HARBOR DEEPENING PROJECT

PUBLIC MEETING

ENVIRONMENTAL IMPACT ANALYSIS

DATE: Thursday, October 25, 2012

TIME: 7:00 p.m.

PLACE: Jacksonville Cruise Terminal
9810 August Drive
Jacksonville, Florida 32226

REPORTED BY: Amanda Robinson, RPR,
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P R O C E E D I N G S

MR. BUSH: I am very fortunate to have one of the best planning jobs in the entire Corps of Engineers. I want to welcome everybody to our second public meeting on environmental impacts analysis for the Jacksonville Harbor Deepening Study.

And I just want to take a moment to remind everybody what we're about here. What we're about here is preparing a recommendation to Congress on modifications to the Jacksonville Harbor Project. And very simply put: That recommendation is going to be based on economics analysis, environmental impacts analysis. Now, there's a lot that goes into both of those, and tonight we're focusing on the environmental impacts analysis.

And the other thing I just want to emphasize is that, first of all, the great partnership we have with JAXPORT, because these are cost-shared studies that we do. And the information that we develop is -- we can only develop that if we have a good partnership with our cost-sharing partner;

in this case, it's the Jacksonville Port Authority.

We are focused on environmental impacts analysis tonight. And what we're doing here in this study, I think, is a little different than maybe the Corps of Engineers has done in the past, where we have a very concerted effort to have a transparent process and opportunity for public and agency involvement in the development of this project.

And so one of our objectives here is to wear you out with information. You know, and that's not something that we've always done in the past, but it's definitely something we're trying to do now.

In addition to these public meetings we have here out at JAXPORT, we also have teleconferences that the public and agencies can call into and gather information that way. We have information available on our website. And so we have lots of opportunities for you to provide your input. But those opportunities don't mean anything unless you take advantage of them. And so this is an opportunity for the public, in particular, to get information.

And so here tonight we have lots of our technical team that can answer your questions. We have engineers, we have biologists and planners. And so I encourage you to take advantage of this opportunity to get information either through the presentations that you're going to see tonight or afterwards, because they'll be opportunities to ask questions privately.

So I just want to kind of give you the order of presentation tonight. We're going to hear from our partner, Mr. Kaufman from the Jacksonville Port Authority, in just a moment; and then our Environmental Chief, Mr. Eric Summa, will come up and lead the meeting, and that will be kind of a facilitated discussion. You will also hear from our Project Manager Jason Harrah, and he's going to walk you through the schedule and milestones and future opportunities for both informal and formal engagement.

And so with that, I would like to introduce Mr. Chris Kaufman, Chief Operating

Officer from JAXPORT. Thank you for having us here, Chris.

MR. KAUFMAN: Good evening. Again, I'm Chris Kaufman. I'm the COO for the Port Authority. On behalf of Paul Anderson, our CEO, and our Board, I welcome everybody here for this important briefing tonight.

Just out of curiosity, how many have never been to this terminal before? I'm just curious on how many it's their first time to this cruise terminal. Okay. Thank you for sharing that.

You know, as the Chief Operating Officer and as the Port Authority, we have always been engaged with the Army Corps of Engineers relative to the projects on the federal channel. And how many of you out here know today the depth of the federal channel? Okay. Forty feet. Why do you think we're at 40 feet today? We're at 40 feet today because the goal was to get the river to be able to support the Panamax ships that were coming out of the Panama Canal, the two locks that were designed and built 100 years ago, okay.

As you all know, the river started out, you know, 15, 16, 18 feet, and it gradually went up a few feet at a time over that last century in order to support the commerce that was coming into Jacksonville, okay. So 40 feet was the logical depth that we were looking for back in the '90s, because at that time that was the maximum draft that you could use going through the two existing locks of the Panama Canal.

And as Eric said, we've been partnering with the Corps this entire time. All these federal projects, by statute, are headed up by the Army Corps of Engineers. And yes, there's a local sponsor; in the case of Jacksonville, it happens to be the Port Authority.

But everyone in here is part of that team and is part of that sponsorship because this is your river as much as it is the commercial site. And I'm glad to see everybody here. I was hoping we'd have more; next time bring your friends. We need more people out here so that they can understand all of the dynamics that go into this project that we're dealing with today, okay. It's very important. I want you to be knowledgeable and conversant in what's going on.

This project, to go deeper than 40 feet, has been in play now since about 2006. We finished the deepening all the way down to Talleyrand to 40 feet back in '10 or '9 -- in '10.

UNKNOWN SPEAKER: Christmas.

MR. KAUFMAN: Christmas of '10. So why do we want to go deeper than 40 feet? That's a good question. We are looking at depths of water deeper than 40 feet for two reasons. One is that the Panama Canal that connects us with Asia, primarily China, Japan and Korea, coming through the Panama Canal, that the new set of locks, this is a third set, the original two are still in play, the third set of locks will open up in about 2015. The country of Panama has invested it.

These new set of locks will handle ships that can take a draft up to 50 feet of water, okay. The current locks handle ships that can handle 40 feet of water. So this new set of locks is going to bring the opportunity to the east coast for larger ships that will make a greater efficiency in the supply chain of the movement of the cargo of -- on behalf of the shippers and the shipping lots.

So why Jacksonville? Jacksonville, as you know, we have partnered over times recently with MOL, Mitsui OSK Lines, out of Japan. We've built a post-Panamax terminal here at Dames Point, just adjacent to the terminal here, the cruise terminal. And they are designed and will be equipped to handle post-Panamax ships.

Post-Panamax ships, again, by definition, are those ships that cannot go through the two current locks and that are going to require deeper water, either through the new third set of locks in the Panama Canal or through the Suez Canal itself.

Now, the Suez Canal, connecting in the Indian Ocean up through the Mediterranean, that is deep enough to handle the ships that we are planning on in the future from an international standpoint.

And why is the Suez Canal important? Can anybody tell me why? Do you think the Suez Canal is important to the east coast? Frankly, it's because labor, which is the lowest common denominator relative to producing commerce is shifting -- the lower costs are going down into Indonesia, into India, into Vietnam. So as the lower labor costs go down, the manufacturing shifts to a certain degree. And then those commercial products that we're buying at Lowe's, at Walmart, at K-Mart, Coach purses, you name it, are now being shifted down through the southeast part of Asia. And their transportation route to the east coast is through the Suez Canal. So the Suez Canal can handle those ships that are post-Panamax limited, they can handle the post-Panamax.

We have today at Dennis' terminal one service that weekly comes out of the Suez Canal today, but that service is post-Panamax ships, but they're limited to 40 feet of water. And these ships can come in potentially at 44, 45 feet of draft and leveraging the capacity that the ship was designed for, but they can't do that today because of the 40-foot channel, okay.

So the growth to this region, not only to Duval County but to Northeast Florida, into this port, is the future growth, relative to jobs and relative to economic impact, is going to be through partially the increased growth of Asian trade into Northeast Florida through the Port of Jacksonville.

And as important as the import is the export, okay. Don't forget how important the export part of the equation is, when you're talking about U.S. jobs to manufacture, to produce, to containerize and to ship back to Asia. The products that are coming into Asia -- I mean, from Asia into Jacksonville that are disbursed throughout this region of the U.S., you know, our consumer products. But there are consumer products that are in demand in Asia that are manufactured in the U.S., so that export is just as important as the import.

We can export more by having the deeper water, as well.

Export containers, interestingly enough, are generally heavier than the importing containers that we get from Asia. The types of commodity that are manufactured in Asia have a lighter weight in general than those types of commodities that are coming from the United States back to Asia.

Dennis will tell you they're moving citrus products, forest products, items that, you know, their density is such that they're heavier and they require the ability to go deeper from the standpoint of the depth of water that we have today.

So the Asian trade, frankly, is what's driving our partnership with the Army Corps of Engineers to go deeper than 40 feet, which we have to date. And that equates to jobs for imports and exports, as well as the economic impact to this region, so that's important to keep in mind.

Now, what you're going to hear tonight is this very detailed study, which, again, we've been doing this, the Corps has been doing this since 2005, 2006, and they've been full-time on it. And tonight you're going to hear about the environmental impacts of the study on the modeling that they've done.

