ERDC-EL

Moderator: Courtney Chambers
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1:00 PM CT

Dr. (Katie Brutsche): Thank you Courtney for the introduction. As she mentioned my name is (Katie Brutsche) and I'm with CHL at ERDC. I'm just a small piece of this collaborative study.

This was done with two work DOER work units, an RSM group, a CIRP group, a group from the University of South Florida, and countless other people. So I will do my best to answer any questions that you have on some of this stuff. But if I can't answer any questions that you have I'll definitely be sure to direct you to someone who might be better suited to.

Just want to give a brief outline of what my talk is going to be today. We'll start with an introduction on Egmont key and the project itself. Then we'll go over some of our research objectives for this project. As well as monitoring efforts we did. And take a look at the 2014 dredging and placement. Go over some results and finally some summary and conclusions.

So Egmont Key is a virtually uninhabited island located at the mouth of Tampa Bay in West Central Florida. It's important to Florida due to its cultural and environmental resources. There was a fort that was actually placed on the island in I believe the 1800's. And some historical structures remain. And it's also an increasingly utilized bird nesting habitat and turtle nesting habitat. And so it's important for us to protect the island.

It's a highly dynamic island due to its location at the mouth of the bay. And it's continually maintained through beach nourishment on the north tip of the island. So here we are in the State of Florida.

Tampa Bay is located in the West Central portion of Florida. And Egmont Key is right here at the mouth of the bay. Tampa Bay entrance channel is actually where the material was dredged from to place on the beach in two different nourishment forms.

I'll go over these in the coming slides. To give you an idea of just the dynamics of the island, we're going to go over time series aerial photos. When you look at the left here this is 1942 with an outline from the 2014 shoreline survey.

So by 1962 the west side of the island begins to erode westwards. And the south tip begins to expand towards the east. And here in 1984 with continued erosion on the western portion of the island.

And continued growth at the spit - at the south end of the island. And then finally 1993, continued erosion on the west side and growth of the spit of the southeast portion. And then finally here we are in 2014.

So over a 70 year period the island has changed pretty dramatically. This island is regularly maintained through beach nourishment. Typically at the northern tip of the island.

So here are just some examples of previous nourishments. The red lines in these photos are actually the same length just to give you an idea for scale. So here we are in 1999 with a critically eroded northern portion of the beach.

There was a nourishment in 2001, extending the beach past the red lines here for scale. And it eroded back in 2005. And then another large nourishment in 2006 leading to this wide beach berm in 2007.

So again the previous beach beneficial uses were in 2001, 2006, and 2011. This is an ebb dominated system. The strongest currents actually go through the Tampa Bay entrance channel here to the north, and some to the south as well. There's a node at the point - approximately the mid-point of the island where longshore sediment transport direction reverses.

So we have long shore sediment transport to the north. And south of the node it's to the south. Typically what happens when we nourish here is the nourishment erodes and sediment form the nourishment actually deposits on the ebb shoal here.

So you can see the growth of the shoal through time. So for this particular project dredging commenced in November of 2014. Material as I mentioned was dredged from the Tampa Bay entrance channel.

It was placed in the form of traditional beach nourishment at the north tip of the island and a cross-shore swash zone placement in the south central portion of the island. I'll talk about exactly what I mean by that in coming slides. In situ fine content, from vibracores from the channel was approximately 20% passing the number 230 (sieve).

And that would be the 63 microns sieve. So this was an exception to the Florida Sand Rule which states that when you're using maintenance dredge material you're not permitted to put anything more than 10% fines on the beach. But because of its environmental and cultural resources an exception was made for Egmont Key.

So this created an ideal opportunity to study and address environmental concerns and regulations regarding dredging using excessively fine material. As I mentioned there were two different placement types. One was a traditional placement and that was placement of material to build a beach, using longitudinal dikes to increase settlement.

This project's purpose is to create a wide, flat beach berm. So this is your typical beach nourishment. And then there was also cross-shore swash zone placement.

And this is placement of dredge material by discharging material directly into the swash zone until a delta builds and then extends out - shore perpendicular building a point sealant feature. This picture is actually from Egmont Key courtesy of Great Lakes Dredge and Dock. So you can see actually the pipe is running down the beach and they're literally just letting sediment pump into the swash zone, with only minor help form earth moving vehicles.

