RESTORATION ADVISORY BOARD

FORT McCLELLAN, ALABAMA

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Taken before SAMANTHA E. NOBLE, CCR, Certified Court Reporter and Commissioner for Alabama at Large, at Fort McClellan, Alabama, on the 15th day of October 2019, commencing at approximately 5:00 p.m.

R E P O R T E R ' S I N D E X

MR. BOBBY FOSTER: Okay, I'd like to call this meeting to order. So, I take it the Army co-chair is not -- is Mr. Nuttall.

MR. OWEN NUTTALL: I'm here.

MR. BOBBY FOSTER: Okay. Mr. Burgett?

MR. PHILLIP BURGETT: Here.

MR. BOBBY FOSTER: Mr. Cox?

DR. BARRY COX: Here.

MR. BOBBY FOSTER: Mr. Elser?

MR. JEROME ELSER: Here.

MR. BOBBY FOSTER: Ms. Harrington? Mr. Kimbrough? Mr. Pearce? Mr. Thompson?

I'm gonna make you say it. Mr. Turner?

MR. ED TURNER: Here.

MR. BOBBY FOSTER: All right. Ms. Pinson?

MS. KAREN PINSON: Here.

MR. BOBBY FOSTER: Mr. Hardy?

MR. GERALD HARDY: Here.

MR. BOBBY FOSTER: Ms. Little?

MR. OWEN NUTTALL: She's not here.

MR. BOBBY FOSTER: Introduction of guests. Am I supposed to do that, too?

MS. BRENDA CUNNINGHAM: We'll go around.

MR. BOBBY FOSTER: All right.

MS. LISA HOLSTEIN: You want to go first?

MS. BRENDA CUNNINGHAM: Okay, I'll go first. Brenda Cunningham with the transition force.

And let the record show that Mr. Hall, Mr. Buford, Dr. Kimberly, and Dr. Steffy are excused from the meeting. Thank you.

MS. LISA HOLSTEIN: Lisa

Holstein, Environmental Research Group.

MR. MICHAEL WINNINGHAM: Michael Winningham, project manager Zapata.

EMILY McREE: Emily McRee, Zapata.

MR. TERRY HAMIL: Terry Hamil, project manager, Corps of Engineers, Huntsville.

MR. RICHARD SATKIN: Richard Satkin with MATRIX Environmental.

MR. JACOB OEHRIG: Jacob Oehrig, resident of Anniston.

MR. BOBBY FOSTER: Has everyone read the minutes from the last meeting? Like to propose that those minutes be approved.

MR. JEROME ELSER: I propose they be approved.

MR. BOBBY FOSTER: Do we have

a second?

MR. PHILLIP BURGETT: Second.

MR. BOBBY FOSTER: All for? Any opposed? Let the record reflect the minutes from the last meeting have been approved.

Is there any old business? We'll move into number five about the update on MEC removal.

MR. MICHAEL WINNINGHAM: Standing by.

(Dr. Harrington enters meeting.)

MR. MICHAEL WINNINGHAM: Michael Winningham. I'm gonna give an update on the removal action of Charlie area. So, here we go.

Surface clearance has been completed a while ago, back last year. All the proper areas, areas one, two, four, five, six, seven, nine, ten, eleven, twelve

have been completed a hundred percent. And we are now currently working on the step-outs, which we'll go through in a little bit.

This is the numbers here on the total area surface swept, including the parts of area three and eight, if you remember, that was initially in there, but we had some in there, also.

So, that's twelve hundred and fifty-seven acres vegetation removed, eight hundred and eighty-six acres, six-inch clearance, 12.5 in the DGM -- digital geophysical mapping -- and the analogue geophysical mapping is completed, also.

Of the DGM, seven hundred acres has been completed, which also includes a parcel that we

did in three, if you remember back then, last RAB meeting.

Then we did six hundred and thirty acres reacquired and six hundred and thirty acres intrusive investigate.

And then, if you look at the -- if you add up the analog and the digital, we completed seven hundred and forty-five, almost seven hundred and forty-six acres has been QC'ed and QA field checked.

Area three and eight, if you remember last time, have been de-scoped, and are no longer in the task order.

Are there any questions on this first slide? It's basically a repeat from the last RAB meeting.

Next slide, please.

These are the total number of

anomalies we have investigated in the proper areas, a hundred and thirty-three thousand, roughly almost twenty-four hundred -- we're going to call it twenty-four hundred, because it sounds better than twenty-three ninety-nine, MEC items, which is munitions and explosive of concern items, munitions debris, a hundred and thirty-eight thousand pounds, and non-munitions-related debris, forty-seven thousand pounds and some change. That was out of the proper areas, not the step-outs.

Next slide, please.

Here is the step-outs. So, if you remember, last April we talked about the step-outs, what they were. So, when we find a munition item within two hundred

feet of the boundary, we have to step outside of that two hundred feet for that munitions item to set up a new buffer.

To date -- well, not to date -- sorry. Back for September 27th, we had a hundred total step-out drivers. We've completed eighty-six intrusively and fifteen are in the process, as of the end of the last month.

And then for acres completed, seventy-two acres we passed field QC of 68.8, field QA sixty-four acres.

We've done seven thousand, seven hundred and thirty-nine intrusive investigations. Found eighty-four MEC items, five thousand pounds of munitions-related debris and sixty-three hundred pounds.

We got sixteen and a half

acres remaining that are being in the process right now.

And then, what I'm going to do next is show you the figures of the areas and show you where the step-outs are.

MS. BRENDA CUNNINGHAM: Figure one?

MR. MICHAEL WINNINGHAM: Figure one will be great, please. No figure one yet, though.

(Whereupon, there was discussion held off the record.)

MR. MICHAEL WINNINGHAM: So, figure one, it shows the proper areas and some of the step-outs that have been completed. So, you can see it's green it's been field QA'd and QC completed. The little pink guy there, that's area three, which is the area twelve, if you remember was

way out in the -- the Alabama Forestry --

MS. LISA HOLSTEIN: Choccolocco corridor.

MR. MICHAEL WINNINGHAM: Yeah, Alabama Forestry area out there.

If you flip over to figure two, just the southern half. So, figure one is north of Bains Gap. Figure two is south of Bains Gap. And you can see the areas we've also completed and the step-outs.