Listen, no one is more concerned about balancing the environmental aspects of this than the Corps and the Port. We are not going to sacrifice the environmental situation that we have here in Northeast Florida for economic standpoint. There has got to be a balance.

And the studies that they've gone through in the mitigation that will come up are going to be that balance and will give us that depth of water below 40 feet that will meet the balance between the economics and between the environmental impact.

And so with that, I'm looking forward to hearing this myself, I've seen it once before, but I'm looking forward to hearing it again. I ask you to, if you've got questions, ask them. And if I can, Eric, if anybody has a question for me before I get done, I'll be more than glad to answer it or talk about it, or after the session, whichever.

Okay. Seeing none, I will turn it back over to Eric.

MR. SUMMA: That was great. I really appreciate that, Mr. Kaufman.

He just hit on a lot of the most significant points that I hope you guys take away from this meeting tonight.

My name is Eric Summa. I'm the Environmental Branch Chief for the Jacksonville District Corps here.

And yes, this is the second of five public meetings that we have planned for you guys tonight. And this is a very focused meeting. We're showing you the preliminary results from our ecological and water quality modeling. It's just that. That's all we're doing tonight.

So you might ask why. Why are you so focused on just this one subject? I'll give you three reasons. One, it's because, you know, when we first started this back in 2006, 2007, we started going around and asking folks -- we do scoping meetings as part of our process, we go around and we have meetings. We had two meetings where we asked the public, hey, we're considering doing this, we're partnering up with the Port, Congress has authorized us to do this feasibility study to see if this is a good idea. What are your concerns?

And you, the public, came back and told us many times that you're concerned about the river. You're concerned about the potential impacts of any deepening scenario to the river.

And we understand that, it's very important to us, too. You voiced it, so we're spending a lot of time on that specific question. So that's what you're going to see a little bit of tonight, the preliminary results of that analysis.

So if you came here tonight looking for other information such as what might be the economics that are driving this study, or where are you today, Corps, with the mitigation scenarios that you're considering here. Frankly, we're just not ready for that yet. And so that's why this is the second of five public meetings.

Some people are concerned about the potential for blasting. We don't even know if we will blast; however, because this study is going to be comprehensive, and if it gets approved by Congress and if it goes to contract, because we're the federal government, we're going to be very, very fair in offering bids to any and all companies who might want to take on the job, again, if it gets to that point.

And so some companies may elect to blast. So because of that, we're going to draw some very, very tight parameters around that opportunity. It's going to be very, very protective. And we're going to have an entire public meeting that's just dedicated to sharing information with you about that plan.

So if you came here tonight looking for additional information, we're just not going to be able to do it. But I am going to encourage you to write down any comments or questions that you have that are outside the information we're going to provide you tonight, because we will get those questions answered.

So the other two reasons why we're focused so heavily on this particular aspect is, one, we're talking about state-of-the-art technology that we're employing here. The models that we're using are models that were developed by the Water Management District that are on data that was collected from the St. Johns River.

It's pretty rare for our organization or any organization to get a model that's so specific to a geographic location. Data was collected on the St. Johns River by the Water Management District, by the DEP and by others. That data was plugged directly into these models. These models were provided to the National Academy of Sciences and other entities to take a look at it to say, hey, is this a good way to evaluate the river. And those reports from those entities came back and said, yes, this is a really good way to evaluate the river.

So that led us to use these models. It gave us a lot of confidence that we are on the right track. So that's the second reason that we wanted to be so focused and tell you about -- give you this specific information on these models tonight, because they are pretty heavy-duty, they're pretty technical. And so it's going to take us a little while to explain it.

The third reason is because, honestly, the staff that are here tonight from the Corps of Engineers. Anybody who is working for the Corps, raise your hand tonight, and folks that worked on the model who are here tonight, also raise your hands.

All the people, all the hands you saw, all these folks live here in Jacksonville or around Jacksonville, primarily are engineers, biologists, planners. We all have a love of the river. We all have a love of the community. We want to make sure we're doing this thing right. So it's really important to us. We're personally invested in doing this thing and doing it right. So that's the third reason why we're so focused and taking so much time on this.

So tonight, again, we're going to be

talking about the preliminary results from the application of these state-of-the-art models. So I want to provide you an idea of what it is you're about to see and, perhaps, more importantly, what it is that we're not going to be able to show you tonight.

So because we're using models, we're talking about models, these things are just tools. So all tools have their limitations. So because this tool was developed by the Water Management District and it's got the endorsement of the National Academy of Sciences and National Research Council, we feel pretty good about it.

But whenever you're establishing or whenever you're applying a model, one of the first things you do is you set up the boundary conditions for the model. So hopefully -- I'm not going to go too deeply into this, but I hope this is helpful. Whenever you're trying to assess something, you have to draw your boundaries, you have to decide, okay, what's my box look like before you even get started.

Because this study is so important and

because people have voiced so much concern over what, how the potential deepening may affect the river, we made sure we drew that box pretty small. We made sure those boundaries were pretty tight. So the decisions about whether making those boundaries really wide or small decide whether or not that model is going to be sensitive or not very sensitive to the information you're putting into it.

Because we drew those boundaries very small, and I'll tell you how we did that in a moment, this model is very, very sensitive. So we're able to pick up a lot of information over even small alternatives that are applied to it.

So the way we did that -- well, first of all, let me tell you that the reason why -- the main focus of the ecological models here is on salinity. And the reason we chose salinity is because, when we talked about the potential to deepen the river, people were concerned about how the estuary might change.

There are people that see porpoises down in the Ortega River area, see them fairly frequently. But in that exact same area, I have a lot of friends and family that often see bass in the exact same area, or fish for bass in the exact same area. It is a very dynamic river that we have here. It is an estuary. It has a lot of significant benefits.

So the concern was, if you deepen the river, you're going to get this big slug of dense, heavy saltwater. You guys all know that saltwater is heavier than freshwater. And that it would push up the river with the deeper channel and that it would affect the river, and so we would no longer have bass in the Ortega River area. We would change the composition of the wetlands that are in the main stem of the river. We would change the Vallisneria beds, which are the habitat for shrimp. That was the big concern we heard from you guys.

So a lot of what you're going to see tonight is an example of what would happen with the salinity if you change the depth of the main river channel. So that's the big focus.

So we want to make sure these things were sensitive enough to pick up even the smallest anomaly. And the three ways we made that box even smaller were, okay, so if you have a cup of salty water and you want to change the amount of salt in that water, you would just normally add freshwater, right.

Imagine the river being the same way. The river changes its salinity just through the flush and the ebb and the flow of the tide. Happens every day, the salinity moves up and down the river. Three factors change that: Rain falling out of the sky, rain washing off of the watershed and anything that's pulled out the river, any water that's withdrawn from the river. So we use those three pieces of information to make that box really small.

What we did is we took our period of record for rainfall and we used six years of a period of record. Three of those years are the driest years in 78 years that we've been collecting this data, three of the driest years, and consecutive years. There's four total dry years and two wet years.

So just because you're limiting your model scope to limited rainfall coming down, you're talking about a very dry, dry river, not getting a lot of rain coming in, so it can't push that heavy saltwater or dilute that saltwater. So we thought that was drawing the box really, really small.

The other thing we did is we used the 1995 land use information that the Water Management District had. They had land use information that was 1995 and then they had another projection which was 2030. We had a choice. The 2030 said you're going to get a lot more freshwater coming off of the land and into the river. That would have changed the results potentially of the deepening scenario. That would have changed the results that we would have seen.

So we decided to draw that box even smaller and use the 1995 runoff scenarios, which, again, are going to be limiting the amount of freshwater coming in and the speed of that freshwater coming in. So again, it's making the model even more sensitive.

And the last thing we did is we thought about the third component I mentioned, the third factor, the withdrawal rates. What we did is we took the Water Management District's recent water supply study and we took one of their longer-term scenarios, 155-million-gallons-per-day withdrawal, which is not where they are now with the minimum flows and levels rate that they've set. And it's not a rate that's been approved currently. It's a rate that may be approved in the future.

But we decided to, again, be very statistically conservative about our approach here, so I just wanted to share that with you. So the information that you're going to see up here tonight is information from a very sensitive model, where you see changes in the river that the model will reflect. Those are during fairly low probability times; times when it would be very dry, when we had a lot of water being withdrawn from the river to meet the freshwater needs of the populous, and also, with very limited runoff scenarios, okay.

