WURTSMITH RESTORATION ADVISORY BOARS WEDNESDAY, SEPTEMBER 1, 2021 5:00 P.M.	WURTSMITH RESTORATION ADVISORY BOARD (RAB)
<del>_</del> _	Transcript of the proceedings regarding the former Wurtsmith Air Force Base
4	being held via video teleconference technology and in-person at 6000 N. Skeel Road, Oscoda,
5	Michigan.
6	APPEARANCES:
7	TIM SUELTENFUSS, GALEN DRISCOL SARAH RIFFE, AEROSTAR
8	PAULA BOND, AEROSTAR JIM ROMER, AEROSTAR
9	
10	COMMUNITY RAB: MARK HENRY, CO-CHAIR
11	BILL GAINES JOE MAXWELL
12	DANIEL STOCK DAVID WINN
13 14	CATHY WUSTERBARTH ARNIE LERICHE
15	COVEDNMENT DAD.
16	GOVERNMENT RAB: CATHARINE VARLEY, CO-CHAIR PUNEET VIJ
17	BETH PLACE MICHAEL MUNSON
JESSIE STUNTEBECK (VIA TELECONFERENCE)  BEN WEISS  DENISE BRYAN	JESSIE STUNTEBECK (VIA TELECONFERENCE)
20	
21	REPORTED BY: Quentina R. Snowden, (CSR-5519)
22	Certified Shorthand Reporter & Notary Public
23	
24	
25	

1	MEMBERS OF THE PUBLIC ADDRESSING THE BOARD:
2	REX VAUGHN
3	ANTHONY SPANIOLA SHARON VRIESENGA
4	REX VAUGHN GREGORY COLE
5	CAROL COLE JENNIFER HILL (VIA LETTER)
6	CHRIS KOLANT (PH)
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

(CALL TO ORDER AT 5:00 p.m.)

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

MR. SUELTENFUSS: Let's begin. So, I wanted to welcome everyone to the Wurtsmith Restoration Advisory Board meeting tonight. My name is Tim Sueltenfuss, again. I'll be serving as the facilitator for our meeting this evening. Reporter is here to capture a verbatim transcript of tonight's meeting, and this online meeting is also being recorded. We're doing something a little bit more challenging than we've done in the past, we're doing a hybrid meeting with some folks in person and some online, so I appreciate your patience in advance with the extra steps that are needed to make this a success.

Before I review the agenda, let me turn to our co-chairs for welcoming remarks. So Dr. Varley, would you like to say any opening remarks?

DR. VARLEY: Yeah. I'd just like to thank everybody for showing up, and being available, and for all of the good work that we're all doing together, and hopefully we'll continue to keep making good strides toward progress. Mark?

MR. HENRY: I'm looking forward to moving forward as well. It's been a long time coming. I'm glad that things are finally starting

to happen and that we're actually moving forward towards some remedial actions.

2.1

MR. SUELTENFUSS: All right. Well, thank you very much to our co-chairs, Dr. Catharine Varley and Mr. Mark Henry.

Let's go ahead and move to slide

three, if we could. We have a full agenda tonight,
and we'll begin with updates from our RAB members,
and then review RAB business items including the
continuation of community RAB member and community
co-chair terms and action items. After that, we'll
move into remedial investigation and interim
remedial action update. We reserved a significant
portion of the time towards the end of our meeting
to address RAB members' questions, and also portions
of -- those portions of the agenda will be for RAB
members for discussions, and you'll see the RAB
members, we'll introduce them one by one here in
just a moment. Let's see.

Towards the end of our discussion tonight, we will have a public comment period or we'll hear from members of the public, and have the opportunity for three-minute verbal comments to the RAB.

During the technical presentation,

please do hold your questions until the end of the presentation. It's a relatively brief presentation, we'll address those questions at the end as well as in the RAB member questions portion of the agenda. So, for the RAB members who are here in person, if you have a comment that you'd like to make, please raise your hand so that I can see it, I'm over here to your right and somewhat behind you.

For those who are -- RAB members who are participating virtually, please raise your hand electronically and I'll be monitoring that as well as the support staff from Aerostar Sarah Riffe and her colleagues. Let's see.

For those of you who have joined remotely, we do ask that you mute your microphones so that we won't have any distractions or background noise. That will also be very important because there are some members who are -- or some participants who are participating virtually, and without display as well, to please, each time you speak, please state your name, and please make sure that we have only one person speaking at a time. I know that can be challenging, but please try your best to do that. That's going to make life much easier on our Court Reporter as well. And,

Quentina, our Court Reporter, if you need us to stop and pause and restate anything, just let me know.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

So, now let's move to slide Okay. four, if we could, and I wanted to review the ground rules for our meeting tonight. After I read these, I'll ask the RAB members to please continue to work, and if you continue to support these ground rules. So, I'll read these off. Respect one another and maintain an atmosphere of open dialogue and exchange of ideas. Use our time together efficiently, wisely and respectfully. Listen and remain open to each other's varying points of view. Speak clearly and succinctly, one person at a time, avoid interrupting Share information early, openly and others. Maintain a propensity for progress. honestly. Prepare to discuss document and move forward. Accurately and objectively relay to others the discussions that occur at board meetings.

So, RAB members, do those ground rules continue to work for you?

(MULTIPLE SPEAKERS): Yes

MR. SUELTENFUSS: Any changes to those? All right. Thank you very much. So, I'm going to do my job, so either you hug me or you hate me, and try to keep us on track and on the agenda

while also providing time for just good dialogue 1 2 from all of the RAB members, and then soliciting 3 public comments towards the end of the meeting as well. 4 5 So, let's now just confirm that all of 6 our RAB members are present and ensure we have a 7 The operating procedure and the 8 constitution of this RAB meeting dictate what a 9 quorum is, and so let me just go through name by name, and if you're here, please just say you're 10 11 here. Bill Gaines? 12 MR. GAINES: Here. 13 MR. SUELTENFUSS: Thank you, sir. 14 Mark Henry? 15 MR. HENRY: Here. 16 MR. SUELTENFUSS: Thank you. Arnie Leriche? 17 MR. LERICHE: 18 Here. 19 MR. SUELTENFUSS: Thank you. 20 Maxwell. 21 MR. MAXWELL: Here. 22 MR. SUELTENFUSS: Do we have Ryan 23 And let me just look to make sure to see 24 whether Ryan Mertz has joined us virtually. I'm not 25 seeing Ryan Mertz.

1	Do we have Jerry Schmidt? I'm not
2	seeing Jerry Schmidt virtually. As we'll indicate
3	here briefly, Jerry Schmidt will be continuing his
4	term, which ends September 11th, but not continuing
5	beyond that point.
6	Do we have Daniel Stock?
7	MR. STOCK: Here.
8	MR. SUELTENFUSS: Thank you, Mr.
9	Stock. David Winn?
10	MR. WINN: Here.
11	MR. SUELTENFUSS: Thank you, David.
12	Cathy Wusterbarth?
13	MS. WUSTERBARTH: Here.
14	MR. SUELTENFUSS: Thank you. Let's
15	see. From the Air Force, we have Dr. Catharine
16	Varley.
17	DR. VARLEY: Here.
18	MR. SUELTENFUSS: Thank you. And do
19	we have our representation from Au Sable Township?
20	And if you are representing Au Sable Township
21	virtually, please raise your hand electronically.
22	I'm not seeing anyone. Let's see.
23	I know that we have Denise Bryan with
24	District Health Department 2 on the line. So,
25	Denise, are you with us?

1	MS. BRYAN: Yes. Good evening. I'm
2	here.
3	MR. SUELTENFUSS: Great. Thank you.
4	Denise is joining virtually. Do we have Puneet Vij?
5	MR. VIJ: Here.
6	MR. SUELTENFUSS: Thank you. And we
7	have Beth Place with Environment Great Lakes and
8	Energy.
9	MS. PLACE: Here.
10	MR. SUELTENFUSS: Let's see. Do we
11	have representation from Oscoda Township? And if
12	you are representing Oscoda Township via virtual
13	means, please raise your hand electronically. Okay.
14	Mr. Michael Munson?
15	MR. MUNSON: Here.
16	MR. SUELTENFUSS: Thank you. And USDA
17	Forest Service, Mr. Ben Weiss is with us, correct?
18	MR. WEISS: Yes, I'm here.
19	MR. SUELTENFUSS: Great. Thank you.
20	That was a rhetorical question, I can see you right
21	in front of me. And I believe Jesse Stuntebeck was
22	also going to join virtually. Let me just see if we
23	have Jesse on the line. I see Jesse has raised her
24	hand electronically. So, we have both Jesse and Ben
25	representing the Forest Service.

Okay. We also have both our co-chairs. So, we do have a quorum per our operating procedures, Section 3.10.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

Okav. Well, I think that takes us through the administrativia. Thank you for your Let's move to slide five, if we patience with that. could. Actually, on this slide here, just a reminder that we will have the public comment here towards the end of the evening, and you can e-mail me or you can use the -- you can simply come up to the microphone when we get to that point. I'll also be asking those who are joining us virtually to raise their hand electronically if they would like to make a comment. Let's see.

Again -- all right. Let's move to the next slide and we'll move to stakeholder updates, please. Thank you.

And so we are now entering the portion of the agenda for the RAB members to provide any updates about any activities since our last meeting and so on.

Let's move to slide seven, please. We'll start off with the Air Force update.

DR. VARLEY: All right. Catharine

Varley, Wurtsmith (indecipherable.) So, right now,

we've been doing a lot of fieldwork out there, and Ms. Paula Bond is going to help us with explaining where we are with each of our projects here in a little bit.

We have made it through step one of pledging ground water samples.

Step two, we are well underway of collecting soil samples.

And step three, VAS samples is starting soon.

Along with that, we also are planning on moving forward as far as the IRAs go. We appreciate everybody that came out last night and look forward to seeing your comments if you haven't submitted them already.

Tim, back to you.

MR. SUELTENFUSS: All right. Thank
you very much. Okay. Next slide, if we could. And
so let's start off with any updates from our
community RAB members, I'll go one-by-one.

Mr. Mark Henry, our community co-chair, any updates you'd like to share?

MR. HENRY: One point of clarification. After these comments, VAS sampling is vertical aquifer sampling, for those of you who

1 are not into acronyms. 2 From the community co-chair's point of 3 view, the community RAB has been working with 4 reviewing the interim remedial action proposed plan 5 for Ratliff Park. We've had both internal meetings 6 and many of us have attended the informal technical 7 reviews that were provided by the Air Force so that we can get some clarification on those. 8 9 Beyond that, there has not been much 10 activity other than many of the people in the RAB 11 and the NOW group attended a tour that I provided working with the National Wildlife Federation to 12 13 bring people around to make them familiar where some 14 of the contaminated sites are. 15 MR. SUELTENFUSS: All right. 16 you, Mark. 17 Dan Stock, any updates that 18 you'd like to share. 19 MR. STOCK: No comment. 20 MR. SUELTENFUSS: Thank you. Howabout Mr. Maxwell, do you have anything you'd like 21 22 to share?

QRS Court Reporting, LLC

800.308.0068

MR. MAXWELL:

Not at this time.

MR. SUELTENFUSS: Okay. And to Bill

23

24

25

Gaines?

MR. GAINES: Not at this time.

MR. SUELTENFUSS: Thank you, sir. And Cathy Wusterbarth?

MS. WUSTERBARTH: Well, I think I'm going to take all of their time, if that's okay.

2.1

All right. We have -- as Mark has mentioned, we've been busy in terms of the community members that are participating in -- for instance, the webinar that we held last week regarding the interim remedial action. We made sure that we provided the community an opportunity to hear some of input and technical review that the NOW members had regarding the interim remedial action. So, we had some good participation with that.

We also highlighted the newly released movie called No Defense, which it shows the experiences of the Veterans and the civilians on this base related to their contamination. And, as Mark said, there was a tour that was -- participated well with that. And it actually happened in this room here.

Also, last week, we released a report in conjunction with the National Wildlife Federation that summarizes the events of the -- of this site itself. I'm going to take the time, actually, to

read a little bit of that report, if that's okay with you.

2.1

It is PFAS Contamination At the Former Wurtsmith Air Force Base, The True Story, and it was produced by Need Our Water and the National Wildlife Federation, and released last week in conjunction with the Great Lakes PFAS Action Network, which is a network of impacted communities fighting for better policies and PFAS cleanup. The report is a hard look at the actions taken or not taken by the Federal government and the State of Michigan to mitigate harm to the community and clean up PFAS pollution. The report highlights what must change in order to rebuild trust with the Oscoda community and see meaningful action on PFAS cleanup.

The recent Department of Defense inspector general report evaluation of the Department of Defense's action to control contaminated effects from PFAS at Department of Defense installations released on July 22nd, 2021 found that the DoD officials are not applying an enterprise-wide approach to mitigate PFAS contamination at military sites, and that people and the environment may continue to be exposed to PFAS contamination unnecessarily as a result. This

report that was treated here for Wurtsmith illustrates how the inactions outlined in the DoD report have materialized in realtime. It is a testament of what needs to change. The Federal and State governments must do more and do better to protect people and wildlife, and we need stronger policies at the State and Federal levels to hold polluters and regulators responsible for timely cleanup.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

The report is sectioned out into actions that occurred with the U.S. Air Force and the State of Michigan. It describes the issue or the need that occurred at the site, what should have happened, and then what really happened. sections include actions that are inconsistent with the known severity of the problem, and there are 14 listed of those related to the Air Force's action. False promises, there are two of those. Endless delays, there are four listed of those. And for the State of Michigan, the inability or unwillingness to protect people and natural resources in Oscoda, and there are 12 of those instances listed.

The document was thoroughly researched, as you can see by the 86 references that were listed.

And I would like to thank all of the environmental partners that we have related to the NOW group and helping the RAB, and also a special thank you to RAB members and non-members that are doing an enormous amount of work related to this site. Thank you.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

MR. SUELTENFUSS: All right. Thank
you very much, Cathy. We appreciate that. Ryan
Mertz and Jerry Schmidt are not with us, so we'll go
to Arnie Leriche. Arnie?

MR. LERICHE: The Department of Defense IG report that Cathy just mentioned is huge. And we've have known -- many of us have known that the Federal government, EPA, Department of Defense, management of budget has not taken action and asked for the budget to do what's right and required under the Department of Defense policies and CERCLA, the Superfund law, and -- at this site specifically. beg the public to talk to your congressionals and ask them if they have read it, if they understand it, what they're going to do about it, because if the Department of Defense is not pushed to follow their policies after this report, then we're going to lose the momentum, they will not ask for the money, because this -- they need money for other

1 things. And we've seen that happen at this site. 2 We don't get our fair share. 3 So, ask us if you have questions, ask 4 the NOW group, there's lots of people here that you 5 can ask, and I'm speaking to the public right now. 6 Thank you. 7 MR. SUELTENFUSS: All right. Thank And David Winn? 8 you, sir. 9 MR. WINN: Nothing at this time. 10 MR. SUELTENFUSS: Okay. Thank you, 11 So, we now heard from all the community RAB 12 members, and there are also members of the RAB who 13 represent governmental organizations, Dr. Varley 14 started off by providing the update for the Air 15 Force, but let's go through the others as well. we'll start with the USDA Forest Service, and let's 16 turn first to Jesse Stuntebeck and then I'll turn to 17 18 see if you have anything additionally. 19 But Sarah, if you could please take 20 Jesse off mute. And Jesse, we should be able to 21 Any updates that you'd like to share? hear you. 22 MS. STUNTEBECK: Hi, this is Jesse. 23 No, I don't have anything. I'll leave it to Ben if 24 he has anything. 25 MR. SUELTENFUSS: Okay. Thank you,

Jesse. We appreciate that. And over to Ben Weiss then.

MR. WEISS: In the last -- since we last met, we've have had continued good communication with the Air Force, but that's about all I can add. No new actions at this time.

MR. SUELTENFUSS: All right. Thank you. Let's then turn to Michigan Department of Environment Great Lakes and Energy, and to Beth Place.

MS. PLACE: Hi. Thank you. And so, we would just like to update on some of EGLE's responses to Air Force actions out there. And Catharine mentioned earlier, the RI is happening in a step-wise approach and they've already completed a few steps, so sampling existing groundwater monitoring wells, soil sampling, and pretty soon they will be doing the vertical aquifer sampling.

And so for the two events that have already begun, EGLE has been on site, or a representative for us has been on site to perform oversight and collect select quality assurance samples.

So, basically a duplicate of Air Force samples that we're having analyzed in a separate lab

just to really have a peace of mind or, you know, insurance on the analytical results.

We also wanted to mention that this week we have been participating in discussions on the vertical aquifer sampling locations, and that that has been going well.

monthly BCT minutes that are in our possession, comparing those to those recordings online the Air Force provided to us. And so by the end of the week, all the BCT minutes that we have from the monthly meetings will be sent back to Air Force, and then the plan is that they will review that and then Air Force will let us know when we can make those available on the MPART website. I believe they also put those in the library, but Catharine can comment on that.

We've been reviewing an explanation of significant differences for remedy enhancement for a (indecipherable) plume at LS 3031. We'll be providing our comments to that ESD, or explanation of significant differences, on -- by the end of the week.

We also wanted to mention that Air Force had previously provided us the four quarters

of data for their vapor intrusion investigation.

EGLE has indicated to Air Force that at the locations where outdoor soil gas samples were above the non-residential site-specific values established and agreed to with EGLE and the Air Force, that we would like Air Force to complete indoor sub-slab samples as a next step. And that is to have a better idea if there are any potential health concerns within those buildings.

2.1

I also know that, Cathy, we always appreciate the commitment and all the time that they put in here on this. And we just want to, you know -- I have a statement that we have regarding the NOW and the -- the NOW paper -- I can't remember the name that you were just discussing. Okay.

And so, just a few highlights out of that. Michigan just wants to let folks know that on the Wurtsmith website, there is a complete timeline, so there are a few more steps in that timeline than what was provided, understandably. And so we do have that online on the MPART site.

And then, just that Michigan has had a proactive and transparent approach to PFAS contamination, and it's been widely recognized as a national model for addressing what was once

considered an emerging class of contaminant when Michigan created the PFAS Action Response Team in November of 2017. And since that time, in our opinion, no State or Federal agency has done more to address PFAS contamination to hold responsible parties accountable and educate the public about this class of contaminants.

2.1

And so we agree with many of the findings made by the National Wildlife Federation and NOW regarding Air Force's response to contamination at the former Wurtsmith Air Force Base. However, having said that, the report fails to provide a complete timeline of the State's work that's available on the MPART website.

And so EGLE agrees that the lack of Federal action on PFAS and DoD's reliance on the slow-moving CERCLA process has certainly complicated Michigan's efforts to accelerate the U.S. Air Force cleanup on the former Wurtsmith Air Force Base, but MPART will continue to advocate for the public and do everything within the State's power to see that this former Federal facility is cleaned up to State standards, and the public's drinking water and environment is protected.

And I can definitely see that the pace

recently on Wurtsmith, although we strive to have a faster pace, that we do agree that we are seeing actions happening out there, the IRAs as well as we are very glad that the Air Force is in the field performing the remedial investigation. Thank you.

MR. SUELTENFUSS: Okay. Thank you very much, Ms. Place.

And let's move to slide nine, if we could. And to Oscoda-Wurtsmith Airport Authority, Mr. Michael Munson.

MR. MUNSON: Thank you, Tim. Yes, this is Mike Munson with the Oscoda-Wurtsmith
Airport Authority with a quick 12-point summary of airport activities.

The airport business has been very active as of late. Our on-site clients new hangar build is progressing. The Air Force was on site this summer with an exercise. MDOT AERO last week and through September is working with the airport maintenance staff at sealing and repainting runways and taxiway markings.

Long-term activity, there will be some taxiway rebuild and all of the taxiways will be rebuilt. And that's it. Thank you.

MR. SUELTENFUSS: All right. Thank

you, sir.

Let's see. Leisa Sutton with Au Sable
Township is not with us. Let's turn to Michigan
Department of Health and Human Services, Mr. Puneet
Vij.

MR. VIJ: So, I have two updates.

Regarding the residential well sampling, round two; total of round two 80 residential wells is the sample. And around 215 results letters were mailed last week. Also deer (indecipherable) will be out tomorrow, and MPART web page will be updated for deer and wildlife and you will be able to access a revised map that is for three miles published area, and along with a final deer report. And also, the revised deer, fish and fawn signs will be posted soon.

MR. SUELTENFUSS: Okay. All right.

Thank you for that update, Mr. Vij. Appreciate it.

Okay. Bill Palmer with Oscoda

Township is not with us tonight.

Let's move onto Department of Health
District 2. Sarah, if you don't mind, un-mute
Denise Bryan, who is joining us virtually.

Denise, any updates you'd like to share.

MS. BRYAN: The local public health does not have any new updates at this time, but thank you.

MR. SUELTENFUSS: Okay. Great. Well, thank you for joining. We appreciate that.

Okay. Let's move to that next slide then. And we'll move into the RAB business portion of the agenda.

And actually the next slide, just for your awareness, the community RAB members' terms expire on the 11th of September of this year. And the community co-chair's term as co-chair expires this month as well.

Of the primary community RAB members,
Dan Stock, Mark Henry, Joe Maxwell, Bill Gaines,
Cathy Wusterbarth, Arnie Leriche, Ryan Mertz and
David Winn do wish to continue serving as primary
community RAB members. Jerry Schmidt does not wish
to continue as a primary community RAB member. He
wanted to thank the RAB for the opportunity and just
appreciates the work that you all are doing. He
mentioned that his law practice is getting a bit
busier than it had been, and so he's unable to
devote the time needed to, what he mentioned to me,
was a very important cause and focus area. So as

such, Dan Stock, Mark Henry, Joe Maxwell, William Gaines, Cathy Wusterbarth, Arnie Leriche, Ryan Mertz and David Winn will begin another two-year term as primary community RAB members on September 11th, 2021. So, congratulations to you all and thank you for your service to the RAB.

Now, for the community co-chair, Mark Henry is our current community co-chair and he is the only one who has expressed interest in serving that role. So, Mark, if it works for you, you'll begin tonight your one-year term as community co-chair.

MR. HENRY: Works for me.

MR. SUELTENFUSS: All right. Well, thank you very much for agreeing to play that leadership role.

MR. HENRY: No problem.

MR. SUELTENFUSS: Okay. Now -- so there are some alternate community RAB members as well. This ties into discussion of the RAB operating procedures. And so the RAB operating procedures are under review, and I'll turn to the co-chairs for an update on this in just a moment, but I believe there had been some changes suggested, some additional discussion that is ongoing between

the co-chairs on this matter, and Mark, I think your suggestion was to hold off on renewing any alternate community RAB member's terms until the RAB operating procedures are adjusted, as that may impact it.

MR. HENRY: I anticipate that the operating procedures will be changed following many of the amendments that have been suggested, and the new operating procedures, I'm anticipating, will not have alternate and primary numbers. Everybody involved will be a primary member.

MR. SUELTENFUSS: Okay. Thank you.

All right. And Dr. Varley, anything you'd like to share on that?

DR. VARLEY: We're working together on this and hopefully we can deal with our team here. Thank you.

MR. SUELTENFUSS: Okay. Also, the co-chairs have a standard practice to meet following each RAB, and I participate in those meetings with them to take notes and so on. They did meet on August 12th, I believe it was, and there are currently 12 open action items, and plan to meet again following this RAB meeting to go through open action items with the agenda topics and so on. Is that --

DR. VARLEY: Absolutely.

MR. SUELTENFUSS: Okay. Great. Okay. Well, co-chairs, anything else you'd like to address on RAB business topics?

MR. HENRY: I don't have anything.

DR. VARLEY: Me neither.

MR. SUELTENFUSS: Okay. All right.

Well -- so, thank you for all of that -- that long intro, but it's important, I think, just to manage the mechanics of this body, especially when you have a cleanup that does take an extended period of time to keep this body functioning and active throughout what can be a very long process. So, I appreciate all of the work that has been put into that.

Let's now move into slide 12, if we could, and shift to our remedial investigation and interim medial action update, and we'll turn to Paula Bound with Aerostar. So, Paula, over to you.

MS. BOND: Can you guys hear me okay?

All right. Well, I want to thank everybody for coming out, members of the RAB tonight gathering in person, members of the public, and for those folks who are online. So, this is two presentations for me in a row, two nights in a row, so you guys are the luckiest people. So, I'm going to give an

update on the remedial investigation work and the interim remedial action work that we are doing at Wurtsmith to keep the project moving. And with that, I'll just kick off and just say next slide please.

So, the first slide that we're looking at is just a summary of the CERCLA process that's already been mentioned here tonight, and the IRA CERCLA process. So, we're doing two different things as part of this work, as everybody knows, the remedial investigation. So, the first component to that is RI scoping, which we have met with EGLE on several occasions and had multiple scoping meetings to discuss our approach and our path forward, where we're going to sample, how we're going to sample, things like that.

Once that scoping process was complete, we moved into developing our work plan or our UFP-QAPP to address everything that we're going to do, our procedures, our methods of accomplishment for the work. That also includes a risk assessment work plan. And then we move into the field data collection portion and the RI report.

The IRA CERCLA process, which was something that we also talked a little bit about

last night, begins the same way with IRA scoping. We had several meetings with EGLE discussing the initial approach for the IRAs, how we were going to implement those methods of accomplishment. So, that scoping process is complete. When we moved into the next phase, which is developing the proposed plans for both FT002 at Clark's Marsh and Van Etten Lake at Ken Ratliff Memorial Park. So, currently, the Clark's Marsh proposed plan has been finalized. Wе had the public meeting earlier this year. proposed plan for Van Etten Lake at Ken Ratliff Memorial Park is currently in the 30-day public comment period, which ends on Friday, actually, that was the meeting that we had last night, it was a public meeting for that proposed plan.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

The next step, after the proposed plans are complete, is the interim record of decision. For Clark's Marsh, that is currently well underway and hopefully that will be ready to be sent to EGLE for review pretty soon. We can't start the ROD for Van Etten Lake until, of course, the proposed plans is done and, like I said, hopefully that will be done in the next few weeks.

After that is the remedial design.

Once everyone agrees on the proposed plan for the

ROD, we move to the design, which actually lays out the engineered drawings for the design of the IRAs, and those will be included in an interim remedial action work plan, which will outline our methods and procedures of accomplishment for the IRAs. And, finally, the interim remedial action itself.

So, the interim remedial action work plan for Clark's Marsh is under EGLE review currently. So, once that is done, the Air Force gets that back, reduce comments, respond to those, we'll finish that document out, and when the ROD gets signed, we'll be ready to start the IRA for Clark's Marsh, and I'll talk a little bit more about that as we go through the slides.

Next slide, please.

So, we'll start off with going over the remedial investigation. So, as Catharine mentioned earlier, we are going in a step-wise process to accomplish the fieldwork under the RI. And step one was collecting groundwater samples from monitoring wells -- existing wells that had never been sampled for PFAS on base. So, we wanted to collect that additional data to help support our approach for the RI so that we can collect better samples, pick better locations for the later stages

of fieldwork. That began on July 19th and that project is -- that task is complete with the exception of a few wells that we still have to get access to.

Next slide, please.

So, this is a figure showing the PFAS data. And these are the same figures that are out in the lobby. This just shows the revised plume based on that new data that we collected. It's just been tweaked in several places based on the new data that we collected, but it's very similar to the existing plume map that we had before. And we've broken them out into PFAS and PFOA just to give you a better idea of where those plumes are for each one of those individual compounds.

Next slide, please.

This is the PFOA map. And you can see the difference between the two. Just as a general concept, the PFAS map shows a smaller plume, the concentrations are higher, but it's not as widespread. The PFOA plume has lower concentrations generally, but it's more widespread, and that's the difference for the two plumes that you see out there.

Next slide, please.

So the RI work plan, or the Uniform
Federal Policy Quality Assurance Project Plan that
we prepared, that was submitted to EGLE earlier in
the spring. They have reviewed that, provided the
Air Force comments. We are responding to those
comments and we're working together to -- to respond
to comments so that we can go to the field in these
different stages that we're working on now so that
we can get to the field earlier, because we're
trying to get as much work as we can done as quickly
as we can.

So step two, which is the phase that we're currently in, is soil sampling and field soil sampling, and we initiated that on August the 16th. We're still doing that currently and we'll be doing that for a couple more weeks. We sampled over 80 samples since we started, and that number is well over 100 at this point. And we'll give another update next time on the additional data that we collect between now and the next RAB.

Next slide, please.

This is just a figure. We started our soil sampling program at the fire training area, and this is a figure showing the locations that we have sampled in the fire training area so far.

Next slide, please.

We also completed the sampling at the VRMO, which is in the northern portion of the former base. This is just a map showing the sampling locations in that area.

Next slide.

So, currently, we are working on soil sampling in the base -- or the base operations apron. This is a figure showing where we have sampled so far, and there are several more samples that we're going to have to collect in that area, so that is where we're currently working and will continuing working over there for another week or so, and then we'll move onto the other areas that we had planned for soil sampling.

Next slide.

So, step three of our initial investigation process is vertical aquifer sampling, or VAS. You're going to hear that acronym "VAS" a lot as we move forward. And that is planned to start on the 16th, I think -- or the 13th, sorry.

So, in two weeks we're going to start that. We may start a little bit early next week if we can get everything in line with our drillers and get everything lined up. So, that is the -- that is

happening very soon.

Next slide, please.

So, we'll move into talking just a little bit about the IRA. The proposed plan for Van Etten Lake, like I mentioned, that is out right now for public comment. The public comment period closes on Friday, so comments need to be postmarked by Friday.

The interim record of decision for Clark's Marsh is under Air Force review. And then the remedial action work plan for Clark's Marsh is under EGLE review.

Next slide, please.

So, this is a graphic of the RI and IRA fieldwork timeline. So, I have all of our major milestones on here just to give everyone an idea of what we're planning and where we are. The RI fieldwork began back in July, and if we're -- as we move down the timeline, the next thing that we have on here is the FT002 Clark's Marsh IRA construction, which we have right now toward the end of October. So, hopefully all of our documentation can be completed, the ROD and the work plan, and then we can move forward with that.

I will let everybody know, because

we're trying to get to the field as guickly as we can, there's a lot of work that's been going on in the background. We have been working feverishly on procurement of the materials and supplies for that IRA, because a lot of the materials that we need have really long lead times, a lot of our process tasks, because these systems are specialized for our needs. A lot of our materials are special order equipment designed especially for our project. many of the materials are long lead times, and if you guys know, if you're doing any construction work at all, it's hard to get anything right now. but we are working really hard to have -- we are having materials delivered. Just yesterday, we had a large shipment of materials.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

2.1

22

23

24

25

So, we are getting ready. As soon as our documentation is signed and sealed, we are ready to start hopefully grading out there and pouring concrete on Clark's Marsh IRA.

So, the next thing that we have on the schedule is the Van Etten Lake at Ken Ratliff

Memorial Park IRA. That one is a little further out, because we all know that the proposed plan is still out for public comment. So, we still have to get that documentation process done for the ROD and

the work plan before we start out there. So, it's pushed out a little bit farther.

And then as we move through the winter and the summer continuing, we'll continue working on the RI as we go through the winter, as we can work, as the weather lets us, so we'll do as much as we can and then we'll finish up next year. And hopefully by that time, the IRAs will also be up and running by that time.

So, that's kind of the schedule that we have right now laid out. Everything is subject to change based on weather delays, schedule procurement and things like that, but this is what we're looking at right now, so --

Next slide, please.

All right. That's really all I have for an update on the RI and IRAs. If anybody has any questions on anything, I'll be more than happy to take your questions.

MR. SUELTENFUSS: Let's go ahead and go, Mark, to you first.

MS. BOND: I went through that really fast, sorry.