And all -- as you can see, all the proper areas are completed. 8 being de-scoped, so it's no longer completed. And then you can see where the individual step-outs are out there, just outside the proper area.

And, if you flip over to figure three, this sort of shows a little better picture on the

munitions items we have located in the proper areas, but you can also see, as we are continuing to go do the step-outs, which are those green areas, we're continuing to find MEC items, which is causing us to keep stepping out and marching across.

So, as you can see, between one Alfa and two and one Bravo, that whole area is all green now. You have some to the south in four.

If you flip over to the next -- last figure, you'll see the green ones we've completed down there. So, if you see the green and you see the little step-out driver symbol in it, those means we're still continuing to step out where we've gone out and finished. If

it's green, it's done. But you'll see some of the areas had purple before.

So, based on the progress we are seeing right now and the number of step-outs remaining, we are anticipating, if we find no more step-outs between now and the middle of December, we'll be done.

Now, the odds of us finding no more step-outs between now and the end of December, probably slim to none, so it'll probably continue to step out into the early part of next year.

Right now, mid-December we'll be finishing up, if we don't find anything more. But all ID features on the ground, where there is munitions debris, fragmentation, stuff like that, is still telling us that we're

going to see more step-outs.

Are there any questions on step-outs?

MR. JACOB OEHRIG: Is your two hundred foot radius as the ground lies or from a birds-eye down, the topography?

MR. MICHAEL WINNINGHAM: So it's based -- two hundred foot based on topography. So, you know, if it goes up and over, that two hundred foot is, you know, over that side there.

MR. JACOB OEHRIG: Okay. So, your surface area is going to be more then?

MR. MICHAEL WINNINGHAM: Correct.

Any other questions?

MR. BOBBY FOSTER: No. No questions.

MR. MICHAEL WINNINGHAM: With that, I will turn it over to

Richard.

MR. RICHARD SATKIN: Thank you. Richard Satkin with Matrix. Dragged over here to talk about landfill three.

It's got a long and storied history with a lot of involvement from Shaw IT that started out the investigations.

And this presentation, I had a lot of help with the investigation work and the remedial design with a company called Geosyntec out of Atlanta.

MR. OWEN NUTTALL: Good folks.

MR. RICHARD SATKIN: Just want to recognize everybody.

Next slide.

Going to try to cover some of the background, site history and site features, CSM, Conceptual site model. Sorry for the acronym.

You'll see landfill three is right here. It's in the northeast -- the northwest part of the Fort.

And when we talk about landfill three, we also usually refer to FANWRA, which is the fill area north of Reilly Airfield, the landfill.

And then landfill four is just over here to the east. And that's Highway 21.

Currently, the right-of-way and highway portion of this parcel is pending transfer, it's still by the Army. The rest of the parcel has been transferred to the MDA.

Next slide, please.

Site history. Okay. So, this is a unlined sanitary landfill. It's about twenty-three acres. And during the operations there

were -- the landfill operations, there were about forty-eight or forty-nine trenches, east-west, trenches that were filled with waste debris. There's no real good record on what was disposed of in the landfill.

But as a result of the landfill operations, there's now a groundwater plume that's migrated away from the landfill. And it migrates to the north, along the Alabama Highway 21 corridor.

The investigations started back in 1998. IT Shaw, they did a lot of studies.

And Matrix completed the RFI. It was submitted and approved by ADEM in 2008.

The landfill, when they stopped operating it in the 1970s, they did not cap it. It

was not closed up to today's standards.

So, we -- Matrix Environmental Services and Geosyntec capped and closed that landfill. The way it was closed was we used some structural fill that tried to level out the areas of subsidence that were the trenches. Okay.

You had these -- you had very undulating topography, okay, as a result of the fill subsiding into the landfill.

So, we used structural fill. Then there was, I believe, eighteen inches of low permeability soil. That's the ten to the minus five centimeters per second. It's a standard engineering criteria for capping a landfill.

And then it was placed with, I

believe, about six inches of top soil, so it would facilitate some grass to grow on it.

So, the final design of that landfill, you know, was able to, you know -- was designed so it would facilitate drainage, low maintenance, and to prevent contact with any waste, human contact, and, which is very important to us, is it cut back on the leaching and infiltration of any rainwater to the groundwater that would facilitate further migration of the plume.

So, basically, we stopped any groundwater from migrating into the waste and going in to dissolve any contaminants and cut off the vertical source.

However, there's also -- there's currently still

lateral flow that goes from the east of the landfill, up gradient, that flows laterally, through the waste.

Cement design. So, let's move on.

Next slide, please.

In 2003, Shaw IT completed a fairly thorough, very thorough inventory. They used -- I guess they contacted, I think it was about five hundred, six hundred residents in the area. And they identified twenty wells, one spring within a one-mile radius. Here is a figure from that report.

Six wells were located within sixteen hundred feet of the landfill, but none of them were used for drinking. So, it was a good story.

There were -- we went back and

recently, 2018, we wanted to try to assess if there's been any changes in the use of the wells that were identified.

We foc- -- we didn't go out a one-mile radius. We focused primarily within this corridor. You see all these parcels that are tan or red, those are the locations that we quarried.

We sent out questionnaires. Got a pretty poor response. Sent out a second round of questionnaires. Improved a little bit.

And then, everybody that did not respond, we went door to door. And we were able to contact all forty-six, or at least have interactions, with all forty-six property owners.

One property owner did not complete the form, would not let

us up -- really not let us on their property. That was the Medders' well, which is number eighty-six right there.

The one well that was identified as a source that was used for -- for a restroom -- wasn't used for drinking -- we looked at that location. It was -- basically, it turned out it was a hole in the floor in a thrift store, over here, and there was no associated piping or anything else at the time, so --

MR. ED TURNER: How was it used as a restroom, if it was --

DR. BARRY COX: Are we going to have to draw a picture?

MR. RICHARD SATKIN: That was in 2003. I don't know. But that's what the report said.

We went back, and today it's a

hole in the floor.

MR. ED TURNER: Okay. There was no sink or anything to flush?

MR. RICHARD SATKIN: No sink.

MR. ED TURNER: Okay.