So I hope that's clear for everybody. I hope that kind of sets up what you're going to be seeing.

And then lastly, you know, if you guys have some questions about this, we had a presentation on this data on Monday. It took three-and-a-half hours to go through it. We're not going to kill you guys with that tonight. It's way, way too technical.

But it had a lot of very good information in it. If you would like to see the more technical presentation, it's going to be on our website, I think it's going to be up there Monday, is that correct, guys, the presentation we had Monday, okay. So it should be up Monday. We have a specific website that's just for this particular project. If you want to see the full study, it's going to be up there for you.

So again, this is all for you. This is to let you see where we are now, to get your feedback on where we are. If you don't think that we've gone far enough or looked at an appropriate place, if you think we're missing something, this is your opportunity to tell us.

If you want to give us some verbal comments tonight, great. If you want to write them down or send them to us in e-mail, there are comment cards here, feel free to write any comment or question down, and we'll make sure that we get it answered.

And with that, I'm going to turn it over to Mr. Steve Schropp of Taylor Engineering -- oh, Jason first. We're going to get to Steve. First it's going to be Jason Harrah is the Project Manager on this project. He's going to give you kind of an introduction of where the study has been and then we're going to get into the technical science. Jason.

MR. HARRAH: Can everyone hear me okay without standing behind the microphone? Good. I'm not much for standing in front of microphones. I'd rather walk around a little bit if that's okay.

Again, my name is Jason Harrah. I'm the Project Manager from the Corps of Engineers.

I have the privilege to represent a highly technical team of folks not only from the Corps of Engineers but from Taylor Engineering, as well, who we hired due to their expertise in this modeling effort. They've been a tremendous help thus far. And we certainly look forward to the opportunity to continue to work with them to further this project along.

You'll hear from Dr. Schropp. Dr. Schropp, I'll give him the opportunity to introduce his people, as well.

But from the Corps' perspective, we've spent a lot of time on this presentation. I think you'll like it. And I do appreciate everyone on my team, especially taking the time to go through and create the slides that you'll see shortly.

Just some key folks, obviously we have a lot bigger team than is up on this PowerPoint: Again, I'm the Project Manager.

Steve Bratos, Steve, raise your hand. He's one of our senior engineers responsible for overseeing the modeling and working with Taylor Engineering directly.

Paul Stodola, Paul, raise your hand. Paul is one of our senior biologists for the Corps of Engineers. He works for Mr. Summa. Paul is also working directly with Taylor Engineering looking at some of these modeling results as they come out.

Mike Hollingsworth, Mike, raise your hand. Mike is another senior biologist on our team. Mike will be heavily engaged not only with this modeling effort, but, once we begin submitting for water quality permits with the Florida Department of Environmental Protection, Mike will be adamantly involved in that to assist and make sure everything goes smooth that way.

Taylor Engineering, we have Dr. Schropp will be doing presentation; Dr. Stites is also here; and Dr. Kabling is not here. So we got two out of three, two of the best, we'll leave it at that.

Study overview: Jacksonville Harbor is located in Duval County -- several people know that since most of us know the river or either live on it -- begins at the mouth of the St. Johns River where it empties into the Atlantic Ocean.

Essentially, Mr. Kaufman hit on several key points, the Harbor provides access to deep draft vessels trafficking using terminal facilities that are located in the city of Jacksonville, and there are several.

Study overview: Where exactly are we studying this project? Now, what I'm going to point out to you is where the channel will be deepened to provide access -- I'm getting moved out of the way. I'm covering people's eyes here, sorry about that.

Where exactly will we be deepening to allow access to these bigger ships? The channel will be deepened, as part of this study, from the mouth here at the Atlantic Ocean all the way in, segment one, all the way to River Mile 13. And that's essentially where we're sitting tonight.

There are other segments of the river, segment two goes all the way to Talleyrand. Segment three is in the west Blount Island channel.

But this study here is focused on deepening from here all the way to River

Mile 13, taking that channel from 40 feet to whatever the tentatively selected plan becomes, somewhere between 40 feet and 50 feet. We don't know that yet. We're expecting that in January of 2013.

Now, as everyone knows, there was some work done out here for Mayport, so there is some dredging that would not occur in here due to the Mayport deepening that's already occurred. But essentially, for study purposes, we say 0 to 13.

Study goals: Mr. Kaufman hit on several of these, provide transportation cost savings, speed is the currency today. Bigger vessels haul more cargo, get it there more efficiently.

Finally, we're going to have a lot of material that has to be placed somewhere. It will depend greatly if we're closer to a 40-foot project or a 50-foot project, that will tell us how much material we have. So we have to find a good place to store all this material.

Lastly, we want to accommodate the existing and the larger commercial ship traffic while minimizing impacts to environmental resources. The latest stories I hear from the Panama Canal, we're talking a June 2015 time frame for the Panama Canal to be opened. And those larger ships will then start coming in. And these ports want to be ready to receive those larger vessels.

Agency and public coordination efforts today: This is just highlighting a bold list of some things that we've done thus far. I won't go through all of them. We have had feasibility scoping meetings, 2007 we had a public scoping letter went out. We've had public workshops. The most recent, July 2012, we had initiated our monthly interagency and bimonthly teleconferences.

In May 2012, in this room, we had a public meeting on the ecological. That was our first meeting, to kind of introduce you to some of the stuff we'd be modeling.

The key one here is the July 2012. And I made the decision to not only monthly we meet with all the agencies, and we get pretty good feedback from that. We have several agencies, EPA, National Marine Fishery, National Park Service. Some agencies call in, voice their opinion, ask questions about the study.

Bimonthly, we have now provided the opportunity bimonthly for the public to call in. You're going to hear exactly where we're at in the study. You're going to have the opportunity at the end of those meetings to ask questions.

The report will come out, you'll see in the schedule here shortly where the report is going to come out. I would like to try to address all of your questions or get a lot of those questions addressed early on in the study process to hopefully alleviate some of your concerns when you see this report when it comes out on the website for your review. So anything I can do to alleviate those concerns or the team can do now, before the report hits the streets, is that much farther ahead we'll be.

Anticipated future interagency and public meetings: October 12 the ecological preliminary result meeting that you're going to hear Dr. Schropp present, that's what we're doing now. November we'll have agency mitigation and monitoring planning meetings. December we'll have ecological modeling draft report meeting. A key meeting that I'm sure a lot of people will have interest in is in February 2013, rock removal public meeting.

Why are we waiting all the way until February to have a rock removal meeting? Well, because our team will not have a tentatively selected plan. And what I mean by that is where are we going to go from 40 to 50 until January 13. So I don't want to paint a picture that all this blasting is going to occur, we're going to go all the way to 50 feet until I know what the plan is going to be. So that's why we're waiting until February of '13 to present that.

May of 2013, that's when all of this information we're doing, all the environmental, all the ecological, all the economical, all this stuff will be put into one document with the environmental impact statement and will be put out for public review. That's a key starting point. And we'll have a public meeting to kick that off.

October 13 that's when the report has been reviewed by the public, we've answered your questions, we've revised the documents, we've answered questions from numerous folks, independent engineering companies have the opportunity to review our report. We have all those answered, we've revised the document, and at that point we consider it final.

Again, as I mentioned earlier, the monthly interagency and bimonthly public teleconferences, we will continue those. We will let the public call in and we'll address your questions as needed.

As we also mentioned, I think Mr. Summa mentioned some of the reports are coming out onto the website. This is the website here. Obviously, it's kind of maybe hard to read. We can write it down for you guys. I think we have cards to hand out.

MS. ELLISON: The website is on the handout you received.

MR. HARRAH: The website is on the handout you received. Every time we have these bimonthly meetings, we also do detailed meeting minutes for those with a Q-and-A portion at the bottom. We post those to the website, as well. So if you forgot what a question was and want to go back and look, those will be put on the website so you can go look at those meeting minutes from every one of those meetings.

Study schedule: Some people know President Obama was in Jacksonville and did a release on major ports, the weekend weight initiative. I think everybody has probably heard that announcement. Jacksonville Port was one of the ones privileged enough to be part of his presentation.

