that worked very well. It came together quite well.

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Just before the second meeting, we had the first permit, and that was Chesapeake. And after that, we probably have 15 permits now with most of the companies - larger companies working out. It's working very well.

And then we had a little issue with U.S. Fish and Wildlife. There was concern that permits were being slowed down from one side's perspective; so we invited the U.S. Fish and Wildlife to come out for the third meeting. And we did the same thing; we explained what happens with oil and gas drilling, particularly fracing for natural gas; so they became educated on how this process worked.

And we sit across the table, roll up our sleeves - it's not a formal organization - and solve these problems, and it's worked, I think, very well.

One other thing that I would like to mention is, we meet not very frequently with this watershed committee. We meet when we think there's an issue that needs to be done. And, again, I really appreciate how well DNA and the Office of Conservation is working with us up in North Louisiana. It would be nice to see a meeting in Shreveport some time soon. I know every time I show up here, I ask that question. The people really want you to come up and talk about this. A lot of good things to talk about.

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I'm being asked all over the country to come and give talks about what we've done there with the industry. It really is a paradigm shift for the oil and gas industry in doing the things they're doing. They're trying to be good citizens. And they realize that water is a different issue. It's a cultural issue, and you don't want to be on the bad side of that.

But, again, I want to thank John Adams for coming up here a couple of weeks ago with DEQ's protection plan, surface water protection plan. And, yeah, it is a long ways up there, but we would really like to see you guys come up and talk with us and see that we're getting a lot of things done at the local area, and it doesn't necessarily have to be a formal part of this institution, and at some time, I would be glad to give you a presentation on how we've been doing all of this. Thank you very much.

SECRETARY ANGELLE:

Thank you. Mr. Snellgrove, perhaps at the next meeting agenda, we can consider having Mr. Hanson there. Very good.

BARBARA DODDS:

My name is Barbara Dodds, and I'm a resident of St. Tammany Parish, and I just wanted to extend a thank you all for coming here to have your meeting, and I've

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learned a great deal about what your programs are doing. And I was involved in the original ground water legislation that went through early this - in 2001, was it? Time flies. And I do want to thank you all for coming down to this end of the world. I've been to Shreveport. I know how long it takes to get here, and thank you again for coming.

SECRETARY ANGELLE:

Thank you, Ms. Barbara. This is a great part of Louisiana. We appreciate your hospitality here. Thank you very much.

PAT CREDEUR:

Mr. Chairman, I'm Pat Credeur, Director of the Louisiana Rural Water Association. I just want to make sure you guys know that we're around here to assist each and every one of you. We are funded by USDA and EPA, and my staff travels through the state working with all the water and wastewater utilities.

We are in the process now of working in the Haynesville Shale area and Sparta. What my staff is trying to do is get information from all water utilities, as far as who's got master meters, who has not, what is your water loss.

What we're finding right now, believe it or not, is some utilities do have mass meters in the ground, but

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they are not utilizing them; so we're going to work with them and try to start doing that.

And to the Chair and the rest of the Commission, you guys are doing a great job, and thank you.

SECRETARY ANGELLE:

Thank you, sir. Okay. I don't see any other hands. It is now 2:30. I'm assuming everybody is getting a little hungry. I would entertain a motion to adjourn.

MR. DOWNS:
So moved.
MR. JOHNSTON:
Second.
SECRETARY ANGELLE:
Motion by Mr. Downs, second by Mr. Johnston. Any questions? Any objections? Hearing none, this meeting is adjourned.

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C E R T I F I C A T I O N

This certification is valid for a transcript accompanied by my original seal on this page. I, Michelle M. Dardeau, a Certified Court Reporter, License #21014, in and for the State of Louisiana, as an officer before whom this testimony was taken, do hereby certify that the witness to whom the oath was administered, after having been duly sworn by me upon authority of R.S. 37:2554, did testify as hereinbefore set forth in the foregoing pages; that this testimony was reported by me in the stenographic reporting method, complemented audio-sync recording, and thereafter reduced to computer-aided transcription by me, and is a true and correct transcript to the best of my ability.

I further certify that I am not an attorney or counsel for any of the parties; that I am neither related to nor employed by any attorney or counsel connected with this Action; and that I have no financial interest in the outcome of this Action.

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MICHELLE M. DARDEAU, CCR