MR. SUELTENFUSS: As a reminder, if you could please state your name for the Court

1 Reporter. Go ahead. 2 MR. HENRY: Mark Henry. I actually 3 have two questions. 4 MS. BOND: Okay. 5 The soil sampling that has MR. HENRY: been completed, was that done down through the water 6 7 table or below the water table? 8 MS. BOND: That was -- we aren't 9 collecting any samples below the water table, so that's all (indecipherable) or non-saturated soil 10 11 samples. 12 MR. HENRY: For the purposes of 13 remediation, you may want to collect a few samples 14 below the water table to find out how much is 15 absorbed to the aquifer material that's not 16 dissolved. 17 MS. BOND: And that is -- that's a 18 great question, or great comment, and we are -- in the RI, we are looking at saturated materials for 19 20 (indecipherable) transport components. That's not 21 part of this step in the process, that's going to 22 happen a little bit later, but we are going to be 23 looking at those properties in the subsurface as we move forward with the RI. 24

MR. HENRY:

The other question that I

25

had was of the 80-some or 90-some wells that have been sampled that had not previously been sampled for PFAS, how many wells are on the base that have not been sampled for PFAS?

MS. BOND: That's a great question, and I don't have an exact number for you. There are a lot of monitoring wells. There are hundreds of monitoring wells on Wurtsmith.

Most of the wells, as we know, were installed for other projects to look at other plumes all over the base.

So, the wells that we chose to select for this phase were wells that were down-gradient, or near the PFAS plumes that we already know if they were in a good position, if they were at a depth that we thought would give us some good data.

So, we didn't go sampling everything that had never been sampled if they weren't in the right location, he we just selected a subset of those.

MR. HENRY: Just for clarification, were most of those wells around the perimeter? Or were they all over?

MS. BOND: They're really -- they're really all over.

1 MR. HENRY: Okay. Thank you. MS. BOND: You're welcome. 2 3 MR. SUELTENFUSS: Thank you very much. 4 And other questions about this presentation from the 5 RAB members? Go ahead, sir. 6 MR. GAINES: First, I'd like to say 7 that there is an ongoing action item, something in 8 the administrative things that you wrote that calls 9 for the slides to be legible. 10 MR. SUELTENFUSS: Correct. 11 MR. GAINES: They are not. That's been a continuing problem, a continuing 12 13 frustration. I find that just -- these slides are 14 reviewed. 15 Why can they not be reviewed for 16 compliance with our procedures? I've spent some time looking at the conceptual site model out there 17 18 and I do not know where the deficiency is. that we've seen a lot of PFAS and plume evidence in 19 20 State data, but I do not, out there, see any 21 evidence of sampling in the area west of FT002 as 22 far as water sampling. I know that there has to be 23 PFAS/PFOA moving off of the north end of the base. 24 There are biota samples that -- maybe 25 a do not eat fish advisory now on Allen Lake, on

Forest Service land. That, I don't think there were industry out in the Forest Service land. It has to have come from this base, yet there's nothing in the conceptual site model for the testing that I see that leads to that.

I know that there was a significant PFAS (inaudible) in the DRMO area. I know that settling beds would vary between the runway and Camp Nissokone. I haven't seen any evidence in what I see as far as the conceptual site model, or the sampling there, of how that is represented, and I'd like to know where your plan is and what data you have to represent that data, and whether or not you plan to replicate the State data, which shows a significantly broader spectrum of PFAS across the base than anything I've seen in the -- in the Air Force data.

So, do you plan to incorporate that data as you promised long ago, or do you plan to, at some point before we're presented a fait accompli with the RI, complete an investigation that's, in fact, all the way around regardless of assumptions that you make about specific area water flow. Thank you.

MR. SUELTENFUSS: Just for clarity --

I'm sorry, just for clarify, that was Bill Gaines, community RAB member. Go ahead, Dr. Varley.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

DR. VARLEY: Catharine Varley. So, we are using all data available. We are not using just Air Force data. When EGLE provides us data, we use their data. When Mark provides me data, we use the We are driving forward together. We are working this as a team. Forest Service is working OWA, airport is working with us. with us. Everybody is working together. We are sharing data. We are actively updating our CSM as we get data. EGLE is working with us. They provided a lot of data.

So, I don't quite understand your comment about the RAB slides not being legible, because, in my mind, they are very legible, so maybe we can talk afterwards and you can clarify what you had meant, because then we can work towards something that we can all agree will work.

MR. GAINES: Well, I have a relatively small screen and my eyesight has glaucoma. I'm sorry, that's -- that's the way it is. It happens when you get to be an elderly person. I recognize that.

The other thing is, I don't know when

the conceptual site model will be updated. 1 2 looked at out there did not represent what you just 3 said, in my understanding. Sir, the construction --4 DR. VARLEY: 5 it is -- we are updating it every time we get data. 6 It is a continuous model. Paula can speak to it. 7 Paula has got the online virtual tool, and if you'd 8 like to see our data, it's open. You guys can sit 9 down, one-on-one or whoever, and go through the 10 data. 11 MR. GAINES: Well, I specifically asked Paula about it this afternoon. 12 13 DR. VARLEY: Good. 14 MR. GAINES: And I was not satisfied 15 with the answer. Thank you. DR. VARLEY: You're welcome to sit 16 17 with him and go through the data, if that's what you 18 prefer. 19 MR. SUELTENFUSS: And Arnie, I see you 20 have a question, but before that, let me just see, 21 Dr. Varley, anything else that you'd like to share, 22 or Paula, in response to Mr. Gaines' question? 23 DR. VARLEY: I would like to work with 24 Mr. Gaines. Paula, go ahead. 25 MS. BOND: Yeah, I would just add that

for several of your questions, sampling west of the fire training area, we do have groundwater sampling planned west of the fire training area. And we can look at the plume maps out here whenever we're done here with the RAB, if you'd like, and we can go over those and I can show you where we're planning to sample west of the fire training area. There were a lot of other questions in there that have -- I don't -- I can't recall, but I'll be more than happy to go over that with you on the maps and show you where we're planning the same thing. MR. SUELTENFUSS: Mr. Gaines, does that sound like a path forward for you? Yeah, as long as the data MR. GAINES: is -- gets incorporated. That's my concern. just -- I have not, to date, seen it in the data. And we are years into this. And so I would have expected that we'd have a more comprehensive picture on the table at this point in time. MR. SUELTENFUSS: All right. Well, And Mr. Arnie Leriche? thank you. MR. LERICHE: Just a quick followup on that. This has been an --MR. SUELTENFUSS: If you could focus towards the mic.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

MR. LERICHE: Okay. This has been an action item that Bill started two and a half years ago. And Catharine, you did a great first step about six months ago, you produced a very detailed map, which is a good start, but it needs to be bigger and it needs to be updated and shared with the RAB on a quarterly basis if there are changes, which a CSM would be a major change.

In addition to that, the map has to have a list of the site names and so forth so that we can look for those in the more detailed reports if there's something that we have a question about, or the public has a question about, of how your recommendations fit with the reality of what's on the ground. And so I just throw that out. You're taking some good first steps, but I think that if we could follow up and work with you on that, and maybe a technical review on this topic meeting with the RAB, I think would go a long way in accomplishing this. So --

MR. SUELTENFUSS: Any -- let me just check in before going to you, David Winn.

Dr. Varley, any response that you'd like to share on that point?

DR. VARLEY: I look forward to

continuing to advance what we're doing. So, I'm writing down notes right now that I need to get a new updated IRP, AFFF out to everybody, and look at those plumes to see if there's a good way to present it for you, Arnie and Bill.

MR. SUELTENFUSS: Okay.

MR. LERICHE: It crosses into the training responsibility of the Air Force and the other agencies to the public and the community RAB. It crosses into that. I'll just leave it at that.

MR. SUELTENFUSS: All right. Thank you. David Winn? Yes, sir.

MR. WINN: Okay. I have a couple of questions. First thing is the -- on the RI, you stated earlier in your presentation that you've done testing soil samplings in different areas and groundwater testing. What about the testing for the area north of where you plan on putting the IRA for Van Etten Lake? Has that even been tested yet, or is that part of the test?

MS. BOND: That's a great question.

That is part of where we're going to go when we start our vertical aquifer sampling, the groundwater sampling. We all recognize that there's a data gap north of the IRA that we're planning at Van Etten

Lake Ken Ratliff Memorial Park, so that's going to be a priority for us when we start the VAS, or the vertical aguifer sampling, so that we can fill those groundwater data gaps there and see what we may need to do in that area. But that is a focus for us and that is part of the work that we're going to be doing in the next few weeks. MR. WINN: Will that affect anything relative to the current designs that you have? It will not affect anything MS. BOND: relative to the current designs that we have. MR. WINN: Okay. All right. Second question I have. The Clark's Marsh and RI comments that were made between EGLE and Air Force, when will those become public record? They're all published on DR. VARLEY: the record. I sent you guys an update, we said that. MR. WINN: So, the RI is out there as well? DR. VARLEY: The comments -- well, not on the RI, because the RI hasn't been finalized. MR. WINN: Okay. That's my question. DR. VARLEY: Yeah, sorry. The --I think he's -- Catharine, MS. BOND:

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1	I think he's talking about the comments on the
2	proposed plan.
3	DR. VARLEY: Yeah, the proposed plan.
4	MR. WINN: Yeah, I have the ones that
5	you sent out for the proposed plan, I have those.
6	What I'm asking for is Clark's Marsh and the RI.
7	DR. VARLEY: Those have not been
8	finalized.
9	MR. SUELTENFUSS: And let's try to
10	make sure that we're speaking one at a time for
11	Quentina's benefit and her poor fingers.
12	DR. VARLEY: Let me clarify. For
13	Clark's Marsh, for both the IRAs, EGLE's comments
14	are on the administrative record.
15	MR. WINN: Okay.
16	DR. VARLEY: If you're having trouble
17	finding them, let me know and I will get them for
18	you.
19	MR. WINN: Clark's Marsh, they're out
20	there?
21	DR. VARLEY: Yes. Both are out there.
22	MR. WINN: Okay. What about the RI?
23	DR. VARLEY: The RI comments have not
24	been finalized, so
25	MR. WINN: Do you have any idea when

that might be?

DR. VARLEY: As soon as we can start finalizing. We had 198 comments to go through and we've been going through them in a step-wise fashion. So, every time we make a decision, I go ahead, I put that in the memo of the record, that's going on the AR, and how we're moving forward. And that's based off of comment resolutions that Beth and I are coming to agreement with, with our teams, and that's the step-wise process that we're going down.

But I want to continue sharing information, so I shared groundwater data. And Mark and I had good conversations and hopefully that will continue. And if you have a concern, please bring it to my attention and we'll look at it.

MR. WINN: Nope. Just curious as to when the comments will be available that we can review, that's all. You've been more than generous in sharing information.

For the Van Etten Lake IRA, the preliminary designs, are they complete? Are they in process?

DR. VARLEY: I put everything on hold when I came on board, because honestly we need to

make sure that we address every single comment and 1 2 make sure that there's no design changes. 3 So, yes, we have ordered tanks, 4 because we figured that that was not changing, 5 because tank lead time was becoming -- what was it, 6 12 months, Paula? Or 18 months? 7 MS. BOND: Yeah, a lot of our 8 materials and supplies lead times were very long, 9 and things that we knew -- or were confident that 10 wouldn't change, we were looking at ordering those 11 just so we would have them ready to go. 12 DR. VARLEY: So -- but just -- we have 13 the ability to (inaudible), we have the ability to 14 change it. 15 MR. WINN: So, my question for -- my 16 question (sic) for asking that question, is the 17 timeline that you put up there, you just -- if I 18 just heard you correctly, you said the tanks are at 18-month lead time? 19 20 DR. VARLEY: They were. We paid for a 21 rush turnaround. 22 MR. WINN: Okay. 23 DR. VARLEY: And we will get them by October, so 24 25 MR. WINN: Okay. All I'm asking is,

is this timeline realistic based on where we currently are? If everything goes smooth --

DR. VARLEY: If everything goes as planned, if we're able to get EGLE the ROD in the next two weeks, then it's doable. Assuming we're all in lockstep, which means everybody needs to be in lockstep that way we're communicating everything we're doing all the way through.

MR. WINN: Okay. Does EGLE agree with that?

MS. PLACE: I know there have been some -- this is Beth Place. I know there have been some preliminary discussions with our attorneys on the AORS (ph) for the Clark's Marsh IRA, and so I think that will get easier WHEN we receive the correct documents to review it. So, I know both agencies' priority is to get them interim remedies constructed and operational.

MR. WINN: So, it sounds like there could be some issues.

MS. PLACE: I don't think so, with the record of decision. We also have a remedial action work plan in house for the Clark's Marsh interim remedial action, and we'll be providing our comments back to Air Force by September 13th.

MR. WINN: Okay.

MR. SUELTENFUSS: Mr. Winn, does that address the questions that you had or --

MR. WINN: Yeah, I mean, it addresses the question, but there's -- I mean, like anything normal, there's -- this is, you know, the best schedule that you have based on the date and time.

DR. VARLEY: This is the best we can do and this is best case. This is what I'm leaning for, this is what I want.

MR. WINN: And you need to understand why I'm asking this question. In the past -- and this is before you, okay -- community has seen -- I can't count on my fingers and toes how many different timelines that we've seen have come and gone, all right? And if -- if this is realistic, or if it's in the ballpark, and from what I've seen so far from just me personally, I think that you guys are very sincere about getting this thing moving and getting it going.

My issue is, like I said, is what we've seen in the past for the last 12 years or whatever, all right, we've seen timelines come and go and nothing get done. And all I'm asking is -- from a community standpoint, is to make sure that

we're doing the best we can and that if there are any hiccups or issues, that they -- that the group sit down, resolve those issues so that we can move forward.

2.1

All the community is looking for is these IRAs to move forward and get installed and up and running. That's going to make everybody a heck of a lot happier, and I know it will make a lot of you as well. So, that's the reason for my asking.

DR. VARLEY: Absolutely. And I look forward to working it with you.

MR. WINN: Okay. Thank you.

DR. VARLEY: Thank you, sir.

MR. SUELTENFUSS: Well, thank you very much, Mr. Winn. We're still in the RAB member questions. We will break -- move to a break in about 20 minutes, just for your awareness. But let me check with the RAB members for other questions. I see Mr. Winn.

MR. WINN: I do have one more question and it's not relevant to the IRA. The BCT meeting minutes, okay? Beth mentioned in her presentation that she's in the process of sending those BCT minutes back to the Air Force, okay? The last one that I understand is in the record is February. So,

those BCT minutes is what the public looks at to be able to understand what's going on.

My question to you is once the Air

Force receives those BCT meeting minutes, how long would you anticipate that you are going to need before those can go back to EGLE and those can get on the MPART website for public review?

DR. VARLEY: We'll turn those around as fast as possible, so those are two contractors are PDF contractor Bay West is now in the finishing up the documentation stage of their contract and (inaudible) contractor. So, they will actively work those and we'll get those done, I will stay on top of it as fast as possible.

MR. WINN: I would just ask that you do that, because again, the last ones that are out there from February, and we're now in August, so again, those are -- that's information the public uses to understand what goes on in the month-to-month meetings and the progress of this project, so --

DR. VARLEY: That makes sense. And if you need anything along the way, just ask.

MR. WINN: Okay. Thank you.

MR. SUELTENFUSS: All right. Thank

you very much. Other questions from the RAB 1 2 I'm sorry, could you state your name? members? 3 MR. MAXWELL: Joe Maxwell. On the 4 north side of the base is a place where the old 5 pump, KC135, was stored after it crashed, and 6 there's also settlement basins there -- settlement 7 basin from old septic systems, sewer systems, that 8 have been long buried. Are there soil samples and 9 water samples in both places, typically? So, if I -- I think I heard 10 MS. BOND: 11 you say the KC135 that was stored. Are you talking 12 about the DRMO where it was stored up there? 13 MR. MAXWELL: Yeah. 14 MS. BOND: Yeah, we are -- yeah, we 15 have done soil sampling in the DRMO, yes. And the other one? 16 There is an old 17 MR. MAXWELL: 18 settlement basin from an old sewer system on the north side of the base. It's all been buried, it 19 20 was there years ago, and it's all been buried. 21 was -- I can point it out when I'm out there, but 22 it's hard to describe. It was there. 23 MS. BOND: Yeah, I'm not sure that I 24 know where you're talking about, and I don't know if 25 Catharine knows --

1	DR. VARLEY: Yeah. So, that's the
2	site up into L3031 that Mark sent us all the data
3	about, and we have been working on scoping that
4	project for L3031. I believe it's falling through
5	the cracks this year, it will be picked up next
6	year, but that's because we prioritized the removal
7	of FT002. And that is my highest priority, I want
8	that to happen this year. We want to remove that
9	source of before it has a chance to impact Clark's
10	Marsh.
11	MR. MAXWELL: Thank you.
12	DR. VARLEY: Yes, sir.
13	MR. SUELTENFUSS: And, Mr. Maxwell,
14	does that address the question?
15	MR. MAXWELL: Yeah, but I have one
16	more.
17	MR. SUELTENFUSS: All right. Go
18	ahead.
19	MR. MAXWELL: This is for Dr. Varley.
20	Back in July when you gave us a technical meeting,
21	you talked about a putting a map in Van Etten
22	Lake. There's been some stuff that has been
22	
23	previously done very successfully in the same kind
	previously done very successfully in the same kind of thing to reduce pollution. Whatever happened to

DR. VARLEY: That idea is still on the table, sir. So first, we need to get the capture under control so that we don't -- so that we do removal of sand at the lakefront, and go ahead and put down a clay mat and be able to cover it up that we aren't having more flowthrough. If we have capture already then that mat is going to be more of a lid and next take care of the foam issue and treat the lake by more or less just flowthrough. So, that was on the table.

(Indecipherable) also came to me with a proposal recently that I think we might try a three-stitch pipe bend, right? So, it's the same thing. Very similar concept. It's a flowthrough mat, and if it works there, that would be the verification we need to be able to put it somewhere else.

MR. MAXWELL: Great. Thank you.

MR. SUELTENFUSS: Other questions from RAB members? Yes, go ahead.

MS. WUSTERBARTH: Thank you. So, yesterday was the public comment period for the IRA for Van Etten Lake, and I made some comments that were created by community members in addition to the environmental groups that we partnered with, and I

would like to have those comments, for the sake of 1 2 not reviewing them all tonight, submitted to this 3 meeting, if possible. Is that -- is that possible? 4 As comments from the community as part of the 5 response to the presentation. 6 DR. VARLEY: So, last night's will be 7 posted online. This one will as well. You can 8 always review it if you want to. I don't know if 9 -- I mean, you can attach it to meeting minutes 10 or --11 MR. SUELTENFUSS: However you would like to proceed. Certainly, if you decided to 12 13 reread during the public comment period, it will be 14 captured at that time, but Dr. Varley, I defer to 15 you --DR. VARLEY: I'll stick with 16 17 whatever -- Mark? MR. HENRY: It doesn't matter to me. 18 19 DR. VARLEY: Cathy, whatever you want 20 to do. 21 MS. WUSTERBARTH: It looks like we have many of the same people that were here last 22 23 night today, so formerly I'm just not sure, but I 24 would like to have those comments submitted as part 25 of the community speaking on --

1	DR. VARLEY: Why don't you? We've got
2	time. We can read them if you want.
3	MS. WUSTERBARTH: I don't know if you
4	want me to do it now or during public comments.
5	DR. VARLEY: During public comments,
6	right?
7	MR. SUELTENFUSS: I would suggest
8	during public comments. And so I'll add you to the
9	list of public comments. And just for awareness,
10	that was Cathy Wusterbarth speaking just there.
11	MS. WUSTERBARTH: Sorry.
12	MR. SUELTENFUSS: Does that work,
13	Cathy?
14	MS. WUSTERBARTH: Yes.
15	MR. SUELTENFUSS: Okay. Other
16	questions from the RAB members? Mr. Leriche?
17	MR. LERICHE: As part of the
18	presentation that you gave, thank you very much for
19	that, I'd like to ask as an action item that in
20	that Air Force presentation part of the future RABs
21	that you talk about the reports that and the
22	status of those reports could be just a slide with
	the detail, not that much talking unless there's
23 24	the detail, not that much talking unless there's some highlight that needs to happen like the BCT

some of them are over two years old. And so I think that would be a very important add to the RAB and to the community to see what reports, where they are, how quickly things are moving along. We'll understand what's being discussed here a lot more. So, that's an action item.

2.1

DR. VARLEY: All right. Hold on.

Before we make that an action item, what I'm trying to do is I'm trying to get organized, first of all.

I'm still fairly new to this, so give me a second.

But one of the first things that we decide to do is start putting together a tracker, and that tracker is being put together now for the beginning of every BCT, so we're going to start sending that out to the RAB members as well, so you'll have that in realtime. You don't have to worry about waiting for a RAB meeting for that, because we're meeting for BCT meetings more often than we are the RAB a lot of times, right? So --

 $$\operatorname{MR.}$  LERICHE: The reports are not on the action item tracker.

DR. VARLEY: No, but I -- we're working on putting that together, sir. That's what I'm telling you. I'm working on that. So, we're going to have it soon as well as a calendar of what

1 we're doing when. So we're working on getting 2 organized. I just need a little bit more time if 3 you can --MR. LERICHE: I understand. 4 This is 5 not a complaint to you for sure, not to you. 6 is something that's historical. But the AR, when 7 it's updated, we need to be notified when there is 8 an update, otherwise we don't know to go there. 9 DR. VARLEY: Are you reading the e-mails I'm sending you? 10 11 MR. LERICHE: Of course I am. They're in there every 12 DR. VARLEY: 13 time, I'm telling you. 14 MR. LERICHE: That's only recently. 15 But in the information repository at the library --MR. SUELTENFUSS: Okay. Let's let Mr. 16 Leriche finish up. 17 So, I think we can have 18 MR. LERICHE: a more detailed discussion, but the information 19 20 repository has fallen down over the last 18 months 21 in being updated, so the public does not have that 22 method of going there and reading if they don't have 23 a computer, or they just want to see the maps and so 24 forth in more detail. So -- but that's a joint 25 effort between the community RAB and the Air Force.

I'd like to add to the presentation you gave, a report that has not been discussed in maybe three to six months, and so I'd like to know the status of this, and that's the five year -- the fifth five-year review. And it's my understanding that a five-year review is a look back at five years of the performance of actions, records of decisions, GAC units, other things that have been required to be installed, or tracked, or whatever. And that report is coming up on two years overdue on the 30th of this month.

And so the first question is, I'd like to know the status of that and when we're going to actually get it for final or review, whichever the process is.

The second part is I asked at the last meeting or the one before that, that it's my understanding that a five-year review includes an evaluation of all of those records of decisions and GAC units like FT002 as an evaluation of the protectiveness to human health, the environment and also in addition to, was it -- is it meeting the purpose of that record of decision for that equipment.

And I was told that for PFAS, the

five-year review does not include the protectiveness, and I'd like to just add to the record I found just this weekend the Navy says that is on the east coast. Their five-year will also consider -- it's due in November of this year -- will have a PFAS protectiveness.

So, I don't know how much you want to talk about that now. Will yours include that and what is the status of that?

DR. VARLEY: First of all, I'm still fairly new. I prioritize fieldwork. So, we are working on documents, but we are working on the fieldwork and getting into the field faster than anything else, right? We want results. It's time to do work.

Once we hit winter, we'll have time to do document reviews, work on additional work plans, move other things forward, so we'll be ready for next year's season, right.

We are working on the five-year review. It has gone back and forth with legal. The protectiveness statement is something that has to be approved by our -- approved by the Air Force, right, before it can actually go forward. So, it is taking longer, but it also is not the highest priority at

1	this point in time, and the reason being is
2	fieldwork is important. If we don't have fieldwork,
3	we don't have data to analyze over the winter. If
4	we don't have data over the winter, we are not ready
5	for next year.
6	So, I'm trying to be results-driven
7	and that's my goal. But we will get to it, Arnie, I
8	promise. We're just not there yet.
9	MR. LERICHE: So, EGLE has not seen it
10	yet and still hasn't?
11	DR. VARLEY: I believe so.
12	MR. LERICHE: Okay. Thanks.
13	MR. SUELTENFUSS: Okay. Thank you for
14	the question, sir. Other questions from the RAB
15	members? Yes, sir.
16	MR. HENRY: Just a followup. Mark
17	Henry. Will that upcoming five-year review, when
18	it's done, have a protectiveness statement?
19	DR. VARLEY: That all
20	MR. HENRY: Do you anticipate it?
21	MS. VRIESENGA: This is Sharon
22	Vriesenga this is Sharon Vriesenga from the Air
23	Force. Can I take that one, please?
24	MR. SUELTENFUSS: Go ahead, Sharon.
25	MS. VRIESENGA: Five-year reviews talk

to RODs that are already in place, remedies that are We make protectiveness determinations in place. based on remedies that are in place. So, all of the remedies that are in place and have decision documents at Wurtsmith will be evaluated in the five-year review. That includes interim ROD if we have interim ROD from the five-year review or done If we have a site where there's a final -- is done. record of -- record of decision, but maybe there's PFAS on there. If we know there's PFAS on there, but we don't have a record of decision for that, we will evaluate whether the remedy is protective in the short-term versus in the long term, because we won't have a PFAS remedy in place. That's how that's being handled with PFAS on Air Force installations across the country. MR. SUELTENFUSS: Thank you, Sharon. MR. LERICHE: Just a quick followup. Is that across the country for the Air Force? MR. SUELTENFUSS: Just a moment. Real quick. And let me just make sure, Mark, that that addresses your question. MR. HENRY: Yes. MR. SUELTENFUSS: Okay. Great. Thank

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

you.

Arnie, go ahead.

1	MR. LERICHE: To Sharon, across the
2	country for the Air Force, I'm sure that was part of
3	the answer you gave, is it also across DoD branches,
4	DoD-wide, enterprise-wide? The way the five-year
5	review for PFAS protecting this in this five-year
6	review is going to be done?
7	MS. VRIESENGA: I don't advise the
8	Navy and the Army, so I can't give you a definitive
9	answer on that. I can tell you how it's being
10	handled across the Air Force and that's what I
11	stated previously. I think we're being consistent
12	with the other services, so again, I do not advise
13	them, so I cannot speak for them.
14	MR. LERICHE: So, is this the first
15	one for PFAS for the Air Force because of the
16	MS. VRIESENGA: No. We have been
17	handling PFAS across the United States at other
18	bases and former bases, so it's coming up in the
19	five-year review.
20	MR. LERICHE: But this is the only one
21	that's overdue, isn't it?
22	MS. VRIESENGA: No, sir, it's not.
23	MR. LERICHE: Okay. Thank you.
24	MR. SUELTENFUSS: Great. Sharon,
25	thank you for your comments. Anything else you'd

like to add on that point?

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

21

22

All right. We have about seven minutes or so until our scheduled break. Any other RAB member questions at the moment? Yes, go ahead, Beth Place.

MS. PLACE: Beth Place of EGLE. I just wanted to follow up on Mr. Gaines's question about potential site model and I wondered if something EGLE has asked for along the way, I know (inaudible) shows you the map of the locations and plumes, it's easy to understand, but would it be helpful to the RAB to have figures in place that have the older locations as points along with the plume maps, something like that that you guys could refer to? I don't know if that's something Catharine can provide to you.

DR. VARLEY: That's what's attached.

Beth Place again.

MS. PLACE: Okay. Good.

MR. SUELTENFUSS: Okay? All right.

Other questions from the RAB members? Yes?

MS. PLACE:

I have one more. I thought what Sharon said on the

Okay.

call, but I wasn't quite sure if I caught it right,
was that PFAS is on one of the IRP sites with the

remedy that is being reviewed with the five-year

review, that there will be short-term and long-term 1 2 protectiveness statements for PFAS; is that correct? 3 Sharon, can you answer? DR. VARLEY: 4 MS. PLACE: Just confirming. 5 MS. VRIESENGA: I had to un-mute 6 It's a little unwieldy with the telephone. 7 What I was saying, and this gets 8 convoluted, but with the remedy that's in place, 9 let's say is for PCE, but we have data on PFAS, and 10 we know that we have exceedances, we've got RI data, 11 or we've got ESI data or whatever, we look at 12 whether the remedy that's already in place is protective in the short-term also for PFAS. 13 14 example, often there are land use controls on a site 15 that prohibit groundwater use. If the PFAS is in 16 the groundwater, even though we don't have a long-term remedy in place for PFAS yet, we can say 17 18 that the remedy is protected in the short-term if there's a land use control that prohibits 19 20 groundwater use because of the PCE contamination. 21 Those are the sorts of things we're looking at. 22 MS. PLACE: Thank you, Sharon. 23 MR. SUELTENFUSS: Any other RAB member 24 questions at the moment? 25 MS. WUSTERBARTH: I have another

1 procedural question. 2 MR. SUELTENFUSS: Cathy Wusterbarth. 3 MS. WUSTERBARTH: The report that I 4 referenced in the short summary that I gave, I'd 5 like to plan to be submitted as part of the RAB. 6 did provide that to Dr. Varley via e-mail about a 7 week ago. So, I'd like to have that included. 8 MR. SUELTENFUSS: And sorry, for 9 clarity, you mean included in the transcript of tonight's --10 11 MS. WUSTERBARTH: Whether it's an 12 attachment or however you would like to do that. Ι 13 mean, it's a -- you know, it's a 15-page report 14 so --15 MR. SUELTENFUSS: Right. Right. 16 Co-chair, any ideas on how you'd like to address that? 17 18 DR. VARLEY: Any ideas? MR. HENRY: Well, it hasn't really 19 20 been read at a meeting, so -- at any formal meeting. 21 And so putting it as an attachment to the -- to RAB 22 meeting may not be appropriate. Reading it during 23 the meeting -- during -- towards the end of the 24 meeting, at least a summary of it, may be within reference to the document or where that document 25

could be found, might be more in line.

2.1

DR. VARLEY: I agree. I haven't read it yet, I apologize. I'm still catching up on my reading list, but I'm getting there. So, hopefully over the next week or two I can read it, but if you'd like to read portions of it and then tell us where to find it, that would be awesome.

MS. WUSTERBARTH: I can do that. And I'd also ask the Air Force to make a response to that report since (inaudible) summarize to find out all information, we'd like to have a response similar to how the State responded in terms of just formally letting us know what's in the report.

DR. VARLEY: Okay.

MS. WUSTERBARTH: Thank you.

MS. VRIESENGA: I'm sorry, this is

Sharon Vriesenga. Ms. Wusterbarth, why are you
asking the Air Force to make a formal response to a
public report?

MS. WUSTERBARTH: Because, as Dr.

Varley had mentioned, we're partners in this

process, and so we would like to have some feedback

on what they think the direction that we're going

with all of the work that we're doing, and if

there's any feedback that we need to consider, you

know, change in directions.

DR. VARLEY: So, I'll give you my two cents without physically going through it yet, so I might have more to add later.

So right now, I have been focused on the here and now and then moving us into the future. What is our long-term game plan? How do we actually make things happen now, quickly, and keep that momentum up? And I do need everybody in this room, as well as everybody online, to help us with that process.

where we came from, but with that in mind, we also don't want to dwell on the history too much, because that might actually hold us back from moving forward. So, it's everything in perspective.

If we do this as a team and we move forward in the right direction, then there's no reason why we can't clean up these base sites.

There's no reason that we can't complete the RI in two years. There's no reason that we can't move on to the FS and start putting, you know, long-term remedies in place.

So, I'm trying to take a big vision to it. I know that there's been a lot of piecemeal

throughout the years. I like to start with right here. Where are we right now? How do we speed things up? And then how do we keep that going? So, hopefully we can all do that together. And I will read it, trust me. We'll get there. Thank you.

2.1

MR. SUELTENFUSS: And Cathy, for your awareness, just -- I've been keeping track of those who would like to make a comment during public comment, and you are on that list. I also have, first off, Anthony Spaniola, he indicated via the chat function of the online meeting that he would like to make a comment, so when we start public comment, Tony, I'll turn to you first, then to Cathy Wusterbarth.

I'll then read -- there's a statement that Jennifer Hill had asked to be read during the public comment period, so I'll check with the co-chairs about how they would like to proceed on that during the break.

We are at 6:20 Eastern and so scheduled for a ten-minute break. Does that work to go ahead and proceed for the agenda, a ten-minute break? Okay. So, again, thank you for your patience. Let's go into a ten-minute break. Please go ahead and stop the microphones during this

ten-minute break. 6:21 now, we'll come back at 6:31 Eastern. Thank you.

(Off the record at 6:21 p.m.)

(Back on the record at 6:31 p.m.)