MR. RICHARD SATKIN: Nothing. Just a hole in the floor. Yeah.

DR. MARY HARRINGTON: Used to be there.

MR. RICHARD SATKIN: Yeah.

If you have any questions, feel free.

Next slide, please.

Site features. Guess when you're, you know, looking at population centers, the Weaver water supply well, that's about one and three-quarters, close to two miles, from landfill three. Okay.

These lines here demarc topographic ridges, which are,

you know, low permeable bedrock, because they're ridges, indicates that there's very little erosion, right.

And so, it's just an overall view.

But, you know, the McClellan area -- this goes to speak for the whole facility -- it's highly complex geology. It's a mixed bag of Paleozoic, classic rocks and limestone and dolo stones. Okay.

Regionally, groundwater follows topography. And, you know, here it's not that much different.

There is intense weathering and fractures in the bedrock. The contamination that we have in landfill three is chlorinated solvents that we've detected at, you know, pretty much every of

our sites here on the Fort.

Next site. Next slide.

This is -- we copied this right out of -- I think it was a Shaw 2000 report. It just shows the splay fault that -- this is a section running east-west through landfill three, and there's an inferred splay fault that this expresses itself right by the Highway 21 corridor.

And we've encountered -- a lot of the drilling along that fault encounters quite a bit of groundwater flow. Okay.

DR. BARRY COX: What is a splay fault?

MR. RICHARD SATKIN: This is -- what is a splay fault?

DR. BARRY COX: Yeah.

MR. RICHARD SATKIN: It's just -- we have these thrust faults, right.

DR. BARRY COX: Okay.

MR. RICHARD SATKIN: Thrust fault from when -- this is from a couple of hundred million years ago, when the Appalachian mountains were forming, right.

DR. BARRY COX: Okay.

MR. RICHARD SATKIN: You had pushing together of the rocks. Okay. And some rocks go over another.

DR. BARRY COX: Okay.

MR. RICHARD SATKIN: Okay. And so that's a thrust fault.

So, these rocks -- some of these rocks have been transported tens of miles away. Okay, and across the -- Alabama. Okay.

So, these are large blocks of rock that have been deformed, folded, and pushed. Okay. So, there's intense weathering and

fracturing in these zones.

Yeah. It's a good question.

But it is more of a pictograph or somewhat cartoonish. I mean, it is veri- -- field verified with, you know, the boring and the logging. So, it's not all cartoonish. But it's probably not as simple as it's depicted here.

Okay. Next slide. Okay.

Regionally, we've broken up the groundwater wells into basically four zones. We have a residuum shallow zones and a transition zone that is between the bedrock and the residuum. And it's a highly fractured unit. Okay.

And then the bedrock and deep bedrock. And the difference between the bedrock zone and deep bedrock zone is really the

degree of fracturing is the way we depict it.

Average depths for the bedrock wells are maybe around -- I think around two fifty, two hundred feet. And the deep bedrock zone wells are on the order of over three hundred feet.

The groundwater flow from landfill three, the footprint of landfill three, it's clear that the potentiometric contours show that it moves towards the west, towards this fault. And then it migrates north, along the fault line.

We've locally, in individual bore holes and wells, it's -- pretty much it's fracture controlled. Okay. But when you look at it, on like a site-wide basis, it's controlled more by

these faults. Okay.

There is some karst zones in the area, but it's secondary to the fractures. Okay. It's primarily fracture controlled.

MR. JACOB OEHRIG: Are those aquifers distinct or is there a mixing in between the two?

MR. RICHARD SATKIN: Oh, there is mixing. There is upward flows and downward flows in different areas.

As you go to the north, the contaminants move -- the wells are deeper, right. And the contaminants starts to sink, as you go to the north.

So, our point of compliance well is OLF-G52, I believe, that's it. And the well is screened on the order of four hundred, four hundred feet below ground surface. It's a fairly

deep well.

Next slide.

Mention the contaminants, the cocktail that's out here. It's the chlorinated solvents.

The ones that are highlighted in red are the primary contaminants of concern at the site. Okay.

They all have, you know, these wonderful acronyms, Trichloroethene, TCE, you probably all -- you've heard of that one, right.

These contaminants, they biodegrade. Okay. They change from -- it's a process whereby they lose a chlorine and gain a hydrogen. Okay.

So, we've got these -- you've got chlorethenes following this pathway and chloroethanes following that pathway. The

ethenes and ethanes, it's about the bonding. Okay. Help me.

It's double bonds for the chlorethene, right. Right. Double bonds.

And they all biodegrade. The chloroethane pathway is a little more difficult. It takes, I guess, more energy to break those bonds.

And so -- but they all do occur naturally in the environment without our assistance. Okay. And -- but, you know, these compounds are difficult to clean up. When we have them in groundwater, it's a challenge, but these bioremediation technologies have been successfully applied around the country. And that's what we're relying on. That's what we'll jump into on our remedial

design.

Next slide. So, what we have here for our overall view, we've got a fractured complex geology with fracture flow.

Groundwater migrates from the west to the splay fault, along the Highway 21 corridor. That splay fault acts like a convergence zone, actually, a flow on the west side of -- I get my east and west mixed up. I'm sorry, if I'm confusing you. But on the west side and the east side, the flow converges to Highway 21 and migrates to the north.

So, what we see a plume, it's about two thousand feet long, around -- along the highway. And it's a relatively dilute plume, okay, in the scheme of things.

This is a footprint of landfill three. So, you know, certainly more concentrated. We see a lot of the characteristics of the -- the footprint plume has more the vinyl chloride, so it's further along in the degradation process, right.

So, as we go out to the highway and north, we still -- we see some trichloroethene and 1, 2 dichloroethene. So we see areas where it hasn't degraded as much. Okay.

And there, you can imagine that the conditions for biodegradation are a little bit better. They're in the -- within the landfill proper. Landfill proper is more reduced conditions, which are more favorable to help in the bioremediation process.

So, you have a dilute plume moving north. But there is considerable biodegradation going on. And what we did for --

Next slide. So, for the remedial design, I think we do that. First one.

Corrective action objectives, okay, is to prevent contact with groundwater; protect, you know, try to get the concentrations below these groundwater protection standards -- I'll show those in a minute -- protect the City of Jacksonville and the City of Weaver, their water supply wells.