As you can see this point placement was beginning to be built in February 2015. And then here we are in April 2015 where you can see that the point has been fully placed. And so the goal is to allow natural forces from waves and currents to transport sediment along shore to nourish adjacent beaches.

We had many research objectives here. One was to track the fine sediment loss through the dredging process. And then quantify their effects on the placement area.

As I mentioned we started with 20% fines in the channel. So what happened to the 20% fines? Did it make its way to the beach?

And where did we lose that throughout the dredging process? We also wanted to test several types of relatively inexpensive light and photosynthetically active radiation sensors. For every dredging project we have to measure turbidity in a water column.

So we were trying to find a cheaper, easier way to determine that number by using light and PAR sensors. And being able to relate that back to turbidity. That would allow us to get a more comprehensive view of dredging plumes - and plume impacts to biological resources.

And also to compare dredging conditions with ambient conditions. Often we run into a lot of issues with regulatory standards. And so if we can quantify background conditions and compare them to the dredging conditions, we can maybe modify regulatory standards to a realistic number.

And then finally to compare cross shore swash zone and traditional placements. So why worry about fines? I've been talking about fines a little bit.

So I wanted to talk about a little bit of background of why they can be an issue. It's thought that fines can lead to compaction and density issues. And so that might potentially be an issue for Sea Turtle nesting.

Light attenuation through the water column. If we have excessive fines in the material, you might create a dredge plume. That may impact biological resources.

It could impact sediment colors which have an impact on sea turtle nest male to female ratio. And potential hatching success as well as asthetic issues.

Especially in the state of Florida where you really want your sugar sand beaches.

And then overall grain size. If you have an excessive amount of fines it may not match the existing beach. So these are issues that we want to be able to quantify so that we can actually come back and maybe justify it or modify current regulations for fine materials.

So we did a lot of project monitoring in order to satisfy our research objectives. It started prior to dredging. Vibracores were taken inside the channel. And they were logged.

And a sediment analysis was performed on many of the samples take form the cores. During dredging, we actually had cameras set up near both placement sites. At the north tip, and also at the cross-shore swash zone placement site.

The University of South Florida completed beach profile surveys using standard level and rod techniques. They also grabbed surface sediment samples and analyzed them using both dry sieve and wet sieve techniques. Great Lakes Dredge and Dock was really cooperative with us.

They took samples for us on the dredge and at the placement site when we were unable to be there. We also performed compaction testing on the beach prior to placement and post placement. As well as deploying many, many light and PAR sensors to take a look at light attenuation through the water column.

We did some Munsell color testing, pre-placement on the vibracores and post placement on the surface sediment samples. And University of South Florida did some Sea turtle nesting surveys for us when they did their August survey. So here just some pictures of the different activities we did.

Here is the compaction testing. Here is a base station that has our light and PAR sensors as well as YSI to measure turbidity so we can actually correlate the two. And I'll talk about that in a little bit more detail later.

Here's just some examples some Munsell color testing we did. Okay so the two different placements types are shown here. The traditional beach placement was located at the northern portion.

Essentially they used the same dredging and placement template as the previous nourishments I showed you. The cross-shore swash zone placement was located here sort of - just south of the mid-point of the island. It's located right about where that node was that I pointed out in an earlier slide.

The traditional beach placement consisted of about 320,000 cubic yards. The cross-shore swash zone placement consisted about 107,000 cubic yards. All right so now let's take a look at the results.

First I'm going to talk about the fines content and the density of the material. Then we'll go into morphological evolution. And I'll talk about the surface sediment samples that the University of South Florida took while they were surveying.

Take a look at the compaction results using the cone penetrometer, as well as Munsell color, light attenuation, and sea turtle nesting. All right so just taking a look at the fines content from the dredged material to when it hit the beach. This top chart here shows you the percent of fines passing the number 230 sieve.

So in situ in the channel, out of the 80 samples, on average each sample had about 20.7% fines. Prior to dredging the dry beach contained 0.03% fines.