These are the dates that were outlined in that White House directive that the teams, not only Corps of Engineers' team, but all federal agencies that are our partners are working to meet. April 2013 is when the draft feasibility report, with the environmental impact statement, that's what SEIS is, supplemental environment impact statement, will be completed.

About a month later in May is when the report will come out for the public to have the opportunity to review. October 13 is a few months later, we've addressed everyone's concerns, we've revised the report, and it's considered final.

April 2014 is when the Chief of Engineers' report is complete. That's when everybody has bought off on it, we've done our multiple layers of government review. We've dotted our Is, crossed our Ts. Everybody agrees that the report we've completed is feasible and the best bang for the buck for the taxpayers of America.

July of 2014 the Assistant Secretary of the Army, ASA, will send a letter to Congress and the record of decision will be signed for the NEPA process. At that point, when will we advertise the contract and what will we construct, I don't know; that's for Congress to decide.

Our job is to get the report completed, to send it off to Congress to allow them to make that opportunity and decide when we will receive authorization and funding to move forward.

One thing I want to hit on, there has been -- several people asked the question, how can you take these dates, you may notice in other presentations or something you've seen that essentially what we have done is shift the entire project schedule about 14 months to the left, okay. That was part of President Obama's initiative.

How can we do that and not skip and hop and dance away from all these important things that need to be done? Essentially, we are going to do everything that we promised to do when this study started. We're going to do every environmental check, every economical check, every check that needs to be done for the report is still going to be done.

Where we're buying time is all of these reviews that occur at our division level in Atlanta, our headquarters offices, any independent external peer reviews from an outside engineering agency looking in, all these reviews including the public review now start on the same day and they go out. So we save an enormous amount of time not doing these reviews back to back. That's part of our civil works transformation that we're working to expedite the study review process. So we are not cutting anything out environmentally from our study.

And that's all I have. I'll turn it over to Dr. Schropp for presentation.

MR. SCHROPP: I'll do the same thing. Can the folks in the back hear me?

MS. ELLISON: Please use the microphone, or the one on the stand.

MR. SCHROPP: Can everybody hear me now? Okay. Good.

Thank you, Jason.

The first thing I want to do this afternoon, or this evening, is make one more introduction that we have another member of our team here tonight. Xiaohai Liu, if you could raise your hand for a minute. Xiaohai has been living, breathing models for several months now, so he's an important member of our team.

The other thing I want to say is that

Eric Bush mentioned that we want to wear you out with information. I'm going to try not to wear you out tonight, but hopefully give you enough information to where you start to see some of the results that are coming out of the ecological models, give you some idea of what the capabilities of these models are.

Couple introductory remarks, this may look similar to what you saw at the first meeting, but what is the purpose of this ecological modeling study? It's part of the overall environmental assessment for the project, which goes to support the Corps' requirements under the National Environmental Policy Act.

For this part of the study, Jason mentioned that the project, the deepening project, occurs right up here during the first 13 miles or so of the river. Our ecological study, because the effects of deepening, the effects of salinity intrusion that Eric Summa talked about that extend further upstream, the geographic scope of our ecological modeling studies extends from the mouth all the way down to Lake George, so roughly 110 miles of river.

And as Eric mentioned earlier, that is because the deeper channel could cause additional title flow, or title flux, of saltwater in and out of the river, which could affect salinities on upstream in the river.

Why do we care about these potential changes in salinity? Again, Eric kind of summarized this for us, but we do know that potential effects of salinity increases in the river are changes in the wetland communities, the swamps and marshes that lie in parts of the riverbank that occur in some of the tributaries to the river.

Salinity stress could cause changes in the eelgrass, the submerged aquatic vegetation habitat in the lower part of the river, could cause some change in the suitability of habitat, salinity habitat at least, for the eelgrass, which is an important component for many other plants and animals in the river.

We could see shifts in optimal fish

salinity ranges, that could cause fishes to move to different parts of the river or, in some cases, could even force the fishes into areas in which habitat is less suitable. The salinity may be good, but the habitat might be less suitable. So we'll look at those kind of shifts.

Loss of low salinity habitat for benthic macroinvertebrates, shrimp, clams, crabs, which everybody is familiar with, as well as things that aren't so obvious like worms and smaller crustaceans that live in the sediments, could lose a portion of their low salinity habitat. We could see shifts in those communities upstream.

And not so much a salinity effect, but changes in water circulation could also cause some changes in plankton blooms. So we're looking at potential changes related to water movement in the river and potential effects on plankton blooms.

The basis for these tools, the ecological modeling tools, is found in the St. Johns River Water Management District's water supply impact study. A lot of you are familiar with that study. It provides a set of tools that allows us to look at each of these ecological communities. And following the procedures, following the strategy, the approach, that the Water Management District used, we have a series of both numerical models to simulate physical conditions, as well as ecological models that will help simulate changes in these five key communities, five key components.

I'll just briefly run through the stepwise process we go through to apply these models. We start off with the water circulation in the salinity model. We use the term EFDC, environmental fluid dynamics code model, we just say EFDC. That's a numerical model that simulates changes in circulation, simulates changes in salinity. And we can plug in the starting condition from the river, as well as different alternative channel depths and determine what changes in the river salinity and water circulation occur.

We take the results of that model and use various forms of the salinity data, various forms of the water circulation, or really water residence time, water age data as information to feed the different ecological models. And each of the ecological models functions a bit differently, it works a bit differently. Some of them, for example, plankton is based on regression equations. Others, wetland vegetation, is based on salinities that define where wetland communities can occur, various measures of impact or measures of effect on these different communities that we can determine based on the results of the EFDC model.

Lastly, we are spending some time working on another numerical model, or set of numerical models, a water quality set, which allows us to simulate dissolved oxygen and chlorophyl A in the river. These model tools are a somewhat different version, slightly different version, of EFDC model based on, again, some Water Management District work looking at total maximum daily loads and a model called the CE-QUAL ICM model, which does the actual simulation of the dissolved oxygen chlorophyl A.

So what I want to do for the next few minutes is run through each of those models and tell you a little bit about what we're doing with them and then show you some of the first results that are coming out of them. The EFDC model covered a pretty large area. I'm not sure how well you can see that. But the EFDC model is set up with almost 5,000 cells. Each one of these little squares is a cell, or rectangle. In six vertical layers it is a three-dimensional model. It measures things from both the horizontal, as well as vertical direction.

Feeding that model are information about ocean water levels, rainfall, wind, lateral inflows from tributaries from point source discharges. As Eric Summa mentioned, we used the 1995 land use data from the Water Management District to develop some of the inflows, salinity out here at the ocean boundary. So a lot of data go into the EFDC model to simulate the conditions in the river.

This slide illustrates another point that Eric made; and that is, that the period that we chose to simulate, period from 1996 to 2001, is a period that contains three of the most dry years to occur consecutively during the 70-some-odd period of record for the river. The vertical bars on the chart represent the flow in the river. In this case, we've just shown from 1993 to 2011.

The Water Management District modeled this entire period from 1996 to 2005. We've chosen a subset of that because we feel like it does give us a more, we use the term, conservative; we're more likely to overestimate impacts than underestimate impacts. And we don't want to underestimate.

I'm going to try to show you a brief illustration of the results that we get from the EFDC model. If my animation works, what we'll see are salinities, the red colors being ocean salinities, the blue color being freshwater. And we have a graded scale in between the two.

What this figure will represent is

starting at the mouth of the river and going upstream. Unfortunately, these are feet, but that's roughly 5 miles, 10 miles, 15. You see some points, landmarks, mentioned here, river mouth, Dames Point Bridge is roughly here, Acosta Bridge here at the deepest spot, Buckman, Shands, river depths and distance upstream.

What you'll see the model doing is you're seeing the highly saline water come in from the ocean. In this case, more water, more saline water, moving in a little bit along the bottom. And right now we're in January of 2001, this entire animation will run for about a year, and we'll speed through it.

But you see, as time goes by, as you get into the drier part of the year, we see greater salt content moving up into the river. And over time you'll see that this salt wedge will extend roughly up to the Acosta Bridge with the most saline water.

We'll advance it if we can. It takes a long time to run through this thing, but as you get on later into the year, now I'm look ing at roughly September, which is a period when we typically have more rainfall, we can see the effects of more rainfall, the more inflow to the river. The freshwater has moved farther downstream, pushing the saltwater out farther towards the mouth of the river.