As I showed you before, the City of Weaver well number two, I believe, is about one and three-quarters, two miles west of landfill three. So, highly

improbable that it would ever get impacted. It's too -- the distance is way too far to the west, and you have a fault line, you've got the splay fault that cuts off the flow, and you also have those topographic ridges with low permeability rocks.

So, we've already tested their well. Tested in 2003. They test it on a regular basis. It's not a problem.

City of Jacksonville, I think, the well is -- there's no wells within a two-mile radius. Okay.

And the contamination from landfill three, you know, it pretty much dead ends at around two thousand feet north. So, we're -- City of Jacksonville is certainly safe.

The City of Anniston, their Coldwater Spring, that's nine

and a half miles, ten miles, maybe, as the crow flies, to the south, southwest.

Groundwater flow is going west and then north. It's not heading south. So, it doesn't bifurcate. In other words, flow doesn't do this -- (demonstrating).

I've seen groundwater flow go a little bit like, you know, could separate, going a little bit in the second direction, but the alternate direction is based on backwards diffusion. And that's -- you know, it's going to be limited to a few hundred feet at the max.

So, again -- and the other objective is to overall reduce the solvent mass from the footprint so it doesn't contribute to any more

contamination to the off-site plume.

So, next slide.

Groundwater protection standards. These are the GS RBTLs that had its creation before I was born. I don't know. You might know more about --

It's a risk-based concentration based on a set of parameters about how much water you're going to drink and the age of the person and so forth. So, these standards were developed by the Army, I believe, and Shaw, the GS RBTLs back in the day.

MS. LISA HOLSTEIN: Uh-huh.

MR. RICHARD SATKIN: And in places where we don't have a groundskeeper or a residential RBTL, we have MCLs. Those are

federal promulgated concentrations for drinking water.

So, you see a range of groundwater protection standards for the different contaminants, and it's based on -- primarily based on toxicity.

All right. And so, just a bunch of numbers. Okay.

Next slide, please.

Remedy design. This one didn't come out very clear, I'm sorry. So, the remedy design was to install approximately a three hundred and twenty foot long injection well transect right here. Okay. It's comprised of a total of, I believe, seventeen wells. There's -- each cluster has two wells, except for the northernmost well. It's just a

single cluster. Screen lengths are between fifty to seventy-five feet.

And we use these injection wells to add nutrients and bugs to try to enhance and facilitate the ongoing bioremediation. We try to accelerate it. Okay.

The bioremediation will occur by itself. It has been occurring by itself. But we try to step it up a notch. Right.

So, we use what's called the KB-1 bacteria culture. We use the emulsified vegetable oil, which is a -- it's a biodegradable, FDA approved. It's edible. Okay. It provides the food source for bugs to, you know, to get them to thrive and to grow more. Okay.

So, you want to take your existing bacteria and increase

them. Make them -- make this into a biologically active zone so that the groundwater, as it migrates across the landfill, it intersects this biologically active zone and will undergo a cleanup. Right.

You see in here, we've got this green contour, this green area attached, that's where we have the concentration -- I believe they're about -- greater than about two hundred and fifty parts per billion total COCs.

The objective of this injection array is shown here and dashed in green. The treatment area, we targeted two hundred and fifty parts per billion. Okay. We didn't -- we're not going to try to clean up ten, twenty, thirty parts per billion total VOCs.

We just -- it's just not possible. Okay. We don't have enough money to be doing this.

But, when you use the map and you look at the concentrations and the plumes, this captured approximately 96 percent of the mass that was migrating off-site.

So, we really -- we met the -- one of the primary objectives was to cut the flow of contaminants from migrating off-site. So, this, by targeting two hundred and fifty PPB, with this configuration, we're able to get 96 percent. Okay.

The wells are spaced approximately forty feet apart or a twenty-foot radius of influence. Okay. And that's how they look. Okay.

Next slide.

All right. So, the wells are -- and let me go back. As part of that design, what I didn't mention, we installed somewhere, I believe, about nine wells. They were multi-depth wells.

We used a flute technology. I don't know if you're familiar. They have up to six sample ports in each of these wells. So, we were able to delineate very carefully the horizontal extent of contamination.

We also put in very -- couple of deep wells, down to three hundred and ninety feet. Make sure we got, you know, the bottom.

So, we refined the horizontal and vertical extent. And that helped us to place, you know, those -- the injection well

array. Okay. So, we did a re-look at the distribution end.

And we also did a laboratory study on different amendments and bacteria to see which -- how best to remediate this site. So, we used different bacteria cultures and different amendments.

And so the wells we implemented in 2017, close to a half a million gallons of water, was added to this -- the treatment zone. And -- yeah.

Next slide.

So, this is the pre-injection. Again, we were trying to target that two hundred and fifty PPB contour. And this is pre-injection.

Next slide.

Post-injection. Afterwards, the contours tightened up a

little bit.

And let's do the next slide. See pre and post side by side. And that was after the first of the year. And it's improving as we speak. It's gotten better. A good reduction. Approximately, 85 percent of the mass was removed.

Next slide.

So, we do monitoring. Initially, we were doing monitoring one month after the injection and we did quarterly and then semiannual. And we're gonna be moving to an annual basis. Okay.

And this has -- this is one well, six ports. I think the top port one is -- I think I have it written down here. That's at a hundred and fifteen feet. And the bottom port is at

two hundred. Port six is at two hundred and forty feet. So, there's six different sample locations in that one well.

And these are -- we installed these wells -- these are immediately down gradient of the injection wells, okay, to see its effects.

And this has the total COCs, which are just a summation of five compounds that we identified in that other slide, right, five compounds.

We see the trending the way you want to see it. This is just three different wells, 72, 73 and 77.

Okay, next slide.

This is -- so we talked briefly about the different pathways for biodegradation. This is the ethene and this is

the ethane pathway. So, the primary contaminant here for the ethenes is Tetrachloroethene. But really, there's not a whole lot of tetrachlor, it's mostly trichloroethene. Okay. You see it as this kind of an orange shading.

And you see that after injection, the TCE, the trichlor pretty much disappeared, okay. Very, very favorable, really outstanding results.