Post dredging with both the traditional and the cross-shore swash zone placements, the average percentage of fines is about 0.51%. When you look at that a little bit more closely between the two types of nourishments, you can see that the traditional nourishment had about 0.52% and the cross-shore swash zone placement had about 0.49% fines. So big take home message here though is that the in situ material had 20.7% fines.

But we're just not really seeing that on the beach by the time it actually made it there and was placed. Taking a look a density, right here you have the pre-beach density of the samples on average was 1405 kilograms per meters cubed. For the rest of these rows, we're talking about a percentage that's greater than the pre-beach.

So the post- dredge material on average was 4.7% more dense than the pre-beach material. When you split that up by placement type, the traditional placement was about 5% more dense than the pre-beach and the cross-shore swash zone placement was only about 4.2% more dense than the pre-beach material. All right now we're going to get into looking at the morphological evolution of the nourishments.

And I'm going to split it up by the two types of nourishments just for a little bit of comparison. We'll start here with the traditional nourishment to the north. And I'm going to start with the profile that's in the middle of the nourishment.

So in all of these profiles the darker blue line is the pre-construction survey. The green line is the post-construction survey and the lighter blue line is the

August 2015 survey, which would be about 5 months post construction. Any of these tick marks that you see on here are locations of surface sediment samples.

And the percentages are the percent fines found in that material. So at R23, you can see that the nourishment actually widened the beach by about 100 meters or so. And they filled the template to about the one meter contour.

You can see that by August 2015 about 30 meters or so of that nourishment had actually eroded back. We don't really see where that sediment ended up in the profile itself. But that implies that actually the sediment probably moves along shore.

In terms of percentages of fines, the highest amount of fines was found at the toe of the foreshore actually prior to dredging and placement. So at this particular location, we don't really have an issue of fine post-dredging or post-placement. The highest amount fines we see is about 3% here on the beach.

Now moving onto one survey line south, R-21. Here the beach actually widens about 60 meters or so to this green line here. Less erosion by August 2015, likely due to some sediment actually coming into this survey line from the other nourishment lines.

Again the location with the highest percentage was actually during the pre-construction survey, 17.9% here at the toe of the fore-shore. Post placement, the highest percentage of fines was only up to 4.3. This is actually within the Florida Sand Rule regulation.

All right now looking at R-25. A little bit of a different evolution here. So again the profile here actually gained about 60 meters or so in width to this green line. But by August 2015, it actually gained sand.

Which implies that some of the sediment that was being eroded form the adjacent profiles was actually being transported and deposited in this profile. Again looking at the percentages of fines, you don't really see anything above 4-1/2, 5% here. So again we're within the Sand Rule for Florida.

And then finally R-19 which is kind of located at the taper - at the end of the nourishment. The nourishment extended the beach approximately 20 meters or so, at this location. And again we do see a small gain in sediment actually on the dry beach here and the intertidal zone by the August 2015 survey.

Here we actually do see excessive fines right at the toe of the fill in the post construction survey. But by August 2015 you don't see that fine material anymore. And you don't actually see that fine material anywhere along the profile in August 2015.

Which implies that the fines that were found in this sample likely were winnowed out and taken offshore. Now moving into the cross-shore swash zone nourishment, starting here with R-12 sort of at the apex of the cross shore swash zone nourishment. The cross shore swash zone nourishment, as I mentioned before, they're just pumping directly into the swash zone.

They weren't actually building the beach. They just sort of let it do what it was going to do. So as a result of that, the nourishment actually only builds up to about the 0.8 or so meter contour.

However it did widen the beach about 50 meters. And then at this location the profile eroded back another 20 meters by August 2015. Here we again do see an excessive amount of fines at the toe of the fill in March 2015.

But again by August we don’t see those fines anymore. And they do not show up on the dry beach. Once again implying that they probably migrated offshore.

Here we are R-11. Here the profile extended approximately 20 or 30 meters seaward. And then eroded back another 10 or 15 meters or so by August 2015.

The highest percentage of fines once again is found at the toe of the fill, 72.3%. By August 2015 we don’t see that fine material anymore. The highest we see is about 4%.

Once again implying those fine materials likely migrated offshore. At R-10 we have a little bit of a different evolution. So here we do have a gain as post construction fill mostly in the sub-tidal region.