So we have many simulations that cover different conditions. And what we do then is extract the salinity data from this model. In some cases, we use average data for the entire simulation period. Other cases we may take 30-day or 90-day average chunks. It depends on the particular ecological model and what form of the salinity function drives that model.

We can certainly look at those kind of figures all night long, but I don't think we need to do that. What we're going to do now is look at some of the ecological models. I'm going to start with wetland vegetation. We covered this during the first meeting, but just to refresh folks' memory who -- or to introduce you to it if you didn't see it the first time, what we're evaluating with wetlands are changes in the marshes, changes in the swamps, potential changes, due to salinity changes, mainly salinity that might move farther upstream, higher salinity farther upstream.

The Water Management District's model for wetlands is based on defining what are called salinity breakpoints, salinity values in the river that determine transitions between, let's say, a salt marsh community and a freshwater title community on up into various forms of freshwater swamps.

So the District defined four of these salinity breakpoints based on work it did in the Ortega River and applied these into the salinity results it got in the main stem of the river. We applied the same approach using the same salinity breakpoints that the District did.

I'm going to show you quickly a series of three or four slides here. And what I'd like for you to look at is the location of these lines. These are the salinity breakpoint lines that are defined by the District. In this case, the red line is a

5.77-parts-per-thousand salinity, going up to the green line of 3.2. These are the salinities that the District felt like define shifts in wetland communities.

The other thing I need to point out at this point is that you'll see a notation here that this is the baseline 40-foot condition. That means that the results of this simulation are intended to illustrate what conditions are in the river today, the existing conditions with a couple of exceptions.

In addition to the depths of the river as they occur today, we've also included in the existing, or in the baseline condition, the changes in the Mayport Harbor and also the changes that are planned for the Mile Point area. So any time you see baseline 40 foot, that means current channel with the addition of the Mayport and the Mile Point improvements. So these are the locations of these particular breakpoints under baseline conditions.

Turned on a layer now that shows the position of those breakpoints with a 46-foot channel in the simulation. So you see that we have a bit of a shift upstream, all of the lines -- and sorry you can't see that one very well. But the model is predicting shifts, and these are roughly -- each one of these are a mile apart. So we're looking at shifts of roughly anywhere from a quarter to a half a mile, perhaps, in salinity zones, salinity breakpoints.

I've turned on another layer that represents a 50-foot channel. Again, it's a little hard to see, but the difference between the 50-foot and the 46-foot channel are not great in these simulations. So we have seen a shift, at least with the first increase in depth, up to 46. We see a shift but not quite as much a shift in going to 50 feet.

I am showing also in this figure light blue areas are the location of wetlands within the river basin in this area. And one of the reasons I'm showing this particular segment of the river, which runs roughly from the Fuller Warren Bridge, Buckman Bridge down to Julington Creek and

Doctors Lake is because this is the segment of the river in which we see shifts -- or where we see the breakpoints that the Water Management District defined and where we're seeing shifts occur in those breakpoints.

Eric also mentioned that we're looking at a condition that we call 50-year future condition, the 50-year horizon, in which we are looking at the effects of sea level rise and the effects of water withdrawal from the Water Management District's plans. The conditions, the sea level rise we factored in as .39, four-tenths of a foot sea level rise. And we're looking at 155-million-gallon-per-day water withdrawal.

This very light line here, very thin line, is the original baseline condition that we looked at, today's condition. You see the thin line there; it's today's baseline condition.

Under the 50-year -- or with the 50-year horizon scenario, no channel added, same 40-foot channel, we see that the baseline has shifted up the river really about as much or more than it did with the nearpy (ph) channel alternatives that we looked at under the current condition.

I took off the old original baseline. I'm just looking at the 50-year baseline with a 50-foot channel thrown in. So at the further time horizon, we see the baseline in a shift upstream in the potential transition from wetland communities with the 50-foot channel, 46 foot would fall somewhere in between. You see similar shifts at each of the salinity breakpoints.

MR. SUMMA: Ortega River, as well.

MR. SCHROPP: You can barely see them, but we've also got some different things in the Ortega River, as well.

Just to give you an idea of what we're looking at for the wetlands is how the model is helping us look at wetland communities. And what we'll be looking at eventually is where do these shifts occur, what types of wetlands occur along the area of the river affected by these shifts and do we get into tributary systems anywhere that would be affected by shifts in salinity, as well. So that's one of our next steps we're going to do to use this data to try to look at impacts.

I want to move on now to submerged aquatic vegetation, eelgrass. Our evaluation method is a little bit different here. It's still based on salinity, but it's based on salinity stress. And the Water Management District looked at several different levels of salinity stress. It looked at stress related to the seven-day average salinity numbers. It looked at stress related to the 30-day average salinity numbers. It looked at stress related to the 90-day average salinity numbers.

We chose to use the 90-day average, because in looking through the data, the 90-day average gave us the greatest number of days that put submerged aquatic vegetation under stress. It's, again, trying to look at a situation that would cause us, if anything, to over-predict rather than under-predict impacts. We think it is a conservative approach.

We'll look at two things. We'll look at

the individual areas where potential sea grass habitat changes from one stress condition to another. And we'll also look at total area affected, or total area that falls under one of the four stress conditions.

Our stress condition assessment is based on this nice, colorful summary of the Water Management District's work. Salinity is over here, one-day salinity, 7-day average, 30-day average, 90-day average.

Ninety-day average is what we are looking at against four different levels of stress, either no effect, low stress, moderate stress or extreme stress. So again, we chose that because we think it was the most conservative approach.

The figure here shows our baseline condition, 40-foot condition, today. It shows the frequency, the amount of time, percentage of time that one of our model cells is under either moderate or extreme stress during the entire simulation period.

Our simulation period is six years. So roughly 2,100 days, give or take, 2,000 days, with the 90-day average. So a one-percent time under stress equates to about 22 days over that six-year period.

Again, we're looking at the area from the Fuller Warren Bridge, Buckman Bridge down to Doctors Lake and Julington Creek, because this is the area where we see the most change that would affect these communities.

We're also looking only at the edge cells in our model. Each of these colored areas is one of our modeled grid cells. The model contained cells throughout the main stem of the river. The model results are generated, of course, using all that for purposes of the SAV evaluation. We're only looking at the results from these cells along the edge because that's where the SAV, the eelgrass habitat, resides. You don't have eelgrass habitat out in the main part, the deepest part of the river.

So what this figure shows is that, first of all, below roughly not too far south of the Buckman Bridge, this light color is zero stress. So during our entire simulation period, none of these cells in this color ever suffered any salinity stress according to our model results.

If you look at the other end, up here, this rusty reddish color is actually the 41 to 45 percent stress frequency, which means that roughly 40 to 45 percent of the time there were a couple cells here near the Fuller Warren Bridge that the submerged aquatic vegetation was under moderate or severe stress. Colors grayed roughly, purplish, is roughly up to about 10 percent. The blue colors cover about 11 to 20 percent. So you can gauge by the colors the rough frequency that any of these segments of the river were under moderate, extreme stress for Vallisneria.

I'm going to turn on the next layer, which I believe is going to be the 46-foot depth. And what I would like for you to notice is up in this area, you'll see a few changes, you'll see some change down in here by the different colors. We have a few more cells under increased stress here. Some of the sort of more moderate or less frequent stress has actually shifted upstream a bit. These cells down here still remain under a no-stress condition all the time.

And lastly, I'll look at the 50 foot. Again, all these are relative to today's baseline. Fifty-foot channel depth added a few more cells under stress here, pushed a few more in this area into a higher stress condition, but these down here still remain in the no-stress condition.

So we've got these types of figures for also our 50-year horizon, which I haven't shown here. And we will be taking all of -- we'll be taking the acreage occupied by each of these cells and the degree of stress and the change in stress conditions, stress frequency, to perform some calculations of potential impact and the amount of impact in terms of acres.

Move on to anther topic, the benthic macroinvertebrates. In this case, we're looking at habitat area defined by salinity ranges. We'll look at changes in acreage of salinities, salinity ranges suitable for different benthic macroinvertebrates. We'll also look at changes in the duration of the level of higher salinity events through something called partial duration frequency analysis. We'll also look at some regression equations the District has come up with to look at benthic macroinvertebrate abundance based on salinities.