And you'll see that the -- as the trichlor goes down, you see some new colors appear. So, what's happening is you're seeing the ethene, which is a gas, the dissolved gas -- and that's one of the non-toxic end products of the reductive dechlorination, right.

And, on the other side, the

non-toxic end product is ethane. And you see here some green. Okay. Nice.

And it shows the 1,1,2,2 Tetrachloroethane taking a nice hit, going down. We really, really like to see that. So, those are favorable results.

Next slide. So, OLF-77, that's a well that's, I believe, a ten-foot screen in the transition zone on site. Again, it's not as dramatic, okay, but headed in the right direction. Okay. So, we're pleased with that.

MR. ED TURNER: What's that spike at the end on --

MR. RICHARD SATKIN: May --

MR. ED TURNER: -- in May of '19?

MR. RICHARD SATKIN: It's a spike. It goes up a little bit,

yeah, so -- you know, I tell you -- been looking at groundwater concentrations, especially VOCs for a long time, and they sort of go up and down. It's -- you're not going to get a straight line.

DR. BARRY COX: Is it rainfall dependant?

MR. RICHARD SATKIN: Uh, you know --

MR. GERALD HARDY: We had a wet spring --

MR. RICHARD SATKIN: Yeah --

DR. BARRY COX: That's what I'm saying --

MR. GERALD HARDY: -- (inaudible) impact it.

MR. RICHARD SATKIN: Could be. We had a drought. Not sure if it was, you know, if that's --

MR. ED TURNER: It was after --

MR. RICHARD SATKIN: -- was that from a drought or was that from actual rainfall, the other way around.

DR. BARRY COX: When you argue the dryer it is, the higher it would be, because it wouldn't be diluted as much.

MR. RICHARD SATKIN: Maybe. Could be.

MR. GERALD HARDY: The more rain that falls, you're also flushing through the soil.

DR. BARRY COX: Yeah, dilution is the solution to pollution, right.

MR. RICHARD SATKIN: You know, but if this was to continue to spike up, then I'd be concerned. Now, not concerned.

And we've got to look -- the processes of bioremediation, yeah, we did see a dramatic

drop, okay, in those other two wells, but overall, you need to take a long perspective. These things happen on a long timeframe. So, yeah, we'll be looking at this well.

Next slide. Okay. We're wrapping it up then.

So, I guess the wells in yellow, those are some of the wells that we're actually testing now. Okay.

And that's the biobarrier right here. This is our point of compliance well, which is 52 or 72, I think that --

So, yeah, we feel that we were successful with the implementation. I think we need to give it some time to see how the concentrations in the highway corridor, how these behave. Okay.

We're gonna rely on what we call monitored natural attenuation over here.

We already have, you know, contamination. It's been out here for probably forty, fifty years.

This remedy over here, this active remediation, this is not going to directly affect what's already here, okay, it just cuts off any further, okay, contamination from going to the -- to this portion of the plume. So, here we're relying on what's called, you know -- terminology is monitored natural attenuation, which is a combination of dilution, dispersion, and absorption, retardation.

So, dissolution, where you mix, right, clean water;

dispersion, where you, you know, spreading of concentrations, right, from high concentration to low concentration; and absorption is the sticking of the contaminants to the rock. Okay.

MR. GERALD HARDY: We pointed out, we had the -- as part of the -- you can see the sketched in, Iron Mountain two, the industrial access road, that ties into 21 and goes between FANWRA (phonetic) and landfill three, there were four monitoring wells impacted by that road construction.

And two of them that you see circled by yellow are in the median, had to be abandoned. We had to abandon those wells before the road construction could proceed.

So, we ran that through ADEM, and they concurred with abandoning the wells. There were two there and two further east in the road median.

MR. OWEN NUTTALL: So, how many total monitoring wells do you have?

MR. RICHARD SATKIN: Well, landfill three, I believe we're up to around seventy-five --

MR. OWEN NUTTALL: Good number.

MR. RICHARD SATKIN: -- wells. Okay. We don't sample them all, please. And some of those wells have six ports for sampling. So, we sample a lot.

MR. OWEN NUTTALL: Okay.

MR. RICHARD SATKIN: And ADEM would like us to put more wells in.

MR. OWEN NUTTALL: Of course.

MR. GERALD HARDY: And one thing that happened while we were doing the injection -- one of the slides said visual observation, because we had a design injection rate, and when they actually got to implementing that in the field, because of the fractured flow out there, they had to -- we had to start looking visually, because, if you put too much pressure in one well, it would -- daylight is the term -- it would -- 'cause the solution that was put together was very visible. It was a white, milky color.

And so, when you see it either daylighting in an area, then you have to sort of back off the pressure.

And then one of the slides

shows the manifold, as to how they adjusted that injection rate to get where they wanted to in the wells.

But we had a desired outcome of total volume injected, and that's what was achieved. But all that was done under an ADEM underground injection control permit. We just didn't go out willy-nilly and put stuff in the ground.

MS. LISA HOLSTEIN: Right.

MR. RICHARD SATKIN: Yeah. In the underground injection control group, that's different from the Brandi Little group, right, at ADEM.

And so, we had to do another set of well testing and set different parameters. They made us measure sulfate and ni- -- -- and ammonia nitrate, all

kinds of weird stuff.

They were concerned -- it was a concern about what we were adding to the groundwater. And all the results were really favorable. It was at the end.

And no comments from the UIC department.

MR. GERALD HARDY: Well, the UIC group has also pushed us -- wanted another well survey. So, they were -- the one we did a couple years ago, that -- the UIC group was the one that --

MS. LISA HOLSTEIN: Oh, they --

MR. GERALD HARDY: -- wanted it --

MS. LISA HOLSTEIN: -- pushed you for that second one.

MR. GERALD HARDY: -- an updated one, yeah.

MR. OWEN NUTTALL: Yeah.

MR. TERRY HAMIL: So I have a question. I'm just that kind of infantry kind of guy, right, so I'm gonna ask the infantry question, right. Is the water safe to drink?

MR. RICHARD SATKIN: Where? No.

MR. TERRY HAMIL: So, the water is not safe to drink?