MR. SUELTENFUSS: Let's go ahead and get started again. Welcome back, everyone. This is Tim Sueltenfuss and we are going to continue the Restoration Board meeting for the former Wurtsmith base.

We will turn in just a moment to clarification of the comment of Sharon Vriesenga, Air Force attorney, but just a reminder to the RAB members, please do -- we are getting a bit of feedback on the mics maybe by rustling papers near them or having phones on vibrate nearby, so please just try to avoid impacting those mics, and thank you very much for your patience with this setup.

Let's first turn to Sharon Vriesenga for comment and then we'll go to RAB member questions. So, Sharon.

MS. VRIESENGA: Hi. Thanks, Tim.

This is Sharon. I just wanted to clarify how I answered the question a minute ago, because I wanted to make sure I didn't mishear it.

We will be looking at short-term

protectiveness regarding PFAS in the upcoming five-year review for sites that already have remedies in place. So, if there is a site that has PFAS contamination that we're investigating in the RI, that there is not a remedy already in place for other contaminants on that site, it will not be evaluated in the five-year review. So Beth, I just wanted to follow up to make sure I hadn't said something to mislead you on that score. Thank you, Tim. MR. SUELTENFUSS: Thank you very much. And, Beth Place, does that address the questions that you have? Thank you, Sharon. MS. PLACE: Yes. MR. SUELTENFUSS: All right. Thank you very much. We appreciate that. Let's see. Mr. Bill Gaines had a So Sarah, if you could, let's move back question. to one of the first map slides in the presentation that we just viewed. Mr. Gaines, does that one work for you? MR. GAINES: That one works just fine. I challenge anyone here to read anything in any legend on that slide.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

MR. SUELTENFUSS: And I realize there

are some folks on the phone that are having a bit of difficulty hearing for a variety of reasons. And so, Mr. Gaines, you made the point that you made before, which is just the importance of having legible graphics and documents for RAB meetings, correct?

MR. GAINES: Yes. If you're going to talk about something, I'd like to be able to discern what it is you're presenting.

MR. SUELTENFUSS: All right. Well, thank you very much. And I see Cathy Wusterbarth has a question.

MS. WUSTERBARTH: I do. I have a comment just related to maps. There's a really great new map out there. It's beautiful. It doesn't have a date on it though, so dates are really helpful for us when we are trying to track when things are happening. So, in the future consider maps that are dated.

MR. SUELTENFUSS: Thank you. And we're still in the RAB member questions. Let's go to that slide. Mr. Arnie Leriche with a question.

MR. LERICHE: Just a quick followup to Sharon's clarification on her response. For a layperson, the FT002 is -- had an interim ROD. And

1	therefore and it was in this period that's
2	covered by the five-year review, and it was for PFOA
3	and PFAS, so for that one instance, how is this
4	five-year review going to reflect the protectiveness
5	for PFAS or PFOA/PFAS? I guess
6	MS. VRIESENGA: This is Sharon
7	Vriesenga. I'm not
8	MR. SUELTENFUSS: Go ahead, Sharon.
9	MS. VRIESENGA: Arnie, I'm not sure
10	I'm understanding your question correctly. But if
11	there is an IROD in place when we do the five-year
12	review, the IROD will meet the remedy and the IROD
13	will be evaluated for protectiveness in the
14	five-year review.
15	MR. LERICHE: Does that, in any
16	someone experts around me here, give me a nod,
17	because I don't understand it. Maybe later we can
18	talk about it.
19	MS. PLACE: This is Beth Place. So,
20	are you asking if in the five-year review, if
21	FT002 will have a PFAS protectiveness statement?
22	MR. LERICHE: It will.
23	MS. PLACE: I'm asking if that's what
24	you're asking, Sharon.
25	MR. LERICHE: That's what my question

1 is to her. 2 MS. PLACE: To Sharon, okay. 3 outside of the IRA, correct? So the --4 MR. LERICHE: Right. Well, no. was an IRA in 2014/'15. 5 The new one -- right. That one was different. It's outside the five-year 6 7 review. 8 MR. SUELTENFUSS: So, Dr. Varley, any 9 further clarification needed on that? DR. VARLEY: Okay. So, I don't know 10 11 how to answer this, so Sharon, if you could answer, 12 will FT002 have a PFAS determination? MR. LERICHE: Based on the first 13 14 interim action ROD that was issued in 2014 and operational in '15, just that interim action. 15 the one that's being reviewed now. 16 DR. VARLEY: Based on the 2014 interim 17 Sharon? 18 action. 19 So, Mr. Leriche, to be MS. VRIESENGA: 20 honest with you, I don't know hardly anything about 21 that interim action from 2014. If there is an IROD 22 in place for it, though, we'll be evaluating that. 23 And it will follow up with what I said. 24 quite frankly, by the time we get a five-year review, you're going to have a Clark's Marsh IROD 25

for this action. So, we'd be evaluating that.

But you're going to be evaluating whether the interim remedy is protected until you get the final remedy, is how you're going to be doing it.

DR. VARLEY: All right. I've got additional information from another one of our team members. There was no IROD for FT002. FT002 was a particular action, it was a removal action. It's time critical. Okay? We can talk more about it.

MS. VRIESENGA: Well, we're talking about when -- oh, okay. Yeah, the time for removal actions don't have to be covered in records of -- in five-year reviews, and I don't remember off the top of my head if they usually are or not. But the final decision document, like records of decision, that are evaluated in five-year reviews.

MR. SUELTENFUSS: All right. Well, thank you, Sharon. We appreciate that.

Mark Henry had a comment.

MR. HENRY: What is surrounding this ROD review thing? It would seem that the interim remedial action that we just commented on is about to be implemented that the ROD from before that would supersede the previous ROD. And it would be

starting with this five-year cycle all over again 1 2 when that ROD is issued. That's just how I envision 3 it. 4 MR. SUELTENFUSS: Okay. Thank you. And David Winn? 5 6 MR. WINN: Yeah, I have a question. 7 MS. VRIESENGA: This is Sharon. Just to clarify that, five-year review clocks don't 8 9 So, it's a five-year review by statute. You go five years from when the first remedial action 10 11 was taken on base, or former base. And you trigger 12 five years off of that every time. We don't reset the clock when the action restarts. I can think of 13 14 one very odd scenario where a clock got reset. 15 usually, they stay, almost without fail, they don't 16 get reset. 17 So, whatever timeline we've been on, 18 which we may very well be late, I don't remember for this base, we're still on that timeline even though 19 20 we're late meeting it. 21 Thank you for that, MR. SUELTENFUSS: 22 Sharon. And I see David Winn has a question. 23 MR. WINN: Yeah, I have a question. 24 Paula, I think this one will probably be directed

25

towards you.

On both of the Clark's Marsh IRA, as well as Van Etten Lake IRA, how are the performance objectives established as part of the design? Or is that something that you guys wait until you basically -- and I'm going to put a dart in the wall and say okay, this is our linear objective, and then once the system is started up, then you try to improve the performance; or do you guys establish those performance objectives up front?

MS. BOND: No, that's a great question. The way that we look at the IRAs and the performance monitoring, I know we have received several comments on performance monitoring on the Clark's Marsh proposed plan. So, we know that's important. We have to do performance monitoring so that we can ensure that the hydraulic control system that we have just installed is actually controlling the migration of groundwater.

So -- and I think in the proposed plan -- I know in the proposed plan for both it says that we're going to monitor up-gradient and down-gradient monitoring wells to evaluate the performance or the efficiency of that hydraulic control system.

So, when we actually select where we're going to put those performance monitoring

wells up- and down-gradient once all of the comments have been received on the proposed planned, and those have been evaluated by the Air Force and any changes or updates are made, once that is final, then we can finalize or move into finalizing the work plan or the final designs for the treatment system, because the Air Force does evaluate all comments that they receive on the proposed plans. So, those designs aren't finalized until that process is over and any changes made.

2.1

So, once the designs are then finalized, then we can look at the performance monitoring. Where are we going to go? Up-gradient, down-gradient, all along the hydraulic control line, and the best locations that we think we need to get to monitor that. So, those -- those details really aren't finalized until after everything else is done and we're ready to go. And we'll use those monitoring wells to enhance the performance of the treatment system.

Like Jim mentioned last night, and posters are out in the lobby, we use all of that data to continuously tweak and make sure that the system is running as efficient as possible, and that's why we have to have some engineering safety

factors in there. We talked about our flow rates last night so that we can -- we have the ability to change that as we need to. And the performance monitoring will help us decide if this well needs to be pumped faster, this one needs to be pumped slower, and tweak that and so that we are really operating efficiently in the system, and to ensure that we are, in fact, capturing -- hydraulically controlling that portion of the plume that needs to be controlled.

MR. WINN: Did I hear you correctly?

So at the -- after the designs are -- at the end of the design time you will have established the performance objectives so that --

MS. BOND: Yes, I'm sorry.

MR. WINN: -- when the system is installed and up and running, you compare those performance objectives as a design as to what you actually have, and tweak them accordingly?

MS. BOND: Right. Yes, and I'm sorry. I didn't answer your question. I realized that when you said that. Yeah, but the performance objectives are actually established during the design and then finalized in the work plan, so that's where they are actually documented as what we'll be measuring

ourselves against. And obviously for the hydraulic control, are we controlling the flow? And that will be realized by contaminant trends and down-gradient Are they going down? Are they staying the Are they going up? And we need multiple wells to check those trends at different places to make sure that we really have a handle on that. then we can evaluate the system treatment efficiently, like I said, tweak high or low, whatever, but -- yeah. But that will be in the work plan, the actual performance objectives. MR. WINN: Is EGLE in agreement with that? MS. PLACE: We're in agreement Yes. that we'll be discussing performance monitoring and the remedial action work plan. MR. WINN: Okay. Thank you. MR. SUELTENFUSS: Thank you, David, we appreciate your question. Any other RAB member questions? Anything else from the RAB members? Okay. Well, let's move to the next slide then, if we could. And Paula, thank you very much. MS. BOND: Thank you. MR. SUELTENFUSS: Great. So, now we're in the public comment portion of the meeting

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

and the RAB members so far in the meeting had the opportunity to meet, to address questions, have some discussion, and we're now opening the floor to members of the public who are not RAB members, but who would like to make a comment to the RAB. those who are here in person, if you would like to make a comment, I'll ask you in a moment to come up to the microphone stand that we have to your left. And for those who are participating remotely, I will ask you to raise your hand electronically, and then I'll call on you, un-mute you, you may have to un-mute yourself, and then you can make a comment. When I do call on your name, Sarah will make sure that you're not muted, then you have three minutes to make your comments. I do have a list of those who have signed up first, but first is Anthony Spaniola.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

And so let's make sure Anthony

Spaniola is un-muted, if we could. And I see you

un-muted yourself as well. So, Mr. Spaniola, we'll

turn to you. Three minutes.

MR. SPANIOLA: Thank you, Tim. Can you hear me okay?

MR. SUELTENFUSS: Yes, sir, we can.
MR. SPANIOLA: Thank you. I would

just like to -- first of all, there was a discussion about the history and action moving forward, and Dr. Varley, I want to thank you for your focus on action and your efforts to, I think, bring a new approach It's welcome. I do think, however, that the history is very important, because it shows a mindset, a mindset not just of the various project managers and predecessors to you, Dr. Varley, but of the entire Air Force and those that have been in charge at the highest levels of this cleanup over the last -- over a decade period. And from those of us who have been involved for a lengthy period of time, that that mindset isn't going to -- we're not going to be convinced that that mindset has changed until we see real and meaningful action. And as we sit in the tail end here of the public comment for Van Etten Lake IRA, there is a real perception and concern that whoever is making these decisions is not going into this with an open mind when it comes to the Van Etten Lake IRA and the comment that has been out there from the community and from Need Our Water and others, including our U.S. senator, for the need to extend the extraction field to the north. We've been told that there are data gaps. And we have experts on our team who are telling us

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

that that is not in fact the case. And we also have history that tells us that in April of 2020, we were told by the Air Force that they didn't have enough data to even do an IRA at Clark's Marsh or to do an IRA at Van Etten Lake, and suddenly when Congressman Kildee went to the Pentagon, suddenly we had enough data.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

And so the concern that we have is that this project, over and over and over again, corners have been cut, and efforts have not been taken to properly manage and deal with the full extent of contamination when we know we have a problem. We know we have maps not only from you, but also from the Air Force. And so my concern, and I think many others share this, is that we're here in the end of the public comment period, this has been going on for more than a year, the Air Force has not explained adequately why it's not addressing the additional contaminant plumes, and now is the time to do it. We were told money wasn't going to be an issue, but my suspicion -- my strong suspicion is that money is driving this, and that the Air Force really just doesn't want to do it. asking for action. I'm asking for action to make that happen. Thank you.

DR. VARLEY: Hey, Tony. So, right now we're in the middle of doing the RI, right? We've already started, we got the gears rolling, and we are collecting data. We are closing those data gaps as fast as we can, and as we close those data gaps, we will be programming to take care of any human health concerns or any ecological concerns.

Paula, would you like to add to this comment?

MS. BOND: Yes, I would. Thank you.

DR. VARLEY: Thank you.

MS. BOND: Yeah. I would like to say this has come up in conversations that I've with a few folks over the last couple of days, you know, while we're not going further north with the IRA and Van Etten Lake, and data gaps is one of the reasons that we're not moving the line further north.

We are in the process, like Dr. Varley mentioned, of looking at that in the IRA or the RI to fill those data gaps.

There's also a couple other things, and I'll kind of quickly elaborate on those. When we began this project, when the Air Force came to us and said we want to do an IRA here, let's look at what we have, what is the best option to cut off the

higher concentrations of PFAS and PFOA that are moving into Van Etten Lake and Ken Ratliff Memorial Park, and we've all seen the figures, and we have them here, and you can clearly see where that area is, where those highest concentrations are.

So, that is what the Air Force wanted to focus on, was cutting off those higher concentrations that -- that higher risk area. So, that's what we tried to focus on.

When we built the central treatment system in 2018, as most of you know, that treatment system was built to house a second treatment train on the other side, and that was already in place.

So, when the Air Force asked us how -- what's the fastest way that we can do this to get some action to mitigate the issues there at Van Etten Lake at Ken Ratliff Memorial Park, we already have the central treatment in place, it was built to expand. Let's take advantage of that and use that to wrap into the IRA. So, when we looked at that, the sizing of the central treatment system that's already there, the treatment capacity that we have in the existing train is 500 gallons a minute, then we're talking about capacity here -- I'm sorry, I hope you guys can hear me -- talking about capacity.

And then it was designed to handle another 500 gallons on the other side.

2.1

So, with the 500 gallon a minute capacity that we have, and the IRA that we're looking at, the 12 wells that we're proposing in the proposed plan will use the capacity of the central treatment system. So, if we -- the data gaps is one and the capacity that we have in central was the other reason for not moving that forward. And it's not that -- we were looking for the quickest way to mitigate that issue of those higher concentrations of PFAS and PFOA and this is the quickest way to get action, is to use the existing infrastructure that was already there for the purpose that it was meant for.

So, that's kind of -- in a nutshell, that's kind of how we're now moving forward with advancing that further to the north.

One of the discussions that we had last night, Jim Romer who is the design engineer for both of the IRAs, had mentioned that as part of the design, we are adding in one additional blank so that if -- based on operational data, if we can add another well, that might be possible depending on how our system operates as we get it up and running.

Depending on our optimizations that we do, maybe we can add another well, and that additional capacity will not overwhelm what we already have going into the CTS.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

So, we do have some capacity from the original train, because we're not actually pumping it at 500 gallons a minute right now, so we could use that, but we need to get the system up and running to see what we could do if we need to add another well. But again, that will not be -- we won't be able to determine that until the system is actually operational.

So hopefully that answers the question.

DR. VARLEY: What he's saying is the purpose, right, of the IRA. The purpose of the IRA is to protect human health and to address hydraulic control, hydraulic capture at the most severe areas. And that beach is a serious issue. I've seen people out there. You know, we do want to take care of that as fast as possible. This is what we can get done as soon as possible this year. That's my goal, this year. Now, that requires a lot of things to fall into place and that requires us all to work together. But that is the goal.

MR. SUELTENFUSS: Okay. Well, thank you very much. Paula, anything else you wanted to add?

2.1

MS. BOND: No thanks.

MR. SUELTENFUSS: All right. And Mr Spaniola, thank you for your comment. We'll now turn -- next on my list is Cathy Wusterbarth.

Cathy, would you like to make a comment?

MS. WUSTERBARTH: Yes. So, what it sounded like you had asked me during public comment was to both summarize the public comments of the IRA, the Van Etten Lake IRA like I did last night so that they can get into public record here in the meeting, and then also looking forward to NOW and Natural Wildlife Federation comments last week. So, I'll start with the IRA comments from the public, the NOW group and its experts.

"The proposed plan describes the actions planned by the Air Force's Base Realignment and Closure Program Office at the Air Force to remediate to a limited degree the contamination in and around Van Etten Lake. The proposed plan describes interim actions as defined under the Comprehensive Environmental Response Compensation and Liability Act of 1980 CERCLA. Interim actions

at a CERCLA site, such the former base, are intended to rapidly address situations where an imminent and substantial endangerment of the human health or the environment from contaminants, pollutants or hazardous chemicals is occurring.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

2.1

22

23

24

25

In the case of Van Etten Lake, PFAS substance contamination emanating from the base and discharging through groundwater into Van Etten Lake has contaminated waters of the lake, the biota, and created PFAS-contaminated foam. This contamination of biota has resulted in State-issued health advisories limiting consumption of fish from the lake, the do not ingest the foam advisory. As the advisories are not enforceable and are impossible to monitor for compliance, the level of contamination in the animals is resulting in unacceptable human exposure to the PFAS and possibly other PFAS found Also, foam contact and ingestion by citizens is not preventable by the authorities.

The PFAS foam also contains a sweep of PFAS chemicals that fit the CERCLA definition of contaminant or pollutant.

Additionally, the extent of groundwater contamination and potential human exposure from the plumes impacting the Ken Ratliff

Memorial Park area may extend into the other side of Van Etten Lake where very similar PFAS contamination is impacting drinking water wells around the lake.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

The proposed plan is to double the treatment capacity of the central treatment system, the CTS, plant currently treating plumes along Arrow Street and in the area of the former fuel storage tank system. The plan includes a new groundwater extraction field paralleling F41. The new well field extraction system will capture 503 gallons per minute of PFAS-contaminated groundwater that will be directed to the central treatment plant. treatment water will be discharged to Van Etten The discharge is controlled by substantial requirement document (SRD) created by EGLE that limits the discharge of PFAS to 12 parts per trillion as a monthly average, with a 15 parts per trillion daily maximum discharge. Other than PFAS and PFOA, no other PFAS discharge are regulated by the SRD. The remedy described in the proposed plan does not provide a rationale for the width of the groundwater collection and groundwater extraction The extraction system does not cover the known part of the PFAS plumes entering Van Etten Lake at the Ratliff Park beach, but does not extend

to the known width of PFAS plume that exceeds part 201 groundwater/surface water interface criteria of 12 parts per trillion.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

2.1

22

23

24

25

Also, the Air Force does not document the extent of other PFAS contaminants in the plumes that are also discharged into the lake that are known to biomagnify in fish and preferentially partition to foam on the lake. The Air Force's proposed plan would increase the amount of groundwater captured and treated from 320 gallons per minute to 823 gallons per minute. The total treatment capacity will be 1,000 gallons per minute when the expansion of the system is complete. Treatment of the additional captured plumes would be either by activating carbon or by ion exchange Either technology will treat the PFAS contamination in the groundwater to below the SRD requirements. The preferred alternative presented in the plan is to use activated carbon."

And we include 12 technical comments with slides and images. And so I will move to the summary.

"In summary, NOW's comments are, number one: Activated carbon as a treatment technology appears to be the correct choice of

treatment using the nine CERCLA treatment balancing criteria for choosing a remedy.

Number two: The Air Force should present and explain to the public and elected officials the plan for future monitoring of the remedy described in the proposed plan. Also, the Air Force does not present the other PFAS chemicals and plumes, and likely the central treatment plant influence will be a mix of these PFAS chemicals. Is carbon treatment able to remove all of the PFAS contaminants and pollutants that will be entering the system? Will there be illegal discharges of other PFAS than PFAS and PFOA in the treatment effluent?

Under the National Pollution Discharge
Elimination System, the discharges of effluent must
disclose all chemicals that may enter the surface
waters and they must disclose the expected
concentration and volume of such discharges. Is the
Air Force making such disclosures when submitting
the request for an SRD for this new discharge?

NOW is not confident that the Air

Force's remedial site team accurately understands

the site contamination. This conceptual site model

that the Air Force presents to the public clearly

lacks a great deal of information that is known to EGLE.

NOW is not certain that the Air Force team understands the site, or if this seemingly lack of understanding is just the legacy of previous Air Force site teams and lack of institutional knowledge.

The current team should not repeat the same mistakes and should present a coherent conceptual site model for the Ratliff area plume.

Number three: The Air Force needs to present all of the data and the full extent of contamination to the public and elected officials in understandable ways. There is no law that prevents the Air Force from informing the public and elected officials of data gathered by others, nor is the Air Force presented (sic) from presenting all the technical data, not just PFOA and PFAS, as the other chemicals meet the definition of contaminants or plumes, or may so designated in the near future.

The Air Force needs to present all of the information that points to substantial contamination of humans, from base contamination, to the Health Department's, the Veteran's Administration and the ATSDR.

Number four: The Air Force should expand the proposed plan footprint to the north of the current proposed extraction well field along F41. Waiting years to act while more study of the problem is undertaken is unnecessary. This is a situation where there is a clear imminent and substantial endangerment of the public and the environment. More study is not going to make the known plume stop discharging into Van Etten Lake.

2.4

NOW affirms its concurrence with EGLE's request for additional interim actions at the entire site.

NOW cannot affirm the locations discussed in the March 23rd, 2021 letter to the Air Force Remediation and Redevelopment Division Director Neller, as the reference map is not included in the copy of the letter provided to the public. But now that there are multiple areas around the base that pose imminent and substantial endangerment to the public, the Air Force has been entrusted with the responsibility that human health and the environment, CERCLA provides the Air Force with the tools to carry out that responsibility.

CERCLA is not designed to prevent responsible behavior as the Air Force seems to

believe by its actions and statements.

2.1

The Air Force can address any contaminant or plume released at the site and can do so at any time that the contamination presents an imminent and substantial endangerment.

The Air Force response is not limited by CERCLA to address only PFAS and PFOA with interim actions or CERCLA removal actions."

The last point. "The Air Force needs to start monitoring the impacts of PFAS on the biota and the ecosystem in Van Etten Lake. Monitoring of biota will document the effects of the Air Force remedial actions over time and inform decisions made at Wurtsmith and other sites across the nation. It should be understood by everyone that this interim action, while helpful toward the final cleanup of Van Etten Lake, is incomplete as even a short-term solution, adding that much more effort is needed to reduce the impacts on the lake and citizens.

However, overall, NOW is now pleased that the Air Force has doubled the treatment capacity of the central treatment system plant and is cutting off much of the plumes that discharge at Ken Ratliff Memorial Park."

MR. SUELTENFUSS: Thank you very much.

DR. VARLEY: Where can we find that?

MS. WUSTERBARTH: Well, this is the public comment letter for the public comment period for the IRA. Now, that was sent to Dr. Varley and to the State, and of course will be submitted formally. Excuse me. This has not been sent to you, so -- sorry. This will be sent by the deadline, okay, via e-mail and through mail, and of course, we could provide that to anyone that requests it after that, and I'll probably post it online or on our Facebook page.

2.1

Now, the report that, you know, we also are going to be having available online, the title of that report is PFAS Contamination of the Former Wurtsmith Air Force Base: The True Story. It's setting the record straight about what the Air Force, and the Department of Defense, and the State of Michigan have actually done, or not done, to protect people and natural resources in Oscoda 1974 through 2021. I'll just read off the -- I'm going to summarize the introduction.

The U.S. military's heavy and longstanding use of aqueous film forming foam has contributed to one of the worst environmental crises of our time. For over 50 years, the U.S. military

has used AFFF containing high concentrations of toxic chemicals called PFAS. PFAS are a family of chemicals that are extraordinarily toxic and persistent in the environment. They have been linked to cancer, kidney disease and numerous birth and developmental disorders. Also known as forever chemicals, PFAS, a widespread in the environment because they take decades to break down and many tend to bioaccumulate in people, fish and wildlife. Moreover, PFAS are exceptionally numerous. are thousands of individual PFAS compounds and their durability and resistance to water, oils make them ubiquitous in both commercial and industrial settings.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

2.1

22

23

24

25

And then it goes on to talk about when PFAS were first discovered at the former Wurtsmith Air Force Base over two decades ago, and from the 1970s until at least the base closure in 1993, the Air Force sprayed PFAS laden with AFFF at Wurtsmith during training exercises to extinguish fires and regularly disposed of spent AFFF in grassy areas of the base. It should come to no surprise that these activities caused massive groundwater contamination, and contamination is running largely unchecked through the Oscoda area due to the Air Force's

failure to control and clean up the PFAS plumes from the base.

2.1

The Air Force has known about the toxic nature of PFAS since the early 1970s. Despite this knowledge, the Air Force has been extremely slow to address the devastating effects of its historic discharges of AFFF at Wurtsmith.

When it has responded, the Air Force has taken inadequate actions that have only worsened the public crisis in Oscoda. Adding insult to injury, the Air Force has repeatedly attempted to assure Wurtsmith veterans and Oscoda residents that it takes their health and its own cleanup responsibility seriously. In doing so, the Air Force has hidden behind tax -- excuse me -- lacks Federal guidelines and deny its need to comply with Michigan stricter standards.

The State of Michigan actions have also been deficient. Although the State has played a significant role in uncovering the extent of PFAS contamination at Wurtsmith, it has frequently been slow, opaque and ineffective in warning Michiganders of the dangers of exposure to PFAS contamination from Wurtsmith.

Furthermore, because of its attempt to

pushback on the Air Force, positions have been incomplete or unavailing, and the statement generally failed to use the strict PFAS cleanup standards that it developed over the past few years to its advantage. Despite their dubious track records protecting public health in Oscoda, both the Air Force and the State of Michigan have often defended and even praised their own actions, even when those actions resulted in delays and mishaps. This document aims to set the record straight regarding what the Air Force and the State of Michigan have actually done and failed to do about the random PFAS contamination in Oscoda.

2.1

And this 13-page report, again, has 86 references and you can find the report at the Great Lakes PFAS Action Network website, which is GLPAN.org. Again, that's GLPAN.org.

MR. SUELTENFUSS: All right. Thank you, Ms. Wusterbarth.

MS. WUSTERBARTH: Thank you for your time.

MR. SUELTENFUSS: Okay. So, we also have a comment that was submitted as a question in the virtual meeting from Jennifer Hill. Just wanted to check with her, shall I read that off? It's

about two sentences -- two or three sentences. All right.

So this is, again, a comment from

Jennifer Hill and it reads as follows: "Hi, this is

Jennifer Hill with National Wildlife Federation.

I'm not able to stay on for the whole meeting, but

would like it read into the record that the National

Wildlife Federation stands behind the report

released last week of NOW. We have shown that the

Air Force and the State of Michigan can and should

be doing more to address PFAS cleanup at this site,

and we look forward to working with both entities to

get to meaningful cleanup as quickly as possible."

So, there is the comment from Jennifer Hill. Let me just ask if there are any members of the public in person who would like to make a comment to the RAB? Okay. Yes. Please come on over to the microphone standing right here, and if there are others in person who would like to make a comment, please do line up behind as well.

And if you could, if you would like to, please state your name first and then go ahead with your three-minute comment.

MS. KOLANT: Okay. My name is Chris Kolant (ph), and could you read where you stopped

with that comment there?

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

MR. SUELTENFUSS: The last words were, "To get to meaningful cleanup as quickly as possible."

MS. KOLANT: Okay. All right.

MR. SUELTENFUSS: And if you could get real close to that mic, please. Thank you.

MS. KOLANT: I'll get as close as I How is that? I feel like I'm screaming if I can. I have a comment about some of the discussion here tonight. And the Air Force, and the State, and the community of Oscoda has been at this for many years now. We've been through many different people with lots of personalities, but I thought that things were coming around so that they were being civil, and cordial, and cooperative, and welcoming, and it seems from one of the comments tonight who was the attorney, whoever was online, was talking to Cathy when she asked for the Air Force to comment on the report, was dismissive and was insensitive, and the tone of voice was very non-partner-like. So, I was very, very disappointed to hear that.

When anybody comes to Oscoda who has not lived here, you have to understand who you're

1	talking to. We are people who have been poisoned.
2	We have been poisoned while defending our country.
3	And the Air Force it's not the people maybe who
4	are sitting in front of us today, but the Air Force
5	as a whole is responsible for that. They did not
6	they have not been transparent, so now it's a new
7	day and we need to pick up and move on from that.
8	But when we talk about the Air Force, I know it's
9	hard not to take it personal, but it's not personal,
10	it's the Air Force as an institution, but when
11	you're talking to us, it is very personal, because
12	it is our lives, and our families, and our
13	environment, and our properties, and our future, and
14	our children.
15	So, please, please, I beg you, keep
16	that in mind when you come to Oscoda, because we
17	will call you out every single time. Thank you.
18	MR. SUELTENFUSS: Thank you very much.
19	DR. VARLEY: Ma'am, could I can I
20	just reply, please? I'm not trying to be
21	dismissive. I'm trying to
22	MS. KOLANT: Not it wasn't you.
23	DR. VARLEY: It wasn't me?
24	MR. SUELTENFUSS: Her comment was
25	that yes.

DR. VARLEY: Sorry.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

MR. SUELTENFUSS: Dr. Varley, any response to that?

DR. VARLEY: All I know is that we are forming a team, we have formed a team, where we are trying to do our best for you. The time I spent here is time I spend away from my family, my kids. I want my kids to grow up knowing that we're doing something that's meaningful. Everywhere I've been, I've had meaningful projects, and I want that here And I want people to come and visit. to be able to bring my family here, you know, I want to be able to make things good, make things right. So, you have a commitment from me, I will share what I will be transparent, I will, you know, work with the team. And we are all one big team working together. So --

MR. SUELTENFUSS: All right. Thank you. And Ms. Kolant, thank you for your comment.

Are there others in person who would like to make a comment to the RAB? Yes, sir. Mr. Gaines?

MR. GAINES: I would like to make a comment. You know, I noticed last night that the O and M costs, the operation and maintenance costs for this central treatment plant facility was split --

spread over 30 years. And then I thought about the fact that the Arrow Street plant has been pumping PFAS-polluted water since the mid-1980s, and it's still pumping water that needs to be treated.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

I just wonder what is the true effectiveness, long-term, of these plans. I wonder if the pollution here will be cleaned up for my grandchild when he is my age. It's a scary thought, but I -- I --

DR. VARLEY: So, Bill, can I take a stab at answering that?

MR. GAINES: Yeah.

DR. VARLEY: So, I don't think pump and treat is going to solve everything. I don't think it's our end all. So, part of what I've done in other bases and other installations and we've employed innovative approaches to move progress forward, and that's what we're doing here. CERCLA projects coming less and looking at trying foam fractionation trenches. We are talking about doing that at DRML. We've got the map project that we're talking about doing again at three pipes right We've got other ones that come to us, and talking about microbial (indecipherable) project coming to us about a microbial solution,

potentially.

So, there's a lot going on. And as we evaluate and see different ways to move forward, we'll move forward. And I'm sharing a lot of this information with Mark, and he can share it with you, and there's got to be better ways. There's got to be better technologies. And I think we can get there as long as we continue talking and working together, and not being afraid of trying something new. We need to be able to try something new.

MR. GAINES: Amen.

MR. SUELTENFUSS: Are there other comments to be made to the RAB from those in person? Okay. Let me ask for those who are connected virtually if you would just raise your hand electronically, if you would like to make a comment to the RAB. And again, just raise your hand electronically if you would like to make a comment. And I see Rex Vaughn has a hand up. So, let's see. Sarah, if you don't mind un-muting Rex. Rex, sounds like we can probably hear you. Go ahead and say something.

