HUDSON RIVER PHASE 1 DREDGING PEER REVIEW PANEL

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1 P R O C E E D I N G S

2 **Welcome and Introduction**

3 **MS. HOLLAND:** It looks like half the audience is
4 still asleep someplace else besides here, and I hope the
5 other half of you are still awake.
6 We are going to start on time this morning. We
7 have a lot to do today. The agenda today is just basically
8 opportunity for the panel to ask additional questions and
9 then do their own deliberations and discussions amongst
10 themselves until 4:45, when we have our second observer
11 public comment opportunity.
12 Folks need to register by one o'clock if you would
13 like to make comments during the public comment opportunity.
14
15 So that basically is all I have to say. I
16 reminded you all, we went through the ground rules
17 yesterday. You got a copy of them. They were out front.
18 so, if you are new today, I won't go through them again
19 today, but please take a look at the ground rules, if you
20 weren't here yesterday. The agendas and the Charge
21 Questions are also out on the table, if you didn't get them
22 yesterday.

1 So, Paul, do you want to lead us out for our first
2 topic?
3 **Panel Deliberations**
4 **MR. FUGLEVAND:** Good morning. For the morning
5 this morning, the first thing we would like to do is talk
6 about productivity. We had some requests made yesterday.
7 The second thing, I just want to acknowledge we
8 asked both GE and EPA last night to go back and provide us
9 some additional feedback on their recommended changes to the
10 performance standards. We have those this morning. Thank
11 you very much. That will be the second item. So, after we
12 talk about productivity, we are going to talk with you and
13 just make sure we understand all your changes. Then, from
14 that point on, we will start our deliberations.
15 We ended up last night asking for GE to give us
16 basically a description of what went on at the dredge. We
17 are interested in how did the contractor get their
18 direction, what were they asked to do, and then what kind of
19 discretion did the contractor have in choosing how to
20 proceed through a CO area, and then, thirdly, as far as the
21 operator goes, what kind of direction did the operator have
22 in operating the dredge.

1 Maybe you could talk us through a particular
2 dredge set, when they move into the location and the bucket
3 sequencing, how they chose to do that, if we had like a 4-
4 or 5-foot cut, which is more than one-bucket deep -- I think
5 you talked about 16 inches in your bucket depth -- how did
6 the contractor typically work through that.
7 Then, also, if you could just explain to us did
8 the dredge typically work, was the dredge facing upstream or
9 downstream, and when it moved, did it move downstream or
10 upstream, just so we can understand how it typically moved
11 through the cut.
12 So, if we could start there, then we will go from
13 there.
14 **MR. CONNOLLY:** Andrew Inglis, who is our dredging
15 task leader, he will walk through, I think, most of what you
16 are looking for, but, obviously, if there is more you would
17 like to hear, Andrew and then Tim Kruppenbacher, our overall
18 operations leader, and then Scott Blaha was responsible for
19 the processing facility operation. So we will have Andrew
20 and Scott go through a brief overview. If we don't capture
21 what you are looking for, please let us know, and they can
22 be as interactive as you would like.

1 **MR. FUGLEVAND:** Okay, thanks.

2 **MS. HOLLAND:** Just remember, because we are
3 recording, we need names as you change speakers.

4 [Pause.]

5 **MR. INGLIS:** Good morning, Peer Review Panel. My
6 name is Andrew Inglis. I am the dredging task leader for
7 GE. Paul, thanks for letting me talk about dredging,
8 something that is near and dear to my heart.

9 Dredge operators. This is our typical dredge
10 operator here. He was the kind of the dredge, sitting up
11 there on his throne. This guy here, his name is Steven Fry.
12 He is a 30-year veteran of the dredging industry, one of
13 our more senior operators.

14 One of the challenges we had on this project was
15 so much equipment. We actually had to field approximately
16 30, sometimes more, operators on any given day, 15 on each
17 shift. Part of the way that we coped with the training of
18 the operators was by training the trainer and then have the
19 trainer train the other operators, and Steve was one of our
20 key operators for training new guys coming on to the job.

21 You asked about how are decisions made and how did
22 we communicate from the top down to the operator.

1 Obviously, in my world, the operator is really the most
2 important person. They are the person that makes or breaks
3 your dredging project. Typically, whenever I go out to a
4 dredge -- and likewise same for construction managers -- the
5 first person that you try and speak to was the dredge
6 operator because they knew exactly what was happening with
7 the material, what were they encountering.
8 [Pause.]
9 **MR. INGLIS:** As I was saying, the dredge operator
10 was key, even though they are at the bottom here. They had
11 the best information, and they were the person that we went
12 to time and time again to understand what exactly was
13 happening in an area.
14 Decisions all happened at the top. Really, the
15 design was the basis. We went for a process with the
16 contractors of soliciting their input, which was through a
17 submittal process. It took over a year to get all of the
18 submittals finalized. That then fell into the Remedial
19 Action Work Plan, which was approved by EPA.
20 The Remedial Action Work Plan was actually an
21 enforceable document for the contractors. So anything that
22 was in there was something that actually was a contract

1 requirement; obviously, discussion between GE and EPA with
2 any changes to the design or any changes to the work plan.
3 Then, once a decision was made and it was approved by EPA,
4 we communicate it down to the construction manager and the
5 contractor management. They would then work together to
6 develop a procedure or a process that could be put out to
7 the field.
8 The first step in the field was the
9 superintendents. Each dredge area had a superintendent, and
10 that was 24-hour supervision. So there was a total of eight
11 superintendents for the project. At any given moment, there
12 would be one in the East Channel, one in the West Channel,
13 and one down at East Griffin Island.
14 Their role was really to supervise the dredging,
15 make sure they were doing what they were supposed to be
16 doing and interact directly with the dredge operators and
17 the dredge captain.
18 In addition, Vessel Traffic Service was really
19 sort of the nerve center of all communications of the
20 vessels in the project. So they played a large part in
21 getting communication moving between all participants.
22 Then, lastly, as I led off with we have the dredge

1 operator, the dredge captain, each dredge had a dredge
2 captain as well as a dredge operator. They worked in
3 unison. Very often, they would swap each other out when
4 digging. Any issue that they experienced would then make
5 its way back up.
6 So, on some days, we may have a decision that we
7 could get approval from EPA on. We put out, out to the
8 field, and then we would get instant feedback, within a
9 couple of hours, that it was either working or it wasn't
10 working, and then we get into sort of an adaptive management
11 situation.
12 So you asked what does the dredge operator
13 actually see and what is in their mind. This is their
14 screen. This is a modified dredge pack program. We had a
15 couple of drivers custom made for the project, one of which
16 was that every single bucket was already predefined for the
17 dredge operator to dredge.
18 So, just to explain what you are seeing here, this
19 is the cross-sectional view. It is a 3-D model that the
20 dredge is depicted on. That is coming from a number of
21 different sensors. We had bucket closure sensors. I know
22 that is something Manna Jo brought up, but we did actually

1 have bucket closure sensors on. We had sensors on the boom,
2 the stick, and then also a RTK-GPS, so it new where it was
3 at any given moment in time.
4 Over on the left is the plan view of the dredge
5 area. The different colors are different depths. You can
6 see here, the blue line, that they are dredging to. That is
7 the dredge prism. Right here, going back to what I was
8 talking about, each bucket was defined, laid out in advance,
9 and was programmed into the computers.
10 These bucket patterns were changed. The
11 contractor had a whole staff of computer techs that would
12 come onto dredgings and update the files on a daily basis.
13 The buckets, you can see here, have an overlap. Typically,
14 20-percent overlap was used between buckets.
15 This is an interesting point here. Do you see
16 this outlined square with a cross through it? The computer
17 actually defined which bucket the operator would take next.
18 So the decision-making process was build into the setup.
19 So, for example, Paul, as you were questioning, we
20 typically dredged upstream to downstream, unless it was not
21 possible from a kind of physical perspective, and then
22 upslope to downslope. That was to avoid minimized