By August 2015 we actually have more sediment deposited in the sub-tidal region. Which shows that some of that sediment that was being eroded from the previous profiles was transported and deposited at this location. Once again the highest percentages of fines were found at the toe of the fill.

And again by August we don’t see those fines anymore. To get an overall look of what the island did as a whole during this time period, University of South Florida performed shoreline surveys along the mean high high water lines. And these aerial photos were taken by the Jacksonville District UAV guys.

So pre-construction in October of 2014, here's the shoreline just for reference. Here's the shoreline in December of 2014, so you can see that the northern nourishment is still being built at this time. March 2015 both nourishments were done being built so here's the northern piece of it.

And you can now see the point placement. By August 2015 about 5 months after placement you can see that the point placement actually pretty much equilibrated in the long shore. In the North you can see that the nourishment has now eroded back a bit.

But at the northern tip like we saw in R25 which is located right here you can see that the beach is actually gaining some sand. I mentioned we did cone penetrometer testing for compaction. We did the pre-placement and also post placement.

So on the left these are our pre-placement testing sites. And the right are our post placement testing sites. And these are actually all the testing that we did for all of the different cone penetrometer tests we did.

Here is a picture of what cone penetrometer actually looks like. To make it easier to digest, it's been broken down into two different tables. The magic number in the state of Florida is 500 psi.

Beaches need to be at 500 psi or below in order to be within the regulatory standards. So we took cone penetrometer tests between the 0 to 6 inch depth mark. The 6 to 12 inch and the 12 to 18 inch.

On average all of these sites were below the 500 psi mark in both the pre-placement and the post-placement samplings. The biggest difference between the pre-placement and the post-placement samplings were the number of refusals. The percentage of refusals went up post-placement.

And this is likely due to shell hash areas which pretty much just happen when you’re hydraulically dredging like this. It’s pretty common to have a sort of patchy shelly, areas. And so that’s what led to refusals.

We also did Munsell color testing. In the state of Florida a Munsell color value of less than 5 is unacceptable for beach placement. So the smaller the Munsell color value, the darker the color of the sediment.

And so we used a digital colorimeter to quantitatively determine the Munsell color value. So in situ channel material had an average value about 4.36. So this is the color associated with that value.

Prior to placement, the beach had a value of about 5.9. That’s this color here. Post-dredging the beach had a value of 5.3 so a little bit darker than the pre-beach value but still within the greater than 5 acceptable number for Florida.

When you look at that specifically for the traditional nourishment and the cross-shore swash zone placement nourishment, you can see that the traditional nourishment had a number of 5.0 and the cross-shore swash zone placement had 5.9. So those placements were actually within the accessible limit for beach placement in Florida. We did a ton of light attenuation monitoring.

And part of the work unit for DOER was to find better ways to mount these and deploy these in different light and PAR instruments. So I’m just going to go through some of the ways that we did that. The first was a pipe and so we see here the PVC with two separate instruments on it, this is called an Odyssey, it's a PAR sensor.

This is a HOBO light sensor. And these are actually wipers to help with biofouling. And so what we did is we drove in a steel pipe into the substrate and then slide this PVC pipe over the steel pipe.

We also had a base station that had a YSI on it to measure turbidity simultaneously with PAR and light. So here's the YSI here with two LiCORs attached that were measuring PAR. We also had an Odyssey and a HOBO at two different heights on this bar here measuring light and PAR.

We made daisy chain mounts where we had the instruments attached to buoys so they could sort of float with the currents. And they were held down by a weight at the base. We also had tire mounts where we placed the light sensors on the PVC arms that were attached to this arm here.

And these were nice because we could actually just walk them out from the beach until a wading depth and deploy them that way. One of the biggest issues that we had with deploying these instruments and really with any instrument that you're deploying when you do these types of studies is biofouling. Initially, we didn't do anything and this was the result.

So you can see that actually these barnacles are covering the sensor. We also tried plastic baggies and this is the result of that again. Lots of sediment was actually caught by the buoys.

And barnacles were forming on the instruments as well. The wipers I showed in the pipe initially, they didn't do too much to help biofouling. The sensor is completely covered.