MR. VAUGHN: Good evening, this is Rex Vaughn. Can you hear me?

MR. SUELTENFUSS: Yes, sir we can. Go

ahead, sir.

MR. VAUGHN: A question for the engineering design team. Did they ever evaluate what it would take to expand the central treatment plant to allow that pipeline to run farther to the northwest along F41 and pick up some of the additional plumes that have been identified by EGLE? So, was there any engineering analysis done? Are you talking about an additional 3 or 400 gallons a minute, or are you talking about the whole building? What caused the Air Force to say we're going to live within the confines of the existing structure?

MS. BOND: Right. Can you hear me?

MR. SUELTENFUSS: Paula Bond with

Aerostar, go ahead.

MS. BOND: Sorry. Yeah, we actually did look at that, and again, we were looking at the best way to move forward to address the risk from the PFAS and PFOA concentrations there at Ken Ratliff Memorial Park moving in. So, we are confined by the capacity at the central the way that it's built, but we also looked at building a completely new treatment system. We looked at expansions and different things, and we settled on using the infrastructure that we had, because we

knew that where the highest concentrations were, we could capture that and treat that with the existing system that we had, and get to treatment more expeditiously. So, we did look at different things and we settled on this as the best path forward at the current time. So, everything to the north will be addressed once the RI is complete, or if there's something -- and I think Dr. Varley can elaborate on this, if there is something that we find during the RI that leads us to another interim action, or another early action, then the Air Force will look at that and take that on. So -- but everything to the north will be addressed. We're not saying it's never going to be addressed, just for this current interim action, this is the best we've got, the best path forward.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

DR. VARLEY: So, we are taking care of what is most critical right now as we define, using the RI data, to determine what we need to take care of next. And we will continue taking action where we can take action.

MR. VAUGHN: A followup question, if I may, please?

DR. VARLEY: Absolutely.

MR. VAUGHN: If you want another 1,500

feet up F41, how many additional gallons per minute would you have had to accommodate in the design?

DR. VARLEY: So, Jim, engineering?

MS. BOND: The -- yeah, I'm going to have our design engineer answer that question. And I can tell you that the well spacing, based on the groundwater modeling, is 250 feet apart. So, Jim?

MR. ROMER: Well, based on, again, the modeling that was done, as Paula indicated, we're looking at spaces of about 250 feet. As we go north, our projections are that each well, we need to pump about 50 gallons a minute, so here I think your question was 1,500 additional feet?

MR. VAUGHN: Or 2,000 or -- at what point did you determine that you blew past any capabilities of the existing structure without a larger facility of central treatment?

MR. ROMER: Well, we're pretty much there now. I don't know if you were able to participate in last night's meeting, but one of the things that I discussed was you can't -- when you look at 1,000 gallons a minute, that is the maximum capacity that the pipes, and the pumps, and the tanks can handle. But the analogy would be, you know, again the red line on your car, maybe 6,000

1 RPM --2 MR. VAUGHN: I heard that. I heard 3 that. MR. ROMER: Okay. Well, so it's still 4 5 I mean in that, you know -- I also heard, 6 like, when you were reading earlier a comment of --7 MR. VAUGHN: Use bigger pipes, and 8 bigger pumps, and bigger tanks, because you probably 9 want to stay below ten feet per second and all that kind of hydraulic stuff, that I spent 4 (sic) years 10 11 in my career dealing with. 12 MR. ROMER: Okay. 13 MR. VAUGHN: So I'm trying to get the 14 economics of a longer run up 41 crossed over point 15 of diminishing returns where you said we've just got to live with what we've got. 16 17 MR. SUELTENFUSS: Let me jump in real 18 quick and just pull us all into one conversation, if Let me just pull us all into one 19 I could. 20 conversation. Jim, go ahead. 21 MR. ROMER: So, no, those are good 22 questions and good observations. And so there's 23 more than one driver here. 24 So, you know, if the goal -- if we 25 knew the distribution of contamination, if we looked at the current knowledge of the plumes, and we had a very high concentration that extended, you know, 2,000 feet, could you go and design something that could accommodate that? The short answer is of course you could. But you would probably, at some point, you know, getting back to the hydraulics, you would end up putting an additional treatment plant further to the north before you continue to go further and further and further. All right.

So, these systems, the head, the driving force of these comes from submersible pumps that are in the wells. And so, you know, at some point, you get up to a horsepower size that's bigger, requires a bigger well, and there's just a domino effect. But one of the main elements is we looked at the available data, and that's the first thing I did when I took on this assignment almost a year ago now, was we went to the Wood report and we went and looked at other data that was available, and we used the model that has been developed at the site.

So, it was an IRA. The mission was cut off as much flux going into Van Etten Lake as quickly as possible. That was the mission. Still is, in my mind.

1 Now, if you want to change the 2 objectives, you can take it a different approach, 3 okay? But right now, we don't have information that 4 indicates high concentrations, and if you went 5 another 1,000 feet, yes, you would capture some 6 additional stuff, but what I've seen on the data 7 that is all inclusive of EGLE's data, Air Force 8 data, all of the data, I mean, those plume maps 9 represent all of the data that we have to look at. 10 And so, you know, the decision is the 11 RI is going on right now. So, at the same time, 12 we're expediting the IRA, we're expediting the RI

RI is going on right now. So, at the same time, we're expediting the IRA, we're expediting the RI and we're going to look at those feasibilities; and there are going to be hotspots to the north, and we are going to have to come up with ways to address those. We just felt like once you got to a certain distance away from the central plant, at that point it would make sense to address those with another facility. And I have to look at it.

13

14

15

16

17

18

19

20

21

22

23

24

25

MR. VAUGHN: I understand that.

MR. SUELTENFUSS: And let me just ask, Jim, if we could state your last name as well for the record.

MR. ROMER: Oh, Jim Romer.

MR. SUELTENFUSS: Great. Over to Dr.

Varley.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

DR. VARLEY: The key thing is we want to cut off where the most risk is to human health and ecological risk. It is important. And the sooner we can get it done, the better off everybody will be, especially with the fact I'm seeing people out at the beach. We need to address that issue Not two years from now to build a bigger system so that we can pump up further gradient. Ιf another technology turns out being better, it makes sense to employ another technology too. We do not want to get stuck with pump and treat, because we're investing in (indecipherable) without thinking about the future. So, think about everything holistically.

Right now, biggest, hottest part of
the plume heading towards where people hang out. We
need to take care of that. Up-gradient, we're
refining that area, we'll address that next. If
there's something going into that lake, we'll go
ahead, we'll program a plan and we'll work towards
it together to address it. And if that means
another pump and treat system up-gradient, that's
fine. But if that means that we can do something
with foam fractionation, a bio trench through the

CERCLA program, if that's successful, that might be a better way, because you're taking care of it in a totally -- in a way that gets rid of PFOA, PFAS.

We're not having to use filter media and we're getting rid of it.

Another -- I mean, and there's other ways. I mean, even stabilizations or solidification-type methods that we could do transects to keep things from going into the lake. There's multiple solutions. And I mean, to be able to work through it, we need the data, and that's what Aerostar is doing for us right now. They're collecting the data so we can make smart data-driven decisions together.

MR. SUELTENFUSS: Thank you, Dr.

Varley. And Mr. Vaughn, thank you for your comment.

MR. VAUGHN: You're welcome.

MR. SUELTENFUSS: Great. Let me check to see if there are others who have joined virtually who would like to make a comment to the RAB, please just raise your hand electronically, if you would.

And I see Carol Cole has a hand up.

So, Carol, we'll turn to you. And Carol, go ahead.

Carol is un-muted, so we should be able to hear you.

Carol, we are not hearing you right now. Can you

1 try saying something? Looks like she may have some 2 connectivity issues. So, we will come back to Carol 3 Cole. Are there others who would like to 4 5 make a comment? Okay. Just to check again, others 6 here in person who would like to make a comment? 7 Okay. And just to check again, any others who are 8 here in person who would like to make a comment to 9 the RAB? Okay. Let me just check in. 10 11 Gregory Cole has a hand raised. So, Gregory, let's 12 turn to you. And Sarah, let's un-mute Gregory Cole, 13 please. 14 MR. COLE: Can you hear me? 15 MR. SUELTENFUSS: Yes, sir, we can. 16 MR. COLE: Okay. My question is, with 17 the weather season coming up here, what will EGLE 18 and the Air Force be doing to, of course stay busy. 19 I know that you're out collecting data. When will 20 that stop and what will be -- you be doing during 21 the winter season to get this going in 2022 in the 22 spring? 23 DR. VARLEY: So, we will be 24 working --25 MS. RIFFE: Trying to mute her.

got two lines active.

DR. VARLEY: Greg, can you mute

3 yourself?

MS. RIFFE: There you go. Go ahead.

DR. VARLEY: All right. So, we will work as much as we can, as far as we can, until the weather makes it so that cannot work any longer.

So, our goal is to accomplish as much of the fieldwork as we can, so we have data to look at over the winter so that we can then provide any step outs next field season for the RI. The goal is to get as much as we can as far as the IRA is done this field season, whatever we don't get done, hopefully we'll have buildings up and we can work inside the buildings all winter.

I also know that Greg has cabins, and who knows, we might be able to use some of those as we move forward. But there's lots of things going on and lots of moving parts, and we all need to work together to make sure we're making progress.

Paula, do you have anything to add?

MS. BOND: No. You hit the nail on
the head. We are going to do fieldwork for the RI
as long as we possibly can, as long as the weather
holds out and we can actually see the ground so that

we don't misstep. So, we're going to do as much as we can with the IRAs, like you mentioned. hoping that Clark's Marsh is -- the building is put up so that we can work inside during the winter and get that thing up and running so that it's ready to go in the spring, so that is our -- our greatest hope, that we're going to do everything we can and work as long as we can. MR. SUELTENFUSS: Gregory, thank you for your question. Are you there with -- with Carol as well? Do you know if she has an additional comment that she would like to make? MS. RIFFE: He's self-muted. Can you hear me? MR. COLE: MR. SUELTENFUSS: Yes, we can hear you. Okay. So, Greg, if you would go ahead and un-mute Carol -- yeah, thank you. Okay. So Carol, go ahead and un-mute yourself. I heard that you were trying to make a comment. And try that one more time, Carol. Hello? MS. COLE: MR. SUELTENFUSS: Yes, we can hear Go ahead. you.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

MS. COLE: Oh, good.

name is Carol Cole and my father owns some property

Thank you.

Му

on the lake. I've been following this situation, I have just sort of a simple question, and I don't know if anybody can really answer it, but I'm trying to get a feeling for if I want to keep the property or let it go.

What are the prospects for getting the lake cleaned out for PFAS so it would be safe to fish in the lake within the next ten years?

MR. SUELTENFUSS: Thank you for that question. Is there any response anyone would like to provide for that?

DR. VARLEY: I think data is needed to be able to fully answer that question, because you're saying what would it take, right? So, first of all, we need to know where to cut off the plumes. We need to know how our transport is. We need to get full remedies set up. My goal is to move forward as fast as we possibly can and to get things done, and the only way to do that is everybody working together.

Paula, do you have any thoughts on this, or anybody else on the team?

MS. BOND: My thought would be that it's really -- that's a great question, and it's a hard one to answer, and I don't think we're in a

position where we have enough data to even make any 1 2 kind of prediction on that. I would be -- I would not make any prediction at this point. We're just 3 4 not there yet. We don't have enough data. 5 MS. COLE: Okay. Thank you. answers my question. I appreciate it. 6 7 MR. SUELTENFUSS: Thank you very much, 8 And Gregory, I see that your hand is raised. Carol. 9 Do you have an additional comment you'd like to make 10 to the RAB? I see Gregory's hand is raised, you are muted, Gregory, so if you would like to come off 11 12 mute. Okay. It's possible that -- go ahead, Greg. 13 MR. COLE: No comments right now. Thank you. 14 15 MR. SUELTENFUSS: Okay. Great. Thank 16 you. Thanks for your persistence. Are there any other comments to 17 18 be made to the RAB from those who have joined us 19 virtually? Please raise your hand electronically if 20 you would like to make a comment. 21 I don't see any others. Any 22 comments from those in person? 23 So, let's move to slide 27. We have 24 reached the end of the agenda tonight. Before 25 turning to our co-chairs for closing remarks, I'd

just like to thank all of you all on behalf of myself, Tim Sueltenfuss, my business partners and colleagues at Galen Driscol. We just appreciate being involved in the process and really applaud the commitment that all of you have, the dedication, Cathy, those thousands of hours that are put in on such an important topic. And so just thank you for all of the work that you're doing.

Let me turn first to Mr. Mark Henry and then move to Dr. Catharine Varley for any closing remarks.

MR. HENRY: I would just like to thank everybody in attendance tonight virtually and in person. Thanks for all of the questions. The RAB has several comments to make to the proposed plan.

I look forward to hearing the responses back from the Air Force. I guess that's about it. Thank you.

DR. VARLEY: All right. I'd like to thank everybody for attending tonight both virtually and here in person. I really like seeing everybody face to face, it's really quite nice. So, thank you all for coming out, and thank you all for your questions. And if you ever questions, community RAB chair, Mark Henry, you can get them to him and we'll talk it through, and I'm sure we can get you an

1	answer. Thank you all.
2	MR. SUELTENFUSS: Thank you all very
3	much. We are adjourned. Have a good evening.
4	(MEETING CONCLUDED AT 7:35 P.M.)
5	Minutes certified by:
6	( I h. D. D. )
7	Mulhy Monde
8	/s/ Quentina Rochelle Snowden, CSR-5519
9	QRS Court Reporting, LLC 800.308.0068, 810.691.4226 Dated: September 23, 2021
10	Dated. September 23, 2021
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

,	<b>23rd</b> [1] - 96:14	56:5, 56:16, 74:8,	activating [1] - 93:15	101:5
	<b>250</b> [2] - 110:7, 110:10	89:11, 94:10, 102:6,	active [3] - 22:16,	advise [2] - 65:7,
145 70 45	,	, , , , ,	,	
<b>'15</b> [1] - 76:15	<b>27</b> [1] - 120:23	105:12, 105:13,	27:12, 117:1	65:12
_	_	107:10, 110:19,	actively [2] - 41:11,	advisories [2] - 91:12,
/	3	115:10, 115:24,	53:12	91:14
		117:17, 119:13	activities [3] - 10:20,	<b>ADVISORY</b> [1] - 1:1
<b>/s</b> [1] - 122:7	<b>3</b> [1] - 108:9	absolutely [3] - 27:1,	22:14, 99:23	advisory [2] - 39:25,
	<b>3.10</b> [1] - 10:3	52:10, 109:24	activity [2] - 12:10,	91:13
1	<b>30</b> [1] - 106:1	absorbed [1] - 37:15	22:22	<b>Advisory</b> [1] - 3:4
	<b>30-day</b> [1] - 29:12	accelerate [1] - 21:18	actual [1] - 82:11	advocate [1] - 21:20
<b>1</b> [1] - 1:1	<b>3031</b> [1] - 19:20	access [2] - 23:12,	add [14] - 18:6, 42:25,	<b>AERO</b> [1] - 22:18
<b>1,000</b> [3] - 93:12,	<b>30th</b> [1] - 61:10	31:4	58:8, 59:2, 61:1,	<b>Aerostar</b> [4] - 5:12,
110:22, 113:5	<b>320</b> [1] - 93:10	accommodate [2] -	62:2, 66:1, 70:4,	,
<b>1,500</b> [2] - 109:25,	<b>320</b> [1] - 93.10	110:2, 112:4	86:8, 88:23, 89:2,	27:18, 108:15,
110:13	4	· ·		115:12
<b>100</b> [1] - 32:18	4	accompli [1] - 40:20	89:9, 90:3, 117:21	<b>AEROSTAR</b> [3] - 1:7,
	4 444.40	accomplish [2] -	adding [3] - 88:22,	1:8, 1:8
<b>11th</b> [3] - 8:4, 24:11,	<b>4</b> [1] - 111:10	30:19, 117:8	97:18, 100:10	<b>affect</b> [2] - 46:8, 46:10
25:4	<b>400</b> [1] - 108:9	accomplishing [1] -	<b>addition</b> [3] - 44:9,	<b>AFFF</b> [5] - 45:3, 99:1,
<b>12</b> [9] - 15:22, 26:22,	<b>41</b> [1] - 111:14	44:19	56:24, 61:22	99:19, 99:21, 100:7
27:15, 49:6, 51:22,		accomplishment [3] -	additional [18] -	<b>affirm</b> [1] - 96:13
88:5, 92:16, 93:3,	5	28:20, 29:4, 30:5	25:25, 30:23, 32:19,	<b>affirms</b> [1] - 96:10
93:20		accordingly [1] -	62:17, 77:7, 85:19,	<b>afraid</b> [1] - 107:9
<b>12-point</b> [1] - 22:13	<b>50</b> [2] <b>-</b> 98:25, 110:12	81:19	88:22, 89:2, 93:14,	afternoon [1] - 42:12
12th [1] - 26:21	<b>500</b> [4] - 87:23, 88:1,	accountable [1] - 21:6	96:11, 108:7, 108:9,	afterwards [1] - 41:17
13-page [1] - 101:14	88:3, 89:7	accurately [2] - 6:17,	110:1, 110:13,	age [1] - 106:8
<b>13th</b> [2] - 33:21, 50:25	<b>503</b> [1] - 92:10	94:23	112:7, 113:6,	agencies [1] - 45:9
<b>14</b> [1] - 15:16	<b>5:00</b> [2] - 1:2, 3:1	acronym [1] - 33:19	118:11, 120:9	•
<b>15</b> [1] - 92:17		acronyms [1] - 12:1	additionally [2] -	agencies' [1] - 50:17
<b>15-page</b> [1] - 68:13	6	Act [1] - 90:25	17:18, 91:23	agency [1] - 21:4
<b>16th</b> [2] - 32:14, 33:21		act [1] - 96:4	address [23] - 4:15,	agenda [10] - 3:15,
<b>18</b> [2] <b>-</b> 49:6, 60:20	<b>6,000</b> [1] - 110:25		5:3, 21:5, 27:3,	4:7, 4:16, 5:4, 6:25,
<b>18</b> [2] - 49.0, 00.20 <b>18-month</b> [1] - 49:19	<b>6000</b> [1] - 1:4	<b>Action</b> [3] - 14:7, 21:2,	28:19, 49:1, 51:3,	10:19, 24:8, 26:24,
	<b>6:20</b> [1] <b>-</b> 71:20	101:16	55:14, 68:16, 73:12,	71:22, 120:24
<b>1970s</b> [2] - 99:18,	<b>6:21</b> [2] - 72:1, 72:3	action [51] - 4:11,	83:2, 89:17, 91:2,	<b>ago</b> [8] - 40:19, 44:3,
100:4	<b>6:31</b> [2] - 72:1, 72:4	4:13, 12:4, 13:10,		44:4, 54:20, 68:7,
<b>1974</b> [1] - 98:19	0.31 [2] - 72.1, 72.4	13:13, 14:15, 14:18,	97:2, 97:7, 100:6,	72:23, 99:17, 112:18
<b>198</b> [1] - 48:3	7	15:17, 16:15, 21:16,	102:11, 108:18,	<b>agree</b> [5] - 21:8, 22:2,
<b>1980</b> [1] <b>-</b> 90:25	7	26:22, 26:24, 27:17,	113:15, 113:18,	41:19, 50:9, 69:2
<b>1993</b> [1] <b>-</b> 99:18	<b>7:35</b> [1] - 122:4	28:2, 30:4, 30:6,	114:7, 114:19,	agreed [1] - 20:5
<b>19th</b> [1] - 31:1	7.35 [1] - 122.4	30:7, 34:11, 39:7,	114:22	agreeing [1] - 25:15
	•	44:2, 50:22, 50:24,	addressed [3] - 109:7,	agreement [3] - 48:9,
2	8	58:19, 58:25, 59:6,	109:13, 109:14	82:12, 82:14
	<b>20</b> (01 22:0 22:46	59:8, 59:21, 76:14,	addresses [2] - 51:4,	agrees [2] - 21:15,
<b>2</b> [2] - 8:24, 23:22	<b>80</b> [2] - 23:8, 32:16	76:15, 76:18, 76:21,	64:22	29:25
<b>2,000</b> [2] - 110:14,	<b>80-some</b> [1] - 38:1	77:1, 77:9, 77:23,	ADDRESSING [1] -	ahead [29] - 4:6,
112:3	800.308.0068 [1] -	78:10, 78:13, 82:16,	2:1	36:20, 37:1, 39:5,
<b>20</b> [1] - 52:17	122:8	84:2, 84:3, 84:15,	addressing [2] -	41:2, 42:24, 48:6,
<b>201</b> [1] - 93:2	810.691.4226 [1] -	85:24, 87:16, 88:13,	20:25, 85:18	55:18, 56:4, 56:20,
<b>2014</b> [3] - 76:14,	122:8	97:16, 109:10,	adequately [1] - 85:18	63:24, 64:25, 66:4,
76:17, 76:21	<b>823</b> [1] <b>-</b> 93:11	109:11, 109:15,	adjourned [1] - 122:3	71:22, 71:25, 72:5,
<b>2014/'15</b> [1] - 76:5	<b>86</b> [2] <b>-</b> 15:24, 101:14	109:20, 109:21	adjusted [1] - 26:4	71.22, 71.23, 72.3, 75:8, 102:22,
<b>2017</b> [1] - 21:3		actions [21] - 4:2,	Administration [1] -	107:21, 108:1,
<b>2018</b> [1] - 87:11	9	14:10, 15:11, 15:15,	95:25	107.21, 106.1,
<b>2020</b> [1] - 85:2		18:6, 18:13, 22:3,	administrative [2] -	114:21, 115:23,
<b>2020</b> [1] <b>-</b> 65.2 <b>2021</b> [6] <b>-</b> 1:1, 14:20,	<b>90-some</b> [1] - 38:1	61:7, 77:13, 90:19,	39:8, 47:14	
		90:23, 90:25, 96:11,	administrativia [1] -	117:4, 118:16,
25:5, 96:14, 98:20,	Α	97:1, 97:8, 97:13,	10:5	118:18, 118:23,
122:8		100:9, 100:18,	advance [2] - 3:13,	120:12
<b>2022</b> [1] - 116:21	ability [3] - 49:13, 81:2	101:8, 101:9	45:1	aims [1] - 101:10
<b>215</b> [1] - 23:9	able [18] - 17:20,	activated [2] - 93:19,		<b>Air</b> [106] - 1:3, 8:15,
<b>22nd</b> [1] - 14:20	23:12, 50:4, 53:2,	93:24	advancing [1] - 88:18	10:23, 12:7, 14:4,
<b>23</b> [1] - 122:8		JJ.24	advantage [2] - 87:19,	15:11, 15:17, 17:14,

18:5, 18:13, 18:24, 19:9, 19:12, 19:14, 19:24, 20:2, 20:5, 20:6, 21:10, 21:11, 21:18, 21:19, 22:4, 22:17, 30:9, 32:5, 34:10, 40:16, 41:5, 45:8, 46:14, 50:25, 52:24, 53:3, 58:20, 60:25, 62:23, 63:22, 64:15, 64:19, 65:2, 65:10, 65:15, 69:9, 69:18, 72:12, 80:3, 80:7, 84:9, 85:3, 85:14, 85:17, 85:22, 86:23, 87:6, 87:14, 90:19, 90:20, 93:4, 93:8. 94:3. 94:7. 94:20. 94:22. 94:25. 95:3, 95:5, 95:11, 95:15, 95:16, 95:21, 96:1, 96:14, 96:20, 96:22, 96:25, 97:2, 97:6, 97:9, 97:12, 97:21, 98:15, 98:16, 99:17, 99:19, 99:25, 100:3, 100:5, 100:8, 100:11, 100:14, 101:1, 101:7, 101:11, 102:10, 103:11, 103:19, 104:3, 104:4, 104:8, 104:10, 108:11, 109:11, 113:7, 116:18, 121:17 Airport [2] - 22:9, 22:13 airport [4] - 22:14, 22:15, 22:19, 41:9 Allen [1] - 39:25 allow [1] - 108:5 almost [2] - 78:15, 112:17 alternate [3] - 25:19, 26:2, 26:9 alternative [1] - 93:18 Amen [1] - 107:11 amendments [1] -26:7 amount [2] - 16:5, analogy [1] - 110:24 analysis [1] - 108:8 analytical [1] - 19:2 analyze [1] - 63:3 analyzed [1] - 18:25 animals [1] - 91:16 answer [13] - 42:15, 65:3, 65:9, 67:3, 76:11, 81:21, 110:5,

112:4, 119:3, 119:13, 119:25, 122.1 answered [1] - 72:23 answering [1] -106.11 answers [2] - 89:13, 120.6 **ANTHONY** [1] - 2:2 Anthony [3] - 71:10, 83:16, 83:18 anticipate [3] - 26:5, 53:5, 63:20 anticipating [1] - 26:8 **AORS** [1] - 50:14 apart [1] - 110:7 apologize [1] - 69:3 APPEARANCES [1] -1:6 applaud [1] - 121:4 applying [1] - 14:21 appreciate [13] - 3:12, 11:13, 16:8, 18:1, 20:11, 23:18, 24:5, 27:13, 73:16, 77:19, 82:19, 120:6, 121:3 appreciates [1] -24:21 approach [8] - 14:22, 18:15. 20:23. 28:14. 29:3. 30:24. 84:4. 113:2 approaches [1] -106:17 appropriate [1] -68:22 approved [2] - 62:23 April [1] - 85:2 apron [1] - 33:9 aqueous [1] - 98:23 aquifer [7] - 11:25, 18:18, 19:5, 33:18, 37:15, 45:23, 46:3 **AR** [2] - 48:7, 60:6 area [21] - 23:13, 24:25, 32:23, 32:25, 33:5, 33:11, 39:21, 40:7, 40:23, 43:2, 43:3, 43:7, 45:18, 46:5, 87:4, 87:8, 92:1, 92:7, 95:10, 99:25, 114:19 areas [5] - 33:14, 45:16, 89:18, 96:18, 99:21 **Army** [1] - 65:8

Arnie [12] - 7:16,

16:10, 24:16, 25:2,

42:19, 43:21, 45:5,

63:7, 64:25, 74:22,

75:9 **ARNIE** [1] - 1:13 Arrow [2] - 92:6, 106:2 assessment [1] -28:21 assignment [1] -112:17 assuming [1] - 50:5 assumptions [1] -40.22 assurance [1] - 18:22 **Assurance** [1] - 32:2 assure [1] - 100:12 **AT** [2] - 3:1, 122:4 atmosphere [1] - 6:9 ATSDR [1] - 95:25 attach [1] - 57:9 attached [1] - 66:17 attachment [2] -68:12, 68:21 attempt [1] - 100:25 attempted [1] - 100:11 attendance [1] -121:13 attended [2] - 12:6, 12:11 attending [1] - 121:19 attention [1] - 48:16 attorney [2] - 72:12, 103:18 attorneys [1] - 50:13 **Au** [3] - 8:19, 8:20, 23:2 August [3] - 26:21, 32:14, 53:17 authorities [1] - 91:19 Authority [2] - 22:9, 22:13 available [8] - 3:19, 19:15, 21:14, 41:4, 48:18, 98:13, 112:16, 112:19 average [1] - 92:17 avoid [2] - 6:13, 72:16 awareness [4] - 24:10, 52:17, 58:9, 71:7 awesome [1] - 69:7 В

background [2] - 5:16, 35:3 balancing [1] - 94:1 ballpark [1] - 51:17 base [24] - 13:18, 30:22, 33:4, 33:8, 38:3, 38:11, 39:23, 40:3, 40:16, 54:4, 54:19, 70:19, 72:9, 78:11, 78:19, 91:1,

91:7, 95:23, 96:19, 99:18, 99:22, 100:2 Base [7] - 1:3, 14:4, 21:12, 21:19, 90:19, 98:15, 99:17 based [12] - 31:9, 31:10, 36:12, 48:8, 50:1, 51:7, 64:3, 76:13, 76:17, 88:23, 110:6, 110:8 bases [3] - 65:18, 106:16 basin [2] - 54:7, 54:18 basins [1] - 54:6 basis [1] - 44:7 Bay [1] - 53:10 BCT [9] - 19:8, 19:11, 52:21, 52:23, 53:1, 53:4, 58:24, 59:14, 59:18 beach [3] - 89:19, 92:25, 114:7 beautiful [1] - 74:15 become [1] - 46:15 becoming [1] - 49:5 beds [1] - 40:8 beg [2] - 16:19, 104:15 began [3] - 31:1, 34:18, 86:23 begin [4] - 3:2, 4:8, 25:3, 25:11 beginning [1] - 59:14 begins [1] - 29:1 begun [1] - 18:20 behalf [1] - 121:1 behavior [1] - 96:25 behind [4] - 5:8, 100:15, 102:8, 102:20 below [5] - 37:7, 37:9, 37:14, 93:17, 111:9 BEN [1] - 1:18 Ben [4] - 9:17, 9:24, 17:23, 18:1 bend [1] - 56:13 benefit [1] - 47:11 best [12] - 5:24, 51:6, 51:8, 51:9, 52:1, 80:15, 86:25, 105:6, 108:18, 109:5, 109:15 BETH [1] - 1:17 Beth [11] - 9:7, 18:9, 48:8, 50:12, 52:22, 66:5, 66:6, 66:21, 73:8, 73:12, 75:19

better [11] - 14:8, 15:5,

20:8, 30:24, 30:25,

31:14, 107:6, 107:7,

114:5, 114:10, 115:2

between [6] - 25:25, 31:18, 32:20, 40:8, 46:14, 60:25 beyond [2] - 8:5, 12:9 big [2] - 70:24, 105:16 bigger [7] - 44:6, 111:7, 111:8, 112:14, 114:8 biggest [1] - 114:16 **Bill** [8] - 7:11, 12:24, 23:19, 24:15, 41:1, 44:2, 45:5, 106:10 BILL [1] - 1:11 bill [1] - 73:17 bio [1] - 114:25 bioaccumulate [1] -99:9 biomagnify [1] - 93:7 biota [6] - 39:24, 91:9, 91:11, 91:18, 97:10, 97:12 birth [1] - 99:5 bit [13] - 3:9, 11:4, 14:1, 24:22, 28:25, 30:13, 33:23, 34:4, 36:2, 37:22, 60:2, 72:13, 74:1 blank [1] - 88:22 blew [1] - 110:15 **BOARD** [2] - 1:1, 2:1 **Board** [2] - 3:4, 72:8 board [2] - 6:18, 48:25 body [2] - 27:10, 27:12 Bond [2] - 11:2, 108:14 **BOND** [29] - 1:8, 27:19, 36:22, 37:4, 37:8, 37:17, 38:5, 38:24, 39:2, 42:25, 45:21, 46:10, 46:25, 49:7, 54:10, 54:14, 54:23, 79:10, 81:15, 81:20, 82:23, 86:10, 86:12, 90:4, 108:13, 108:16, 110:4, 117:22, 119:23 Bound [1] - 27:18 branches [1] - 65:3 break [9] - 52:16, 66:3, 71:19, 71:21, 71:23, 71:24, 72:1, 99:8 **brief** [1] - 5:2 briefly [1] - 8:3 bring [4] - 12:13, 48:15, 84:4, 105:12 broader [1] - 40:15 broken [1] - 31:13 BRYAN [3] - 1:19, 9:1, 24:1

84:16, 84:20, 85:16,

Bryan [2] - 8:23, 23:23 budget [2] - 16:15, 16:16 build [2] - 22:17, 114:8 building [3] - 108:10, 108:22, 118:3 buildings [3] - 20:9, 117:14, 117:15 built [4] - 87:10, 87:12, 87:18, 108:22 buried [3] - 54:8, 54:19, 54:20 busier [1] - 24:23 business [5] - 4:9, 22:15, 24:7, 27:4, 121:2 busy [2] - 13:7, 116:18 BY [1] - 1:21