1 residuals. So, when they programmed the computer, they
2 would program it in such a fashion so that after they
3 dredged this bucket, they would them move to the downslope,
4 assuming they are set across the lane.
5 One thing I want to just clarify is the objective
6 of the operator was to dig full buckets, and that was their
7 direction and that was they attempted to do every time they
8 could.
9 Also, their chief goal was to methodically and
10 carefully load the scow. Once the scow shipped, then they
11 were at liberty to take a break, go down get some lunch or
12 whatever.
13 I think yesterday came up this concept of nibbling
14 and that when scows were waiting for a scow, the operator
15 would sit there and somehow kind of waste their time or
16 nibble, and that just did not happen. Their goal was to
17 fill the scow as quickly as possible and move it out there.
18 This is actually the system. This is a live feed
19 from the sensors. This is what we call "Dredge TV." You
20 can sit there and watch this, the operator dig, all day
21 long, if you wish. This was created for EPA for a
22 documentary they were making. Even though it is actually

1 live data, some of the buckets were taken off to make it
2 simpler for a TV presentation.
3 What is missing here and what was never shown is a
4 scow. Right here, there is a scow. Right now they are
5 getting ready to put the bucket into the scow to unload it.
6 You can see they come down. They are aiming on the plan
7 view for the blue line. Once they have taken the bite, they
8 take it back up and add it to the scow.
9 This is CU-1. The consideration here was that
10 there was a water line which we defined as a "no spud zone."
11 So they would have to dig on either side of it but not spud
12 through it, and that is an example of where they may have to
13 retake the dredge, so they may not be facing the same way at
14 all times.
15 There was some talk about how were buckets dredged
16 and this concept of nibbling. When I first heard about it,
17 I really had to scratch my head because we were unaware of
18 nibbling occurring.
19 This is what happened in the field of the dredge
20 operators. This example here is of a 1-cubic-yard bucket.
21 so it is a 1.5-foot cut. The 1-cubic-yard bucket took
22 approximately 6 inches. So the first bite, they go for it;

1 they get a full bucket. The second bite, again full. Third
2 bite, they are aiming for the target elevation, so they get
3 a partial bucket.
4 At the discretion of the operator, if they saw the
5 material was falling out to the bucket or if it was in a
6 debris field and they thought that there was still -- even
7 though they dug in theory to the grade line, they thought
8 there was still material that could be there. To address
9 residuals, they had the discretion to take another bucket,
10 which we called "cleanup bite."
11 This is sort of the practice that was developed,
12 and we really think it went a long way to reduce the actual
13 number of residual sediment we found.
14 Here is where we think EPA may have gotten
15 confused. Instead of talking to operators and being there
16 in the field, looking at it in the rear view of the sort of
17 statistical analysis, if you look at the sort of fill
18 factors, say 85 percent fill in the first bite, 85 second,
19 19 third, 15, your average is 51 percent. So, if you are
20 just looking at the fill factor, you could think to
21 yourself, "Well, they took four buckets there, 51-percent
22 fill factor. They took half buckets every step of the way,"

1 but that is not the actual process that was done in the
2 field.
3 Just to give us an idea, without the cleanup bite,
4 we had 63 percent fill factor, and the actual average in
5 Phase 1 for the 1-cubic-yard bucket was 73 percent, which
6 obviously is reflective of the fact that it wasn't always on
7 point through the cut.
8 **MR. CONNOLLY:** John Connolly.
9 I just wanted to follow up on one point. One of
10 the discussions yesterday was that resuspension was related
11 to the bucket fill factor because somehow that was an
12 estimate of spillage, but I think this demonstrates that it
13 doesn't really have anything to do with spillage. It is
14 just the process of how we fill the buckets as we work
15 through to the cut line.
16 **MR. FUGLEVAND:** Paul Fuglevand.
17 Andrew, would you explain why you are using
18 85-percent fill factor?
19 **MR. INGLIS:** Yeah. I mean, the goal of the
20 operator, you don't want to get completely 100-percent fill
21 bucket because what you are getting then is squeeze-out. So
22 they would typically -- I mean, the 85 percent was like a

1 perfect bite. Goldilocks is not too much, not too little;
2 it's just right. So that was their goal.
3 Next slide.
4 **MR. THOMPSON:** Actually, Andrew, back to the
5 previous slide, please. Tim Thompson.
6 What would happen was the dredger would work
7 through the bites at one particular place until they got to
8 the dredge cut?
9 **MR. INGLIS:** Correct.
10 **MR. THOMPSON:** So, whether it was 6 inches or 4
11 feet, what have you, they would continue working that
12 particular spot --
13 **MR. INGLIS:** Right.
14 **MR. THOMPSON:** -- until they achieved what was the
15 planned dredge cut.
16 **MR. INGLIS:** Yeah. I mean, this was a point that
17 was discussed ad nauseam with the contractor before we got
18 started, and it kind of fits into the adaptive management
19 because the discussion with the contractor was what's
20 better, to sit in one location and dredge all your bucket
21 bites down to grade or to take it in multiple lifts.
22 From a production perspective, sitting there in

1 one location and digging all the way down is a faster way of
2 dredging. So what was decided is let's start doing that.
3 Let's have the 20-percent budget overlap, which would take
4 care of sloughing and such, and then let's see what comes
5 back from a residual perspective. And if there's issues
6 with that, if we are seeing a high amount of generated
7 residuals, then we adapt.
8 So that was the process we started, and as we
9 started getting the data back, it wasn't generated residuals
10 we were seeing. It was this new inventory. So the decision
11 was this is the better production, stick with it, and,
12 again, if we do start seeing higher amounts of residual,
13 generated residuals, then we can adapt to that.
14 **MR. THOMPSON:** And how did you tell? You actually
15 were coring?
16 **MR. INGLIS:** Yeah, through the cores.
17 **MR. THOMPSON:** Right behind him, as soon as they
18 got done with the hole, you were taking cores?
19 **MR. INGLIS:** Exactly. Well, after they got done
20 with the CU.
21 Keep in mind that the CU was broken into 1-crew
22 areas. So, after we finished the 1-acre area, then we could

1 do the coring again, get the 8 cores in that area, and we
2 would get the information.
3 **MR. THOMPSON:** Okay. I will hold questions for
4 now. Thanks.
5 **MR. FUGLEVAND:** Andrew, you may have explained it,
6 but what is the actual average in Phase 1 that you have on
7 the bottom? Is that for different depths?
8 **MR. INGLIS:** Exactly. That is for all the
9 different depths that a 1-cubic-yard bucket dredged in Phase
10 1.
11 **MR. FUGLEVAND:** Thank you.
12 **MR. INGLIS:** Next slide, Jennifer.
13 So what were the considerations in a dredge area?
14 We talked often about how this is a complex project, and I
15 think this speaks to the complexity that the dredging
16 contractor and GE and EPA deal with on an everyday basis.
17 Before we would start dredging in any given area
18 -- I mean, this is just kind of the big ones. There were
19 many other ones that you had to keep in mind. But the first
20 thing you had to look at was what is the water depth, and
21 that really impacts the draft to which you can load a scow.
22 There has been a lot of talk and comments about,

1 well, if only GE had loaded scows down to the 8-foot, then
2 we would have had higher production. Well, yes, you would
3 have higher production. However, if you were in an area
4 with average depth, you are digging to 5 feet, you can't
5 load your scow to 8 feet.
6 An example of how that translates into logistics
7 and similar of the barge logistics, although we brought in
8 638 scows, actually to achieve that number, we had to do
9 over 2,000 scow movements, because what we would do is we
10 would take a scow in a shallow area, partially load it, send
11 it to another deeper location, top it off at that location
12 and sometimes to a third location to be topped off, and then
13 to the processing facility. That was an everyday management
14 that was managed by the Vessel Traffic Service to make sure
15 that we got the maximum in any scow that we possibly could,
16 based on the water depths that we were working in.
17 So it is not to say, oh, all you got to do is fill
18 your scow to a deeper draft. It is not as simple as that,
19 unfortunately.
20 **MR. BRIDGES:** Andrew, I have a question. Can you
21 describe how with the coring that you took, after you
22 completed an acre, how you would distinguish what I would

1 call "generated residual," fallback from the bucket, versus
2 undisturbed residual, which I believe you all call
3 "inventory"? How would you distinguish those?
4 **MR. INGLIS:** There was a couple of different
5 methods. The first was a visual observation on the core
6 results, was there a visual observed, fluffier layer or
7 different type of sediment on top of the core. That was a
8 clear indication of a generated residual as opposed to the
9 native sediment below.
10 In terms of actually how did we identify if it was
11 generated versus actual inventory, yesterday we talked about
12 how the cores were analyzed in 6-inch increments. So, if
13 you had contamination below the first 6 inches, then our
14 thinking is it was inventory that you missed and not
15 sediment that had been redeposited. So it was a two-step
16 process, visual and then looking at the 6-inch core depths
17 going down.
18 **PANEL MEMBER:** In the case of the 6-inch, with the
19 presumption being that under no conditions would you get
20 more than 6 inches of generated residual?
21 **MR. INGLIS:** I think that was initially an
22 assumption, but it was borne out of individual observation.