And so finally we landed on copper tape. So we taped up each of the sensors. And this is what the sensors looked like after about a month of being deployed.

So what does that look like in terms of data? This top graph shows the data without copper tape. So you can see that through time the data degrades drastically.

And it really just becomes unusable about 5 to 10 days following placement. With the copper tape the data is good throughout the entire time period between two scheduled servicing events for the instrument. We deployed these PAR and light sensors all over the place.

They are relatively cheap as compared to turbidity sensors. Turbidity sensors cost on the order of several thousand dollars. The light and PAR sensors we were using were on the order of a couple hundred dollars.

So we were able to deploy many sensors around the entire island. And near both nourishment areas. But I'm going to focus right now on the base station since we actually had a turbidity meter on it so we can actually directly relate turbidity to PAR.

This is data from that base station that I pointed out. On the top chart in blue is PAR. And the orange color is turbidity.

On the bottom chart we have wind speed in blue and wind direction in orange. This shaded area here is times that they were actually actively pumping. They were only pumping between November 19 and December 28 for this particular chart.

And again pumping again on January 21. We also had two small weather events during that time period. And that's here in the yellow.

The wind speeds weren't that great. But the onshore directed wind caused turbid waters and the higher wave energy event. So looking at the top chart you can see that turbidity is obviously increased during dredging, which decreases PAR as you would expect.

But as soon as pumping ends, turbidity decreases dramatically. And actually goes down to more acceptable limits. And then here we are right around January 5, January 6 - we have another peak in turbidity.

And that's likely caused by this event here. And so you can see we actually have pictures from the cameras that I mentioned. It was an extremely energetic event and that seemed to peak turbidity.

Just about as high as the pumping turbidity. And again as soon as the waves quieted down the turbidity drops back down to lower levels. We also took a look at turtle nesting.

We don't have numbers for turtle nesting for prior years right now. So this is just August 2015 data. So you can see that some turtles made their way onto the traditional beach nourishment and the cross-shore swash zone placement nourishment.

So it appears that they aren't completely avoiding the nourishment areas. However there are some gaps where they are. But there are also gaps where there wasn't nourishment.

So it's hard to say whether or not the placement had impact on sea turtle nesting directly. So to kind of just compare the two types of placement, cross-shore swash zone placement allows for less linear feet of beach impacted for an equivalent volume. There were just environmental impacts here so we didn't any cementation really at either at the types of placements.

There weren't any issues with Munsell color. And actually the shore birds didn't seem to mind the cross-shore swash zone placement. This is actually a picture of them all hanging out on the placement sand.

The unfortunate part is that the material is not visible to the public. So they might be wondering why their tax dollars spent all this money on something that they can't see. It is a lower cost however just because there is less beach equipment required to actually construct the cross-shore swash zone placement.

And there can be reduced pipe line extension. And there's reduced maintenance. So you don't have to fix any scarping and you don't have to do any tilling.

It's just another way that we can beneficially use sediments at a lower cost. And you might find better bids because more people might be able to do this type of work. So kind of just to summarize here grain size sampling indicates significant fine losses through the dredging process.

Long shore spreading of both nourishment types occurred as evidenced by the gain of stand and adjacent profiles. Most of the sediment gains from longshore spreading appeared in the intertidal to sub-tidal zone. Fine material initially located at the toe of the fill no longer appears along the profile.

And Munsell color and compaction were similar post placement as pre-placement. Turbidity decreased when not pumping.

We found that copper tape was the best way to reduce impacts of biofouling. Turtle nesting appears lower in traditional nourishments in the cross-shore swash zone placement. However overall number of nests may not have been impacted.

And there's plenty of people to thank for helping us and collaborating and cooperating with us in this effort. Great Lakes Dredge and Dock as I mentioned were very helpful. University of South Florida for their surveys and data.

The Fish and Wildlife Service. The Florida Department of Environmental Protection. The Tampa Bay Pilots Association, the Florida Fish and Wildlife Conservation Commission. Folks from the Jacksonville district, Tampa field office as well as the district itself.

Many folks at ERDC and also the US Coast Guard for letting us keep our boat there. And with that I can take any questions that anyone might have. And this is just contact information for me, but also for Coraggio Maglio. He spent a lot of time really delving deep into the data on this one. So he can also answer a lot of your questions.