#### C

cabins [1] - 117:16 calendar [1] - 59:25 **CALL** [1] - 3:1 Camp [1] - 40:8 cancer [1] - 99:5 cannot [3] - 65:13, 96:13, 117:7 capabilities [1] -110:16 capacity [13] - 87:22, 87:24, 87:25, 88:4, 88:6, 88:8, 89:2, 89:5, 92:5, 93:12, 97:22, 108:21, 110:23 capture [7] - 3:7, 56:2, 56:7, 89:18, 92:10, 109:2, 113:5 captured [3] - 57:14, 93:10, 93:14 capturing [1] - 81:8 car [1] - 110:25 carbon [4] - 93:15, 93:19, 93:24, 94:10 care [7] - 56:8, 86:6, 89:20, 109:17, 109:19, 114:18, 115.2 career [1] - 111:11 Carol [12] - 115:22, 115:23, 115:24, 115:25, 116:2. 118:10, 118:17, 118:20, 118:25, 120:8 **CAROL** [1] - 2:4 carry [1] - 96:23 case [3] - 51:9, 85:1,

91:6 catching [1] - 69:3 catharine [3] - 8:15, 10:24, 41:3 Catharine [9] - 4:4, 18:14, 19:16, 30:17, 44:3, 46:25, 54:25, 66:16, 121:10 **CATHARINE** [1] - 1:16 cathy [1] - 90:8 Cathy [17] - 8:12, 13:3, 16:8, 16:12, 20:10, 24:16, 25:2, 57:19, 58:10, 58:13, 68:2, 71:6, 71:13, 74:11, 90:7, 103:19, 121:6 CATHY [1] - 1:13 caught [1] - 66:23 caused [2] - 99:23, 108:11 central [14] - 87:10, 87:18, 87:21, 88:6, 88:8, 92:5, 92:12, 94:8, 97:22, 105:25, 108:4, 108:21, 110:17, 113:17 cents [1] - 70:3 CERCLA [15] - 16:17, 21:17, 28:7, 28:9, 28:24, 90:25, 91:1, 91:21, 94:1, 96:22, 96:24, 97:7, 97:8, 106:19, 115:1 certain [2] - 95:3, 113:16 certainly [2] - 21:17, 57:12 certified [1] - 122:5 Certified [1] - 1:22 chair [8] - 4:11, 11:22, 24:12, 25:7, 25:8, 25:12, 68:16, 121:24 CHAIR [2] - 1:15, 1:16 chair's [2] - 12:2, 24:12 chairs [9] - 3:16, 4:4, 10:2, 25:23, 26:1, 26:18, 27:3, 71:18, 120:25 challenge [1] - 73:23 challenging [2] - 3:10, 5:23 chance [1] - 55:9 change [9] - 14:13, 15:4, 36:12, 44:8, 49:10, 49:14, 70:1, 81:3, 113:1 changed [2] - 26:6, 84:14

changes [6] - 6:22,

25:24, 44:7, 49:2, 80:4, 80:10 changing [1] - 49:4 charge [1] - 84:10 chat [1] - 71:11 check [9] - 44:22, 52:18, 71:17, 82:6, 101:25, 115:18, 116:5, 116:7, 116:10 **chemicals** [9] - 91:5, 91:21, 94:7, 94:9, 94:17, 95:19, 99:2, 99:3, 99:7 children [1] - 104:14 choice [1] - 93:25 choosing [1] - 94:2 chose [1] - 38:12 Chris [1] - 102:24 CHRIS [1] - 2:5 citizens [2] - 91:19, 97:19 civil [1] - 103:16 civilians [1] - 13:17 clarification [6] -11:24, 12:8, 38:21, 72:11, 74:24, 76:9 clarify [5] - 41:1, 41:17, 47:12, 72:22, 78:8 clarity [2] - 40:25, 68:9 Clark's [21] - 29:7, 29:9, 29:18, 30:8, 30:13, 34:10, 34:11, 34:20, 35:19, 46:13, 47:6, 47:13, 47:19, 50:14, 50:23, 55:9, 76:25, 79:1, 79:14, 85:4, 118:3 class [2] - 21:1, 21:7 **clay** [1] - 56:5 clean [3] - 14:12, 70:19, 100:1 cleaned [3] - 21:22, 106:7, 119:7 cleanup [12] - 14:9, 14:15, 15:9, 21:19, 27:11, 84:10, 97:16, 100:13, 101:3, 102:11, 102:13, 103:3 clear [1] - 96:6 clearly [3] - 6:12, 87:4, 94:25 clients [1] - 22:16 clock [2] - 78:13, 78:14 clocks [1] - 78:8 close [3] - 86:5, 103:7, 103:8 closer [1] - 103:10

closes [1] - 34:7 closing [3] - 86:4, 120:25, 121:11 Closure [1] - 90:20 closure [1] - 99:18 **co** [18] - 3:16, 4:4, 4:11, 10:2, 11:22, 12:2, 24:12, 25:7, 25:8, 25:12, 25:23, 26:1, 26:18, 27:3, 68:16, 71:18, 120:25 **CO**[2] - 1:15, 1:16 co-chair [7] - 4:11, 11:22, 24:12, 25:7, 25:8, 25:12, 68:16 CO-CHAIR [2] - 1:15, 1:16 co-chair's [2] - 12:2, 24:12 co-chairs [9] - 3:16, 4:4, 10:2, 25:23, 26:1, 26:18, 27:3, 71:18, 120:25 coast [1] - 62:4 coherent [1] - 95:9 Cole [5] - 115:22, 116:3, 116:11, 116:12, 118:25 COLE [9] - 2:4, 2:4, 116:14, 116:16, 118:14, 118:21, 118:24, 120:5, 120:13 colleagues [2] - 5:13, 121:3 collect [6] - 18:22, 30:23, 30:24, 32:20, 33:11, 37:13 collected [2] - 31:9, 31:11 collecting [6] - 11:8, 30:20, 37:9, 86:4, 115:13, 116:19 collection [2] - 28:23, 92:22 coming [10] - 3:25, 27:21, 48:9, 61:10, 65:18, 103:15, 106:19, 106:25, 116:17, 121:22 comment [63] - 4:21, 5:6, 10:8, 10:14, 12:19, 19:16, 29:13, 34:6, 35:24, 37:18, 41:15, 48:8, 49:1, 56:22, 57:13, 71:8, 71:9, 71:12, 71:13, 71:17, 72:11, 72:19, 74:14, 77:20, 82:25, 83:5, 83:7, 83:12,

86:9, 90:6, 90:8, 90:10, 98:3, 101:23, 102:3, 102:14, 102:17, 102:20, 102:23, 103:1, 103:10, 103:20, 104:24, 105:19, 105:21, 105:23, 107:16, 107:18, 111:6, 115:16, 115:20, 116:5, 116:6, 116:8, 118:12, 118:19, 120:9, 120:20 commented [1] -77:23 comments [42] - 4:23, 7:3, 11:14, 11:24, 19:21, 30:10, 32:5, 32:6, 32:7, 34:7, 46:13, 46:21, 47:1, 47:13, 47:23, 48:3, 48:18, 50:24, 56:23, 57:1, 57:4, 57:24, 58:4, 58:5, 58:8, 58:9, 65:25, 79:13, 80:1, 80:8, 83:15, 90:11, 90:15, 90:16, 93:20, 93:23, 103:17, 107:13, 120:13, 120:17, 120:22, 121:15 commercial [1] -99:13 commitment [3] -20:11, 105:14, 121:5 communicating [1] communication [1] -18:5 communities [1] -14:8 community [35] -4:10, 11:20, 11:21, 12:2, 12:3, 13:7, 13:11, 14:12, 14:14, 17:11, 24:10, 24:12, 24:14, 24:18, 24:19, 25:4, 25:7, 25:8, 25:11, 25:19, 26:3, 41:2, 45:9, 51:13, 51:25, 52:5, 56:24, 57:4, 57:25, 59:3, 60:25, 84:21, 103:12, 121:23 COMMUNITY [1] compare [1] - 81:17 comparing [1] - 19:9

Compensation [1] -90:24 complaint [1] - 60:5 complete [12] - 20:6, 20:18, 21:13, 28:18, 29:5, 29:17, 31:2, 40:21, 48:22, 70:20, 93:13, 109:7 completed [5] - 18:15, 19:7, 33:2, 34:23, 37:6 completely [1] -108:23 compliance [2] -39:16, 91:15 complicated [1] -21:17 comply [1] - 100:16 component [1] - 28:11 components [1] -37:20 compounds [2] -31:15, 99:11 Comprehensive [1] -90:24 comprehensive [1] -43:18 computer [1] - 60:23 concentration [2] -94:19, 112:2 concentrations [10] -31:20, 31:21, 87:1, 87:5, 87:8, 88:11, 99:1, 108:19, 109:1, 113:4 concept [2] - 31:19, 56:14 conceptual [6] -39:17, 40:4, 40:10, 42:1, 94:24, 95:10 concern [5] - 43:15, 48:15, 84:18, 85:8, 85:14 concerns [3] - 20:9, 86:7 CONCLUDED [1] -122.4 concrete [1] - 35:19 concurrence [1] -96:10 confident [2] - 49:9, 94:22 confined [1] - 108:21 confines [1] - 108:12 confirm [1] - 7:5 confirming [1] - 67:4 congratulations [1] congressionals [1] -16:19

Congressman [1] -85.5 conjunction [2] -13:23. 14:6 connected [1] -107:14 connectivity [1] -116:2 consider [3] - 62:5, 69:25, 74:19 considered [1] - 21:1 consistent [1] - 65:11 constitution [1] - 7:8 constructed [1] -50:18 construction [3] -34:20, 35:11, 42:4 consumption [1] -91:12 contact [1] - 91:18 containing [1] - 99:1 contains [1] - 91:20 contaminant [5] -21:1, 82:3, 85:19, 91:22, 97:3 contaminants [6] -21:7, 73:6, 91:4, 93:5, 94:11, 95:19 contaminated [5] -12:14, 14:19, 91:9, 91:10, 92:11 contamination [27] -13:18, 14:23, 14:25, 20:24, 21:5, 21:11, 67:20, 73:4, 85:12, 90:21, 91:7, 91:10, 91:15, 91:24, 92:2, 93:17, 94:24, 95:13, 95:23, 97:4, 99:23, 99:24, 100:21, 100:23, 101:13, 111:25 Contamination [2] -14:3, 98:14 continuation [1] -4:10 continue [15] - 3:21, 6:6, 6:7, 6:20, 14:24, 21:20, 24:17, 24:19, 36:4, 48:12, 48:15, 72:7, 107:8, 109:20, 112:8 continued [1] - 18:4 continuing [7] - 8:3, 8:4, 33:13, 36:4,

39:12, 45:1

80:23

continuous [1] - 42:6

continuously [1] -

contract [1] - 53:11

**contractors** [1] - 53:9 contributed [1] -98:24 control [9] - 14:18, 56:3, 67:19, 79:16, 79:23, 80:14, 82:2, 89:18, 100:1 controlled [2] - 81:10, 92:14 controlling [3] -79:17, 81:9, 82:2 controls [1] - 67:14 conversation [2] -111:18, 111:20 conversations [2] -48:14, 86:13 convinced [1] - 84:14 **convoluted** [1] - 67:8 cooperative [1] -103:16 copy [1] - 96:17 cordial [1] - 103:16 corners [1] - 85:10 correct [6] - 9:17, 50:16, 67:2, 74:6, 76:3, 93:25 Correct [1] - 39:10 correctly [3] - 49:18, 75:10, 81:11 costs [2] - 105:24 count [1] - 51:14 country [4] - 64:16, 64:19, 65:2, 104:2 couple [4] - 32:16, 45:13, 86:14, 86:21 course [6] - 29:21, 60:11. 98:5. 98:9. 112:5, 116:18 Court [5] - 3:6, 5:25, 6:1, 36:25, 122:7 cover [2] - 56:5, 92:23 covered [2] - 75:2, 77:13 cracks [1] - 55:5 crashed [1] - 54:5 created [4] - 21:2, 56:24, 91:10, 92:15 Creek [1] - 92:14 crises [1] - 98:24 crisis [1] - 100:10 criteria [2] - 93:2, 94:2 critical [2] - 77:10, 109:18 crossed [1] - 111:14 crosses [2] - 45:7, 45:10 **CSM** [2] - 41:11, 44:8

contractor [2] - 53:10,

53:12

122:7 CTS [2] - 89:4, 92:6 curious [1] - 48:17 current [8] - 25:8, 46:9, 46:11, 95:8, 96:3, 109:6, 109:14, 112:1 cut [5] - 85:10, 86:25, 112:23, 114:3, 119:15 cutting [2] - 87:7, 97:23 cycle [1] - 78:1 D daily [1] - 92:18 Dan [3] - 12:17, 24:15, 25.1 dangers [1] - 100:23 **DANIEL** [1] - 1:12 Daniel [1] - 8:6 dart [1] - 79:5 data [68] - 20:1, 28:22, 30:23, 31:7, 31:9, 31:10, 32:19, 38:16, 39:20, 40:12, 40:13, 40:14, 40:17, 40:19, 41:4, 41:5, 41:6, 41:7, 41:10, 41:11, 41:13, 42:5, 42:8, 42:10, 42:17, 43:14, 43:16, 45:24, 46:4, 48:13, 55:2, 63:3, 63:4, 67:9, 67:10, 67:11, 80:23, 84:24, 85:4, 85:7, 86:4, 86:5, 86:16, 86:20, 88:7, 88:23, 95:12, 95:16, 95:18, 109:19, 112:16, 112:19, 113:6, 113:7, 113:8, 113:9, 115:11, 115:13, 116:19, 117:9, 119:12, 120:1, 120:4 data-driven [1] -

115:13

74:16

122:8

date [3] - 43:16, 51:7,

dated [2] - 74:19,

dates [1] - 74:16

David [11] - 8:9, 8:11,

17:8, 17:11, 24:17,

25:3, 44:22, 45:12,

78:5, 78:22, 82:18

**DAVID** [1] - 1:12

days [1] - 86:14

deadline [1] - 98:8

deal [3] - 26:15, 85:11, 95.1 dealing [1] - 111:11 decade [1] - 84:11 decades [2] - 99:8, 99.17 decide [2] - 59:12, 81:4 decided [1] - 57:12 decision [11] - 29:18, 34:9, 48:5, 50:22, 61:23, 64:4, 64:9, 64:11, 77:16, 113:10 decisions [5] - 61:7, 61:19, 84:18, 97:13, 115:14 dedication [1] - 121:5 deer [4] - 23:10, 23:12, 23:14, 23:15 defended [1] - 101:8 **defending** [1] - 104:2 **Defense** [8] - 13:16, 14:16, 14:20, 16:12, 16:14, 16:17, 16:22, 98:17 Defense's [1] - 14:18 defer [1] - 57:14 deficiency [1] - 39:18 deficient [1] - 100:19 define [1] - 109:18 defined [1] - 90:23 definitely [1] - 21:25 definition [2] - 91:21, 95:19 definitive [1] - 65:8 degree [1] - 90:21 delays [3] - 15:19, 36:12. 101:9 delivered [1] - 35:14 Denise [4] - 8:23, 8:25, 23:23, 23:24 **DENISE** [1] - 1:19 denise [1] - 9:4 deny [1] - 100:16 Department [12] -8:24, 14:16, 14:18, 14:19, 16:11, 16:14, 16:17, 16:22, 18:8, 23:4, 23:21, 98:17 Department's [1] -95:24 depth [1] - 38:15 describe [1] - 54:22 described [2] - 92:20, describes [3] - 15:12, 90:18, 90:23 design [14] - 29:24, 30:1, 30:2, 49:2,

79:3, 81:13, 81:18,

CSR-5519 [2] - 1:21,

81:23, 88:20, 88:22, 108:3, 110:2, 110:5, 112:3 designated [1] - 95:20 designed [3] - 35:9, 88:1. 96:24 designs [7] - 46:9, 46:11, 48:22, 80:6, 80:9, 80:11, 81:12 despite [2] - 100:4, 101:5 detail [2] - 58:23, 60:24 detailed [3] - 44:4, 44:11, 60:19 details [1] - 80:16 determination [1] -76:12 determinations [1] -64:2 determine [3] - 89:11, 109:19, 110:15 devastating [1] -100:6 developed [2] - 101:4, 112:20 developing [2] -28:18, 29:6 developmental [1] -99.6 devote [1] - 24:24 dialogue [2] - 6:9, 7:1 dictate [1] - 7:8 difference [2] - 31:18, 31:23 differences [2] -19:19, 19:22 different [11] - 28:9, 32:8, 45:16, 51:15, 76:6, 82:6, 103:14, 107:3, 108:24, 109:4, 113:2 difficulty [1] - 74:2 diminishing [1] -111:15 directed [2] - 78:24, 92.12 direction [2] - 69:23, 70:18 directions [1] - 70:1 Director [1] - 96:16 disappointed [1] -103:22 discern [1] - 74:8 discharge [6] - 92:14, 92:16, 92:18, 92:19, 94:21, 97:23 **Discharge** [1] - 94:15 discharged [2] -92:13, 93:6

discharges [4] -94:12, 94:16, 94:19, discharging [2] - 91:8, 96:9 disclose [2] - 94:17, 94 18 disclosures [1] -94:20 discovered [1] - 99:16 discuss [2] - 6:16, 28:14 discussed [4] - 59:5, 61:2, 96:14, 110:21 discussing [3] -20:15, 29:2, 82:15 discussion [7] - 4:20, 25:20, 25:25, 60:19, 83:3, 84:1, 103:11 discussions [5] -4:17, 6:18, 19:4, 50:13, 88:19 disease [1] - 99:5 dismissive [2] -103:20, 104:21 disorders [1] - 99:6 display [1] - 5:20 disposed [1] - 99:21 dissolved [1] - 37:16 distance [1] - 113:17 distractions [1] - 5:16 distribution [1] -111:25 District [2] - 8:24, 23:22 Division [1] - 96:15 doable [1] - 50:5 document [11] - 6:16, 15:23. 30:11. 62:17. 68:25, 77:16, 92:15, 93:4, 97:12, 101:10 documentation [4] -34:22, 35:17, 35:25, 53:11 documented [1] -81:25 documents [4] -50:16, 62:12, 64:5, 74:5 DoD [4] - 14:21, 15:2, 65:3, 65:4 **DoD's** [1] - 21:16 **DoD-wide** [1] - 65:4 domino [1] - 112:15 done [30] - 3:10, 21:4, 29:22, 29:23, 30:9, 32:10, 35:25, 37:6, 43:4, 45:15, 51:24, 53:13, 54:15, 55:23, 63:18, 64:7, 64:8,

117:12, 117:13, 119:19 double [1] - 92:4 doubled [1] - 97:21 down [15] - 34:19, 37:6, 38:13, 42:9, 45:2, 48:11, 52:3, 56:5, 60:20, 79:21, 80:1, 80:14, 82:3, 82:4, 99:8 down-gradient [5] -38:13, 79:21, 80:1, 80:14, 82:3 Dr [22] - 3:16, 4:4, 8:15, 17:13, 26:12, 41:2, 42:21, 44:23, 55:19, 57:14, 68:6, 69:20, 76:8, 84:2, 84:8, 86:18, 98:4, 105:2, 109:8, 113:25, 115:15, 121:10 **DR** [75] - 3:18, 8:17, 10:24, 26:14, 27:1, 27:6, 41:3, 42:4, 42:13, 42:16, 42:23, 44:25, 46:16, 46:21, 46:24, 47:3, 47:7, 47:12, 47:16, 47:21, 47:23, 48:2, 48:24, 49:12, 49:20, 49:23, 50:3, 51:8, 52:10, 52:13. 53:8. 53:22. 55:1, 55:12, 56:1, 57:6, 57:16, 57:19, 58:1, 58:5, 59:7, 59:22, 60:9, 60:12, 62:10, 63:11, 63:19, 66:17, 67:3, 68:18, 69:2, 69:14, 70:2, 76:10, 76:17, 77:6, 86:1, 86:11, 89:15, 98:1, 104:19, 104:23, 105:1, 105:4, 106:10, 106:13, 109:17, 109:24, 110:3, 114:2, 116:23, 117:2, 117:5, 119:12, 121:18 drawings [1] - 30:2 drillers [1] - 33:24 drinking [2] - 21:23, 92:3 **DRISCOL** [1] - 1:7

65:6, 80:17, 89:22,

98:18, 101:12,

106:15, 108:8,

110:9, 114:5,

driven [2] - 63:6, 115:13 driver [1] - 111:23 driving [3] - 41:7, 85:22, 112:11 DRML [1] - 106:21 **DRMO** [3] - 40:7, 54:12, 54:15 dubious [1] - 101:5 due [2] - 62:5, 99:25 duplicate [1] - 18:24 durability [1] - 99:12 during [17] - 4:25, 57:13, 58:4, 58:5, 58:8, 68:22, 68:23, 71:8, 71:16, 71:19, 71:25, 81:23, 90:10, 99:20, 109:9, 116:20, 118:4 dwell [1] - 70:14

Ε

e-mail [3] - 10:9, 68:6, 98:8 e-mails [1] - 60:10 early [4] - 6:14, 33:23, 100:4, 109:11 easier [2] - 5:25, 50:15 east [1] - 62:4 Eastern [2] - 71:20, 72:2 easy [1] - 66:11 eat [1] - 39:25 ecological [2] - 86:7, 114:4 economics [1] -111:14 ecosystem [1] - 97:11 educate [1] - 21:6 effect [1] - 112:15 effectiveness [1] -106:6 effects [3] - 14:19, 97:12, 100:6 efficiency [1] - 79:23 efficient [1] - 80:24 efficiently [3] - 6:10, 81:7, 82:9 effluent [2] - 94:14, 94:16 effort [2] - 60:25, 97:18 efforts [3] - 21:18, 84:4, 85:10 EGLE [25] - 18:20, 19:7. 20:2. 20:5. 21:15, 28:12, 29:2, 29:20, 30:8, 32:3, 34:12, 41:5, 41:12,

46:14, 50:4, 50:9, 53:6, 63:9, 66:6, 66:9, 82:12, 92:15, 95:2, 108:7, 116:17 **EGLE's** [4] - 18:12, 47:13, 96:11, 113:7 either [3] - 6:24, 93:15, 93:16 elaborate [2] - 86:22, 109.8 elderly [1] - 41:23 elected [3] - 94:4, 95:13, 95:15 electronically [10] -5:11, 8:21, 9:13, 9:24, 10:13, 83:10, 107:16, 107:18, 115:21, 120:19 elements [1] - 112:15 **Elimination** [1] - 94:16 emanating [1] - 91:7 emerging [1] - 21:1 employ [1] - 114:11 employed [1] - 106:17 end [17] - 4:14, 4:20, 5:1, 5:3, 7:3, 10:9, 19:10, 19:22, 34:21, 39:23, 68:23, 81:12, 84:16, 85:16, 106:15, 112:7, 120:24 endangerment [4] -91:3, 96:7, 96:20, 97:5 endless [1] - 15:18 ends [2] - 8:4, 29:13 Energy [2] - 9:8, 18:9 enforceable [1] -91:14 engineer [2] - 88:20, 110:5 engineered [1] - 30:2 engineering [4] -80:25, 108:3, 108:8, 110:3 enhance [1] - 80:19 enhancement [1] -19.19 enormous [1] - 16:5 ensure [3] - 7:6, 79:16, 81:7 enter[1] - 94:17 entering [3] - 10:18, 92:24, 94:11 enterprise [2] - 14:22, 65:4 enterprise-wide [2] -14:22, 65:4 entire [2] - 84:9, 96:12 entities [1] - 102:12

**Driscol** [1] - 121:3

entrusted [1] - 96:21 environment [9] -14:24, 21:24, 61:21, 91:4, 96:8, 96:22. 99:4, 99:7, 104:13 Environment [2] - 9:7, 18.9 environmental [3] -16:2, 56:25, 98:24 Environmental [1] -90:24 envision [1] - 78:2 EPA[1] - 16:14 equipment [2] - 35:9, 61:24 ESD [1] - 19:21 ESI [1] - 67:11 especially [3] - 27:10, 35:9, 114:6 establish [1] - 79:8 established [4] - 20:4, 79:3, 81:13, 81:23 Etten [28] - 29:7, 29:11, 29:21, 34:5, 35:21, 45:19, 45:25, 48:21, 55:21, 56:23, 79:2, 84:17, 84:20, 85:5, 86:16, 87:2, 87:17, 90:12, 90:22, 91:6, 91:8, 92:2, 92:13, 92:24, 96:9, 97:11, 97:17, 112:23 evaluate [6] - 64:12, 79:22, 80:7, 82:8, 107:3, 108:3 evaluated [5] - 64:5, 73:7, 75:13, 77:17, 80.3 evaluating [3] - 76:22, 77:1, 77:2 evaluation [3] - 14:17, 61:19, 61:20 evening [5] - 3:6, 9:1, 10:9, 107:23, 122:3 events [2] - 13:24, 18:19 everywhere [1] -105.9 evidence [3] - 39:19, 39:21. 40:9 exact [1] - 38:6 example [1] - 67:14 exceedances [1] -67:10 exceeds [1] - 93:1 exception [1] - 31:3 exceptionally [1] -99:10 exchange [2] - 6:9,

93:15

excuse [2] - 98:6, 100:15 exercise [1] - 22:18 exercises [1] - 99:20 existing [8] - 18:16, 30:21, 31:12, 87:23, 88:13, 108:12, 109:2, 110:16 expand [3] - 87:19, 96:2, 108:4 expansion [1] - 93:13 expansions [1] -108:24 **expected** [2] - 43:18, 94:18 expediting [2] -113:12 expeditiously [1] -109:4 experiences [1] -13:17 experts [3] - 75:16, 84:25, 90:17 expire [1] - 24:11 expires [1] - 24:12 explain [1] - 94:4 explained [1] - 85:18 explaining [1] - 11:2 explanation [2] -19:18, 19:21 exposed [1] - 14:24 exposure [3] - 91:17, 91:25, 100:23 expressed [1] - 25:9 extend [3] - 84:23, 92:1, 92:25 extended [2] - 27:11, 112:2 extent 151 - 85:12. 91:23, 93:5, 95:12, 100:20 extinguish [1] - 99:20 extra [1] - 3:13 extraction [6] - 84:23, 92:9, 92:10, 92:22,

# F

92:23, 96:3

99:3

extraordinarily [1] -

extremely [1] - 100:5

eyesight [1] - 41:21

F41 [4] - 92:9, 96:4, 108:6, 110:1 face [2] - 121:21 Facebook [1] - 98:11 facilitator [1] - 3:6 facility [4] - 21:22, 105:25, 110:17,

113:19 fact [5] - 40:22, 81:8, 85:1, 106:2, 114:6 factors [1] - 81:1 fail [1] - 78:15 failed [2] - 101:3, 101.12 fails [1] - 21:12 failure [1] - 100:1 fair [1] - 17:2 fairly [2] - 59:10, 62:11 fait [1] - 40:20 fall [1] - 89:24 fallen [1] - 60:20 falling [1] - 55:4 false [1] - 15:18 familiar [1] - 12:13 families [1] - 104:12 family [3] - 99:2, 105:7, 105:12 far [9] - 11:12, 32:25, 33:10, 39:22, 40:10, 51:18, 83:1, 117:6, 117:12 fashion [1] - 48:5 fast [6] - 36:23, 53:9, 53:14, 86:5, 89:21, 119:18 faster [3] - 22:2, 62:13, 81:5 fastest [1] - 87:15 father [1] - 118:25 fawn [1] - 23:15 feasibilities [1] -113:13 February [2] - 52:25, 53:17 Federal [9] - 14:11, 15:4, 15:7, 16:14, 21:4, 21:16, 21:22, 32:2, 100:16 Federation [7] - 12:12, 13:23, 14:6, 21:9, 90:15, 102:5, 102:8 feedback [3] - 69:22, 69:25, 72:14 feet [7] - 110:1, 110:7, 110:10, 110:13, 111:9, 112:3, 113:5 felt [1] - 113:16 feverishly [1] - 35:3 few [9] - 18:16, 20:16, 20:19, 29:23, 31:3, 37:13, 46:7, 86:14, 101.4 field [13] - 22:4, 28:22, 32:7, 32:9, 32:13,

fieldwork [11] - 11:1, 30:19, 31:1, 34:15, 34:18, 62:11, 62:13, 63:2, 117:9, 117:23 fifth [1] - 61:5 fighting [1] - 14:8 figure [4] - 31:6, 32:22, 32:24, 33:9 figured [1] - 49:4 figures [3] - 31:7, 66:12, 87:3 fill [2] - 46:3, 86:20 film [1] - 98:23 filter [1] - 115:4 final [8] - 23:14, 61:14, 64:8, 77:4, 77:16, 80:4, 80:6, 97:16 finalize [1] - 80:5 finalized [8] - 29:9, 46:22, 47:8, 47:24, 80:9, 80:12, 80:17, 81:24 finalizing [2] - 48:3, 80:5 finally [2] - 3:25, 30:6 findings [1] - 21:9 fine [2] - 73:22, 114:24 fingers [2] - 47:11, 51.14 finish [3] - 30:11, 36:7, 60:17 finishing [1] - 53:10 fire [5] - 32:23, 32:25, 43:2, 43:3, 43:7 fires [1] - 99:20 first [28] - 17:17, 28:6, 28:11, 36:21, 39:6, 44:3, 44:16, 45:14, 56:2, 59:9, 59:11, 61:12, 62:10, 65:14, 71:10, 71:13, 72:18, 73:19, 76:13, 78:10, 83:16, 84:1, 99:16, 102:22, 112:16, 119:14, 121:9 fish [6] - 23:15, 39:25, 91:12, 93:7, 99:9, 119:8 fit [2] - 44:14, 91:21 five [33] - 10:6, 61:4, 61:5, 61:6, 61:18, 62:1, 62:4, 62:20, 63:17, 63:25, 64:6, 64:7, 65:4, 65:5, 65:19, 66:25, 73:2, 73:7, 75:2, 75:4, 75:11, 75:14, 75:20, 76:6, 76:24, 77:14, 77:17, 78:1, 78:8,

78:9, 78:10, 78:12

five-year [28] - 61:5, 61:6, 61:18, 62:1, 62:4, 62:20, 63:17, 63:25, 64:6, 64:7, 65:4, 65:5, 65:19, 66:25, 73:2, 73:7, 75:2. 75:4. 75:11. 75:14, 75:20, 76:6, 76:24, 77:14, 77:17, 78:1, 78:8, 78:9 floor [1] - 83:3 flow [3] - 40:23, 81:1, 82:2 flowthrough [3] -56:6, 56:9, 56:14 flux [1] - 112:23 foam [9] - 56:8, 91:10, 91:13, 91:18, 91:20, 93:8, 98:23, 106:20, 114:25 focus [6] - 24:25, 43:24, 46:5, 84:3, 87:7, 87:9 focused [1] - 70:5 folks [5] - 3:11, 20:17, 27:22, 74:1, 86:14 follow [5] - 16:22, 44:17, 66:7, 73:8, 76:23 following [4] - 26:6, 26:18, 26:23, 119:1 follows [1] - 102:4 followup [5] - 43:22, 63:16, 64:18, 74:23, 109:22 footprint [1] - 96:2 force [1] - 112:11 Force [100] - 1:3, 8:15, 10:23, 12:7, 14:4, 15:11, 17:15, 18:5, 18:13, 18:24, 19:10, 19:12, 19:14, 19:25, 20:2, 20:5, 20:6, 21:11, 21:18, 21:19, 22:4, 22:17, 30:9, 32:5, 34:10, 40:17, 41:5, 45:8, 46:14, 50:25, 52:24, 53:4, 58:20, 60:25, 62:23, 63:23, 64:15, 64:19, 65:2, 65:10, 65:15, 69:9, 69:18, 72:12, 80:3, 80:7, 84:9, 85:3, 85:14, 85:17, 85:23, 86:23, 87:6, 87:14, 90:20, 93:4, 94:3, 94:7, 94:20, 94:25, 95:3, 95:6, 95:11, 95:15, 95:17, 95:21, 96:1, 96:15,