I'm not sure how well you can see this, but showing the river from the mouth down roughly to Green Cove Springs and picking up on this side from Green Cove Springs down to Palatka, what I'm trying to show with this figure and the next couple of figures is how salinity zones in the river may shift under different project alternatives.

Starting off, again, with the 40-foot baseline condition, we have high salinities greater than 30 parts per thousand up in the first segment of the river that runs east to west basically. These lines here, you see them better here, define the boundaries between salinity zones 24 to 30, 18 to 24 and so forth down the river, until south of Green Cove, we finally get into zones that are less than .5 parts per thousand --

MR. STITES: Steve, these are maximum salinities for the year.

MR. SCHROPP: Right. This represents the maximum 30-day average for the year 1997. And the reason we picked that to show tonight is because of the six model years that we have, 1997 actually represents about the average. If we were to take all of them and average together, this would be roughly that location.

If I turn on the 46-foot -- where did it go -- 46-foot depth, the purple line, it's difficult to see up here, you get a little bit of a shift. As you move down here, you get some shift upstream in each of the salinity zones. Not a whole lot actually, these changes aren't that much in terms of distance.

Turned on the 50-foot relative to baseline, and that one I'm not sure you can see at all, but in actuality, that 50-foot line is almost laid over the top of the 46-foot line, similar to what we saw with the wetland vegetation. We're not seeing that much of an increase or that much of a shift in salinity zones as you go from 46 to 50 feet.

The next one I threw in is the 50-year baseline, 50-year no-project water withdrawal sea level rise. And in some cases, in this part of the river, just south of Fuller Warren down toward the Buckman, the 50-year no-project condition is about the same as the 50-foot project condition relative to today's baseline.

Other areas, as you get farther south, we do see that the 50-year horizon baseline pushes farther down -- or pushes farther up the river than either the 46 or the 50-foot alternative relative to today's condition.

And finally, I'll throw in the most extreme condition we modeled, which is 50 years out and the 50-foot project depth. And we see, again, somewhat of a push upstream.

Now, we have not quantified these shifts yet in terms of acreage. We're still reviewing the contours and reviewing the areas affected. But ultimately, we'll be able to calculate the difference in acreage, let's say, between this area under the baseline condition and that same area under either of the projects, 46, 50 foot, whichever.

What we see right now, based on lots and lots of these pictures and looking at the partial duration results, is that we're seeing relatively small changes in the maximum river bottom salinities. And I should back up and say all these salinities that I talked about with the benthic macroinvertebrates are based on the bottom cell of the model, they're bottom salinities, because that's where these creatures live.

We note that the elevated salinities occur, you see some of the biggest changes, probably spatially at least, along the Fuller Warren Bridge down to the Shands Bridge. All these models are really showing, it seems like, that we see the greatest effect of salinity changes in that area beginning roughly south of the Fuller Warren Bridge and on down to Green Cove Springs or so.

Interesting that the salinity zones really seem to be affected less by the deepening than they do just the year-to-year variability due to changes in flow, changes in rainfall. I didn't show annual variability, but if we looked at that, we would see a quite large shift in the salinity zones on an annual basis just in and among river flow.

Also, as we saw in the figure, when you look at the 50-year-out condition sea level rise, water withdrawal, we see some shifts upstream that exceed the effects of the -- even 50-foot channel under today's condition.

UNKNOWN SPEAKER: Question: What's that sea level rise you were considering again?

MR. SCHROPP: .4, four-tenths of a foot, actually .39, but call it four-tenths.

Next to the last one of the ecological models is the fish model. It's actually somewhat similar to the benthic macroinvertebrates, in that we're looking at salinity zones that are optimal for fish. I'm not going to show any figures for this one because the figures would look very much like the one I just went through for the benthic macroinvertebrates. But we do look at changes in the area of -- (inaudible) -- salinity category.

We also will consider changes in the SAV cover going back to our SAV maps I showed you earlier, because the SAV beds provide some important habitat for juvenile fishes.

And we'll also look at changes that may occur more towards the mouth than what I've shown in these figures where we have some extensive title marsh that we could see some shifts in salinity that could affect waters up in the marshes that really aren't covered well at all or not covered at all by our model.

And based on looking at the salinity changes related to fish, these results are actually -- or interpretation is actually very similar, again, to what we saw from the benthic macroinvertebrates. We do see some minor shifts upstream and in salinity zones.

Fish, though, in contrast to the benthic macroinvertebrates, the fish can move with water, unless they're in the juvenile stages and are planktonic or just aren't swimming well enough to overcome the water currents, but the fish can move upstream or downstream as the salinity shifts. What we are concerned about is just that shift upstream or downstream to take them out of what may be a preferred physical habitat. That's something we'll have to look at.

Similar conclusions related to deepening and annual year-to-year changes and the relative effects of those: We don't think that fish habitat in the main stem of the river, in the main stem, would be seriously affected, but we do realize that there is potential, as I mentioned, for effects on fish in the tributaries, and that's something that we need to look at further.

Last of the five models is the plankton model. If you were here at the first presentation we did several months ago, you might recognize this slide; it's the same one. We're looking at several potential metrics that tell us something about plankton blooms in the river. These include the marine algal blooms measured by the volume of marine algae; micro bloating (ph) nitrogen fixation by blue-green algae. Freshwater bloom magnitude is measured by chlorophyl A or dissolved oxygen. Freshwater bloom duration, how many days, what's the length of a bloom, how long do they persist.

And the valuation method that was developed by the Water Management District was regression models based on a water age factor that's delivered to us from the EFDC model.

Preliminary results, I thought this was going to be the easiest model, plug in our regressions and go. But unfortunately, our results so far are inconclusive. We've run the models, we're seeing some trends one way or another in the regression results that we're just not comfortable with yet. So we're looking at the water age data, we're looking at the regression equations and we're trying to tease out what's going on there. But at this point I'm just going to say the results are inconclusive and that we are continuing to evaluate these data and see what we can do with them.

Lastly, a little bit different topic, but I mentioned at the very beginning that we're doing a somewhat independent water quality evaluation, as well, based on another set of models, the EFDC and the CE-QUAL ICM model. Chlorophyl A and dissolved oxygen, the idea was that we could use these as somewhat of an independent check compared back to our plankton model results.

This is another, or this is couple model systems, depends on an initial running of the EFDC model, a little bit different grid than we had for the ecological model EFDC grid. The reason being that this is a grid, or a model system setup by the Water Management District for the purposes of the total maximum daily load calculations. It's a different set up for a different function.

Roughly 2,700 model cells, again, 6 vertical layers, it's another 3-D model, what we're using it for is to output water service elevation velocities in salinity, which feed then into the CE-QUAL water quality model.

You've got these two calibrated CE-QUAL models, calibrated, and we've started production runs. And those are still underway, so I don't have anything to report yet on those.

So I said I wasn't going to wear you out, so I'm going to wrap it up. Try to summarize what we've run through this evening. Again, I want to emphasize that these are preliminary results. We're still working with them on a daily basis. We're still generating results from the models. So what you see here tonight is the somewhat raw and unedited version of what the models are showing us, but I think you should have hopefully a good example or a good feel for what these models can do.

Tentatively, we feel like the circulation model, the EFDC model, is effectively simulating the water movement. It's getting the water elevations, it's getting the salinities quite effectively, we think.

The ecological models are indicating effects with the different study alternatives. We've not quantified those effects yet. We will be doing that. And those effects occur also with what we call the no-action alternative or basically the 50-year future condition with no project. Even with no project, if the changes in the sea level and changes in the watershed occur as predicted by the Water Management District, we'll still see effects on these ecological communities similar to what we might see due to deepening.

That's not to say deepening doesn't have an impact. The models show that it will have some impact.

Preliminary effects, I would say it looks like we're going to see the greatest effect, the greatest measurable, quantifiable effect probably on the SAV communities and the wetland communities.

I already mentioned sea level rise. That could be a pretty significant impact in the river beyond the scope of this project.

As I said, we're still working. We have

additional simulations underway. Additional data interpretation is ongoing. And I forget exactly what the schedule said, but the next time we have a public meeting, we'll be giving you more definitive results. And that is all I have tonight and I will turn it back over to Eric.