1 It is not something we sought.

2 **MR. THOMPSON:** Do you have any photographs of

3 those cores?

4 **MR. INGLIS:** Yeah. Every single core was

5 photographed.

6 **MR. THOMPSON:** Where you can show us

7 representative samples of what you considered to be

8 residual, generated residual, versus undisturbed?

9 **MS. BENAMAN:** This is Jennifer Benaman.

10 In the Data Compilation Report, there is a photo

11 of every single core and segment, if you are really inclined

12 to look at every single -- all 900 of them.

13 In our evaluation report, we have a figure that

14 shows two examples of where they identified generated

15 residuals. I can't remember whether that is in Chapter 3 or

16 Chapter 6, but there is a figure in our report that has two

17 representative photos.

18 **MR. INGLIS:** So the answer is yes.

19 **MR. BRIDGES:** I am going to follow up here real

20 quick, actually with a question to Jennifer.

21 Jennifer, one of the things we can't distinguish

22 in the photographs that you supplied us is we have got a

1 station ID, and that's it. So it is really difficult for us
2 to know whether this was actually a sample taken at the
3 design or later on when you were --
4 **MS. BENAMAN:** Okay.
5 **MR. BRIDGES:** -- taking with -- as opposed to
6 confirmation sample. That would be helpful if we could see
7 that.
8 **MS. BENAMAN:** We can get you the figure number
9 from that report, and we can also get you the convention for
10 the Ids. The ID actually tells you the CU and the dredge
11 pass.
12 **MR. THOMPSON:** That would be helpful.
13 There actually maybe is a question for the whole
14 GE team.
15 The picture in the report does show a highly
16 flocculated material that's on top of the core, and you
17 called that in that. You say that's the residuals.
18 But I think where maybe perhaps Todd was going is
19 there is the material that is, in fact, kicked up by the
20 dredge into the water column. It settles back down. Then
21 there is the material that potentially, even despite your
22 best efforts, is still going to slough in as your slopes

1 failed, and I would wonder how you would be able to
2 distinguish that because I don't think that is going to have
3 the same flocculent characteristics that the material you
4 show in the report would.
5 So that would be the question for me is how would
6 you distinguish between what you might call extra inventory,
7 in fact, as opposed to what may have sloughed in from the
8 sides after you had done your dredging. Thoughts?
9 **MR. INGLIS:** As I said, I don't think that is
10 something that we saw in the core results.
11 The material that sloughs, I do believe would have
12 a different characteristic than material that was native
13 sediment to the river bottom.
14 Keep in mind that we were also having to do
15 multiple passes.
16 **PANEL MEMBER:** Sure.
17 **MR. INGLIS:** We were going down on the second
18 round of coring in some locations to 2.5, 3 feet.
19 I hope that answers your question.
20 **PANEL MEMBER:** Thank you.
21 **MR. INGLIS:** The point is here that many things
22 were brought in, and we had to address each area, and each

1 area was unique. That is where we tried to let the dredge
2 operator -- you know, beyond the aspect of telling them
3 which bucket they are to take. How they angled the dredge,
4 how they positioned it, that was really at their discretion,
5 to make sure that they were able to deal with these
6 different aspects.
7 Noise is a classic example. If there was a
8 resident close to a dredge area, the preference would be to
9 dredge that area during the day rather than night, but did
10 that lead sometimes to us not doing a sequential upstream to
11 downstream dredging method? Yes. But that is the balance
12 that we had to strike between all the different standards
13 that were imposed on us and getting the project done.
14 Next slide.
15 Adaptive management.
16 **MR. HARTMAN:** I'm sorry. Greg Hartman.
17 Could you just real quick go back to that last
18 slide? I have a question on the upstream to downstream
19 dredge lanes.
20 **MR. INGLIS:** Yes.
21 **MR. HARTMAN:** That concept, what kind of a bucket
22 spread or a swing were you taking? What were the actual

1 widths of those dredge lanes?

2 **MR. INGLIS:** Typically, they were 60-foot for the

3 385 and 30-foot for the 320. That worked for us because we

4 could mix and match, you know, the 320s within those dredge

5 lanes. There was, as I described earlier, a 20-percent

6 bucket overlap within that lane, and the bucket would extend

7 20 percent outside of each lane. Typically, the lanes would

8 go, would be parallel to flow.

9 **MR. HARTMAN:** Did you go to full depth before you

10 advanced?

11 **MR. INGLIS:** Yes.

12 **MR. HARTMAN:** Okay. Thank you.

13 **MR. BRIDGES:** So how wide were the lanes?

14 **MR. INGLIS:** 60 feet for the large dredge, the 385

15 dredge, and 30 feet for the smaller dredge.

16 **MR. BRIDGES:** Okay. So you went upstream to

17 downstream in lanes --

18 **MR. INGLIS:** Correct.

19 **MR. BRIDGES:** -- bearing between 60 and 35 feet.

20 **MR. INGLIS:** That's a standard. That's the

21 standard within the dredging industry to do that, in that

22 sequential fashion.

1 **MR. BRIDGES:** How many lanes then would you have
2 for a CU? I mean, you did this an acre at a time. So that
3 would be a set number. Right?
4 **MR. INGLIS:** Yeah.
5 Jennifer, do you want to move to -- there is a
6 slide in the backup that shows the dredge lines. It is
7 probably easier to show a picture, Todd, than to --
8 Go up to the top. It is No. 7.
9 Okay. This is CU-2 here, and this is CU-3. You
10 can see these lines here indicate the 1-acre areas, and then
11 these lines here are the dredge lanes. Here, you can see
12 that, that a dredge lane, for a 385 dredge, they are wider,
13 and then here, you can see the smaller lanes that were used
14 for a 320 dredge.
15 If we were in a situation where coring rigs were
16 available and we had capacity to put cores through, then we
17 would work with the dredging contractor to really focus on a
18 1-acre area.
19 If we were in a situation, which was very often
20 with the number of cores we had to do, where the lab was 4
21 or 5 days backed up with samples and where there was no
22 advantage to at that point getting samples that day or that

1 week, then we would say just keep on going down and come
2 back and we will sample it once the whole area is finished.
3 So, to say that every single acre was done
4 individually, that is not what happened. It was managed
5 based on if it was information we really wanted.
6 For example, in CU-1, in our second dredge pass,
7 this was right at the beginning of the program. We were
8 dealing with the residual standard which said your second
9 dredge pass should only be 6 inches. At that point, we
10 suspected there was material that may be deeper in CU-1. So
11 we had the dredging contractor just dredge the first 1-acre,
12 so we could hop in there, get the samples, when they moved
13 into the other locations. So, if we found deeper sediment,
14 we could redo the dredge prism.
15 **MR. BRIDGES:** You can delay me if I am disrupting
16 the flow with the question.
17 So you had on average how many dredges? There was
18 some down time, but there would be how many dredges in the
19 water at a time?
20 **MR. INGLIS:** Typically, in a CU, you would have
21 two large dredges, or if it was a CU being dredged by the
22 smaller dredges, you could have up to five or six smaller

1 dredges in a CU.