Courtney Chambers: Excellent. Thank you very much (Katie). This time we're going to return to interactive talk mode.

Recording: All participants are now in interactive talk mode.

Courtney Chambers: So now we welcome your questions. You can ask over the phone line after taking your phone off of mute. Or feel free to use the chat feature.

(Rod): Hello (Katie)?

(Katie Brutsche): Yes.

(Rod): Hey it was a really good presentation.

(Katie Brutsche): Thank you.

(Rod): This is (Rod) from Portland. On the PAR and turbidity plot, maybe you mentioned it, I might have missed it. It looked like tide some kind of periodic forcing was really dominating the signal of the PAR and turbidity.

(Katie Brutsche): So the spikes here, that's actually a day and night. And I apologize I should have said that. But yes so if anytime you have those peak turbidity here it's actually daytime. And then anytime down here that's actually night.

(Rod): So the blue line, the PAR, is still - those peaks are all diurnal or night time effect?

(Katie Brutsche): The peak is actually daytime.

(Rod): Okay. And strictly do the daylight activating more effect?

(Katie Brutsche): Yes. So the PAR is actually caused by light. It's the part of the light spectrum that plants actually use to go through photosynthesis.

So you'll only actually see a mark of it during the daytime. And we actually had a light sensor and PAR sensor on one of the docks at Egmont Key so we could actually get the background conditions. So say it was a cloudy day and that impacted PAR, we could compare that to what we're seeing here.

So like here for example, this is a relatively low PAR value. So it may have just been a cloudy day. And may not have anything to do with this turbidity because there really wasn't that much turbidity happening at that point.

(Rod): Thank you.

(Katie Brutsche): Sure. We have a question in the room that I'm in, so.

Courtney Chambers: Okay go ahead.

Jase Ousley: Yes so I was curious about the dredging window you have marked off in blue. And at the beginning of the dredging window, there is no turbidity noted even though they're dredging then. So you would expect that if it were actually dredging related that that would be connected.

But then you have the storm event. So do you think that the yellow - or that the turbidity we're observing in the dredging window is actually the storm and not the dredging?

(Katie Brutsche): I think it's both in the window here. I think the sort of increased amounts of turbidity is partly due to the pumping. And also due to the sort of small event here.

But I think that you're right. I think that the small event here actually kicked up more of the turbidity here because they must have been placing at this point as well so yes.

Courtney Chambers: All right we did receive a question in the chat box here (Katie). The question was were there any requirements for chemical analysis of the dredge sediments?

(Katie Brutsche): I don't believe so. (Jase) were their requirements for the chemical analysis?

(Jase Ousley): Yes this is (Jase Ousley). There were no requirements for doing chemical testing on the sediments in the channel.

And there usually aren't. All though there is some source of H2S out there that is likely form the actual in situ rocks below the units that shoal - units sediments that shoal, but yes. So no there were - the answer directly is no there was no chemical testing.

Courtney Chambers: Great thank you. Any other questions.

(Russ Tolle): Hey (Katie).

Woman: This is (Unintelligible). Go ahead.

(Russ Tolle): Oh. My name's (Russ Tolle) I'm the Headquarters Inland program Manager now. But at the time this dredging was done I was actually the engineer for North Florida area office and the Tampa folks worked for me.

(Katie Brutsche): Oh wow.

(Russ Tolle): And I was out on site quite a few times. And one of the things I was looking at is one of your slides when you talking earlier about the percentage of fines. The 20% in the channel versus, you know, an average of like 0.5% on the beach.

I think a lot of that had to do with the way the dredging was performed with a hopper dredge. It was a hopper. And so as part of their filling process they're allowed to overflow during the filling process. But you can't overflow when you're transporting. So I would speculate, you know, that a good percentage of the fines, you know, were lost right there during that process. Or as if you had a cutterhead dredge it was - it's a direct pipeline from the source to the beach. And so you would have probably seen a lot more the fines transported that way.

(Katie Brutsche): Right. Well I actually did have a slide in here before about fines through the dredging process but we're trying to figure out what happened with the sampling on that. So I didn't want to put that in here.