MR. ED TURNER: Whoah, whoah, whoah, the well water? What water you talking about?

MR. TERRY HAMIL: Well, I'm talking about the water that -- so, obviously, all this --

MR. RICHARD SATKIN: This groundwater is not safe to drink.

MR. ED TURNER: You don't drink the well water, no.

MR. RICHARD SATKIN: You drink water that's on a public supply.

MR. ED TURNER: Yeah.

MR. RICHARD SATKIN: Okay. So, everybody's --

MR. ED TURNER: Yeah, you can't get the --

MR. RICHARD SATKIN: -- drinking water out of the faucet is clean.

MR. ED TURNER: Yeah, make sure you clarify what water you're talking about.

MR. TERRY HAMIL: I just wanted to know which water.

MR. ED TURNER: Yeah. That's -- because a lot of people don't know the difference if we say the water is safe to drink. They assume any water.

MR. TERRY HAMIL: No. That's not what I meant.

MR. ED TURNER: Water you go

to the tap is safe to drink.

MR. TERRY HAMIL: I wasn't trying to be crazy when I asked --

MR. ED TURNER: But trust me, there are a lot of people out there that --

MS. LISA HOLSTEIN: He's an infantry guy.

MR. TERRY HAMIL: When I turn the water faucet on --

MR. ED TURNER: You're good. Drink up.

MR. TERRY HAMIL: -- I drink the water that's coming out of that water faucet --

MR. ED TURNER: You're good.

MR. TERRY HAMIL: -- is that water good to go?

MR. ED TURNER: You're good to go. Drink up.

MR. TERRY HAMIL: Okay.

MR. ED TURNER: I'll get you a

bottle to put it in, too.

MR. BOBBY FOSTER: But if you're drinking out of a pond or a lake going north, how far is there really an issue, right?

DR. BARRY COX: You're not going to drink the water in the lake, is that going to be a problem?

MR. BOBBY FOSTER: Well, I know Reilly is an issue. But going north, I mean, there's Aderholt area --

MR. RICHARD SATKIN: I don't think Reilly is an issue. I mean --

MR. GERALD HARDY: Right, Reilly, we've tested it, it's not.

MR. BOBBY FOSTER: Reilly's okay?

MR. RICHARD SATKIN: No problem with Reilly. And the

groundwater contamination from here doesn't go to Reilly.

MR. BOBBY FOSTER: Okay. So, your northernmost, that's just south of Anniston Beach Road, northernmost point of compliance --

MR. RICHARD SATKIN: Over in here, yeah. Yeah. I -- these -- the wells here in this vicinity, there's some low-level contamination, but it's nothing like landfill three. The source of contamination is over here.

At one point we were looking at doing the injection wells right through the highway over here. And that was our first design in 2008, when we were talking about this.

And we thought that it would make a lot more sense to bring the injection array closer to

the source, to cut it off, this way we'd -- you know, just made a lot more sense.

DR. BARRY COX: So we don't think that the contaminants can get around the biobarrier, they won't be going to the left or the right?

MR. RICHARD SATKIN: Yeah. Yeah. So, we also looked at, you know, extending this at one point. Okay. And that's why we put in several of these wells.

I'm sorry, can't read these, but there's several wells out here that the contamination levels are below -- well below our targeting threshold.

DR. BARRY COX: Got you.

MR. RICHARD SATKIN: So, it didn't make sense to extend this. Okay. That's why we did that. We put in those nine

additional wells to kind of refine the horizontal extent. Yeah.

MR. JACOB OEHRIG: What is the current lateral extent of the plume?

MR. RICHARD SATKIN: Well, the lat of the plume goes like this. The main plume goes like this.

You do have trace levels up here, but the main plume goes like this.

MR. JACOB OEHRIG: Does it -- it doesn't exceed the point of compliance then?

MR. RICHARD SATKIN: No.

MR. JACOB OEHRIG: How far to the -- getting my east and west mixed up, too -- but how far west does --

MR. RICHARD SATKIN: Pretty much we don't see much contamination beyond this splay

fault. The splay fault acts like a barrier to us. Okay.

And, you know, it's depicted as a single line, but in reality, it's a lot of broken-up rock, okay, that occurs there.

And so, when you drill a well along here, you'll get a lot of flow, indicating, you know, hey, there's a lot of groundwater flow in here.

And the potentiometric maps all show that it's all moving to the north. Yeah.

I probably spoke too much.

MS. LISA HOLSTEIN: No. It was interesting. Thank you.

DR. BARRY COX: Historical question: What triggered -- I know we've been talking about this for what, decades: What triggered us to do this in 2 16?

MR. OWEN NUTTALL: That was

the MDA.

MS. LISA HOLSTEIN: What was the question?

DR. BARRY COX: In other words, these wells were put in it, what, 2 16?

MR. TERRY HAMIL: 2016.

DR. BARRY COX: 2016. And so, I said the question is: We've known about the contamination. What triggered it to go in in 2016?

MR. RICHARD SATKIN: Well, the wells, we had wells that go out --

DR. BARRY COX: I mean, as far as the --

MR. RICHARD SATKIN: -- (inaudible).

DR. BARRY COX: -- okay, the bioremediation, yeah.

MS. LISA HOLSTEIN: Well, there was a lot of research done

before we did anything. It was a long --

DR. BARRY COX: Yeah --

MS. LISA HOLSTEIN: Lots of research.

MR. RICHARD SATKIN: Yeah. Well, we had to do, right, get approvals on the RFI report, the investigation report. Okay. So, that wasn't until 2008, 2009.

And then we had to do a -- what's called a corrective measures implementation plan, so we developed one of those documents.

And then we went back and forth with the regulatory authority, with ADEM. Okay. And --

MR. GERALD HARDY: It was also --

MR. RICHARD SATKIN: -- so --

MR. GERALD HARDY: Also a combination, because, when we started this, the landfill wasn't capped, and we had to do the engineered cap on there.

DR. BARRY COX: Okay.

MR. GERALD HARDY: Which would have impacted how the groundwater flowed, because you weren't getting permeation through the old, loose fill.

So, you had to cap it. Let that stabilize. See how that impacted the groundwater flow, as we were running the other documents to get permission, because, you wouldn't want to design it under one scenario, implement that, and then the capping had caused the water to flow totally different.