35:1, 62:13, 84:23,

92:9, 92:10, 96:3,

117:11, 117:12

96:20, 96:22, 96:25, 97:2, 97:6, 97:9, 97:12, 97:21, 98:15, 98:17, 99:17, 99:19, 100:3, 100:5, 100:8, 100:11, 100:15, 101:1, 101:7, 101:11, 102:10, 103:11, 103:20, 104:3, 104:4, 104:8, 104:10, 108:11, 109:11, 113:7, 116:18, 121:17 Force's [6] - 15:17, 21:10, 90:19, 93:8, 94:23, 99:25 forest [1] - 41:8 Forest [5] - 9:17, 9:25, 17:16, 40:1, 40:2 forever [1] - 99:6 formal [2] - 68:20, 69:18 formally [2] - 69:13, formed [1] - 105:5 Former [2] - 14:3, 98:15 former [11] - 1:3, 21:11. 21:19. 21:22. 33:3, 65:18, 72:8, 78:11, 91:1, 92:7, 99:16 formerly [1] - 57:23 forming [2] - 98:23, 105:5 forth [3] - 44:10, 60:24, 62:21 forward [35] - 3:23, 3:24, 4:1, 6:16, 11:12, 11:14, 28:14, 33:20, 34:24, 37:24, 41:7, 43:13, 44:25, 48:7, 52:4, 52:6, 52:11, 62:18, 62:24, 70:16, 70:18, 84:2, 88:9, 88:17, 90:14, 102:12, 106:18, 107:3, 107:4, 108:18, 109:5, 109:16, 117:18, 119:18, 121:16 four [4] - 6:4, 15:19, 19:25, 96:1 fractionation [2] -106:20, 114:25 frankly [1] - 76:24 frequently [1] - 100:21 Friday [3] - 29:13, 34:7, 34:8

front [3] - 9:21, 79:9,

104:4 frustration [1] - 39:13 FS [1] - 70:22 FT002 [10] - 29:7, 34:20, 39:21, 55:7, 61:20, 74:25, 75:21, 76:12, 77:8 fuel [1] - 92:7 full [4] - 4:7, 85:11, 95:12, 119:17 fully [1] - 119:13 function [1] - 71:11 functioning [1] -27:12 furthermore [1] -100:25 future [7] - 58:20, 70:6, 74:18, 94:5, 95:20, 104:13, 114:14

## G

graphic [1] - 34:14 graphics [1] - 74:5 GAC [2] - 61:8, 61:20 grassy [1] - 99:21 Gaines [11] - 7:11, great [20] - 9:3, 9:19, 12:25, 24:15, 25:2, 24:4, 27:2, 37:18, 41:1, 42:24, 43:12, 38:5, 44:3, 45:21, 73:17, 73:20, 74:3, 56:18, 64:24, 65:24, 105:21 74:15, 79:10, 82:24, **GAINES** [14] - 1:11, 95:1, 113:25, 7:12, 13:1, 39:6, 115:18, 119:24, 39:11, 41:20, 42:11, 120:15 42:14, 43:14, 73:22, Great [4] - 9:7, 14:7, 74:7, 105:22, 18:9, 101:15 106:12, 107:11 greatest [1] - 118:6 Gaines' [1] - 42:22 Greg [4] - 117:2, Gaines's [1] - 66:7 117:16, 118:16, Galen [1] - 121:3 120:12 GALEN [1] - 1:7 **GREGORY** [1] - 2:4 gallon [1] - 88:3 Gregory [6] - 116:11, gallons [11] - 87:23, 116:12, 118:9, 88:2, 89:7, 92:10, 120:8, 120:11 93:10, 93:11, 93:12, Gregory's [1] - 120:10 108:9, 110:1, ground [6] - 6:4, 6:7, 110:12, 110:22 6:19, 11:6, 44:15, game [1] - 70:7 117:25 gap [1] - 45:24 groundwater [21] gaps [7] - 46:4, 84:24, 18:16, 30:20, 43:2, 86:4, 86:5, 86:16, 45:17, 45:23, 46:4, 86:20, 88:7 48:13. 67:15. 67:16. gas [1] - 20:3 67:20. 79:18. 91:8. gathered [1] - 95:16 91:24, 92:8, 92:11, gathering [1] - 27:21 92:22, 93:10, 93:17, gears [1] - 86:3 99:23, 110:7 general [2] - 14:17, groundwater/ 31:18 **surface** [1] - 93:2 generally [2] - 31:22, group [5] - 12:11, 101:3 16:3, 17:4, 52:2, generous [1] - 48:19 90:17 glad [2] - 3:25, 22:4 groups [1] - 56:25

grow [1] - 105:8 guess [2] - 75:5, 121:17 guidelines [1] -100:16 guys [10] - 27:19, 27:24, 35:11, 42:8, 46:17, 51:18, 66:14, 79:4, 79:8, 87:25

glaucoma [1] - 41:21

goal [7] - 63:7, 89:22,

89:25, 111:24,

117:8, 117:11,

GOVERNMENT [1] -

government [2] -

governmental [1] -

governments [1] -

gradient [10] - 38:13,

79:21, 80:1, 80:13,

80:14, 82:3, 114:9,

grandchild [1] - 106:8

114:18, 114:23

grading [1] - 35:18

14:11, 16:14

GLPAN.org [2] -

101:17

119:17

1:15

17:13

15:5

#### Н

half [1] - 44:2 hand [16] - 5:7, 5:10, 8:21, 9:13, 9:24, 10:13, 83:10, 107:15, 107:17, 107:19, 115:21, 115:22, 116:11, 120:8, 120:10, 120:19 handle [3] - 82:7, 88:1, 110:24 handled [2] - 64:15, 65:10 handling [1] - 65:17 hang [1] - 114:17 hangar [1] - 22:16 happier [1] - 52:8 **happy** [2] - 36:18, 43:9 hard [6] - 14:9, 35:12, 35:13, 54:22, 104:9, 119:25 hardly [1] - 76:20 harm [1] - 14:12 hate [1] - 6:24 hazardous [1] - 91:5 head [3] - 77:15, 112:10, 117:23 heading [1] - 114:17 health [11] - 20:8, 24:1, 61:21, 86:7, 89:17, 91:3, 91:11, 96:21, 100:13, 101:6, 114:3 Health [4] - 8:24, 23:4, 23:21, 95:24 hear [17] - 4:22, 13:11, 17:21, 27:19, 33:19, 81:11, 83:23, 87:25, 103:23, 107:21, 107:24, 108:13, 115:24, 116:14, 118:14, 118:15, 118:22 heard [7] - 17:11, 49:18, 54:10, 111:2, 111:5, 118:18 hearing [3] - 74:2, 115:25, 121:16

heavy [1] - 98:22 heck [1] - 52:7 held [2] - 1:4, 13:9 hello [1] - 118:21 help [4] - 11:2, 30:23, 70:10, 81:4 helpful [3] - 66:12, 74:17, 97:16 helping [1] - 16:3 HENRY [21] - 1:15, 3:23, 7:15, 11:23, 25:13, 25:17, 26:5, 27:5, 37:2, 37:5, 37:12, 37:25, 38:21, 39:1, 57:18, 63:16, 63:20, 64:23, 68:19, 77:21, 121:12 Henry [11] - 4:5, 7:14, 11:21, 24:15, 25:1, 25:8, 37:2, 63:17, 77:20, 121:9, 121:24 Hi [1] - 102:4 **hi** [3] - 17:22, 18:11, 72:21 hiccups [1] - 52:2 hidden [1] - 100:15 high [4] - 82:9, 99:1, 112:2, 113:4 higher [5] - 31:20, 87:1, 87:7, 87:8, 88:11 highest [5] - 55:7, 62:25, 84:10, 87:5, 109:1 **highlight** [1] - 58:24 highlighted [1] - 13:15 highlights [2] - 14:13, 20:16 Hill [5] - 71:16, 101:24, 102:4, 102:5, 102:15 HILL [1] - 2:5 historic [1] - 100:7 historical [1] - 60:6 history [5] - 70:12, 70:14, 84:2, 84:6, 85:2 hit [2] - 62:16, 117:22 hold [7] - 5:1, 15:7, 21:5, 26:2, 48:24, 59:7, 70:15 holds [1] - 117:25 holistically [1] -114:15 honest [1] - 76:20 honestly [2] - 6:15, 48:25

hope [2] - 87:25,

hopefully [12] - 3:21,

118.7

26:15, 29:19, 29:22, 34:22, 35:18, 36:8, 48:14, 69:4, 71:4, 89:13, 117:13 hoping [1] - 118:3 horsepower [1] -112:13 hotspots [1] - 113:14 hottest [1] - 114:16 hours [1] - 121:6 house [2] - 50:23, 87:12 hug [1] - 6:24 huge [1] - 16:12 Human [1] - 23:4 human [8] - 61:21, 86:6, 89:17, 91:3, 91:16, 91:24, 96:21, 114:3 humans [1] - 95:23 hundreds [1] - 38:7 hybrid [1] - 3:11 hydraulic [7] - 79:16, 79:23, 80:14, 82:1, 89:17, 89:18, 111:10 hydraulically [1] -81.8 hydraulics [1] - 112:6

1

idea [6] - 20:8, 31:14, 34:16, 47:25, 55:25, 56:1 ideas [3] - 6:10, 68:16, 68:18 identified [1] - 108:7 **IG** [1] - 16:12 illegal [1] - 94:12 **illustrates** [1] - 15:2 images [1] - 93:21 imminent [4] - 91:2, 96:6, 96:19, 97:5 impact [2] - 26:4, 55:9 impacted [1] - 14:8 impacting [3] - 72:16, 91:25, 92:3 impacts [2] - 97:10, 97:19 implement [1] - 29:4 implemented [1] -77:24 importance [1] - 74:4 important [9] - 5:17, 24:25, 27:9, 59:2, 63:2, 79:15, 84:6, 114:4, 121:7 impossible [1] - 91:14 **improve** [1] - 79:8 in-person [1] - 1:4

inaudible [5] - 40:7, 49:13, 53:12, 66:10, 69:10 include [4] - 15:15, 62:1, 62:8, 93:20 included [4] - 30:3, 68:7, 68:9, 96:17 includes [4] - 28:21, 61:18, 64:6, 92:8 including [2] - 4:9, 84:22 inclusive [1] - 113:7 incomplete [2] -97:17, 101:2 inconsistent [1] -15:15 incorporate [1] -40:18 incorporated [1] -43:15 increase [1] - 93:9 indecipherable [8] -10:25, 19:20, 23:10, 37:10, 37:20, 56:11, 106:24, 114:13 indicate [1] - 8:2 indicated [3] - 20:2, 71:10, 110:9 indicates [1] - 113:4 individual [2] - 31:15, 99:11 indoor [1] - 20:6 industrial [1] - 99:13 industry [1] - 40:2 ineffective [1] -100:22 influence [1] - 94:9 **inform** [1] - 97:13 informal [1] - 12:6 information [12] -6:14, 48:13, 48:20, 53:18, 60:15, 60:19, 69:11, 77:7, 95:1, 95:22, 107:5, 113:3 informing [1] - 95:15 infrastructure [2] -88:13, 108:25 ingest [1] - 91:13 ingestion [1] - 91:18 initial [2] - 29:3, 33:17 initiated [1] - 32:14 **injury** [1] - 100:11 innovative [1] -106:17 input [1] - 13:12 insensitive [1] -

103:21

inability [1] - 15:20

inactions [1] - 15:2

inadequate [1] - 100:9

118.4 inspector [1] - 14:17 installations [3] -14:20, 64:16, 106:16 installed [5] - 38:10, 52:6, 61:9, 79:17, 81.17 instance [2] - 13:8, 75:3 instances [1] - 15:22 institution [1] - 104:10 institutional [1] - 95:6 insult [1] - 100:10 insurance [1] - 19:2 intended [1] - 91:1 interest [1] - 25:9 **interface** [1] - 93:2 interim [29] - 4:12, 12:4, 13:10, 13:13, 27:17, 28:2, 29:17, 30:3, 30:6, 30:7, 34:9, 50:17, 50:23, 64:6, 64:7, 74:25, 76:14, 76:15, 76:17, 76:21, 77:3, 77:22, 90:23, 90:25, 96:11, 97:7, 97:15, 109:10, 109.15 internal [1] - 12:5 interrupting [1] - 6:13 intro [1] - 27:9 **introduce** [1] - 4:18 introduction [1] -98:21 intrusion [1] - 20:1 investigating [1] investigation [9] -4:12, 20:1, 22:5, 27:16, 28:1, 28:11, 30:17, 33:18, 40:21 investing [1] - 114:13 involved [3] - 26:10, 84:12, 121:4 ion [1] - 93:15 IRA [38] - 28:8, 28:24, 29:1, 30:12, 34:4, 34:15, 34:20, 35:5, 35:19, 35:22, 45:18, 45:25, 48:21, 50:14, 52:21, 56:22, 76:3, 76:5, 79:1, 79:2, 84:17, 84:20, 85:4, 85:5, 86:15, 86:19, 86:24, 87:20, 88:4, 89:16, 90:12, 90:16,

inside [2] - 117:14,

22:3, 29:3, 30:2, 30:5, 36:8, 36:17, 47:13, 52:6, 79:11, 88:21, 118:2 IROD [6] - 75:11, 75:12, 76:21, 76:25, 77:8 IRP [2] - 45:3, 66:24 issue [7] - 15:12, 51:21, 56:8, 85:21, 88:11, 89:19, 114:7 issued [3] - 76:14, 78:2, 91:11 issues [5] - 50:20, 52:2, 52:3, 87:16, 116:2 item [6] - 39:7, 44:2, 58:19, 59:6, 59:8, 59:21 items [4] - 4:9, 4:11, 26:22, 26:24 itself [2] - 13:25, 30:6 J **JENNIFER** [1] - 2:5

Jennifer [5] - 71:16, 101:24, 102:4, 102:5, 102:14 Jerry [5] - 8:1, 8:2, 8:3, 16:9, 24:18 Jesse [9] - 9:21, 9:23, 9:24, 17:17, 17:20, 17:22, 18:1 **JESSIE** [1] - 1:18 Jim [7] - 80:21, 88:20, 110:3, 110:7, 111:20, 113:22, 113:24 JIM [1] - 1:8 job [1] - 6:24 **Joe** [3] - 7:19, 24:15, 25:1 joe [1] - 54:3 JOE [1] - 1:11 join [1] - 9:22 joined [4] - 5:14, 7:24, 115:19, 120:18 joining [4] - 9:4, 10:12, 23:23, 24:5 joint [1] - 60:24 **July** [4] - 14:20, 31:1, 34:18, 55:20 jump [1] - 111:17

Κ

**KC135** [2] - 54:5, 54:11 **keep** [9] - 3:21, 6:25,

27:12, 28:3, 70:8, 71:3, 104:15, 115:9, 119.4 keeping [1] - 71:7 **Ken** [9] - 29:8, 29:11, 35:21. 46:1. 87:2. 87:17. 91:25. 97:24. 108:19 key [1] - 114:2 kick [1] - 28:4 kidney [1] - 99:5 **kids** [2] - 105:7, 105:8 Kildee [1] - 85:6 kind [7] - 36:10, 55:23, 86:22, 88:16, 88:17, 111:10, 120:2 knowing [1] - 105:8 knowledge [3] - 95:7, 100:5, 112:1 known [10] - 15:16, 16:13, 92:24, 93:1, 93:7, 95:1, 96:9, 99:6, 100:3 knows [3] - 28:10, 54:25, 117:17 KOLANT [5] - 2:5, 102:24, 103:5, 103:8, 104:22 Kolant [2] - 102:25,

L

105:19

L3031 [2] - 55:2, 55:4 lab [1] - 18:25 lack [3] - 21:15, 95:4, 95:6 lacks [2] - 95:1, 100:15 laden [1] - 99:19 laid [1] - 36:11 lake [12] - 56:9, 91:9, 91:13, 92:3, 93:6, 93:8, 97:19, 114:20, 115:9, 119:1, 119:7, 119:8 Lake [28] - 29:7, 29:11, 29:21, 34:5, 35:21, 39:25, 45:19, 46:1, 48:21, 55:22, 56:23, 79:2, 84:17, 84:20, 85:5, 86:16, 87:2, 87:17, 90:12, 90:22, 91:6, 91:8, 92:2, 92:25, 96:9, 97:11, 97:17, 112:23 lakefront [1] - 56:4 Lakes [4] - 9:7, 14:7, 18:9, 101:16 land [4] - 40:1, 40:2,

98:4, 112:22,

113:12, 117:12

IRAs [12] - 11:12,

67:14, 67:19 large [1] - 35:15 largely [1] - 99:24 larger [1] - 110:17 last [31] - 10:20, 11:13, 13:9, 13:22, 14:6. 18:3. 18:4. 22:18, 23:10, 29:1, 29:14, 51:22, 52:24, 53:16, 57:6, 57:22, 60:20, 61:16, 80:21, 81:2, 84:11, 86:14, 88:20, 90:12, 90:15, 97:9, 102:9, 103:2, 105:23, 110:20, 113:22 late [3] - 22:16, 78:18, 78:20 law [3] - 16:18, 24:22, 95:14 layperson [1] - 74:25 lays [1] - 30:1 lead [5] - 35:6, 35:10. 49:5, 49:8, 49:19 leadership [1] - 25:16 leads [2] - 40:5, 109:10 leaning [1] - 51:9 least [2] - 68:24, 99:18 leave [2] - 17:23, 45:10 left [1] - 83:8 legacy [1] - 95:5 legal [1] - 62:21 legend [1] - 73:24 **legible** [4] - 39:9, 41:15, 41:16, 74:5 Leisa [1] - 23:2 lengthy [1] - 84:12 Leriche [8] - 7:17, 16:10, 24:16, 25:2, 43:21, 58:16, 60:17, 74:22 leriche [1] - 76:19 **LERICHE** [25] - 1:13, 7:18, 16:11, 43:22, 44:1, 45:7, 58:17, 59:20, 60:4, 60:11, 60:14, 60:18, 63:9, 63:12, 64:18, 65:1, 65:14, 65:20, 65:23, 74:23, 75:15, 75:22, 75:25, 76:4, 76:13 less [2] - 56:9, 106:19 letter [3] - 96:14, 96:17, 98:3 **LETTER** [1] - 2:5 letters [1] - 23:9 letting [1] - 69:13

level [1] - 91:15

levels [2] - 15:7, 84:10 Liability [1] - 90:25 library [2] - 19:16, 60:15 lid [1] - 56:8 life [1] - 5:24 likely [1] - 94:8 limited [2] - 90:21, 97:6 limiting [1] - 91:12 limits [1] - 92:16 line [8] - 8:24, 9:23, 33:24, 69:1, 80:14, 86:17, 102:20, 110:25 linear [1] - 79:6 lined [1] - 33:25 lines [1] - 117:1 linked [1] - 99:5 list [6] - 44:10, 58:9, 69:4, 71:9, 83:15, 90:7 listed [4] - 15:17, 15:19, 15:22, 15:25 listen [1] - 6:11 live [2] - 108:11, 111:16 lived [1] - 103:25 lives [1] - 104:12 LLC [1] - 122:7 lobby [2] - 31:8, 80:22 local [1] - 24:1 location [1] - 38:19 locations [9] - 19:5, 20:3, 30:25, 32:24, 33:5, 66:10, 66:13, 80:15, 96:13 lockstep [2] - 50:6, 50.7 long-term [6] - 22:22, 67:1, 67:17, 70:7, 70:22, 106:6 longstanding [1] -98:23 look [25] - 7:23, 11:14, 14:10, 38:10, 43:4, 44:11, 44:25, 45:3, 48:16, 52:10, 61:6, 67:11, 79:11, 80:12, 86:24, 102:12, 108:17, 109:4, 109:11, 110:22, 113:9, 113:13, 113:19, 117:9, 121:16 looked [7] - 42:2. 87:20. 108:22. 108:23, 111:25,

112:16, 112:19

looking [17] - 3:23,

28:6, 36:14, 37:19, 37:23, 39:17, 49:10, 52:5, 67:21, 72:25, 86:19, 88:5, 88:10, 90:14, 106:19, 108:17, 110:10 looks [3] - 53:1, 57:21, 116:1 lose [1] - 16:24 low [1] - 82:9 lower [1] - 31:21 **LS**[1] - 19:20 luckiest [1] - 27:25 М

ma'am [1] - 104:19 mail [4] - 10:9, 68:6, 98.8 mailed [1] - 23:9 mails [1] - 60:10 main [1] - 112:15 maintain [2] - 6:9, 6:15 maintenance [2] -22:20, 105:24 major [2] - 34:15, 44:8 manage [2] - 27:9, 85:11 management [1] -16:15 managers [1] - 84:8 map [13] - 23:13, 31:12, 31:17, 31:19, 33:4, 44:5, 44:9, 55:21, 66:10, 73:19, 74:15, 96:16, 106:21 maps [8] - 43:4, 43:10, 60:23, 66:14, 74:14, 74:19, 85:13, 113:8 March [1] - 96:14 Mark [22] - 3:22, 4:5, 7:14, 11:21, 12:16, 13:6, 13:19, 24:15, 25:1, 25:7, 25:10, 26:1, 36:21, 37:2, 41:6, 48:13, 55:2, 57:17, 64:21, 107:5, 121:9, 121:24 MARK [1] - 1:15 mark [2] - 63:16, 77:20 markings [1] - 22:21 Marsh [21] - 29:7, 29:9, 29:18, 30:8, 30:13, 34:10, 34:11, 34:20, 35:19, 46:13, 47:6, 47:13, 47:19, 50:14, 50:23, 55:10, 76:25, 79:1, 79:14, 85:4, 118:3

massive [1] - 99:23 mat [3] - 56:5, 56:7, 56:15 material [1] - 37:15 materialized [1] - 15:3 materials [8] - 35:4, 35:5, 35:8, 35:10, 35:14, 35:15, 37:19, 49:8 matter [2] - 26:1, 57:18 maximum [2] - 92:18, 110:22 Maxwell [6] - 7:20, 12:21, 24:15, 25:1, 54:3, 55:13 MAXWELL [10] - 1:11, 7:21, 12:23, 54:3, 54:13, 54:17, 55:11, 55:15, 55:19, 56:18 **MDOT** [1] - 22:18 mean [10] - 51:4, 51:5, 57:9, 68:9, 68:13, 111:5, 113:8, 115:6, 115:7, 115:10 meaningful [6] -14:15, 84:15, 102:13, 103:3, 105:9, 105:10 means [4] - 9:13, 50:6, 114:22, 114:24 meant [2] - 41:18, 88:14 measuring [1] - 81:25 mechanics [1] - 27:10 media [1] - 115:4 medial [1] - 27:17 meet [6] - 26:18, 26:20, 26:22, 75:12, 83:2, 95:19 meeting [38] - 3:4, 3:6, 3:8, 3:11, 4:14, 6:5, 7:3, 7:8, 10:20, 26:23, 29:10, 29:14, 29:15, 44:18, 52:21, 53:4, 55:20, 57:3, 57:9, 59:17, 59:18, 61:17, 61:22, 68:20, 68:22, 68:23, 68:24, 71:11, 72:8, 78:20, 82:25, 83:1, 90:14, 101:24, 102:6, 110:20 MEETING [1] - 122:4 meetings [9] - 6:18, 12:5, 19:12, 26:19, 28:13, 29:2, 53:20, 59:18, 74:5

member [11] - 4:10,

5:4, 24:19, 26:10,

41:2, 52:15, 66:4, 67:23, 72:19, 74:21, member's [1] - 26:3 MEMBERS [1] - 2:1 members [41] - 4:8, 4:17, 4:18, 4:22, 5:5, 5:9, 5:18, 6:6, 6:19, 7:2, 7:6, 10:19, 11:20, 13:8, 13:12, 16:4, 17:12, 24:14, 24:18, 25:4, 25:19, 27:21, 27:22, 39:5, 52:18, 54:2, 56:20, 56:24, 58:16, 59:15, 63:15, 66:20, 72:13, 77:8, 82:20, 83:1, 83:4, 102:15 members' [2] - 4:15, 24:10 memo [1] - 48:6 Memorial [9] - 29:8, 29:12, 35:22, 46:1, 87:2, 87:17, 92:1, 97:24, 108:20 mention [2] - 19:3, 19:24 mentioned [14] - 13:7, 16:12, 18:14, 24:22, 24:24, 28:8, 30:18, 34:5, 52:22, 69:21. 80:21, 86:19, 88:21, 118:2 Mertz [6] - 7:23, 7:24, 7:25, 16:9, 24:16, 25:2 met [2] - 18:4, 28:12 method [1] - 60:22 methods [4] - 28:20, 29:4, 30:4, 115:8 mic [2] - 43:25, 103:7 Michael [2] - 9:14, 22:10 MICHAEL [1] - 1:17 Michigan [15] - 1:5, 14:11, 15:12, 15:20, 18:8, 20:17, 20:22, 21:2, 23:3, 98:18, 100:17, 100:18, 101:7, 101:12, 102:10 Michigan's [1] - 21:18 Michiganders [1] -100:22 microbial [2] - 106:24, 106:25 microphone [3] -10:11, 83:8, 102:18 microphones [2] -5:15, 71:25

mics [2] - 72:14, 72:16 mid-1980s [1] - 106:3 middle [1] - 86:2 might [8] - 48:1, 56:12, 69:1, 70:4, 70:15, 88:24, 115:1, 117:17 migration [1] - 79:18 Mike [1] - 22:12 miles [1] - 23:13 milestones [1] - 34:16 military [2] - 14:23, 98:25 military's [1] - 98:22 mind [8] - 19:1, 23:22, 41:16, 70:13, 84:19, 104:16. 107:20. 112:25 mindset [4] - 84:7, 84:13, 84:14 minute [18] - 4:23, 71:21, 71:22, 71:24, 72:1, 72:23, 87:23, 88:3, 89:7, 92:11, 93:11, 93:12, 102:23, 108:10, 110:1, 110:12, 110:22 minutes [12] - 19:8, 19:11, 52:17, 52:22, 52:24, 53:1, 53:4, 57:9, 58:25, 66:3, 83:14, 83:21 Minutes [1] - 122:5 mishaps [1] - 101:9 mishear [1] - 72:24 mislead [1] - 73:9 mission [2] - 112:22, 112:24 misstep [1] - 118:1 mistakes [1] - 95:9 mitigate [4] - 14:12, 14:22, 87:16, 88:11 mix [1] - 94:9 model [10] - 20:25, 39:17, 40:4, 40:10, 42:1, 42:6, 66:8, 94:24, 95:10, 112:20 modeling [2] - 110:7, 110:9 moment [7] - 4:19, 25:23, 64:20, 66:4, 67:24, 72:10, 83:7 momentum [2] -16:24, 70:9 money [4] - 16:25, 85:20, 85:22 monitor [3] - 79:21, 80:16, 91:15 monitoring [17] - 5:11,

18:17, 30:21, 38:7, 38:8, 79:12, 79:13, 79:15, 79:22, 79:25, 80:13, 80:19, 81:4, 82:15, 94:5, 97:10, 97:11 month [4] - 24:13, 53:20. 61:11 month-to-month [1] -53:20 monthly [3] - 19:8, 19:12, 92:17 months [5] - 44:4, 49:6, 60:20, 61:3 moreover [1] - 99:10 most [6] - 38:9, 38:22, 87:11, 89:18, 109:18, 114:3 move [41] - 4:6, 4:12, 6:3, 6:16, 10:6, 10:15, 10:16, 10:22, 22:8, 23:21, 24:6, 24:7, 27:15, 28:22, 30:1, 33:14, 33:20, 34:3, 34:19, 34:24, 36:3, 37:24, 52:3, 52:6. 52:16. 62:18. 70:17, 70:21, 73:18, 80:5, 82:21, 93:21, 104:7, 106:17, 107:3, 107:4, 108:18, 117:18, 119:17, 120:23, 121:10 moved [2] - 28:18, 29:5 movie [1] - 13:16 moving [18] - 3:24, 4:1, 11:12, 21:17, 28:3, 39:23, 48:7, 51:19, 59:4, 70:6, 70:15, 84:2, 86:17, 87:2, 88:9, 88:17, 108:20, 117:19 MPART [6] - 19:15, 20:21, 21:14, 21:20, 23:11, 53:7 MR [240] - 3:2, 3:23, 4:3, 6:22, 7:12, 7:13, 7:15, 7:16, 7:18, 7:19, 7:21, 7:22, 8:7, 8:8, 8:10, 8:11, 8:14, 8:18, 9:3, 9:5, 9:6, 9:10, 9:15, 9:16, 9:18, 9:19, 11:17, 11:23, 12:15, 12:19, 12:20, 12:23, 12:24, 13:1. 13:2. 16:7. 16:11, 17:7, 17:9,

17:10, 17:25, 18:3,

18:7, 22:6, 22:11, 22:25, 23:6, 23:17, 24:4, 25:13, 25:14, 25:17, 25:18, 26:5, 26:11, 26:17, 27:2, 27:5, 27:7, 36:20, 36:24, 37:2, 37:5, 37:12, 37:25, 38:21, 39:1, 39:3, 39:6, 39:10, 39:11, 40:25, 41:20, 42:11, 42:14, 42:19, 43:12, 43:14, 43:20, 43:22, 43:24, 44:1, 44:21, 45:6, 45:7, 45:11, 45:13, 46:8, 46:12, 46:19, 46:23, 47:4, 47:9, 47:15. 47:19. 47:22. 47:25. 48:17. 49:15. 49:22, 49:25, 50:9, 50:19, 51:1, 51:2, 51:4, 51:11, 52:12, 52:14, 52:20, 53:15, 53:24, 53:25, 54:3, 54:13, 54:17, 55:11, 55:13, 55:15, 55:17, 55:19, 56:18, 56:19, 57:11, 57:18, 58:7, 58:12, 58:15, 58:17, 59:20, 60:4, 60:11, 60:14, 60:16, 60:18, 63:9, 63:12, 63:13, 63:16, 63:20, 63:24, 64:17, 64:18, 64:20, 64:23, 64:24, 65:1, 65:14, 65:20, 65:23, 65:24, 66:19, 67:23, 68:2, 68:8, 68:15, 68:19, 71:6, 72:5, 73:11, 73:15, 73:22, 73:25, 74:7, 74:10, 74:20, 74:23, 75:8, 75:15, 75:22, 75:25, 76:4, 76:8, 76:13, 77:18, 77:21, 78:4, 78:6, 78:21, 78:23, 81:11, 81:16, 82:12, 82:17, 82:18, 82:24, 83:22, 83:24, 83:25, 90:1, 90:5, 97:25, 101:18, 101:22, 103:2, 103:6, 104:18, 104:24, 105:2, 105:18, 105:22, 106:12, 107:11, 107:12, 107:23, 107:25, 108:2, 108:14, 109:22, 109:25, 110:8, 110:14,

111:12, 111:13, 111:17, 111:21, 113:20, 113:21, 113:24, 113:25, 115:15, 115:17, 115:18, 116:14, 116:15, 116:16, 118:9, 118:14, 118:15, 118:22, 119:9, 120:7, 120:13, 120:15, 121:12, 122:2 MS [85] - 8:13, 9:1, 9:9, 13:4, 17:22, 18:11, 24:1, 27:19, 36:22, 37:4, 37:8, 37:17, 38:5, 38:24, 39:2, 42:25, 45:21, 46:10, 46:25, 49:7, 50:11, 50:21, 54:10, 54:14, 54:23, 56:21, 57:21, 58:3, 58:11, 58:14, 63:21, 63:25, 65:7, 65:16, 65:22, 66:6, 66:18, 66:21, 67:4, 67:5, 67:22, 67:25, 68:3, 68:11, 69:8, 69:15, 69:16, 69:20, 72:21, 73:14, 74:13, 75:6, 75:9, 75:19, 75:23, 76:2, 76:19, 77:11, 78:7, 79:10, 81:15, 81:20, 82:14, 82:23, 86:10, 86:12, 90:4, 90:9, 98:2, 101:20, 102:24, 103:5, 103:8, 104:22, 108:13, 108:16, 110:4, 116:25, 117:4, 117:22, 118:13, 118:21, 118:24, 119:23, 120:5 multiple [4] - 28:13, 82:5, 96:18, 115:10 MULTIPLE [1] - 6:21 Munson [3] - 9:14, 22:10, 22:12 MUNSON [3] - 1:17, 9:15, 22:11 must [4] - 14:13, 15:5, 94:16, 94:18 mute [12] - 5:15, 17:20, 23:22, 67:5, 83:11, 83:12, 116:12, 116:25, 117:2, 118:17, 118:18, 120:12