2 **MR. BRIDGES:** Two to five or six within a CU?

3 **MR. INGLIS:** Mm-hmm.

4 **MR. BRIDGES:** But you are doing multiple CUs at a

5 time. So those CUs would be sometimes upstream and

6 downstream of each other, right?

7 **MR. INGLIS:** The way that we handled that was that

8 during the design pass, the initial pass which has the most

9 amount of PCB load, there could be no dredging upstream off

10 a design pass dredge.

11 **MR. BRIDGES:** And a design pass is?

12 **MR. INGLIS:** The design pass is the first pass.

13 Once we were into the residual dredging, so the

14 redredged passes, then we relaxed that requirement with EPA

15 and allowed dredging to occur concurrently with other CUs.

16 Does that make sense?

17 **MR. KRUPPENBACHER:** If I could clarify that? Tim

18 Kruppenbacher.

19 We had contiguous CU requirements that were in the

20 design. The approved design had that we could work in two

21 contiguous CUs upstream/downstream at the same time in any

22 given area.

1 Keep in mind that Phase 1 had three distinct work
2 areas: East Channel/Rogers Island, West Channel/Rogers
3 Island, and then West Griffin Island area. So you had three
4 sets of contiguous CUs.
5 When we laid out the plan, it was based on working
6 in two contiguous CUs. As we got into the difficulties
7 associated with the acceptance and residual multiple passes
8 and the additional extra inventory dredging that we were
9 doing, we went back to EPA and talked with them about how
10 that was progressing, and with their approval, we were
11 granted the ability to work in three contiguous CUs for that
12 pass. So there was an upstream/downstream, but there was
13 also a contiguous CU requirement that we had.
14 Typically, we were managing 12 dredges in the
15 river at a time. Once we reached a point in mid July, we
16 had 11 to 12 dredges operating at all times until we started
17 the ramp-down in September.
18 **MR. BRIDGES:** So, if you are working in two
19 contiguous CUs, the lanes that those dredges are working in
20 are also contiguous? Let's say they are starting on the
21 left side and working over. Is that coordinated in some
22 fashion, or they get out of sync, where the upstream dredge

1 is working on a lane that is different than -- you get what
2 I'm asking.
3 **MR. INGLIS:** I see where you are going, Todd, and
4 that was a concern that we had initially -- if generated
5 residuals were going to be the big issue, then how do you
6 restrict that? We talked to the contractor about being able
7 to balance the progress for a lane. Obviously, material is
8 not deposited based on our lanes. So you are never going to
9 have a scenario where the dredge production rate in each
10 lane is identical.
11 That is one of the tensions in environmental
12 dredging is how do you get production rates in such tight
13 close areas where you are forced to use equipment, and how
14 do you then get that equipment to work adjacent to each
15 other, minimizing residuals from a safety perspective as
16 well, from productivity how do you get the barges in and out
17 when they are so close. That is a big part of the
18 complexity of this.
19 In Phase 2, I think it will be very similar. In
20 fact, in Phase 2, because of the fact that we don't have
21 these distinct three separate locations -- as you heard
22 yesterday, there is this one location with everything

1 focused on just dredging in one location. How do you focus
2 that amount of equipment in one location, at the same time
3 minimize your residuals, at the same time meet your
4 production? That is what makes this project difficult.
5 **MR. HARTMAN:** Greg Hartman.
6 Would you finish off one of those 1-acre areas?
7 What was the decision to go to a second 1-acre area? Would
8 that be immediately adjacent to the previously dredged area?
9 Would that be in a different -- you know, like go from the
10 upstream area first in 1-acre and then go to the downstream
11 area?
12 **MR. INGLIS:** The acre areas were always done
13 upstream first. We had a policy within a CU, you couldn't
14 have any dredge working upstream when a sampling boat was
15 collecting samples. So, in order for the sampling boat to
16 come in and collect the core samples, they had to be
17 upstream of the dredgings.
18 In this example, this would be the first acre area
19 that would be done, then this one, then this one. So the
20 dredge could be in here doing its dredging, while the
21 sampling boat could be in here collecting core samples.
22 **MR. HARTMAN:** The data you provided us on the

1 colored areas, like dates for different CUs and the
2 different passes, they seem to indicate there was quite a
3 few occasions where you would be digging the upstream area,
4 upstream left bank area, and then you would be digging the
5 next area, it would be the downstream right bank area, and
6 then you'd go back to the upstream right bank area. It
7 wasn't a continuous operation from upstream to downstream
8 then.
9 **MR. INGLIS:** Okay. I mean, I can't comment on
10 that not knowing the specific example, but, as I described,
11 there were other considerations that go into it.
12 **MR. HARTMAN:** Yeah.
13 **MR. INGLIS:** One of the things, there was also
14 cultural resources. There were certain areas on the banks,
15 especially on the East Channel/Rogers Island where we would
16 discover something. That area would become cordoned off.
17 We would not be allowed to go into that area.
18 The one example I am thinking of is in CU-3 and I
19 think CU-2 as well, but there was an area upstream that was
20 cordoned off, no dredging allowed until the archeologist had
21 gone in and identified was there really a cultural resource
22 there that had to be protected. Once that investigation was

complete, it would be opened back up to us, and then we would have to go back and dredge it.

If that was upstream, that is just one of -- it happened, you know. But the goal was not to dredge upstream to downstream if we could avoid it -- I'm sorry -- other way, downstream to upstream.

MR. THOMPSON: Let me follow up on that, then, Andrew.

Perhaps maybe you can comment real quickly on the conditions of CU-5 where, in fact, you did go downstream to upstream. Based on the bucket prints you provided us, you started downstream and then worked all the way upstream on your lanes. Was there something unique there that would help us understand that particular one?

MR. INGLIS: Going there.

[Laughter.]

MR. THOMPSON: Well, you can answer me later. That's okay.

MR. INGLIS: Yeah, we could take a look at it.

MR. THOMPSON: All right, thanks.

MR. INGLIS: I mean, obviously, CU-5 was a very strange one because of the rock, but I would have to take a

1 look back and get back to you.

2 **MR. THOMPSON:** My only guess when I looked at it

3 was possibly navigational issues. I wasn't sure of scows.

4 **MR. INGLIS:** You are correct. The issue in CU-5

5 was depth, especially on the western lobe. We had to dredge

6 our way into that location.

7 **MR. THOMPSON:** Okay.

8 **MR. INGLIS:** So, yeah, thanks for reminding me of

9 that. That was the issue there.

10 **MR. THOMPSON:** Thank you.

11 **MR. INGLIS:** Next slide.

12 So, adaptive management, I think we had an

13 incredibly involved and managed process throughout the whole

14 of Phase 1. We met with the contractor, EPA, every morning

15 at 7:30. We would meet again with them at three o'clock.

16 We would meet with EPA at four o'clock. Very often, we

17 would meet with the contractor again at five o'clock.