DR. BARRY COX: Okay.

MR. RICHARD SATKIN: Yeah.

But this site has been one of our -- you know, we've been paying very close attention to this site. We've devoted a lot of resources and a lot of money to this, you know. Since 2011, we were -- and two thousand- -- yeah, 2011, we did treatability studies. And in 2015, we started putting additional wells. We tried to define the true extent of the contamination.

So, it took several years to do all those studies. And we didn't want to just jump into this haphazardly. So, we've done it fairly systematically and carefully.

DR. BARRY COX: Okay.

MR. RICHARD SATKIN: Okay. So, it's -- I mean, yeah, we've known about it. It's a concern

for everyone.

It's -- you know, if you look at all the site, this is the priority site for the MDA because it has off-site contamination.

Yes. Could we have done it sooner? No. I mean, maybe somebody could have, but we want to go through it (inaudible) --

DR. BARRY COX: No. I was just curious, because, we've -- as you've said, we've talked about it for --

MS. LISA HOLSTEIN: Forever.

DR. BARRY COX: -- forever, you know.

MS. LISA HOLSTEIN: Ever since we've been a RAB.

DR. BARRY COX: So what happened to boom this time to do it? So, as you said, it was a period of many years and

different things to --

MR. RICHARD SATKIN: Yeah, (inaudible) --

MR. OWEN NUTTALL: It's --

MR. RICHARD SATKIN: -- design.

MR. OWEN NUTTALL: -- the process.

DR. BARRY COX: Okay.

And good work takes time.

MS. LISA HOLSTEIN: Uh-huh.

MR. TERRY HAMIL: I guess so, yeah.

MR. BOBBY FOSTER: Any other questions in that area?

Then we'll move on to new business with ADEM, Brandi Little.

MR. OWEN NUTTALL: She's not here.

MS. BRENDA CUNNINGHAM: She's not here, but she sent a report -- well, her office sent

a report. She's been on leave. So, it's in your packet.

MR. BOBBY FOSTER: Okay.

MS. BRENDA CUNNINGHAM: ADEM's report.

MR. BOBBY FOSTER: Karen Pinson from NGB.

MS. KAREN PINSON: Is that me? Okay.

For our Pelham Range sites, at range J and range K, these -- we do remedial evaluation reports every year, so we go out and sample the groundwater. And we've just completed the sampling round in September of 2019. And we've just received comments back on our sampling report from a previous sampling event, received comments from ADEM. And we're addressing those.

And we prepared an updated

groundwater sampling and analysis plan, because we needed to update some of the EPA analytic methods that were used and changes there.

And then for the site we called the former toxic gas area, we are trying to complete the remedial investigation and baseline risk assessment.

And we've received from ADEM -- we submitted that report to ADEM in September of 2018. And we are addressing the comments that we received in May of 2019.

And then for the trap and skeet range, which is located here in the enclave, we have submitted an RI, remedial investigation, based on risk assessment, to ADEM. And we've been back and forth with some

comments and responses and talking to them.

And so we are about to wrap that one up, I think. We have -- ADEM has approved the -- our responses to their comments. And we're preparing the final remedial investigation report for that site.

And then -- so, that's about where we are there. That's all I have.

MR. BOBBY FOSTER: Mr. Hardy from MDA.

MR. GERALD HARDY: All right, a copy of -- I got four pages of notes that are in your packet. I won't go through all of that, but I'll point out a few highlights.

If you look on page one, the first three sites listed, which is landfill three, that

Mr. Satkin just talked about, small weapons repair shop and T6 are three sites that we did underground injection control. We did a bioremediation to assist the degradation of the contamination in -- so, those three sites have been -- recently have undergone underground injection.

A little note I'll add about landfill three, we talked about karst terrain and the highway construction up there. There was one area close to Reilly Airfield that highway had a tough time getting the roadbed stabilized. In other words, we had a little sinkhole underneath it. And they had to do a lot of work to get it firm enough to support the road. But I think that's stabilizing.

They started at highway -- they -- they put in the road, which starts really at the guard property there at the cemetery, goes north, and it intersects at Highway 21.

ALDOT's, once they got the roadbed completed, the paving started at Highway 21 and went just east of Reilly Airfield a short distance. And then they stopped and went to the southern end and paving north.

And let's hope, you know, we -- they know how to meet in the middle.

But that has held up some of the activity in that area, because that was the -- they decided to -- because of some historical World War I trench area, they had to re-route the road a little further east, and

it really then fell on the pathway of the old Goode Road. And that was the main north-south corridor that we used to access all the sites.

So, when they started the road construction, that limited the ability of anybody to get to the property until they can finish the road.

And I say all of that because on page two there is a site, landfill four, or the Butler Green Industrial Landfill, we have about twelve and a half acres that's called the industrial landfill area, part of landfill four, that has been an active landfill putting in construction demolition debris, as buildings were demolished on McClellan. That is about full.

But -- and we had hoped to do

a final cap on that landfill, but the road construction has prohibited being able to get to the landfill. And if that is completed, we've got it targeted to do the final capping some time in 2020.

The active -- or the permit to continue to operate that landfill will expire in January of 2021. So, they'll need to -- we'll need to accomplish that closure by then.

Another highlight on some of this is right below landfill four. You see it says Iron Mountain Road.

We've got several ranges over there -- if you've traveled on McClellan, coming in off the bypass, down to the church, or you know where the soccer fields are, and you can see some

exposed hillsides of dirt, where the trees were excavated, that's what we refer to as -- it's a cluster of different ranges, but we refer to it as Iron Mountain Road ranges. There were pistol and skeet ranges in there, small arms.

That's our next soil remediation to remove metals, contaminated soil. We did receive concurrence finally from ADEM on that corrective measures implementation plan.

We have put that out for an RFP for the contractors. A contractor has been selected. And we will be implementing that any day this week or maybe starting some of it.

But when -- I think the targeted completion date and all to be impacted by weather at

about hundred and twenty-five actual field days. So, by March or April, or the next time the RAB meets, we might have the report that Iron Mountain is done with the fieldwork. But, as we all know, there is a lot of paperwork and a lot of time.

MS. LISA HOLSTEIN: Yeah.