111:4, 111:7,

muted [6] - 83:14, 83:19, 83:20, 115:24, 118:13, 120:11 muting [1] - 107:20

#### Ν

nail [1] - 117:22 name [12] - 3:4, 5:21, 7:9, 7:10, 20:15, 36:25, 54:2, 83:13, 102:22, 102:24, 113:22, 118:25 names [1] - 44:10 nation [1] - 97:14 national [1] - 20:25 National [7] - 12:12, 13:23, 14:5, 21:9, 94:15, 102:5, 102:7 natural [2] - 15:21, 98:19 Natural [1] - 90:15 nature [1] - 100:4 Navy [2] - 62:3, 65:8 near [3] - 38:14, 72:14, 95:20 nearby [1] - 72:15 need [36] - 6:1, 15:6, 15:13, 16:25, 34:7, 35:5, 45:2, 46:4, 48:25, 51:11, 53:5, 53:23, 56:2, 56:16, 60:2, 60:7, 69:25, 70:9, 80:15, 81:3, 82:5, 84:23, 89:8, 89:9, 100:16, 104:7, 107:10, 109:19, 110:11, 114:7, 114:18, 115:11, 117:19, 119:15, 119.16 Need [2] - 14:5, 84:21 needed [5] - 3:13, 24:24. 76:9. 97:18. 119:12 needs [13] - 15:4, 35:8, 44:5, 44:6, 50:6, 58:24, 81:4, 81:5, 81:9, 95:11, 95:21, 97:9, 106:4 Neller [1] - 96:16 Network [2] - 14:7, 101:16 network [1] - 14:8 never [3] - 30:21, 38:18, 109:14 new [19] - 18:6, 22:16, 24:2, 26:8, 31:9, 31:10, 45:3, 59:10,

110:18, 111:2,

62:11, 74:15, 76:5, 84:4, 92:8, 92:9, 94:21, 104:6, 107:10, 108:23 newly [1] - 13:15 next 1391 - 10:16. 11:18, 20:7, 24:6, 24:9, 28:4, 29:6, 29:16, 29:23, 30:15, 31:5, 31:16, 31:25, 32:19, 32:20, 32:21, 33:1, 33:6, 33:16, 33:23, 34:2, 34:13, 34:19, 35:20, 36:7, 36:15, 46:7, 50:5, 55:5, 56:8, 62:19, 63:5, 69:5, 82:21, 90:7, 109:20, 114:19, 117:11, 119.8 nice [1] - 121:21 night [9] - 11:13, 29:1, 29:14, 57:23, 80:21, 81:2, 88:20, 90:12, 105:23 night's [2] - 57:6, 110:20 nights [1] - 27:24 nine [2] - 22:8, 94:1 Nissokone [1] - 40:9 noise [1] - 5:17 **non** [4] - 16:4, 20:4, 37:10, 103:22 non-members [1] -16:4 non-partner-like [1] -103:22 non-residential [1] -20:4 non-saturated [1] -37:10 normal [1] - 51:6 north [15] - 39:23, 45:18, 45:25, 54:4, 54:19, 84:24, 86:15, 86:17, 88:18, 96:2, 109:6, 109:13, 110:11, 112:8, 113:14 northern [1] - 33:3 northwest [1] - 108:6 Notary [1] - 1:22 **notes** [2] - 26:20, 45:2 nothing [3] - 17:9, 40:3, 51:24 noticed [1] - 105:23 notified [1] - 60:7 November [2] - 21:3, 62:5 NOW [15] - 12:11,

13:12, 16:3, 17:4, 20:14, 21:10, 90:14, 90:17, 94:22, 95:3, 96:10, 96:13, 97:20, 102:9

NOW's [1] - 93:23

number [6] - 32:17, 38:6, 93:24, 94:3, 95:11, 96:1

numbers [1] - 26:9

numerous [2] - 99:5, 99:10

nutshell [1] - 88:16

#### 0

objective [1] - 79:6 objectively [1] - 6:17 objectives [7] - 79:3, 79:9, 81:14, 81:18, 81:22, 82:11, 113:2 observations [1] -111.22 obviously [1] - 82:1 occasions [1] - 28:13 occur [1] - 6:18 occurred [2] - 15:11, 15:13 occurring [1] - 91:5 October [2] - 34:21, 49:24 odd [1] - 78:14 **OF** [1] - 2:1 Office [1] - 90:20 officials [4] - 14:21, 94:5, 95:13, 95:16 often [3] - 59:18, 67:14, 101:7 oils [1] - 99:12 old [5] - 54:4, 54:7, 54:17, 54:18, 59:1 older [1] - 66:13 on-site [1] - 22:16 once [12] - 20:25, 28:17, 29:25, 30:9, 53:3, 62:16, 79:7, 80:1, 80:4, 80:11, 109:7, 113:16 one [55] - 4:18, 5:22, 6:8, 6:13, 11:5, 11:20, 11:23, 25:9, 25:11, 30:20, 31:14, 35:22, 42:9, 47:10, 52:20, 52:24, 54:16, 55:15, 57:7, 59:11, 61:17, 63:23, 65:15, 65:20, 66:22, 66:24, 73:19, 73:20, 73:22, 75:3, 76:5, 76:6, 76:16, 77:7, 78:14,

78:24, 81:5, 86:16, 88:7, 88:19, 88:22, 93:24, 98:24, 103:17, 105:16, 110:20, 111:18, 11:19, 111:23, 112:15, 118:19, 119:25

one-by-one [1] - 11:20

one-on-one [1] - 42:9

one-year [1] - 25:11

one-on-one [1] - 42:9 one-year [1] - 25:11 ones [3] - 47:4, 53:16, 106:23 ongoing [2] - 25:25, 39:7

online [12] - 3:8, 3:12, 19:9, 20:21, 27:23, 42:7, 57:7, 70:10, 71:11, 98:11, 98:13, 103:18

**opaque** [1] - 100:22 **open** [6] - 6:9, 6:11, 26:22, 26:23, 42:8, 84:19

**opening** [2] - 3:17, 83:3

openly [1] - 6:14 operates [1] - 88:25 operating [8] - 7:7, 10:3, 25:21, 26:3, 26:6, 26:8, 81:7

operation [1] - 105:24 operational [5] -50:18, 58:25, 76:15, 88:23, 89:12 operations [1] - 33:8

opinion [1] - 21:4 opportunity [4] - 4:23, 13:11, 24:20, 83:2 optimizations [1] -

89:1 **option** [1] - 86:25 **ORDER** [1] - 3:1 **order** [2] - 14:14, 35:8

ordered [1] - 49:3 ordering [1] - 49:10 organizations [1] -17:13

**organized** [2] **-** 59:9, 60:2

original [1] - 89:6 Oscoda [17] - 1:4, 9:11, 9:12, 14:14, 15:21, 22:9, 22:12, 23:19, 98:19, 99:25,

100:10, 100:12, 101:6, 101:13, 103:12, 103:24, 104:16

Oscoda-Wurtsmith

[2] - 22:9, 22:12 otherwise [1] - 60:8 ourselves [1] - 82:1 outdoor [1] - 20:3 outline [1] - 30:4 outlined [1] - 15:2 outs [1] - 117:10 outside [2] - 76:3, overall [1] - 97:20 overdue [2] - 61:10, 65:21 oversight [1] - 18:22 overwhelm [1] - 89:3 **OWA** [1] - 41:9 own [2] - 100:13, 101:8

## Ρ

owns [1] - 118:25

**P.M** [2] - 1:2, 122:4 **p.m** [3] - 3:1, 72:3, 72:4 pace [2] - 21:25, 22:2 page [2] - 23:11, 98:11 paid [1] - 49:20 Palmer [1] - 23:19 paper [1] - 20:14 papers [1] - 72:14 paralleling [1] - 92:9 Park [11] - 12:5, 29:8, 29:12, 35:22, 46:1, 87:3, 87:17, 92:1, 92:25, 97:24, 108:20 part [18] - 28:10, 37:21, 45:20, 45:22, 46:6, 57:4, 57:24, 58:17, 58:20, 61:16, 65:2, 68:5, 79:3, 88:21, 92:24, 93:1, 106:15, 114:16 participants [1] - 5:19 participate [2] - 26:19, 110:20 participated [1] -13:19 participating [5] -5:10, 5:19, 13:8, 19:4, 83:9 participation [1] -13:14 particular [1] - 77:9 parties [1] - 21:6 partition [1] - 93:8 partner [1] - 103:22 partnered [1] - 56:25 partners [3] - 16:2, 69:21, 121:2 parts [4] - 92:16,

92:17, 93:3, 117:19 past [5] - 3:10, 51:12, 51:22, 101:4, 110:15 path [4] - 28:14, 43:13, 109:5, 109:16 patience [4] - 3:12, 10:6, 71:24, 72:17 Paula [16] - 11:2, 27:18, 42:6, 42:7, 42:12, 42:22, 42:24, 49:6, 78:24, 82:22, 86:8, 108:14, 110:9, 117:21, 119:21 **PAULA**[1] - 1:8 paula [1] - 90:2 pause [1] - 6:2 PCE [2] - 67:9, 67:20 PDF [1] - 53:10 peace [1] - 19:1 **Pentagon** [1] - 85:6 people [17] - 12:10, 12:13, 14:23, 15:6, 15:21, 17:4, 27:25, 57:22, 89:19, 98:19, 99:9, 103:14, 104:1, 104:3, 105:11, 114:6, 114:17 per [10] - 10:2, 92:10, 92:16, 92:17, 93:3, 93:11, 93:12, 110:1, 111:9 perception [1] - 84:17 perform [1] - 18:21 performance [17] -61:7, 79:2, 79:8, 79:9, 79:12, 79:13, 79:15, 79:22, 79:25. 80:12, 80:19, 81:3, 81:14, 81:18, 81:22, 82:11, 82:15 performing [1] - 22:5 perimeter [1] - 38:22 period [12] - 4:21, 27:11, 29:13, 34:6, 56:22, 57:13, 71:17, 75:1, 84:11, 84:12, 85:16, 98:3 persistence [1] -120:16 persistent [1] - 99:4 person [17] - 1:4, 3:11, 5:5, 5:22, 6:13, 27:22, 41:23, 83:6, 102:16, 102:19, 105:20, 107:13, 116:6, 116:8, 120:22, 121:14,

121:20

104:11

personal [3] - 104:9,

personalities [1] -103:14 personally [1] - 51:18 perspective [1] -70:16 PFAS [88] - 14:3, 14:7, 14:9, 14:12, 14:15, 14:19, 14:22, 14:24, 20:23, 21:2, 21:5, 21:16, 30:22, 31:6, 31:13, 31:19, 38:3, 38:4, 38:14, 39:19, 40:7, 40:15, 61:25, 62:6, 64:10, 64:14, 64:15, 65:5, 65:15, 65:17, 66:24, 67:2, 67:9, 67:13, 67:15, 67:17, 73:1, 73:4, 75:3, 75:5, 75:21, 76:12, 87:1, 88:12, 91:6, 91:10, 91:17, 91:20, 91:21, 92:2, 92:11, 92:16, 92:18, 92:19, 92:24, 93:1, 93:5, 93:16, 94:7, 94:9, 94:10, 94:13, 95:18, 97:7, 97:10, 98:14, 99:2, 99:7, 99:10, 99:11, 99:16, 99:19, 100:1, 100:4, 100:20, 100:23, 101:3, 101:13, 101:16, 102:11, 106:3, 108:19, 115:3, 119:7 **PFAS-contaminated** [2] - 91:10, 92:11 PFAS-polluted [1] -106:3 PFAS/PFOA [1] -39:23 PFOA [12] - 31:13, 31:17, 31:21, 75:2, 87:1, 88:12, 92:19, 94:13, 95:18, 97:7, 108:19, 115:3 **PFOA/PFAS** [1] - 75:5 **PH** [1] - 2:5 ph [2] - 50:14, 102:25 phase [3] - 29:6, 32:12, 38:13 phone [1] - 74:1 phones [1] - 72:15 **physically** [1] - 70:3 pick [3] - 30:25, 104:7, 108:6 picked [1] - 55:5 picture [1] - 43:18 piecemeal [1] - 70:25 pipe [1] - 56:13

pipeline [1] - 108:5 pipes [3] - 106:22, 110:23, 111:7 place [19] - 22:7, 54:4, 64:1, 64:2, 64:3, 64:4, 64:14, 66:12, 67:8, 67:12, 67:17, 70:23, 73:3, 73:5, 75:11, 76:22, 87:13, 87:18. 89:24 Place [8] - 9:7, 18:10, 50:12, 66:5, 66:6, 66:21, 73:12, 75:19 **PLACE** [15] - 1:17, 9:9, 18:11, 50:11, 50:21, 66:6, 66:18, 66:21, 67:4, 67:22, 73:14, 75:19, 75:23, 76:2, 82:14 places [3] - 31:10, 54:9, 82:6 plan [48] - 12:4, 19:13, 26:22, 28:18, 28:22, 29:9, 29:11, 29:15, 29:25, 30:4, 30:8, 32:1. 34:4. 34:11. 34:23, 35:23, 36:1, 40:12, 40:14, 40:18, 40:19, 45:18, 47:2, 47:3, 47:5, 50:23, 68:5, 70:7, 79:14, 79:19, 79:20, 80:6, 81:24, 82:11, 82:16, 88:6, 90:18, 90:22, 92:4, 92:8, 92:20, 93:9, 93:19, 94:5, 94:6, 96:2, 114:21, 121:15 **Plan** [1] - 32:2 planned [6] - 33:15, 33:20, 43:3, 50:4, 80:2, 90:19 planning [5] - 11:11, 34:17, 43:6, 43:11, 45:25 plans [6] - 29:6, 29:17, 29:22, 62:17, 80:8, 106:6 plant [9] - 92:6, 92:12, 94:8, 97:22, 105:25, 106:2, 108:5, 112:7, 113:17 play [1] - 25:15 played [1] - 100:19 pleased [1] - 97:20 pledging [1] - 11:6 plume [15] - 19:20, 31:8, 31:12, 31:19, 31:21, 39:19, 43:4,

66:14, 81:9, 93:1,

95:10, 96:9, 97:3, 113:8, 114:17 plumes [19] - 31:14, 31:23, 38:10, 38:14, 45:4, 66:11, 85:19, 91:25, 92:6, 92:24, 93:5. 93:14. 94:8. 95:20. 97:23. 100:1. 108:7, 112:1, 119:15 point [19] - 8:5, 10:11, 11:23, 12:2, 32:18, 40:20, 43:19, 44:24, 54:21, 63:1, 66:1, 74:3, 97:9, 110:15, 111:14, 112:6, 112:13, 113:17, 120:3 points [3] - 6:12, 66:13, 95:22 poisoned [2] - 104:1, 104.2 policies [4] - 14:9, 15:7, 16:17, 16:23 Policy [1] - 32:2 pollutant [1] - 91:22 pollutants [2] - 91:4, 94:11 **polluted** [1] - 106:3 polluters [1] - 15:8 **Pollution** [1] - 94:15 pollution [3] - 14:13, 55:24, 106:7 poor [1] - 47:11 portion [8] - 4:14, 5:4, 10:18, 24:7, 28:23, 33:3, 81:9, 82:25 portions [3] - 4:15, 4:16, 69:6 pose [1] - 96:19 position [2] - 38:15, 120:1 positions [1] - 101:1 possession [1] - 19:8 possible [12] - 53:9, 53:14, 57:3, 80:24, 88:24, 89:21, 89:22, 102:13, 103:4, 112:24, 120:12 possibly [3] - 91:17, 117:24, 119:18 post [1] - 98:10 posted [2] - 23:15, 57:7 posters [1] - 80:22 postmarked [1] - 34:7 potential [3] - 20:8, 66:8, 91:24 potentially [1] - 107:1 pouring [1] - 35:18 power [1] - 21:21

practice [2] - 24:22, 26.18 praised [1] - 101:8 predecessors [1] -84:8 prediction [2] - 120:2, 120:3 prefer [1] - 42:18 preferentially [1] -93:7 preferred [1] - 93:18 preliminary [2] -48:22, 50:13 prepare [1] - 6:16 prepared [1] - 32:3 present [7] - 7:6, 45:4, 94:4, 94:7, 95:9, 95:12, 95:21 presentation [11] -4:25, 5:2, 39:4, 45:15, 52:22, 57:5, 58:18, 58:20, 61:1, 73:19 presentations [1] -27:23 presented [3] - 40:20, 93:18, 95:17 presenting [2] - 74:9, 95:17 presents [2] - 94:25, 97.4 pretty [3] - 18:17, 29:20. 110:18 prevent [1] - 96:24 preventable [1] -91:19 prevents [1] - 95:14 previous [2] - 77:25, previously [4] - 19:25, 38:2, 55:23, 65:11 primary [6] - 24:14, 24:17, 24:19, 25:4, 26:9, 26:10 prioritize [1] - 62:11 prioritized [1] - 55:6 **priority** [4] - 46:2, 50:17, 55:7, 62:25 proactive [1] - 20:23 problem [5] - 15:16, 25:17, 39:12, 85:13, procedural [1] - 68:1 procedure [1] - 7:7 procedures [9] - 10:3, 25:21, 25:22, 26:4, 26:6, 26:8, 28:20, 30:5, 39:16 proceed [3] - 57:12,

71:18, 71:22

proceedings [1] - 1:3 process [21] - 21:17. 27:13, 28:7, 28:9, 28:17, 28:24, 29:5, 30:19. 33:18. 35:6. 35:25, 37:21, 48:10, 48:23, 52:23, 61:15, 69:22, 70:11, 80:10, 86:18, 121:4 procurement [2] -35:4, 36:13 produced [2] - 14:5, 44:4 **Program** [1] - 90:20 program [3] - 32:23, 114:21, 115:1 programming [1] -86:6 progress [5] - 3:22, 6:15, 53:20, 106:17, 117:20 progressing [1] -22.17 prohibit [1] - 67:15 prohibits [1] - 67:19 project [10] - 28:3, 31:2, 35:9, 53:21, 55:4, 84:7, 85:9, 86:23, 106:21, 106:24 Project [1] - 32:2 projections [1] -110:11 projects [4] - 11:3, 38:10, 105:10, 106:19 promise [1] - 63:8 promised [1] - 40:19 promises [1] - 15:18 propensity [1] - 6:15 properly [1] - 85:11 properties [2] - 37:23, 104:13 property [2] - 118:25, 119:4 proposal [1] - 56:12 proposed [28] - 12:4, 29:6, 29:9, 29:11, 29:15, 29:16, 29:22, 29:25, 34:4, 35:23, 47:2, 47:3, 47:5, 79:14, 79:19, 79:20, 80:2, 80:8, 88:6, 90:18, 90:22, 92:4, 92:20, 93:9, 94:6, 96:2, 96:3, 121:15 proposing [1] - 88:5 prospects [1] - 119:6 protect [4] - 15:6, 15:21, 89:17, 98:19

protected [3] - 21:24, 67:18, 77:3 protecting [2] - 65:5, 101.6 protective [2] - 64:12, 67:13 protectiveness [11] -61:21, 62:2, 62:6, 62:22, 63:18, 64:2, 67:2, 73:1, 75:4, 75:13, 75:21 provide [8] - 10:19, 21:13, 66:16, 68:6, 92:21, 98:9, 117:10, 119:11 provided [9] - 12:7, 12:11, 13:11, 19:10, 19:25, 20:20, 32:4, 41:12, 96:17 provides [3] - 41:5, 41:6, 96:22 providing [4] - 7:1, 17:14, 19:21, 50:24 public [53] - 4:21, 4:22, 7:3, 10:8, 16:19, 17:5, 21:6, 21:20, 24:1, 27:22, 29:10, 29:12, 29:15, 34:6, 35:24, 44:13, 45:9, 46:15, 53:1, 53:7, 53:18, 56:22, 57:13, 58:4, 58:5, 58:8, 58:9, 60:21, 69:19, 71:8, 71:12, 71:17, 82:25, 83:4, 84:16, 85:16, 90:10, 90:11, 90:13, 90:16, 94:4, 94:25, 95:13, 95:15, 96:7, 96:18, 96:20, 98:3, 100:10, 101:6, 102:16 Public [1] - 1:22 PUBLIC [1] - 2:1 public's [1] - 21:23 published [2] - 23:13, 46:16 **pull** [2] - 111:18, 111:19 **pump** [6] - 54:5, 106:13, 110:12. 114:9, 114:12, 114:23 pumped [2] - 81:5 pumping [3] - 89:6, 106:2, 106:4 pumps [3] - 110:23, 111:8, 112:11 Puneet [2] - 9:4, 23:4 **PUNEET** [1] - 1:16 purpose [4] - 61:23,

88:14, 89:16
purposes [1] - 37:12
pushback [1] - 101:1
pushed [2] - 16:22,
36:2
put [13] - 19:16, 20:12,
27:14, 48:6, 48:24,
49:17, 56:5, 56:16,
59:13, 79:5, 79:25,
118:3, 121:6
putting [7] - 45:18,
55:21, 59:12, 59:23,
68:21, 70:22, 112:7

# Q

**QAPP** [1] - 28:19 QRS [1] - 122:7 Quality [1] - 32:2 quality [1] - 18:22 quarterly [1] - 44:7 quarters [1] - 19:25 Quentina [3] - 1:21, 6:1. 122:7 Quentina's [1] - 47:11 questions [31] - 4:15, 5:1, 5:3, 5:4, 17:3, 36:18, 36:19, 37:3, 39:4, 43:1, 43:8, 45:14, 51:3, 52:16, 52:18, 54:1, 56:19, 58:16, 63:14, 66:4, 66:20, 67:24, 72:20, 73:12, 74:21, 82:20, 83:2, 111:22, 121:14, 121:23 quick [6] - 22:13, 43:22, 64:18, 64:21, 74:23, 111:18 quickest [2] - 88:10, 88.12 quickly [8] - 32:10, 35:1, 59:4, 70:8, 86:22. 102:13. 103:3. 112:24 quite [4] - 41:14, 66:23, 76:24, 121:21 quorum [3] - 7:7, 7:9, 10.2

# R

**RAB** [87] - 1:1, 1:10, 1:15, 4:8, 4:9, 4:10, 4:15, 4:16, 4:17, 4:24, 5:4, 5:5, 5:9, 6:6, 6:19, 7:2, 7:6, 7:8, 10:19, 11:20, 12:3, 12:10, 16:3, 16:4, 17:11, 17:12,

24:7, 24:10, 24:14, 24:18, 24:19, 24:20, 25:4, 25:6, 25:19, 25:20, 25:21, 26:3, 26:19, 26:23, 27:4, 27:21, 32:20, 39:5, 41:2, 41:15, 43:5, 44:7, 44:19, 45:9, 52:15, 52:18, 54:1, 56:20, 58:16, 59:2, 59:15, 59:17, 59:19, 60:25, 63:14, 66:4, 66:12, 66:20, 67:23, 68:5, 68:21, 72:12, 72:19, 74:5, 74:21, 82:19, 82:20, 83:1, 83:4, 83:5, 102:17, 105:21. 107:13. 107:17. 115:20. 116:9, 120:10, 120:18, 121:14, 121:23 **RABs** [1] - 58:20 raise [10] - 5:7, 5:10, 8:21, 9:13, 10:13, 83:10, 107:15, 107:17, 115:21, 120:19 raised [4] - 9:23, 116:11, 120:8, 120:10 random [1] - 101:13 rapidly [1] - 91:2 rates [1] - 81:1 rationale [1] - 92:21 Ratliff [12] - 12:5, 29:8, 29:11, 35:21, 46:1, 87:2, 87:17, 91:25, 92:25, 95:10, 97:24, 108:20 reached [1] - 120:24 read [17] - 6:5, 6:8, 14:1, 16:20, 58:2, 68:20, 69:2, 69:5, 69:6, 71:5, 71:15, 71:16, 73:23, 98:20, 101:25, 102:7, 102:25 reading [5] - 60:9, 60:22, 68:22, 69:4, 111:6 reads [1] - 102:4 ready [9] - 29:19, 30:12, 35:16, 35:17, 49:11, 62:18, 63:4, 80:18, 118:5

realistic [2] - 50:1, 51:16 reality [1] - 44:14 realize [1] - 73:25 realized [2] - 81:21, 82.3 really [20] - 15:14, 19:1, 35:6, 35:13, 36:16, 36:22, 38:24, 38:25, 68:19, 74:14, 74:17, 80:16, 81:6, 82:7, 85:23, 119:3, 119:24, 121:4, 121:20, 121:21 realtime [2] - 15:3, 59:16 reason [6] - 52:9, 63:1, 70:19, 70:20, 70:21, 88:9 reasons [2] - 74:2, 86:16 rebuild [2] - 14:14, 22.23 rebuilt [1] - 22:24 receive [2] - 50:15, 80:8 received [2] - 79:12, 80:2 receives [1] - 53:4 recent [1] - 14:16 recently [3] - 22:1, 56:12. 60:14 recognize [2] - 41:23, 45:24 recognized [1] - 20:24 recommendations [1] - 44:14 record [20] - 29:17, 34:9, 46:15, 46:17, 47:14, 48:6, 50:22, 52:25, 61:23, 62:3, 64:9, 64:11, 72:3, 72:4, 90:13, 98:16, 101:10, 102:7, 113:23 recorded [1] - 3:9 recordings [1] - 19:9 records [5] - 61:7, 61:19. 77:13. 77:16. 101:6 red [1] - 110:25 Redevelopment [1] -96:15 reduce [3] - 30:10, 55:24, 97:19 refer [1] - 66:15 reference [2] - 68:25,

referenced [1] - 68:4

references [2] - 15:24,

101:15 refining [1] - 114:19 reflect [1] - 75:4 regarding [8] - 1:3, 13:9, 13:13, 20:13, 21:10, 23:7, 73:1, 101:11 regardless [1] - 40:22 regularly [1] - 99:21 regulated [1] - 92:19 regulators [1] - 15:8 related [5] - 13:18, 15:17, 16:2, 16:5, 74:14 relative [2] - 46:9, 46:11 relatively [2] - 5:2, 41:20 relay [1] - 6:17 released [6] - 13:15, 13:22, 14:6, 14:20, 97:3, 102:9 relevant [1] - 52:21 reliance [1] - 21:16 remain [1] - 6:11 remarks [4] - 3:16, 3:17, 120:25, 121:11 remedial [25] - 4:2, 4:12, 4:13, 12:4, 13:10, 13:13, 22:5, 27:16, 28:1, 28:2, 28:11, 29:24, 30:3, 30:6, 30:7, 30:17, 34:11, 50:22, 50:24, 58:25, 77:23, 78:10, 82:16, 94:23, 97:13 remediate [1] - 90:21 remediation [1] -37:13 Remediation [1] -96:15 remedies [7] - 50:17, 64:1, 64:3, 64:4, 70:23, 73:3, 119:17 remedy [15] - 19:19, 64:12, 64:14, 66:25, 67:8, 67:12, 67:17, 67:18, 73:5, 75:12, 77:3, 77:4, 92:20, 94:2. 94:6 remember [3] - 20:14, 77:14, 78:18 reminder [3] - 10:8, 36:24, 72:12 remotely [2] - 5:15, 83:9 removal [5] - 55:6, 56:4, 77:9, 77:12, 97:8 remove [2] - 55:8,

real [5] - 64:20, 84:15,

Realignment [1] -

90:19

84:17, 103:7, 111:17

94:10 renewing [1] - 26:2 repainting [1] - 22:20 repeat [1] - 95:8 repeatedly [1] -100.11 replicate [1] - 40:14 reply [1] - 104:20 report [27] - 13:22, 14:1, 14:9, 14:13, 14:17, 15:1, 15:3, 15:10, 16:12, 16:23, 21:12, 23:14, 28:23, 61:2, 61:10, 68:3, 68:13, 69:10, 69:13, 69:19, 98:12, 98:14, 101:14, 101:15, 102:8, 103:20, 112:18 **REPORTED** [1] - 1:21 Reporter [5] - 1:22, 3:7, 5:25, 6:1, 37:1 Reporting [1] - 122:7 reports [6] - 44:11, 58:21, 58:22, 58:25, 59:3, 59:20 repository [2] - 60:15, 60:20 represent [4] - 17:13, 40:13, 42:2, 113:9 representation [2] -8:19, 9:11 representative [1] -18:21 represented [1] -40:11 representing [3] -8:20, 9:12, 9:25 request [2] - 94:21, 96:11 requests [1] - 98:10 required [2] - 16:16, requirement [1] -92:15 requirements [1] -93:18 requires [3] - 89:23, 89:24, 112:14 reread [1] - 57:13 researched [1] - 15:24 reserved [1] - 4:13 reset [4] - 78:9, 78:12, 78:14, 78:16 residential [3] - 20:4, 23:7, 23:8 residents [1] - 100:12 resin [1] - 93:16 resistance [1] - 99:12 resolutions [1] - 48:8

resources [2] - 15:21, 98:19 respect [1] - 6:8 respectfully [1] - 6:11 respond [2] - 30:10, responded [2] - 69:12, 100.8 responding [1] - 32:5 Response [2] - 21:2, 90:24 response [11] - 21:10, 42:22. 44:23. 57:5. 69:9, 69:11, 69:18, 74:24, 97:6, 105:3, 119:10 responses [2] - 18:13, 121:16 responsibility [4] -45:8, 96:21, 96:23, 100:14 responsible [4] - 15:8, 21:5, 96:25, 104:5 restarts [1] - 78:13 restate [1] - 6:2 Restoration [2] - 3:4, 72:8 **RESTORATION** [1] -1.1 result [1] - 14:25 resulted [2] - 91:11, 101:9 resulting [1] - 91:16 results [4] - 19:2, 23:9, 62:14, 63:6 results-driven [1] -63:6 returns [1] - 111:15 review [41] - 3:15, 4:9, 6:4, 13:12, 19:7, 19:13, 25:22, 29:20, 30:8, 34:10, 34:12, 44:18, 48:19, 50:16, 53:7, 57:8, 61:5, 61:6, 61:14, 61:18, 62:1, 62:21, 63:17, 64:6, 64:7, 65:5, 65:6, 65:19, 67:1, 73:2, 73:7, 75:2, 75:4, 75:12, 75:14, 75:20, 76:7, 76:25, 77:22, 78:8, 78:9 reviewed [5] - 32:4, 39:14, 39:15, 66:25, 76:16 reviewing [3] - 12:4, 19:18, 57:2 reviews [5] - 12:7, 62:17, 63:25, 77:14,

resolve [1] - 52:3

77:17 revised [3] - 23:13, 23:15, 31:8 **REX** [2] - 2:2, 2:3 Rex [4] - 107:19, 107:20, 107:23 rhetorical [1] - 9:20 RI [33] - 18:14, 28:12, 28:23, 30:19, 30:24, 32:1, 34:14, 34:17, 36:5, 36:17, 37:19, 37:24, 40:21, 45:14, 46:13, 46:19, 46:22, 47:6, 47:22, 47:23, 67:10, 70:20, 73:5, 86:2, 86:19, 109:7, 109:10, 109:19, 113:11, 113:12, 117:11, 117:23 rid [2] - 115:3, 115:5 Riffe [1] - 5:12 **RIFFE** [4] - 1:7, 116:25, 117:4, 118:13 risk [5] - 28:21, 87:8, 108:18, 114:3, 114:4 Road [1] - 1:4 Rochelle [1] - 122:7 **ROD** [14] - 29:21, 30:1, 30:11, 34:23, 35:25, 50:4, 64:6, 64:7, 74:25, 76:14, 77:22, 77:24, 77:25, 78:2 **RODs** [1] - 64:1 role [3] - 25:10, 25:16, 100:20 rolling [1] - 86:3 **ROMER** [7] - 1:8, 110:8, 110:18, 111:4, 111:12, 111:21, 113:24 Romer [2] - 88:20, 113:24 room [2] - 13:21, 70:9 round [2] - 23:7, 23:8 row [2] - 27:24 RPM [1] - 111:1 rules [3] - 6:5, 6:7, 6:19 run [2] - 108:5, 111:14 running [8] - 36:9, 52:7, 80:24, 81:17, 88:25, 89:9, 99:24, 118:5 **runway** [1] - 40:8 runways [1] - 22:20 rush [1] - 49:21 rustling [1] - 72:14 Ryan [6] - 7:22, 7:24, 7:25, 16:8, 24:16,