18 The whole purpose of those meetings, we weren't

19 sitting around and talking about baseball. We were talking

20 about the situations that were happening, sometimes

21 unfolding as we were sitting in the meeting. We were

22 reacting to information, and a lot of that resulted in all

1 the different adaptive managements that you see here.
2 Just highlighting a couple, these are the big ones
3 that we could think of last night. Bouncing hot and cold
4 PCB areas to minimize air and resuspension exceedances. Air
5 exceedances were a continuous issue during the dredging
6 project. In areas especially where you had low flow, like
7 in the East Channel or in CU-18 behind the sheet pile, it
8 was very difficult to control the air.
9 Something that hadn't been thought of before we
10 started but was developed based on feedback from the
11 dredging operators and also from our construction manager
12 was if we could balance dredging really hot areas within a
13 CU with really cold areas in a CU. Then we could minimize
14 the concentration of PCBs in the barge because it really
15 seemed as if it was the PCB content in the barge that was
16 triggering the air issue.
17 What we would do is we would generate
18 concentration maps based on the SSAP core data and then also
19 on the residual core data. We would provide those maps to
20 the dredging operators and to the dredge captains, and then
21 the process was either they would fill half-a-scow in the
22 same area that had a concentration greater than 250, and

1 then the remainder of the scow would be filled in an area of
2 a concentration less than 250. That was actually one of the
3 more effective BMPs that we had for addressing air. Even
4 though it still didn't stop the exceedances, it at least
5 reduced the total levels quite a bit.
6 We had a similar practice for the 500 protocol
7 standard for the resuspension. Obviously, it doesn't affect
8 your load, but you can by balancing the amount of time that
9 you are working on a given day in a CU with really high PCB
10 values with an area of a CU with low PCB values. So we
11 found we can affect the resuspension. There was nothing
12 anything we did radically.
13 We used the analogy. It was like the proverbial
14 5-year-old with the peas on the plate. You push around the
15 peas, but, at some point, you've got to eat them. So we did
16 find ourselves at a certain point where we used up all our
17 cool areas, and all we had left with hot areas.
18 Again, getting back to the upstream/downstream,
19 when you begin to affect these types of procedures, you are
20 starting to affect the ability to stick with a very
21 regulated, redesigned dredge plan.
22 Access dredging was another one. CU-1 has come up

1 a lot in this kind of rear-view mirror analysis of why
2 didn't GE do access dredging. When we first started in
3 CU-1, the expectation is that we would get about a foot and
4 a half of material, and this was a CU that had an average
5 water depth of about 4 to 5 feet.
6 So, when we came into this, CU-1 was always going
7 to be this very shallow draft CU. The fact that we ended up
8 taking over 9 feet of material out there and ended up with
9 an average draft of about 14 feet was obviously not known
10 when we started. Had we known that, clearly we would have
11 done access dredging.
12 Instead, what happened is with the incremental,
13 each residual core and group coming back, we said we were
14 going to have to dredge more. We even did access dredging
15 based on that information. So, in CU-1, we actually did
16 four separate access dredging attempts, each time to be able
17 to get scows into the depth that we thought we had to reach.
18 The fact that when we got to that level, we still
19 weren't there, it is tough to accuse that we should have
20 known that before and we should have done it, the access
21 dredging, before.
22 The point is, though, that when we did have to do

1 access dredging, we did it. It was adaptive management. It
2 was successful.
3 **MR. MAGAR:** In your mind, as we go into Phase 2,
4 then, what do you see as changing?
5 One of the themes or questions here is how can we
6 approve and learn from Phase 1. So are you able to
7 anticipate a need for access dredging better now in Phase 2,
8 or do you see this as only in the adaptive management
9 approach? Clearly, in hindsight, it is easy to look back in
10 Phase 1 and know that you are learning on the job, but now
11 we know a lot more about this site.
12 **MR. INGLIS:** Right. Victor, I think that is a
13 good characterization of maybe one of the differences
14 between how GE and EPA saw this.
15 We were right there in the thick of it. So our
16 learning and our adaptive management, the improvements that
17 we discovered during the process, they are here. They are
18 embodied in the work that we did, and, obviously, those are
19 changes that we bring forward in a future design. Whereas,
20 EPA is more taking a sort of rear-view learning process,
21 where after the fact they have analyzed all this data and
22 said, "Well, aha. If they had done access dredging, they

1 could have production in CU-1."

2 **MR. MAGAR:** Let me be more specific in my

3 question. Have you identified areas that require access

4 dredging in Phase 2?

5 **MR. INGLIS:** There are some limited areas, but

6 based on the current coordinates, access dredging is

7 warranted. For the most part, it is going to be an adaptive

8 process based on what we see.

9 Another issue that I've go tot think about access

10 dredging is that we discovered that vessel-related

11 resuspension is an issue. Even though we custom-built a

12 fleet of shallow-draft tugboats, we still discovered pretty

13 early on the first couple of weeks that in the shallow

14 areas, the tugboats do resuspend sediment. So we changed

15 our whole operations to not using tugboats in shallow areas.

16 When you think about access dredging as being this

17 way of getting into shallow areas, what are you actually

18 doing? Are you dredging an access channel into this shallow

19 area? In which case, how do you get that? This is just so

20 you can get a deep draft scow in there. How do you do that

21 with your tugboats and not have vessel-related resuspension.

22 So it leads you down this path where you have to

1 have the whole area less than, say, 7 foot of water depth,
2 so you minimize vessel-related resuspension. Now you are
3 not doing access dredging for a channel. You are doing
4 wholesale dredging across that area, and the volume numbers
5 already are high.
6 Again, it is not as simple as just saying if you
7 did access dredging, you could move those scows to a much
8 deeper level and you could up your production.
9 **MR. KRUPPENBACHER:** If I could jump in on that a
10 little bit too, Victor. I am Tim Kruppenbacher.
11 In terms of carrying things forward to Phase 2, I
12 think as you can see from some of the highlights that Andrew
13 has touched on, there is a lot of learning that was done
14 through Phase 1 that we are capturing going forward in terms
15 of what has been incorporated for suggestions for a Phase 2.
16 We are open -- just as we were during the Phase 1
17 process and what happened on a daily basis, we are open to
18 any practical recommendations that comply with the safety
19 requirements we are looking for, the environmental
20 constraints that we are under, and meet the archeological
21 requirements that we have associated with the project. We
22 are look at incorporating those and open to any of those

1 other items that are practical.

2 As it relates specifically to the point you raise

3 about access dredging, yes, there is access dredging that is

4 recognized, and as Andrew points out, it is going to be

5 something that is done in an adaptive management basis as

6 well, primarily due to flows because, depending on what time

7 of year we reach certain areas or the draft changes in those

8 areas, it is a seasonable requirement as well. That is

9 going to be something that has to be adjusted as you go.

10 **MR. BRIDGES:** I was going to ask a question,

11 taking from Victor's, about what plays into the decision

12 about how many dredges do you have going on.

13 This is a very complicated optimization problem,

14 and I am very suspicious of anybody who thinks they have one

15 or two quick fixes for solving this complicated optimization

16 problem.

17 What the decisions seems to be, you know, you have

18 the complex optimization problem with lots of different

19 constraints on it, but it appears really that what you are

20 optimizing for is a production rate.

21 I am reminded of an expression somebody once told

22 me that you can't get a baby made in one month by putting

1 nine guys on the job.

2 [Laughter.]

3 **MR. BRIDGES:** What did you learn in Phase 1 that

4 would translate to Phase 2 in terms of how many dredges and

5 CUs you can be doing at the same time within this

6 optimization problem you have?

7 **MR. INGLIS:** I will let Tim answer that one.

8 **MR. KRUPPENBACHER:** Tim Kruppenbacher.

9 Todd, first of all, to address Phase 1, there was

10 a logistics model that was developed that simulated a lot of

11 the processes that would have to happen for cycling of the

12 locks, cycling of barges, cycling of transit times, things

13 like that, as well as unload times. That was used as a

14 basis for what the requirements would be. This was based on

15 a target of 265,000 cubic yards.

16 During the procurement process, worked with the

17 contractors to look at what they felt from a resourcing

18 standpoint was required, truth-tested that against the

19 logistic model, and that ultimately determined the amount of

20 equipment that we had out on the project that the contractor

21 brought to Phase 1.