But I think that you're right. I think that a lot of fines are loss through the initial dredging and the overflow process. And actually for future work for some of these work units we are actually planning to do the same light attenuation studies at the dredging site rather than at the placement site. So that might help answer some of those turbidity issues with that as well.

(Russ Tolle): Yes. Of course, you know, as part of our river quality we had to monitor turbidity at the dredging site and at the disposal site too, so.

(Katie Brutsche): Right and I do want to caveat this with these numbers that you're seeing for turbidity here we were a lot closer to the placement site then what is actually required to sample for turbidity. So we were right up next to the placement site. Right at the toe of the fill.

(Russ Tolle): Yes because yes normally you're offset a distance 150 meters or something like that.

(Katie Brutsche): Right.

(Russ Tolle): Or more.

(Katie Brutsche): And I know that there's actually another study that's going on right now too where they're actually looking at comparisons of fines loss in hopper dredges and cutter suction dredges. And I believe from that they've found that they still lose fine material using cutterhead dredges as well.

(Russ Tolle): Yes it's suspended, you know, through the cutterhead doing the cutting process. It suspends some of it but a lot of it gets sucked through. Just - it depends a lot on the dredge too.

(Katie Brutsche): Yes.

(Russ Tolle): But yes that - I just wanted to kind of throw in those observations.

(Katie Brutsche): Thank you.

(Garry Holem): Hey (Katie).

(Katie Brutsche): Yes.

(Garry Holem): This is (Garry Holem) in Jacksonville district.

(Katie Brutsche): Oh hey (Garry). How are you?

(Garry Holem): Hey how's it going. Hey (Jase).

(Jase Ousley): Hey (Garry).

(Garry Holem): I saw on the node area where there were some samples when it was first placed that had fines in the 80% area. And then of course six months later they were gone. Any thoughts to perhaps surveying or taking samples in deeper water? Deeper than minus 3 just seeing perhaps where this is going?

(Katie Brutsche): We haven't actually. Unfortunately we haven't taken any samples further offshore then the ones that you saw in that chart.

(Garry Holem): Okay. Any idea why just in the nodal are it was so concentrated and not in the regular placement areas that you saw? Is it just because the location of the dredge? Maybe it was on the western end of the channel where it's siltier?

(Katie Brutsche): Actually I do think that some of the - like for the cross-shore swash zone placement the material they used for that placement was a little bit finer than the material that they used with the traditional placement. And it also may have to do with the fact that they sort of just let the sediment do what it was going to do. And they didn't have any sort of longitudinal dykes or anything. (Jase) do you have an answer for...

(Jase Ousley): What we see for both the north placement and the cross-shore placement are the fine material settling out at the toe of the fill out at the end of the fill template. And she's just trying to pull it up right now. Yes so in both the traditional and the other one you see the fine material settling there at the toe.

And if you notice those are in meters. So that's almost 4 to 600 feet offshore where those fine materials are actually stopping just temporarily before they move out of the system. You guys in Jacksonville could probably give us - yes we can - we'll talk more about going further out finding fine material if you want to talk about, yes.

Yes but there a ways offshore already, you know, and we've seen this - we see the same thing in Galveston too when we did our higher fine content project there. That the material - the finer material is out all in construction at the toe and then moving on, so.

(Garry Holem): Okay. Thank you.

(Pam): This is (Pam) with the Detroit district. I heard that you had done this monitoring of the (unintelligible) water quality surf. And I wondered if you had any conditions if you didn't meet certain requirements?

(Katie Brutsche): Well since we weren't actually the monitoring that was - we were doing monitoring outside of the actual project monitoring. So as a...

(Pam): Oh okay.

(Katie Brutsche): ...result of that we were a lot closer to the nourishment then what the regulations call for. So our numbers are much higher. So our numbers aren't actually reflective of what the project requirements are.

(Jase Ousley): But for the project itself there were no exceedances of the turbidity requirement.

(Katie Brutsche): Yes.

(Jase Ousely): They stayed within the regulation.

(Pam): Okay. And if you had any did you have any management practices set up to handle that?

(Jase Ousley): They're outline in the permit, yes.

(Katie Brutsche): Yes.

(Pam): Okay.