S Sable [3] - 8:19, 8:20, 23:2 safe [1] - 119:7 safety [1] - 80:25 sake [1] - 57:1 sample [4] - 23:9, 28:15, 43:7 sampled [8] - 30:22, 32:16, 32:25, 33:10, 38:2, 38:4, 38:18 samples [17] - 11:6, 11:8, 11:9, 18:23, 18:25, 20:3, 20:7, 30:20, 30:25, 32:17, 33:10, 37:9, 37:11, 37:13, 39:24, 54:8, 54:9 sampling [26] - 11:24, 11:25, 18:16, 18:17, 18:18, 19:5, 23:7, 32:13, 32:14, 32:23, 33:2, 33:4, 33:8, 33:15, 33:18, 37:5, 38:17, 39:21, 39:22, 40:11, 43:1, 43:2, 45:23, 45:24, 46:3, 54:15 samplings [1] - 45:16 sand [1] - 56:4 **SARAH** [1] - 1:7 Sarah [7] - 5:12, 17:19, 23:22, 73:18, 83:13, 107:20, 116:12 satisfied [1] - 42:14 saturated [2] - 37:10, 37:19 scary [1] - 106:8 scenario [1] - 78:14 schedule [4] - 35:21, 36:10. 36:12. 51:7 scheduled [2] - 66:3, 71:21 Schmidt [5] - 8:1, 8:2, 8:3, 16:9, 24:18 scoping [6] - 28:12, 28:13, 28:17, 29:1, 29:5, 55:3 score [1] - 73:10 screaming [1] - 103:9 screen [1] - 41:21 sealed [1] - 35:17 sealing [1] - 22:20 season [5] - 62:19, 116:17, 116:21, 117:11, 117:13

25:2

second [5] - 46:12, 59:10, 61:16, 87:12, 111.9 Section [1] - 10:3 sectioned [1] - 15:10 sections [1] - 15:15 see [48] - 4:17, 4:19, 5:7, 5:13, 7:23, 8:15, 8:22, 9:10, 9:20, 9:22, 9:23, 10:14, 14:15, 15:24, 17:18, 21:21, 21:25, 23:2, 31:17, 31:23, 39:20, 40:4, 40:10, 42:8, 42:19, 42:20, 45:4, 46:4, 52:19, 59:3, 60:23, 73:17, 74:11, 78:22, 83:19, 84:15, 87:4, 89:9, 107:3, 107:19, 115:19, 115:22, 116:10, 117:25, 120:8, 120:10, 120:21 seeing [7] - 7:25, 8:2, 8:22, 11:14, 22:2, 114:6, 121:20 seem [1] - 77:22 seemingly [1] - 95:4 select [3] - 18:22, 38:12, 79:24 selected [1] - 38:19 **self** [1] - 118:13 self-muted [1] -118:13 senator [1] - 84:22 sending [3] - 52:23, 59:15, 60:10 sense [3] - 53:22, 113:18, 114:11 sent [8] - 19:12, 29:19, 46:17, 47:5, 55:2, 98:4, 98:6, 98:7 sentences [2] - 102:1 separate [1] - 18:25 **SEPTEMBER** [1] - 1:1 September [6] - 8:4, 22:19, 24:11, 25:4, 50:25, 122:8 septic [1] - 54:7 serious [1] - 89:19 seriously [1] - 100:14 **service** [1] - 25:6 **Service** [6] - 9:17, 9:25, 17:16, 40:1, 40:2, 41:8 services [1] - 65:12 Services [1] - 23:4 serving [3] - 3:5, 24:17, 25:9 set [2] - 101:10,

119:17 setting [1] - 98:16 settings [1] - 99:14 settled [2] - 108:24, 109:5 settlement [3] - 54:6, 54.18 settling [1] - 40:8 setup [1] - 72:17 seven [2] - 10:22, 66:2 several [7] - 28:13, 29:2, 31:10, 33:10, 43:1, 79:13, 121:15 severe [1] - 89:18 severity [1] - 15:16 sewer [2] - 54:7, 54:18 **shall** [1] - 101:25 share [13] - 6:14, 11:22, 12:18, 12:22, 17:2, 17:21, 23:25, 26:13, 42:21, 44:24, 85:15, 105:14, 107:5 shared [2] - 44:6, 48:13 sharing [4] - 41:10, 48:12, 48:20, 107:4 **SHARON** [1] - 2:3 Sharon [24] - 63:21, 63:22, 63:24, 64:17, 65:1, 65:24, 66:22, 67:3, 67:22, 69:17, 72:11, 72:18, 72:20, 72:22, 73:14, 75:6, 75:8, 75:24, 76:2, 76:11, 76:18, 77:19, 78:7, 78:22 Sharon's [1] - 74:24 **shift** [1] - 27:16 shipment [1] - 35:15 short [8] - 64:13, 67:1, 67:13, 67:18, 68:4, 72:25, 97:17, 112:4 short-term [6] - 64:13, 67:1, 67:13, 67:18, 72:25, 97:17 Shorthand [1] - 1:22 show [2] - 43:6, 43:10 showing [5] - 3:19, 31:6, 32:24, 33:4, 33:9 shown [1] - 102:9 shows [6] - 13:16, 31:8, 31:19, 40:14, 66:10, 84:6 sic [3] - 49:16, 95:17, 111:10 side [5] - 54:4, 54:19, 87:13, 88:2, 92:1 signed [3] - 30:12, 35:17, 83:16

significant [5] - 4:13, 19:19, 19:22, 40:6, 100:20 significantly [1] -40:15 signs [1] - 23:15 similar [4] - 31:11, 56:14, 69:12, 92:2 simple [1] - 119:2 simply [1] - 10:10 sincere [1] - 51:19 single [2] - 49:1, 104:17 sit [4] - 42:8, 42:16. 52:3, 84:16 site [33] - 13:24, 15:13, 16:6, 16:18, 17:1, 18:20, 18:21, 20:4, 20:21, 22:16, 22:17, 39:17, 40:4, 40:10, 42:1, 44:10, 55:2, 64:8, 66:8, 67:14, 73:3, 73:6, 91:1, 94:23, 94:24, 95:4, 95:6, 95:10, 96:12, 97:3, 102:11, 112:21 site-specific [1] - 20:4 sites [6] - 12:14, 14:23, 66:24, 70:19, 73:2, 97:14 sitting [1] - 104:4 **situation** [2] - 96:6, 119:1 situations [1] - 91:2 six [2] - 44:4, 61:3 size [1] - 112:13 sizing [1] - 87:21 Skeel [1] - 1:4 slab [1] - 20:6 slide [29] - 4:6, 6:3, 10:6, 10:7, 10:16, 10:22, 11:18, 22:8, 24:6, 24:9, 27:15, 28:4, 28:6, 30:15, 31:5, 31:16, 31:25, 32:21, 33:1, 33:6, 33:16, 34:2, 34:13, 36:15, 58:22, 73:24, 74:22, 82:21, 120:23 slides [6] - 30:14, 39:9, 39:13, 41:15, 73:19, 93:21 slow [3] - 21:17,

100:6, 100:22

slow-moving [1] -

slower [1] - 81:6

small [1] - 41:21

smaller [1] - 31:19

21:17

smart [1] - 115:13 smooth [1] - 50:2 Snowden [2] - 1:21, 122.7 soil [13] - 11:8, 18:17, 20:3, 32:13, 32:23, 33:7, 33:15, 37:5, 37:10, 45:16, 54:8, 54:15 soliciting [1] - 7:2 solidification [1] -115:8 solidification-type [1] - 115:8 solution [2] - 97:18, 106:25 **solutions** [1] - 115:10 **solve** [1] - 106:14 someone [1] - 75:16 **somewhat** [1] - 5:8 somewhere [1] -56:16 soon [9] - 11:10, 18:17, 23:16, 29:20, 34:1, 35:16, 48:2, 59:25, 89:22 sooner [1] - 114:5 sorry [15] - 33:21, 36:23, 41:1, 41:22, 46:24. 54:2. 58:11. 68:8, 69:16, 81:15, 81:20, 87:24, 98:7, 105:1, 108:16 sort [1] - 119:2 sorts [1] - 67:21 sound [1] - 43:13 sounded [1] - 90:10 sounds [2] - 50:19, 107:20 **source** [1] - 55:9 spaces [1] - 110:10 spacing [1] - 110:6 **SPANIOLA** [3] - 2:2, 83:22, 83:25 Spaniola [3] - 71:10, 83:17, 83:19 spaniola [2] - 83:20, 90:6 **SPEAKERS** [1] - 6:21 speaking [5] - 5:22, 17:5, 47:10, 57:25, special [2] - 16:3, 35:8 specialized [1] - 35:7 specific [2] - 20:4, 40.23 specifically [2] -16:18, 42:11 **spectrum** [1] - 40:15

spend [1] - 105:7 spent [4] - 39:16, 99:21, 105:6, 111:10 split [1] - 105:25 sprayed [1] - 99:19 spread [1] - 106:1 spring [3] - 32:4, 116:22, 118:6 SRD [4] - 92:15, 92:20, 93:17, 94:21 stab [1] - 106:11 stabilizations [1] -115:7 staff [2] - 5:12, 22:20 stage [1] - 53:11 stages [2] - 30:25, 32:8 stakeholder [1] -10:16 stand [1] - 83:8 standard [1] - 26:18 standards [3] - 21:23, 100:17, 101:4 standing [1] - 102:18 **standpoint** [1] - 51:25 stands [1] - 102:8 start [22] - 10:23, 11:19, 17:16, 29:20, 30:12, 30:16, 33:21, 33:22, 33:23, 35:18, 36:1, 44:5, 45:23, 46:2, 48:2, 59:12, 59:14, 70:22, 71:1, 71:12, 90:16, 97:10 started [7] - 17:14, 32:17, 32:22, 44:2, 72:6, 79:7, 86:3 starting [3] - 3:25, 11:10, 78:1 State [19] - 14:11, 15:5, 15:7, 15:12, 15:20, 21:4, 21:22, 39:20, 40:14, 69:12, 91:11, 98:5, 98:17, 100:18, 100:19, 101:7, 101:11, 102:10, 103:12 state [5] - 5:21, 36:25, 54:2, 102:22, 113:22 State's [2] - 21:13, 21:21 State-issued [1] -91:11 statement [6] - 20:13, 62:22, 63:18, 71:15, 75:21, 101:2 statements [2] - 67:2, 97:1

States [1] - 65:17

status [4] - 58:22,

61:4, 61:13, 62:9 statute [1] - 78:9 stay [5] - 53:13, 78:15, 102:6, 111:9, 116:18 staying [1] - 82:4 **step** [15] - 11:5, 11:7, 11:9, 18:15, 20:7, 29:16, 30:18, 30:20, 32:12, 33:17, 37:21, 44:3, 48:4, 48:10, 117:10 step-wise [4] - 18:15, 30:18, 48:4, 48:10 steps [4] - 3:13, 18:16, 20:19, 44:16 stick [1] - 57:16 still [15] - 31:3, 32:15, 35:24, 52:15, 56:1, 59:10, 62:10, 63:10, 69:3, 74:21, 78:19, 106:4, 111:4, 112:24 stitch [1] - 56:13 Stock [4] - 8:6, 12:17, 24:15, 25:1 STOCK [3] - 1:12, 8:7, 12:19 stock [1] - 8:9 stop [4] - 6:1, 71:25, 96:9, 116:20 **stopped** [1] - 102:25 storage [1] - 92:7 stored [3] - 54:5. 54:11, 54:12 **Story** [2] - 14:4, 98:15 straight [2] - 98:16, 101:10 Street [2] - 92:7, 106:2 strict [1] - 101:3 stricter [1] - 100:17 strides [1] - 3:22 strive [1] - 22:1 strong [1] - 85:21 stronger [1] - 15:6 structure [2] - 108:12, 110:16 stuck [1] - 114:12 study [2] - 96:4, 96:8 stuff [3] - 55:22, 111:10, 113:6 STUNTEBECK [2] -1:18, 17:22 Stuntebeck [2] - 9:21, 17:17 sub [1] - 20:6 sub-slab [1] - 20:6 subject [1] - 36:11 submersible [1] submitted [7] - 11:15, 32:3, 57:2, 57:24,

speed [1] - 71:2

68:5, 98:5, 101:23 **submitting** [1] - 94:20 subset [1] - 38:19 substance [1] - 91:7 substantial [6] - 91:3, 92:14, 95:22, 96:7, 96:19. 97:5 subsurface [1] - 37:23 success [1] - 3:14 successful [1] - 115:1 successfully [1] -55:23 succinctly [1] - 6:13 suddenly [2] - 85:5, 85:6 Sueltenfuss [3] - 3:5, 72:7, 121:2 SUELTENFUSS [114] -1:7, 3:2, 4:3, 6:22, 7:13, 7:16, 7:19, 7:22, 8:8, 8:11, 8:14, 8:18, 9:3, 9:6, 9:10, 9:16, 9:19, 11:17, 12:15, 12:20, 12:24, 13:2, 16:7, 17:7, 17:10, 17:25, 18:7, 22:6, 22:25, 23:17, 24:4, 25:14, 25:18, 26:11, 26:17, 27:2, 27:7, 36:20, 36:24, 39:3, 39:10, 40:25, 42:19, 43:12, 43:20, 43:24, 44:21, 45:6, 45:11, 47:9, 51:2, 52:14, 53:25, 55:13, 55:17, 56:19, 57:11, 58:7, 58:12, 58:15, 60:16, 63:13, 63:24, 64:17, 64:20, 64:24, 65:24, 66:19, 67:23, 68:2, 68:8, 68:15, 71:6, 72:5, 73:11, 73:15, 73:25, 74:10, 74:20, 75:8, 76:8, 77:18, 78:4, 78:21, 82:18, 82:24, 83:24, 90:1, 90:5, 97:25, 101:18, 101:22, 103:2, 103:6, 104:18, 104:24, 105:2, 105:18, 107:12, 107:25, 108:14, 111:17, 113:21, 113:25, 115:15, 115:18, 116:15, 118:9, 118:15. 118:22. 119:9. 120:7. 120:15, 122:2

suggest [1] - 58:7

suggested [2] - 25:24, 26.7 **suggestion** [1] - 26:2 summarize [3] -69:10, 90:11, 98:21 summarizes [1] -13:24 summary [6] - 22:13, 28:7, 68:4, 68:24, 93:22, 93:23 summer [2] - 22:18, 36:4 Superfund [1] - 16:18 supersede [1] - 77:25 supplies [2] - 35:4, 49:8 support [3] - 5:12, 6:7, 30.23 surface [1] - 94:17 surprise [1] - 99:22 surrounding [1] -77:21 suspicion [2] - 85:21 **Sutton** [1] - 23:2 sweep [1] - 91:20 system [29] - 54:18, 79:7, 79:16, 79:23, 80:7, 80:20, 80:24, 81:7, 81:16, 82:8, 87:11, 87:12, 87:21, 88:7, 88:25, 89:8, 89:11, 92:5, 92:8, 92:10, 92:23, 93:13, 94:12, 97:22, 108:23, 109:3, 114:9, 114:23 System [1] - 94:16

# T

systems [4] - 35:7,

54:7, 112:10

table [7] - 37:7, 37:9, 37:14, 43:19, 56:2, 56:10 tail [1] - 84:16 tank [2] - 49:5, 92:8 tanks [4] - 49:3, 49:18, 110:24, 111:8 task [1] - 31:2 tasks [1] - 35:7 tax [1] - 100:15 taxiway [2] - 22:21, 22.23 taxiways [1] - 22:23 teaches [1] - 70:12 Team [1] - 21:2 team [14] - 26:15, 41:8, 70:17, 77:7, 84:25, 94:23, 95:4,

95:8, 105:5, 105:16, 108:3, 119:22 teams [2] - 48:9, 95:6 technical [7] - 4:25, 12:6. 13:12. 44:18. 55:20, 93:20, 95:18 technologies [1] -107.7 technology [5] - 1:4, 93:16, 93:25, 114:10, 114:11 **TELECONFERENCE** [1] - 1:18 teleconference [1] telephone [1] - 67:6 ten [6] - 71:21, 71:22, 71:24, 72:1, 111:9, ten-minute [4] - 71:21, 71:22, 71:24, 72:1 tend [1] - 99:9 term [17] - 8:4, 22:22, 24:12, 25:3, 25:11, 64:13, 67:1, 67:13, 67:17, 67:18, 70:7, 70:22, 72:25, 97:17, 106:6 terms [5] - 4:11, 13:7, 24:10, 26:3, 69:12 test [1] - 45:20 testament [1] - 15:4 tested [1] - 45:19 testing [4] - 40:4, 45:16, 45:17 **THE** [2] - 2:1 therefore [1] - 75:1 they've [1] - 18:15 thinking [1] - 114:13 thoroughly [1] - 15:23 thoughts [1] - 119:21 thousands [2] - 99:11, 121:6 three [13] - 4:7, 4:23, 11:9, 23:13, 33:17, 56:13, 61:3, 83:14, 83:21, 95:11, 102:1,

20:19, 21:13, 34:15, 34:19, 49:17, 50:1, 78:17, 78:19 timelines [2] - 51:15, 51:23 timely [1] - 15:8 title [1] - 98:14 **TO** [1] - 3:1 today [2] - 57:23, 104:4 toes [1] - 51:14 together [17] - 3:21, 6:10, 26:14, 32:6, 41:7, 41:10, 59:12, 59:13, 59:23, 71:4, 89:25, 105:17, 107:9, 114:22, 115:14, 117:20, 119:20 tomorrow [1] - 23:11 tone [1] - 103:21 tonight [14] - 3:4, 4:7, 4:21, 6:5, 23:20, 25:11, 27:21, 28:8, 57:2, 103:11, 103:18, 120:24, 121:13, 121:19 tonight's [2] - 3:8, 68:10 **Tony** [2] - 71:13, 86:1 took [1] - 112:17 tool [1] - 42:7 tools [1] - 96:23 top [2] - 53:13, 77:14 topic [2] - 44:18, 121:7 topics [2] - 26:24, 27:4 total [2] - 23:8, 93:11 totally [1] - 115:3 tour [2] - 12:11, 13:19 toward [3] - 3:22, 34:21, 97:16 towards [11] - 4:2, 4:14, 4:20, 7:3, 10:9, 41:18, 43:25, 68:23, 78:25, 114:17, 114:21 Township [6] - 8:19, 8:20, 9:11, 9:12, 23:3, 23:20 toxic [3] - 99:2, 99:3, 100:4 track [4] - 6:25, 71:7,

74:17, 101:5

59:13, 59:21

train [3] - 87:12,

87:23, 89:6

tracked [1] - 61:9

tracker [3] - 59:12,

training [7] - 32:23, 32:25, 43:2, 43:3, 43:7, 45:8, 99:20 transcript [2] - 3:7, 68:9 Transcript [1] - 1:3 transects [1] - 115:9 transparent [3] -20:23, 104:6, 105:15 transport [2] - 37:20, 119:16 treat [6] - 56:8, 93:16, 106:14, 109:2, 114:12, 114:23 treated [3] - 15:1, 93:10, 106:4 treating [1] - 92:6 treatment [30] - 80:6, 80:20, 82:8, 87:10, 87:11, 87:12, 87:18, 87:21, 87:22, 88:7, 92:5, 92:12, 92:13, 93:12, 93:14, 93:24, 94:1, 94:8, 94:10, 94:13, 97:21, 97:22, 105:25, 108:4, 108:23, 109:3, 110:17, 112:7 trench [1] - 114:25 trenches [1] - 106:20 trends [2] - 82:3, 82:6 tried [1] - 87:9 trigger [1] - 78:11 trillion [3] - 92:17, 92:18, 93:3 trouble [1] - 47:16 true [1] - 106:5 **True** [2] - 14:4, 98:15 trust [2] - 14:14, 71:5 try [9] - 5:23, 6:25, 47:9, 56:12, 72:16, 79:7, 107:10, 116:1, 118:19 trying [16] - 32:10, 35:1, 59:8, 59:9, 63:6, 70:24, 74:17, 104:20, 104:21, 105:6, 106:19, 107:9. 111:13. 116:25. 118:19. 119:3 turn [16] - 3:16, 17:17, 18:8. 23:3. 25:22. 27:17, 53:8, 71:13, 72:10, 72:18, 83:21, 90:7, 115:23, 116:12, 121:9 turnaround [1] - 49:21 turning [1] - 120:25

turns [1] - 114:10

102:23, 106:22

three-minute [2] -

three-stitch [1] - 56:13

4:23, 102:23

throughout [2] -

throw [1] - 44:15

**Tim** [8] - 3:5, 11:16,

timeline [9] - 20:18,

22:11. 72:7. 72:21.

73:10. 83:22. 121:2

27:12, 71:1

ties [1] - 25:20

**TIM** [1] - 1:7

36:12, 116:17,

tweak [4] - 80:23, 81:6, 81:19, 82:9 tweaked [1] - 31:10 two [29] - 11:7, 15:18, 18:19, 23:6, 23:7, 23:8, 25:3, 27:23, 27:24, 28:9, 31:18, 31:23, 32:12, 33:22, 37:3, 44:2, 50:5, 53:9, 59:1, 61:10, 69:5, 70:2, 70:21, 94:3, 99:17, 102:1, 114:8, 117:1 two-year [1] - 25:3 type [1] - 115:8 typically [1] - 54:9

#### U

**U.S** [5] - 15:11, 21:18, 84:22, 98:22, 98:25 ubiquitous [1] - 99:13 UFP [1] - 28:19 **UFP-QAPP** [1] - 28:19 un-mute [7] - 23:22, 67:5. 83:11. 83:12. 116:12. 118:17. 118:18 un-muted [3] - 83:19, 83:20, 115:24 un-muting [1] -107:20 unable [1] - 24:23 unacceptable [1] -91:16 unavailing [1] - 101:2 unchecked [1] - 99:24 uncovering [1] -100:20 under [9] - 16:16, 25:22, 30:8, 30:19, 34:10, 34:12, 56:3, 90:23, 94:15 understandable [1] -95:14 understandably [1] -20:20 understood [1] -97:15 undertaken [1] - 96:5 underway [2] - 11:7, 29:19 Uniform [1] - 32:1 United [1] - 65:17 units [2] - 61:8, 61:20 unless [1] - 58:23 unnecessarily [1] -14:25

unnecessary [1] -

96:5

unwieldy [1] - 67:6 unwillingness [1] -15:20 up [58] - 3:19, 10:10, 14:12, 21:22, 33:25, 36:7, 36:8, 44:17, 49:17, 52:6, 53:11, 54:12, 55:2, 55:5, 56:5, 60:17, 61:10, 65:18, 66:7, 69:3, 70:9, 70:19, 71:3, 73:8, 76:23, 79:7, 79:9, 79:21, 80:1, 80:13, 81:17, 82:5, 83:7, 83:16, 86:13, 88:25, 89:8, 100:1, 102:20, 104:7, 105:8, 106:7, 107:19, 108:6, 110:1, 111:14, 112:7, 112:13, 113:15, 114:9, 114:18, 114:23, 115:22, 116:17, 117:14, 118:4, 118:5, 119:17 up-gradient [4] -79:21, 80:13, 114:18, 114:23 upcoming [2] - 63:17, 73:1 update [12] - 4:13, 10:23, 17:14, 18:12, 23:18, 25:23, 27:17, 28:1, 32:19, 36:17, 46:17, 60:8 updated [6] - 23:11, 42:1, 44:6, 45:3, 60:7, 60:21 updates [11] - 4:8, 10:16, 10:20, 11:19, 11:22, 12:17, 17:21, 23:6, 23:24, 24:2, 80:4 updating [2] - 41:11, 42:5 **USDA** [2] - 9:16, 17:16 uses [1] - 53:19

# V

valid [1] - 111:5 values [1] - 20:4 Van [28] - 29:7, 29:11, 29:21, 34:4, 35:21, 45:19, 45:25, 48:21, 55:21, 56:23, 79:2, 84:17, 84:20, 85:5, 86:16, 87:2, 87:16, 90:12, 90:22, 91:6,

91:8, 92:2, 92:13, 92:24, 96:9, 97:11, 97:17, 112:23 vapor [1] - 20:1 variety [1] - 74:2 various [1] - 84:7 VARLEY [76] - 1:16, 3:18, 8:17, 10:24, 26:14, 27:1, 27:6, 41:3, 42:4, 42:13, 42:16, 42:23, 44:25, 46:16, 46:21, 46:24, 47:3, 47:7, 47:12, 47:16, 47:21, 47:23, 48:2, 48:24, 49:12, 49:20, 49:23, 50:3, 51:8, 52:10, 52:13, 53:8, 53:22, 55:1, 55:12, 56:1, 57:6, 57:16, 57:19, 58:1, 58:5, 59:7, 59:22, 60:9, 60:12, 62:10, 63:11, 63:19, 66:17, 67:3, 68:18, 69:2, 69:14, 70:2, 76:10, 76:17, 77:6, 86:1, 86:11, 89:15, 98:1, 104:19, 104:23, 105:1, 105:4, 106:10, 106:13, 109:17, 109:24, 110:3, 114:2, 116:23, 117:2, 117:5, 119:12, 121:18 Varley [24] - 3:17, 4:5, 8:16, 10:25, 17:13, 26:12, 41:2, 41:3, 42:21, 44:23, 55:19, 57:14, 68:6, 69:21, 76:8, 84:3, 84:8, 86:18, 98:4, 105:2, 109:8, 114:1, 115:16, 121:10 vary [1] - 40:8 varying [1] - 6:12 VAS [5] - 11:9, 11:24, 33:19, 46:2 Vaughn [3] - 107:19, 107:24, 115:16 VAUGHN [12] - 2:2, 2:3, 107:23, 108:2, 109:22, 109:25,

vertical [6] - 11:25, 18:18, 19:5, 33:18, 45:23, 46:3 Veteran's [1] - 95:24 Veterans [1] - 13:17 veterans [1] - 100:12 via [5] - 1:4, 9:12, 68:6, 71:10, 98:8 VIA [2] - 1:18, 2:5 vibrate [1] - 72:15 video [1] - 1:4 view [2] - 6:12, 12:3 viewed [1] - 73:20 Vij [3] - 9:4, 23:5, 23:18 VIJ [3] - 1:16, 9:5, 23:6 virtual [3] - 9:12, 42:7, 101:24 virtually [14] - 5:10, 5:19, 7:24, 8:2, 8:21, 9:4, 9:22, 10:12, 23:23, 107:15, 115:19, 120:19, 121:13, 121:19 vision [1] - 70:24 visit [1] - 105:11 voice [1] - 103:21 volume [1] - 94:19 Vriesenga [6] - 63:22, 69:17, 72:11, 72:18, 75:7 VRIESENGA [14] -2:3, 63:21, 63:25, 65:7, 65:16, 65:22, 67:5, 69:16, 72:21, 75:6, 75:9, 76:19, 77:11, 78:7 **VRMO** [1] - 33:3

#### W

wait [1] - 79:4 waiting [2] - 59:17, 96:4 wall [1] - 79:5 wants [1] - 20:17 warning [1] - 100:22 Water [2] - 14:5, 84:22 water [15] - 11:6, 21:23, 37:6, 37:7, 37:9, 37:14, 39:22, 40:23, 54:9, 92:3, 92:13, 93:2, 99:12, 106:3, 106:4 waters [2] - 91:9, 94:18 ways [5] - 95:14, 107:3, 107:6, 113:15, 115:7 weather [5] - 36:6,

117:7, 117:24 web [1] - 23:11 webinar [1] - 13:9 website [5] - 19:15, 20:18, 21:14, 53:7, 101:16 **WEDNESDAY** [1] - 1:1 week [14] - 13:9, 13:22, 14:6, 19:4, 19:11, 19:23, 22:18, 23:10, 33:13, 33:23, 68:7, 69:5, 90:15, 102:9 weekend [1] - 62:3 weeks [5] - 29:23, 32:16, 33:22, 46:7, Weiss [2] - 9:17, 18:1 WEISS [3] - 1:18, 9:18, 18:3 welcome [6] - 3:3, 39:2, 42:16, 72:6, 84:5, 115:17 welcoming [2] - 3:16, 103:17 wells [21] - 18:17, 23:8, 30:21, 31:3, 38:1, 38:3, 38:7, 38:8, 38:9, 38:12, 38:13, 38:22, 79:22, 80:1, 80:19, 82:4, 82:6, 88:5, 92:3, 112:12 west [4] - 39:21, 43:1, 43:3, 43:7 West [1] - 53:10 WHEN [1] - 50:15 whichever [1] - 61:14 whole [3] - 102:6, 104:5, 108:10 wide [3] - 14:22, 65:4 widely [1] - 20:24 widespread [3] -31:21, 31:22, 99:7 width [2] - 92:21, 93:1 wildlife [3] - 15:6, 23:12, 99:9 Wildlife [7] - 12:12, 13:23, 14:5, 21:9, 90:15, 102:5, 102:8 William [1] - 25:1 WINN [32] - 1:12, 8:10, 17:9, 45:13, 46:8, 46:12, 46:19, 46:23, 47:4, 47:15, 47:19, 47:22, 47:25, 48:17, 49:15, 49:22, 49:25, 50:9, 50:19, 51:1,

51:4, 51:11, 52:12,

110:14, 111:2,

111:7, 111:13,

113:20, 115:17

verbal [1] - 4:23

verbatim [1] - 3:7

versus [1] - 64:13

verification [1] - 56:16

52:20, 53:15, 53:24, 78:6, 78:23, 81:11, 81:16, 82:12, 82:17 Winn [10] - 8:9, 17:8, 24:17, 25:3, 44:22, 45:12, 52:15, 52:19, 78:5, 78:22 winn [1] - 51:2 winter [9] - 36:3, 36:5, 62:16, 63:3, 63:4, 116:21, 117:10, 117:15, 118:4 wise [4] - 18:15, 30:18, 48:4, 48:10 wisely [1] - 6:10 wish [2] - 24:17, 24:18 wonder [2] - 106:5, 106:6 wondered [1] - 66:8 Wood [1] - 112:18 words [1] - 103:2 works [4] - 25:10, 25:13, 56:15, 73:22 worry [1] - 59:17 worsened [1] - 100:9 worst [1] - 98:24 wrap [1] - 87:20 writing [1] - 45:2 wrote [1] - 39:8 **WURTSMITH** [1] - 1:1 Wurtsmith [23] - 1:3, 3:3, 10:25, 14:4, 15:1, 20:18, 21:11, 21:19, 22:1, 22:9, 22:12, 28:3, 38:8, 64:5, 72:8, 97:14, 98:15, 99:16, 99:19, 100:7, 100:12, 100:21, 100:24 Wusterbarth [11] -8:12, 13:3, 24:16, 25:2, 58:10, 68:2, 69:17, 71:14, 74:11, 90:7, 101:19 WUSTERBARTH [18] -1:13, 8:13, 13:4, 56:21, 57:21, 58:3, 58:11, 58:14, 67:25,

63:17, 63:25, 64:6, 64:7, 65:4, 65:5, 65:19, 66:25, 73:2, 73:7, 75:2, 75:4, 75:11, 75:14, 75:20, 76:6, 76:24, 77:14, 77:17, 78:1, 78:8, 78:9, 85:17, 89:22, 89:23, 112:18 year's [1] - 62:19 years [19] - 43:17, 44:2, 51:22, 54:20, 59:1, 61:6, 61:10, 70:21, 71:1, 78:10, 78:12, 96:4, 98:25, 101:4, 103:13, 106:1, 111:10, 114:8, 119:8 yesterday [2] - 35:14, 56:22 yourself [4] - 83:12,

83:20, 117:3, 118:18

# 90:9, 98:2, 101:20

68:3, 68:11, 69:8, 69:15, 69:20, 74:13,

year [43] - 24:11, 25:3, 25:11, 29:10, 36:7, 55:5, 55:6, 55:8, 61:4, 61:5, 61:6, 61:18, 62:1, 62:4, 62:5, 62:20, 63:5,

Y 24.