MR. GERALD HARDY: On page three, another highlight you'll see there, range twenty-nine that was east of the old industrial access road. I think range twenty-nine was actually -- I'm talking about the MDA portion -- there was an Army portion and Fish & Wildlife that had been completed.

We did the RFI, the RCRA facility investigation and determined that, with its proposed future use of

industrial/commercial, and some passive recreation areas, that there was no need for any further remedial action with those land-use controls. And ADEM concurred with that.

That impacted one portion. There was one of the water tank sites, as we call the Snap Road, Snap Lane Water Tank Site, that had about an acre that was -- hadn't been transferred due to the getting of concurrence from ADEM. And we have that now. And I think that notice has gone out for transfer, that one acre of property.

But that -- we've got to still do the environmental covenant to put in that restriction. No -- essentially, no residential use and no use of

the water, commercial or passive rec in range twenty-nine.

We also, in this, since we last met, on range thirty, the next area below that, that's in the north part of the site, we received ADEM concurrence on our RCRA facility investigation, which was -- we've got a small area of soil remediation to be addressed there.

That's also not a residential area. It will also be industrial, commercial. And so, that dictates the clean-up level, once you get to the soil.

So, we already have performed -- I reported in the past that we had received ADEM concurrence on a site-wide soil remediation plan, how we do a number of these smaller sites. ADEM had concurred with that.

So, all we are remaining to do is to submit a site-specific addendum to just identify the acreage and all that we will need to address for range thirty. And we hope to accomplish that in this next 20/20, also.

And since -- turn to page four of four. We operate, MDA, its cleanup, under RCRA authority. We have a cleanup agreement that's in lieu of an actual permit. It's processed as a permit.

We received issuance of modification number five to that cleanup agreement on July the 29th of this year. So, that has been -- one of the key modifications to that permit is the fact that we have a number of sites where the corrective

measures activity has been completed on that parcel or parcels, and so there is a new table added to the cleanup agreement that begins to document those sites where there's no further remedial action. It's a final report.

Corrective measures, when once we can -- MDA will have to make a decision under the current ESCA whether to pursue CERCLA warranty for the individual sites or to save 'em up and do 'em in a big batch.

Maybe they'll wait till I retire.

MS. LISA HOLSTEIN: Till you retire. Me, too.

MR. GERALD HARDY: And the last thing I'll make mention is, you know, we're required to, once a year, turn in a report on

the land-use control effectiveness of all the measures implemented. We turned that in in January of 2019. And ADEM has concurred with that report.

Any questions? Thank you.

MR. BOBBY FOSTER: Okay. Mr. Nuttall.

MR. OWEN NUTTALL: From the Army, going back to follow up on what MDA was just talking about with that almost an acre piece of property that the Army is still in ownership on, that's Snap Road Tank Site, the FOST, the finding of suitability of transfer document, one of the ones we say all the paperwork -- that document has gone out for public comment.

And at the same time, we submitted it to ADEM. So, they

have a thirty-day public comment period, as well. Comments are due back 19 November, if I'm not mistaken. That's a thirty-day public comment period.

Once we get the comments back from that, any comments that need to go in there, to adjust, the FOST will be done.

Then that goes up to Washington and goes up to higher headquarters for signature.

Once that part is signed, then it will go over with the environmental condition of property report to Mobile district --

MS. LISA HOLSTEIN: Mobile.

MR. OWEN NUTTALL: -- is who does the land transfer, who's the land people for the Corps, who we use at this site, and they will do up the deed over to

the MDA on that piece of property.

And, in that deed, we'll have the land use controls. That is the standard for Fort McClellan.

So, that's the good news. We're getting that one done.

Hopefully, the other site that we were talking about, landfill three, it's the same process, except that one's a little bit further down the road for when that one will be actually turned over.

I believe that's about an eleven, ten, eleven-acre site --

MS. LISA HOLSTEIN: Uh-huh.

MR. OWEN NUTTALL: -- that landfill three.

The other news that I have is -- I know in the last RAB meeting we were talking about the de-scoping of three and

eight.

That funding request has gone up. I did it two ways: I put up the total for all of three and all of eight to get funded. But the way the budgets are done, they're out years. So, talking with Keith Westbrook, over here with the Fish & Wildlife, I asked him if he had a priority, if I could only get one pot of money, which one.

So, that's -- I sent it up as two options. If I can get it all, that would be great. But if I can't get it all, we need to do area three first. That would help out the Fish & Wildlife.

So, that's up there in Washington in the queue for funding.

I don't know. I haven't heard

any more about it.

Like I said, our funding budgets are a couple of years out, when we do that. And, as you know, this came down as a surprise that we were gonna have to de-scope the two sites.

Besides that, everything else, you know -- like I say, the fieldwork hopefully will be end of December, January, February, sometime to finish all the fieldwork with all the other sites.

And then comes the fun part of all the paperwork.

MR. MICHAEL WINNINGHAM: Yes.

MR. OWEN NUTTALL: So, any questions for me?

That's all I have on the Army update because Michael with Zapata does most of that update.

MR. BOBBY FOSTER: Any

comments?

Who would like to adjourn the meeting?

MR. ED TURNER: So moved.

MR. BOBBY FOSTER: Do we have a second?

MR. JEROME ELSER: Second.

MR. BOBBY FOSTER: All in favor? Any opposed?

The meeting is adjourned.

(Whereupon, the meeting was concluded at 6:20 p.m.)

C E R T I F I C A T E

STATE OF ALABAMA)
CALHOUN COUNTY)

I, SAMANTHA E. NOBLE, a Court Reporter and Notary Public in and for The State of Alabama at Large, duly commissioned and qualified, HEREBY CERTIFY that this proceeding was taken before me, then was by me reduced to shorthand, afterwards transcribed upon a computer, and that the foregoing is a true and correct transcript of the proceeding to the best of my ability.

I FURTHER CERTIFY this proceeding was taken at the time and place as noted and was concluded without adjournment.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal at Anniston, Alabama, on this the 21st day November 2019.

_____

SAMANTHA E. NOBLE (ACCR 232)
Notary Public in and for
Alabama at Large

MY COMMISSION EXPIRES: 11-6-2021.