(Jase Ousley): Have to follow the remediation process and the, you know, stopping of work and all that stuff until we addressed it.

(Katie Brutsche): Yes.

(Jase Ousley): If we had had exceedances we probably would have had to take that cross-shore placement and add a long-dyke to it to try to reduce it, contain it.

(Pam): Okay. Thanks.

(Russ Tolle): This is (Russ Tolle) again. One of the things that kind of goes along with that, not only the fines, we had the full spectrum of stuff there. We actually had to incorporate rock boxes as far as replacement because we were having rock and shell and then fines too. So pretty much the full spectrum of material.

Courtney Chambers: Very good. All right we still have some time for an additional discussion or questions if anybody has any?

(Garry Holem): This is (Garry Holem) again that nice little tool you have for the Munsell color, the little meter, it's interesting. A lot of the pictures you showed that sand sure did look a lot lighter than five you saying were - you're recording. Is that thing that you guys I mean really checked that out to make sure that it's reading what it looks like versus the book?

(Katie Brutsche): Coraggio did most of the color sampling items and I think (Jase) may have helped him too. And (Jacob Berkowitz) over in EL I believe. But as far as I know it compared well with the Munsell color chart. But I didn't actually do much of the colorimeter sampling.

(Garry Holem): Okay. It must have been a moist or wet sample maybe to give them a little darker result.

(Katie Brutsche): Yes. I'm pretty sure most of the samples were moist.

(Garry Holem): Were there any thoughts as to going back later and checking the color of the fill again just to see how much it lightens up over time?

(Katie Bushey): Yes actually I think (Coraggio) and I don't know if (Jase) is a part of this one - and (Jacob Berkowitz). They actually have a whole new DOER work unit on exactly that. Looking at (Munsell) color changes throughout the entire dredging process, from in situ to placement on the beach, and then after.

I don't know if he has plans for that specifically for Egmont. But that whole idea is in the works for another DOER work unit.

(Garry Holem): Okay.

Man: And one more question on the fate of the fines or maybe a recommendation - maybe it's already being done. But the fate of the fines seems like it would be an interesting activity to pursue further. Because if you contract the fines and the fines move certain areas typically then that could inform maybe with permitting issues to use a little bit more fines than 5% from time to time if it's allowable. There's a lot of tools that ERDC has to do that.

And both model - particularly model wise. But if you get the circulation models going like (ADCIRC) or ADH or CMS flow you can put in other model capabilities a Particle Tracking Model. And do a lot of scenarios for trying to figure out where the fines are.

And then use that to go try to sample for them. That's a really kind of important - seems like an important thing, once the fines get below that - the toe of the beach fill.

(Katie Brutsche): Right. Well and I know that (Jase) worked a lot on this project and also works a lot on the fate of the fines DOER work unit. And one of the things that he's been working on is taking previous data from previous nourishments and looking at the in situ fine content and what actually ended up on the beach.

And seeing actually where in the (process) that fine material is being lost. So you can maybe start to look at the in situ material and make a very educated estimate of what would actually end up on the beach based on previous nourishments.

Man: Right the fate - the fines might actually be hanging further because the beach is an energetic area, wind chop and most of the things. The fines just may preferably want to hang somewhere else. And knowing where that somewhere else is could be a really nice question mark to self.

(Katie Brutsche): Right. Definitely.

Courtney Chambers: Did we get any other questions this afternoon? Okay I'll give you another minute or so to think if you had any last questions. But I wanted to just remind you that again if you'd like a PDH make sure you let me know and send me a chat message with your full name and affiliation if you're not with the Corps.

All right any final questions? Okay well with that (Katie) it's been a pleasure hearing about your work. And do you have any final comments before we wrap up today?

(Katie Bushey): No, I hope y'all enjoyed it. Thank you for listening and if you have any more questions, feel free to email me or any of the other co-authors on this talk.

Courtney Chambers: All right thanks so much (Katie) and the rest of your team. It's been a pleasure learning from you. Participants thank you for joining us to make for a successful webinar.

Please watch for upcoming notices on additional DOTS webinars from (Cynthia Banks) the DOTS program manager. And we will look forward to learning with you again soon. We hope y'all have a great afternoon.

END