22 It was somewhat of an iterative process, and it

1 looked at platforms and dredges that could start out in
2 debris removal, convert to dredging, and then convert to
3 backfill. So it is complicated just from the transitions
4 that happened to the resources that are required over the
5 course of the season.
6 Going forward to Phase 2, some of the things that
7 have been identified from that is we can refine the model
8 that was used based on what we have seen from production.
9 You can look at what is a 385 truly capable of, what is a
10 320 with a 1-yard bucket capable of. So we can look at
11 those.
12 We also have a better understanding of the cycling
13 of a CU, and that gets back to some of the comments that
14 have been raised, relative to the residual standards and the
15 time frames and closeout and how do you go through that
16 process because those all enter into whether you have got
17 resources that are sitting on the sidelines waiting for the
18 next area to be open. This upstream, downstream, and
19 contiguous CU constraints also play into that. So those are
20 factors that are all being looked at.
21 The short answer to the equipment is if we are
22 constrained to two to three contiguous CUs, we don't need 12

1 dredges out there. You can't put them all in -- you know,
2 you can't field them all, and we don't need as many hopper
3 barges out there either. That is really what it comes down
4 to.
5 **MR. BRIDGES:** Right. I guess one final comment on
6 this point -- I guess I made this comment in our last
7 meeting -- that, in my mind, this is a remediation project,
8 not a dredging project, and in terms of what you really want
9 to optimize, I would want to factor in the benefits that
10 these standards are intended to achieve. You want to really
11 have as fast a recovery in the river as can be achieved, and
12 it doesn't make sense to me on the surface that 5 years,
13 which is the basis for a production schedule, with all these
14 other things going on is necessary -- is necessarily
15 congruent with the idea of maximizing recovery.
16 That is kind of where my thinking is getting to
17 because -- and trying to understand the relationship among
18 these standards which have as their basis achieving some
19 objectives for the project.
20 **MR. FUGLEVAND:** Could I suggest that before we go
21 down a lot of these philosophical discussions that we let
22 Andrew finish? Because that will give us kind of a better

1 basis to have the conversation, unless you have got
2 clarifying questions for Andrew, but let's let him kind of
3 finish. Then we can get into the discussion.
4 **MR. INGLIS:** Thanks, Paul.
5 Actually, at this point, I am going to turn it
6 over to my colleague, Scott Blaha. He is going to describe
7 some of the adaptive management that was done at the
8 processing facility.
9 **MR. MAGAR:** Before you do that, can you back up a
10 couple slides to where you showed the cut depths, this
11 graphic, and the one that showed the percent levels?
12 Yeah. Can you talk about the decision about the
13 size of the bucket? Because that seems to be a prevailing
14 issue. I know that draft was one issue, but,
15 hypothetically, is a 1-cubic-yard bucket at 85-percent full
16 any better than a 2-cubic-yard bucket at 50-percent full?
17 Is that part of your thinking? What is driving that, if you
18 could have gone two cuts instead of what is now four cuts
19 for the same amount, or could you have?
20 **MR. INGLIS:** I love to talk about buckets.
21 [Laughter.]
22 **MR. INGLIS:** Jennifer, can you go to the

1 production slide at the table? It is in the backup charts.
2 Victor, what I have, it slightly kind of compares.
3 Really, the two buckets that we had on site were a
4 5-cubic-yard and a 1-cubic-yard. You can see that it
5 actually represents two ends of a scale, but then when you
6 consider that typically dredging buckets are 5 cubic
7 yards-plus, they are both considered small buckets.
8 The contractor came up with a 1-cubic-yard and the
9 5-cubic-yard because they really -- when we set out on this
10 journey, we thought we'd have a deep cut, and then we'd have
11 a generated residual cut. So we had the 5-cubic-yard
12 buckets for the deep cut, and the 1-cubic-yard was optimized
13 for the 6-inch residual cut.
14 Within 2 weeks of starting, we discovered that we
15 couldn't use large dredges in the West Channel because being
16 shallow and being this vessel into resuspension, we could
17 only use small dredges. So all those 320s that were going
18 to be used at different parts of the project for this thin
19 cut, they ended up dedicated to shallow areas, and we then
20 had to use the 5-cubic-yard buckets in all the other areas.
21 Where we started off with how we defined our
22 buckets and where we ended up actually using them is

1 somewhat different.

2 This tries to kind of show a little bit about the

3 comparison between the 1-cubic-yard and the 5-cubic-yard.

4 Getting to the fill factors, this is a similar cut.

5 Let's just look at the case with bites as a

6 standard: 1 cubic yard is 77-percent fill factor, 5 cubic

7 yards is 47-percent fill factor. These are averaged for the

8 number of buckets they had to take in that location. So, on

9 the face of it, you could say, hey, from a fill factor

10 perspective, the smaller bucket is doing a lot better;

11 that's the one you should use. Well, you got to play it

12 out.

13 That actually removed 1.7 cubic yards of material;

14 whereas, your 5 cubic yards removed 5.1 cubic yards. The

15 area covered was 32 versus 91, so now you're at a factor of

16 3 here. The number of buckets you had to take were three to

17 get that. Here, you only have to take two buckets. Total

18 cycle time was 564 cycles. Here is 408. So, when you get

19 down to the bottom lane, even though you are only getting a

20 half-filled bucket on average, you are getting 45 cubic

21 yards an hour; whereas, with this situation, you are getting

22 considerably better fill factor but getting 11 cubic yards

1 an hour. When you take a look at the square footage, it is
2 similar, 800 versus 200.
3 One thing we learned is that the 5-cubic-yard
4 bucket was actually a more productive bucket. You were able
5 to reach further with it because it was on the bigger
6 machine, and it became almost an all-purpose bucket.
7 Whereas, when we first started, we had this idea that the
8 5-cubic-yard would be dedicated to deep removal, and we
9 would use the 1-cubic-yard for this kind of touch-up or thin
10 removals.
11 Does that answer your question?
12 **MR. MAGAR:** Very much. Yeah. Thank you.
13 **MR. FUGLEVAND:** Are you done talking about
14 dredging now?
15 **MR. INGLIS:** Yes.
16 **MR. FUGLEVAND:** So, maybe, before we switch, we
17 could ask a few more questions about dredging, before we
18 switch?
19 **MR. INGLIS:** Can I go sit down again?
20 **MR. HARTMAN:** Yeah. This is Greg Hartman.
21 **MR. INGLIS:** Go ahead, Greg.
22 **MR. HARTMAN:** The question, go back to the last

1 slide you showed up there, if you could, real quick.

2 **MR. INGLIS:** Which slide was that?

3 **MR. HARTMAN:** You had a list for adaptive

4 management, I think.

5 **MR. INGLIS:** Okay. Adaptive management.

6 **MR. HARTMAN:** The dredging in bedrock and the clay

7 areas.

8 **MR. INGLIS:** Yeah.

9 **MR. HARTMAN:** Look at the clay areas simply for a

10 second. With your experiences, do you feel now that you

11 will go out and dredge that when you hit a clay area? I am

12 assuming this is the glacial clay that's clean. It is a

13 clean material.

14 **MR. INGLIS:** Right.

15 **MR. HARTMAN:** So, when you first hit that, you

16 will be able to actually see that in the bucket? Would that

17 be a pretty obvious conclusion?

18 **MR. INGLIS:** Yeah. The clay, from a dredging

19 perspective, fortunately we had good production with clay.

20 The processing site where the plan was not

21 designed to handle clay, Scott can talk to that in much

22 greater detail than I can.