MR. SUMMA: All right. So that's the presentation we wanted to give you. We want to give you guys an opportunity now to have some verbal Q and A, if you'd like. If there is anything up here that you saw that you need some clarification on, that's what we're here to discuss. Feel free to come up and speak into the microphone here, please.

We have Amanda, the Court Reporter, here who is actually taking down everybody's comments. So please state your name, if you could, and just give us your comment. And we're welcome to hear any questions or concerns or comments you might have.

MS. RINAMAN: Hello. I'm Lisa Rinaman, St. Johns Riverkeeper. Thank you for this presentation tonight and the opportunity to speak. I have four questions, two clarification and one just from a timing perspective.

On the presentation you showed, it was a simulation they were showing salinity. And was that just from a 40-foot depth over a course of the seasons and time or does that show for different depths? I wasn't clear during the presentation.

MR. SCHROPP: The one we showed, the simulation results that we showed, were for the 40-foot depth, baseline condition for the year 2001. So --

MS. RINAMAN: Just over the course of a year?

MR. SCHROPP: That was just a one year, yeah. And again, that was just an example of what we're getting out of it, but it does let you see, I think pretty clearly, the three-dimensional effect and the movement upstream and downstream.

MS. RINAMAN: It did show the different depths, it showed the 46 and 48 and 50 --

MR. SCHROPP: I'm sorry, I mean the six vertical layers in the model. It showed the salt wedge kind of coming up the bottom part of the river and the fresher water rolling over the top.

MS. RINAMAN: At the different depths? I wasn't clear when you were running it -- it was just over the current level?

MR. SCHROPP: At the current depth condition, yes.

MS. RINAMAN: Have you all ran that model for the proposed depths from 46 to 50?

MR. SCHROPP: Yes. And the results of all the ecological models were based on the output of the EFDC model for those different project depth simulations. So the animation that we showed was just to illustrate what we get out of that model. And it was just at the one depth, but all the ecological model simulations that we talked about were run with the baseline, 46 foot, 50 foot, the 50 year in the future, I do have a 44 foot that we haven't shown tonight, 50 years in the future baseline, 50 plus 50 feet, 50 plus 46 feet, and I think we have 50 plus 44 done also.

MS. RINAMAN: And then all the base ones, I think you answered my second question, all the 40-year baselines, that was run off the 2001 number, the 2001 year?

MR. SCHROPP: No. All the simulations, the results of all the ecological models, are based on the full extent of the simulation period, 1995 through -- 1996 through 2001, six years. I just clipped out one year for that animation because it was way too long.

MS. RINAMAN: It would take the whole night. So like, for example, on the submerged aquatic vegetation model, you said this was the baseline, that was the -- took the baseline from all those six years, I think it was.

MR. SCHROPP: The figure on the submerged aquatic vegetation used the results from the entire six-year period. And what it was doing was showing how many -- what's the percentage of time a particular cell was under stress during that secure period. In other words, if it was 2,000 days and it was under stress for 200 days, it was tagged with a 10, 10 percent, I think I got that right. So that's what that showed.

MS. RINAMAN: I just wanted to clarify it was over the entire six-year snapshot and not just one select year out of that.

MR. SCHROPP: No. That was the entire period.

MS. RINAMAN: I think my other two questions are for you. I know we talked about some of us who would like to get in more detail behind the presentation and have a chance for feedback and conversation. I just wanted to make sure that would be an opportunity to us prior to the next public meeting.

MR. SUMMA: Yes. So we're going to have the entire in-depth presentation available for you on Monday on the website, give you guys a chance to take a look at it. And then the team, we haven't talked about it extensively, but if necessary, we're going to have our bimonthly calls where we can go over any part of the presentation you would like; or if we need to go into it in more detail, have a specific meeting just about the more in-depth presentation, we can do that, too.

MS. RINAMAN: Very good, appreciate that opportunity, as well.

And lastly, I know there is a lot of concurrent -- just to work on your fast tracking, there is a lot of concurrent reviews and different agencies. How will the public be alerted and be able to feedback on changes on issues that may come up from the different agencies' review during that real tight period? I think it begins in December and the first of the year.

MR. SUMMA: Jason, do you want to --

MR. HARRAH: Essentially, what we'll do is the report will come out in May. And just so you know, just to clarify, all the reviews that occur, all start in May. The public review starts in May; our division office in Atlanta review starts in May; our D.C. level starts in May; we have a legal review; and the independent external peer review, which is a completely separate party from the Corps. That takes everything and reviews it for their level.

And then Samantha is the planning technical lead as far as taking all the comments, making sure the team gets all the comments answered, revising the documents.

MS. BORER: Right. And I just want to add that we will have, at the time of release of the draft reports, we'll set up a public meeting. So we can discuss and go over if there are issues that have come up.

MR. HARRAH: We'll keep you guys 100 percent apprised of the documents that you get in May versus the documents completed in October. We'll have all the things that's been modified in the document clearly visible. We can speak to those in the public meetings as we have them and the bimonthly meetings just to let everyone know the changes that have been made based on the various agencies' input.

MS. RINAMAN: Very good, thank you.

MR. SUMMA: Really appreciate the Riverkeeper being here. As you guys know, we're out here trying to give you our best information we have. Ms. Rinaman is out there in the public all the time, and so really appreciate the engagement and the involvement of the Riverkeeper. It's been extensive and really appreciated because that's helping us do the same exact thing, be collaborative, making sure we're getting all the information out, making sure we have the right information. So the help of the Riverkeeper has been fabulous. Thank you so much.

MS. BARNES: I just had a question, if I could, please, a clarification. Again, on the salinity on the wetland vegetation model, I was trying to find out, when you were doing your modeling, did you take into account the sea level rise on your 50-year horizon, both in that model and on the maximum salinity per year model, because you were saying the different depths, but not -- you weren't taking into account the sea level rise.

MR. SCHROPP: In all of the ecological models that we've done, we do include conditions with sea level rise. So all that I showed, if I didn't say it loud enough, sorry, but it did include the different project depths and it did include looking at sea level rise, as well; although, actually, I think, with the SAVs, I didn't have a figure for the sea level rise.

MS. BARNES: Bonnie Barnes, North Florida Land Trust, thank you.

MR. LARSON: My name is Tom Larson. I'm with the Sierra Club. Couple questions: Is your modeling concept where you see really a straight-line relationship between the 40 and 44, 46, 50, or do you see some kind of a curve relationship in some of the shifts for the different models on -- I observe, say, the 46 didn't look a lot different than the 50, but the 46 looked pretty different from the 40. Is there a curve that you're seeing in the data generally?

MR. SCHROPP: The only thing we have to look at -- first of all, you're right. It does look like it's not a linear relationship, but what we have to look at are only the three, four depths we have right now. We may do some runs just to see what happens between that 40 and 46-foot, 44-foot depth. But at the moment, all we can say is that at this point, this point and this point, that's what it looks like, and there is no defined relationship for that. And if you look at different parts of the river and different salinity ranges, you will see somewhat different relationships.

MR. LARSON: Is that possibly a consequence of the geology of the bottom of the river being evident in the simulation where you had the motion, it kind of steeps up in several miles, like 20, 25 miles in and then it kind of is a 12-foot depth or so. I know I don't have the numbers exact. But that's got an effect, I would imagine, as you move from one model's environment to another, as well; right?

MR. SCHROPP: The changes in depth that we're simulating occur only in the first 13 miles of the river.

MR. LARSON: I understand that.

MR. SCHROPP: So how those changes may affect the movement of water, that's what the model simulating how that affects going over this, if you want to call it, a seal that you see there near the Acosta Bridge.

I can't really answer exactly what the model is doing for that, but we know that it's simulating water coming over. And given the different amounts of title flow and circulation coming in, perhaps there is some different behaviors. Maybe we're seeing a little bit different behaviors with different depths, I really can't tell you for sure right now what that might be.

MR. LARSON: My last question relates to sea level rise. Four-tenths of a foot, you might say, one might say, a modest presumption. Some others have been talking about much higher amounts, whether it's 50 years or 100 years, and maybe 10 times that or more.

MR. SCHROPP: Steve Bratos with the Corps can answer that one.