1 I think the adaptive management of the clay was
2 more that when we got into a situation where we were in a
3 clay area, it's how did we respond, you know, getting EPA
4 quickly on the dredge, getting confirmation that, yes, we
5 are seeing clay, how do we then -- what do we do next.
6 The design just said, well, when you encounter
7 clay, you stop dredging, but what does that mean? Does that
8 mean that you stop dredging in that whole area? In which
9 case, how do you have any proof that the remaining part of
10 that area has clay?
11 So what we developed as an adaptive management
12 response is if we hit an area that was clay, then we would
13 get an EPA observer on board. We would have the
14 construction manager observer on board. We would confirm
15 there was clay, and then we would move through the remainder
16 of the area, taking sample buckets to the CM and EPA's
17 desire to confirm that it was a clay area. Typically, what
18 would happen is we would actually take a bucket in every
19 location, but at least we were in a process now where
20 everyone was on board, everybody understood what they were
21 seeing, so when at the 4:00 p.m. meeting that afternoon, we
22 would present a map showing this is a clay area, we all had

1 concurrence, and it wasn't, "Well, can you go back and prove
2 that?" So that was adaptive management there.
3 **MR. FUGLEVAND:** I've got a question, Andrew. If
4 you could move back to the slide right at the beginning that
5 showed the computer image and what the operator was showing,
6 and it shows the bucket print?
7 If you can, kind of walk me through. First of
8 all, when an operator has finished a set and is going to
9 move to a next set, how did that happen?
10 **MR. INGLIS:** Each dredged in two spots. We didn't
11 have walking spots. So there would be an attending tug that
12 would be attached or tied up alongside the dredge. So what
13 they would do, typically, if they were in a low flow area,
14 they would lift up their spuds, and they would float down to
15 15 feet with the tug, just nudging it here, nudging it
16 there, to make sure. Then they would put their spud down,
17 and they would reset. Although it gave us some concern
18 thinking about it, it actually worked very well.
19 **MR. FUGLEVAND:** In high flow areas?
20 **MR. INGLIS:** In high flow areas, the tug would
21 have -- sometimes they would also been a carpenter barge or
22 a trubolt to be on the other side to be able to do a better

1 job of keeping it online.

2 **MR FUGLEVAND:** And could you talk to us a little

3 bit more about what were the difficulties presented during

4 dredging from high flows?

5 **MR. INGLIS:** When we got a real high flow

6 situation, it was pretty simple. We just shut down.

7 The problem on the river that we discovered early

8 on is that with all the upstream dams, we have this extreme

9 fluctuation of flow, and it can occur within a 30-minute

10 basis.

11 To give you an idea we could go from 2,000 CFS to

12 6,000 CFS in 20 minutes, CFS being cubic feet per second,

13 and how that translates into water levels, that is a

14 4,000-CFS jump. That is about 1.5 feet. So, suddenly, you

15 could be 1.5 feet deeper, and, equally, you could be 1.5

16 feet shallower.

17 That fed into some of the concerns about loading

18 barges. When you are loading your barge, you aren't sure if

19 -- you didn't want it to run aground, right? So you had to

20 be conservative to make sure if the flow suddenly dropped,

21 you weren't going to be caught out.

22 There was no way of getting advanced warning.

1 Like so many things in our water world, these dams are
2 controlled from a centralized control station in Canada,
3 where there's two operators that control over 30 dams. They
4 are just switching those dams on and off based on the price
5 of electricity. So there is nobody that's there that can
6 say, "Hey, guys, we're going to start releasing." They do
7 it, and that's how they've done it, and there's no
8 obligation to do any reporting.
9 We would be hit with that extra flow or that
10 sudden loss of flow within minutes. So that was the bigger
11 issue.
12 **MR. FUGLEVAND:** Why would you shut down in high
13 flow?
14 **MR. INGLIS:** Safety was the primary driver. When
15 we first started out on the project, 10,000 CFS was the flow
16 limit, and that was really driven by the safety associated
17 with small boats, because you got to keep in mind that as
18 well as all the tugs and dredges, we had a flotilla of
19 sampling boats, survey boats, crew boats, inspector boats.
20 As we progressed through the first month, when we
21 got a better understanding of this flow and vessel-related
22 resuspension, we established other limits that were more

1 dealing with resuspension than they were with safety. Where
2 that ended up is that in the West Channel, I think it was
3 8,000 CFS became a point when we stopped dredging. What
4 that reflected was that at that flow, we felt we couldn't
5 move vessels or dredge without resuspending too much
6 sediment.
7 **MR. FUGLEVAND:** Thank you.
8 So another question is once the dredge is set in
9 place, how many buckets could the dredge reach? I guess it
10 is different, 385 versus a 320, but in a given set, what
11 kind of footprint could the dredge typically cover?
12 **MR. INGLIS:** Going from memory here.
13 Tim, do you remember?
14 **MR. KRUPPENBACHER:** I don't.
15 **MR. INGLIS:** For the big bucket, I think it was
16 8-feet wide by about 15-feet long. So there's approximately
17 six buckets across the lane, and that's from memory. I can
18 confirm that.
19 **MR. FUGLEVAND:** But six-buckets wide? And can you
20 go out how many buckets in front of the dredge?
21 **MR. INGLIS:** Typically, they would just do one.
22 **MR. FUGLEVAND:** They would just do one. So they

1 would do one width of buckets, and then they would step
2 ahead, so like stepping 15 feet at a time?
3 **MR. INGLIS:** Right.
4 In some situations, they would reach out farther.
5 For example, if they were adjacent to a really shallow
6 area, they would spend extra time to reach out, go to the
7 limit of the reach of the claim, but, typically, they would
8 just do one.
9 **MR. FUGLEVAND:** Okay.
10 **MR. HARTMAN:** Real quick, you were saying the
11 overlap was 20 percent.
12 **MR. INGLIS:** Correct.
13 **MR. HARTMAN:** That was X and Y?
14 **MR. INGLIS:** Yes. Yep.
15 **MR. HARTMAN:** As you advanced, were you advancing
16 by digging a slope or just a straight cut?
17 **MR. INGLIS:** I'm sorry. Say that again, please?
18 **MR. HARTMAN:** When you advanced, were you
19 advancing, were you digging a slope basically -- you only
20 had one set for each sweep; is that right?
21 **MR. INGLIS:** Yes.
22 **MR. HARTMAN:** I guess the question is, as you

1 advanced into the bank, were you attempting to cut a slope
2 as you advanced, or was it actually just a vertical?
3 **MR. INGLIS:** It varied. Again, that is where we
4 go back to the discretion of the operator. We tried to stay
5 out of that to the degree we could and tried to specify what
6 an operator should do because the situation is different.
7 If you were in that debris field in CU-1, you
8 could almost have a near-vertical kind of bench. Whereas,
9 in CU-18, with a very softer sediment, it would run in on
10 it. So they varied that. Once again, they were focused on
11 minimizing residuals, so they were really looking out.
12 That is where that kind of discretionary cleanup
13 bucket would come in. If they felt they were in an area
14 where they were getting run-in, meaning that sands or
15 whatever were running into that area, even though their
16 computer was telling them that they had made grade, they
17 could go down for that additional cleanup bucket. If they
18 came up with a lot of material, they would stay there. They
19 wouldn't move on.
20 **MR. HARTMAN:** Final question. Your setup here and
21 actually that picture I look at right next to you, the
22 picture there, basically you could only put your hull barge

on one side of the bridge --

MR. INGLIS: Correct.

MR. HARTMAN: -- at all locations?

MR. INGLIS: The Flexifloats were great because we could change the configuration of the dredge, and we could easily get them into the canal before the canal opens. So, from a mobilization perspective, it was fantastic.

But what Greg is really talking about here is the spud on a Flexifloat barge is on the outside of the barge, and what that means is that you can only land a scow on the port side of the barge. So that was a limitation that we had to deal with.

MR. FUGLEVAND: So any other questions on dredging before we move on?

MR. SCHROEDER: What was the size of the 1-cubic-yard bucket?

MR. KRUPPENBACHER: 9 feet by 3 feet, approximately. Tim Kruppenbacher again.

MR. SCHROEDER: And the practice was the same practice then?

MR. INGLIS: Yeah.

MR. SCHROEDER: The same 20-percent overlap and

1 such?

2 **MR. INGLIS:** Correct.

3 **MR. SCHROEDER:** Okay.

4 **MR. INGLIS:** Anything else?

5 **MR. FUGLEVAND:** No, that's good. Thank you.

6 **MR. BLAHA:** Good morning. I am Scott Blaha with
7 GE, and I am the processing facility manager. I am just
8 going to talk off of one slide, and I will field any
9 questions that you may have.

10 Through the planning process on this project, it
11 was apparent that unloading barges quickly and getting them
12 back to the dredge sites as quickly as possible was going to
13 be a key to productivity. Andrew mentioned this logistics
14 model that looks at barge movement, but, obviously,
15 unloading at the facility is something that that was one of
16 the key factors.