MR. BRATOS: The Corps of Engineers has guidance that we're required to follow. And what we have, that four-tenths of a foot is our 50-year historic rate projection, 50 years in the future. We have two other curves that are higher rates and go something like in 50 years, it would be one foot. And the highest curve goes to something like two feet in 50 years. Our guides right now is to look at the historic rate.

MR. LARSON: The guidance is policy decision; right?

MR. BRATOS: The Corps of Engineers' policy, yes.

MR. LARSON: Understood. But what if we actually think about the prospect of actually two feet in 50 years, wouldn't that change what the models look like for the 50-year scenario?

MR. BRATOS: It would certainly change where the salinity appears in the river; it would go farther upstream. And what I was going to say is that, while we're looking for that particular depth that falls out economically, cost and benefit-wise, we're looking at the historic rate. When we get to that project depth that we identify based on cost and benefit, we will look at those other two curves to see if that causes some sort of impact that maybe we should redesign our project.

MR. LARSON: So we'll have more opportunity to consider that with you in the future?

MR. BRATOS: Yes. And the Corps' policy is really directed toward trying to look at an adaptive way of dealing with sea level rise, since it's not a completely certain event in the future. So we try to look at -- you know, we try to predict what we think will happen. We design projects for that and then monitor. And if things change, then we adapt that project or our policies to figure out what works better.

MR. LARSON: Okay. Thank you.

MR. SUMMA: Another question back there.

DR. STALKER: Yeah. My name is Jeremy Stalker, I'm an Assistant Professor at Jacksonville University. I have a few questions on the model. I really love models and nuts and bolts.

What kind of verification are you using for the model? So what kind of surveys, subaquatic surveys? Are you doing multilevel salinity analysis? What kind of data are you actually using to verify the model results?

MR. BRATOS: Which models?

DR. STALKER: Well, I mean, multiple models. So there's the subaquatic vegetation model. Where are the subaquatic vegetation patches? Every inch of river doesn't have subaquatic vegetation. So is there some way to verify how those impacts will happen?

And then for the floor models, especially the three-dimensional and cross-sectional floor models, the salinity movement in the river, are there multilevel salinity surveys going on that would verify the results of the -- (inaudible)?

MR. SCHROPP: We're using data for, first of all, the EFDC model, the salinity model, circulation model, we're using input data provided by the Water Management District. The Water Management District model, using a very similar model, a ten-year period, we're modeling a six-year subset of that period. And the inflows, the salinity, the day that we used to calibrate and verify the model all come from the Water

Management District.

The bathymetry in the model is, and correct me if I'm wrong, Steve, a compilation of most recent bathymetry, as well as adjustments for the mile point and Mayport projects.

MR. BRATOS: Correct.

DR. STALKER: If we had a 40-foot dredge since 2010, if that's what I heard, Christmas 2010, so we've only really had a 40-foot environment for a year and a half maybe, so how are we verifying these more increasing depths with current data, I guess?

MR. BRATOS: I'll try to give you some context. The 2010 time frame is when we dredged probably about a 4-mile section and brought it to 40 feet. The other 15 miles were already at 40 feet and have been for a number of years. While there is salinity data being collected, the top, bottom and mid depths, in at least two or three locations along the river, Dames Point, right around here, some data at the Main Street Bridge downtown, Buckman Bridge, Shands Bridge, it's not continuous in all those places. But we have a fairly long record of at least 10 years of data, and that goes up to the present day in a few locations.

So we have been able to confirm that, for instance, our baseline run, while we don't actually simulate the 2009 conditions exactly a comparable year of river flow, gives us the same level of salinity at some of these locations.

DR. STALKER: So there are some tolerance within the modeling, some acceptable error?

MR. BRATOS: We didn't show it today, but there is an extensive calibration, validation set of documentations and statistics and error --

MR. SUMMA: You'll see that Monday if you want to get deep into it.

DR. STALKER: I'm guessing this is all in a much longer, boring talk. I'm just asking because these are the things that pop up in my head when I look at models.

My second question -- I guess I can

answer some of those questions on my own -- what about groundwater, are we looking at any saltwater intrusion changes? Are we looking at any groundwater inputs into the river? We're looking at lateral flow, is it all just surface lateral flow and direct rainfall input? Are we looking at springwater or bottom influences of water going into the river, so sources of water?

MR. BRATOS: All the conditions that we're using, in terms of any freshwater flow, are based on Water Management's ten years of simulations. So they've developed, with their own hydrology model, all of those inputs. And going up to the more upstream locations, really upstream of our model domain, there are significant groundwater inputs. And those are incorporated in the model, not only the volumes of flow, but also what's the exact salinity of those flows.

DR. STALKER: So for this section of the river, we're considering groundwater is just not --

MR. BRATOS: To my knowledge, there is

no groundwater input in the lower St. Johns River. There might be some that I'm not recalling, but we are looking at -- the other way of looking at it in that is we do have, in terms of drinking water wells, we're looking at what the channel depth dredging could do to impact water wells. So we're actually looking at how the salinity may infiltrate --

DR. STALKER: Okay. So you are looking at some cell water intrusion --

MR. BRATOS: Right. But to my knowledge, there is not any significant groundwater input at this location.

MR. SCHROPP: We do see in the model, at the far upstream end of our model, we see the -- some of -- they're small, but we do see some salinity down there that aren't coming from lower river, but they're coming from those inflows upstream. So yeah, we do see that in the model. And the data that we're using from the --

DR. STALKER: So you see them as anomalies in the model, so things that aren't being considered?

MR. SCHROPP: I wouldn't call them anomalies necessarily. They're mimicking what's going on.

DR. STALKER: So you've included those in the model?

MR. SCHROPP: Yeah, our laterals do that.

MR. BRATOS: The values of salinity are attached to those flows. If it is a groundwater flow --

(Inaudible crosstalk.)

DR. STALKER: -- pushing that lateral flow, okay.

MR. SCHROPP: You asked a question about the SAV model, as well. The thing to realize about the SAV model is it's predicting salinity stress in potential SAV habitat. It's not modeling specific field observed patches of SAV. It's simulating, is this area where sea grass likely has good habitat going to be under stress or not due to changes in salinity.

DR. STALKER: Thank you.

MR. HARRAH: One other thing I'll mention, we'll put the presentation out there, the more technical presentation, on the public website for everyone to look at. I think our next public meeting for people to call into is December 3rd, Monday, December 3rd.

What I would like to do is put the presentation out there, give you guys a few weeks to digest it. And then we'll devote a certain portion at the end of that meeting to a technical discussion, full technical discussion. At that presentation I'll make sure we have the right guys in the room to answer your questions once you digest the technical portion. I think that would probably help your question a little bit.

MR. SUMMA: Any others? Thank you guys very, very much for your time this evening. I know you took time away from your families. You took time away from everything that you would normally want to be doing. But your presence here tonight shows that you're actively engaged, you're really interested in what's happening with this project. Please keep up with us and bimonthly calls and future announcements for these meetings.

If you have any other comments, please write to us on the e-mail address that we have on the brochure that you have tonight. We'll take any comment that you didn't think of here tonight and you thought of when you got home. That's how I kind of react to things like this, I think of it way too late. Please bring those comments to our attention. We want to do this stuff right. We want to do this study right for you. So the more you're engaged, the better it's going to be.

Also, just keep in mind that, you know, again, we didn't show you a lot of information on impacts tonight. We showed you what our very small box, our statistic conservative box, demonstrates as far as what changes you might see in the river. As we refine this information a little bit further, we'll get to the point where we can potentially assess impacts to the communities that we talked about tonight when we have a tentatively selective plan.

Right now we wanted to get you as much

information as we have to date, so we hope it was helpful to you.

Again, thank you very much for coming out tonight. We really appreciate your time.

(Whereupon, the meeting was concluded at 8:44 p.m.)

C E R T I F I C A T E

STATE OF FLORIDA)
COUNTY OF DUVAL)

I, Amanda E. Robinson, Court Reporter and Notary Public, duly qualified in and for the state of Florida, do hereby certify that I was authorized to and did stenographically report the foregoing proceedings; and that the transcript is a true record.

I further certify that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

Dated this 30th day of November, 2012.

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Amanda E. Robinson, RPR