17 That said, we were planning on unloading into a
18 size separation plant, which the first step in that plant is
19 a trommel.

20 In the first week of operation, we kind of learned
21 that each barge had a history, and our contractor would
22 pretty much classify the material in the barge and called it

1 either a trommel barge because it needed to be loaded into
2 the trommel, a stone barge because it had very coarse
3 free-draining material, and we discovered that that material
4 didn't need to get size-separated, but it could be directly
5 unloaded into a truck and brought back to our railyard and
6 loaded into railcars directly. Then the third
7 classification was a clay barge, which were barges that
8 contained clay primarily from residual passes that were done
9 in areas where we had taken out sediment to clay, but there
10 was a residual layer around the clay that needed to come
11 out.
12 So there is a handful of adaptive management
13 measures that we did to improve barge unloading. Through
14 the course of the season, we did see an increase in barge
15 unloading rate, although it was dampened by additional water
16 that we had to deal with due to air mitigation and then also
17 the clay.
18 The picture here, down at the bottom is a barge
19 that has got coarse material, has been de-watered. You can
20 see the pipe there. Barges would come in about, on average,
21 50-percent water, 50-percent sediment, which was much higher
22 than we assumed in the design, so we had to adapt and deal

1 with that extra water.

2 The specifications also called for that the barge

3 needed to be unloaded to a 6-inch level of sediment in the

4 barge, and that is because, as Andrew had said, we had some

5 very shallow draft areas. We didn't want that heel that was

6 left in the barge to cause additional draft, as that empty

7 went back. So we had a pretty low level that we needed to

8 achieve in the barge, 6 inches on average at the four

9 corners.

10 So, in order to do that, when we got down to 2

11 feet, 18 inches of sediment in the barge, we dropped this

12 bobcat down there, and it pushed the material into a pile,

13 so that the unloader could remove it. We were using a

14 PC-1250 unloader with a 5-cubic-yard bucket.

15 One of our key adaptive managements was kind of

16 recognizing the advantage that this direct offloading had,

17 and we could directly offload 50-percent faster from those

18 stone barges than we could unload into the trommel. So that

19 was a big benefit to us, and that was actually 50 percent of

20 the material in Phase 1.

21 What we learned in Phase 1, as we moved downstream

22 from, say, CU-1 to CU-4, CU-1 was about 90 percent direct

1 offload, 10 percent trommel. When got into CU-4, it was
2 about 20-percent direct, 80 percent. It was similar down
3 the West Channel and down in the West Griffin Island area.
4 The majority was feeding the trommel, something about 70
5 percent or so from CU-17 and 18.
6 The other adaptive management I would like to
7 highlight is the barge priorities. That was instituted as
8 an air mitigation, air emissions mitigation, where Andrew
9 talked about where we are dredging. In some of the higher
10 level PCBs, we saw air exceedances in the dredging corridor.
11 In order to try to minimize that, we would prioritize those
12 barges, get them up into the unloading wharf. We jumped the
13 queue, so they would go directly to unload, go directly to
14 de-watering and then unloading and try to get that material
15 processed and in the enclosure in the piles as quickly as
16 possible.
17 The other time that we prioritized barges is when
18 we were dealing with clay. Clay became our least priority,
19 but we had to deal with it sometimes.
20 The processing facility was not designed to
21 process clay. So the problems we had was in size
22 separation. Also, in the gravity thickener, the clay did

1 not settle in the gravity thickener. So, after an hour and
2 a half of unloading a clay barge, we would have to stop,
3 move that barge out of the way, bring in one of those stone
4 barges, do a direct unload, so we could remain productive
5 while the thickener was stabilizing, and then after that
6 barge was unloaded, we could bring the clay barge in and
7 finish it.
8 So those are the two I wanted to highlight, and I
9 will take any questions about unloading or processing that
10 you might have.
11 **MR. MAGAR:** Who is distinguishing between how
12 these are offloaded? Is this just visual? Who is out there
13 making these decisions?
14 **MR. BLAHA:** It was pretty much our contractor. It
15 was done visually and then confirmed analytically, and after
16 a while, like I said, we were keeping track of the history.
17 So we knew where that barge was stopping. Like Andrew
18 said, sometimes it would stop at three different dredge
19 locations. So each barge was somewhat unique, but the
20 contractor got very good at visually looking at it and
21 saying this is pre-draining material that can go directly.
22 We would grab the sample, run that on site, and test for

1 solids. If it was 80-percent solids or greater, it was
2 usually the right call, and they made the right call 99
3 percent of the time.
4 What was pretty frequent during the course of the
5 operation, early on it was either all direct or all trommel.
6 We also got very good at recognizing within the barge,
7 different material types, and could do a mixture. So we
8 would sometimes take that bucket and put it in a truck and
9 then finish the barge into the trommel, but it was pretty
10 much done visually.
11 Obviously, de-watering the barge, so you could
12 actually see the material, is key.
13 **MR. HARTMAN:** Greg Hartman.
14 Was all the de-watering done at the offloader?
15 **MR. BLAHA:** It was done at a separate station.
16 This is the de-watering station here, and then that barge is
17 at the offloader, so most of the de-watering was done in
18 advance of the unloader. There was also a Godwin pump at
19 the unloader that was there to either finish the job or,
20 once we got down to the bottom, it needed to do the cleanup
21 and get the extra water that was off the bottom out. So we
22 did it at both locations.

1 **MR. FUGLEVAND:** When we were talking yesterday,
2 the discussion we had about the possibility of increasing
3 production in Phase 2 if load standard didn't restrict it,
4 there was a mention that GE had ideas on how to increase the
5 productivity of the offloading. Could you talk to that?
6 What are some of your ideas of how you would increase
7 productivity?
8 **MR. HAGGARD:** Yeah, let me. This is John Haggard.
9 Just to provide some context on that, one of the
10 things we have looked at is looking at everything together,
11 what is happening in the river, the constraint that we may
12 have with the lock system also, how much we can push through
13 the lock system, and then what does that tell us about what
14 we can theoretically do or what we might need to do at the
15 processing facility itself. We didn't just want to
16 sub-optimize or didn't think we should on the processing
17 side, and we wanted to look at the whole system and how it
18 operates together.
19 We look at it, I think, on the lock system side
20 and what we are hearing from the Canal Corporation, maybe we
21 can get about 75- to 100,000 cubic yards a year through that
22 system. Then the question comes back, if we are operating

1 --

2 **MR. FUGLEVAND:** Per month?

3 **MR. HAGGARD:** About 75- to 100,000 cubic yards

4 over a 30-day period.

5 **MR. FUGLEVAND:** Yeah.

6 **MR. HAGGARD:** Then, if we're in the river and we

7 are actually pulling out that rate of material, are we going

8 to have problems with the resuspension standard of 500? We

9 are hearing that 500 may not be an issue going forward, but

10 that is what we looked at before is that that could be a

11 real constrain on our ability to pull up that much more

12 material.

13 Theoretically, I think we can increase to the 75-

14 to 100,000 cubic yards, and, Scott, maybe you want to touch

15 on the types of things we could do to get to that level,

16 because I think that may go to your question, Paul.

17 **MR. BLAHA:** What we learned in Phase 1 is that we

18 could directly offload a barge at an average of about 150

19 cubic yards an hour. When we were feeding the trommel, it

20 was about 150 cubic yards an hour. We are looking at -- and

21 primarily because there is a constraint in the way that we

22 feed the trommel, as a 12-inch -- call it a "grizzly" on the

1 top -- that slows the operation down. So we are looking at
2 modifications to that grizzly unit.
3 That said, the best we are going to be able to
4 achieve is what, we think, we observe doing direct unload to
5 truck. We are not going to get any faster than that, so
6 that is 150 cubic yards an hour.
7 We are looking at a variety of ways of improving
8 the rate that we can feed the trommel.
9 **MR. FUGLEVAND:** Is that 150 cubic yards per hour
10 when they are working? So, in a 24-hour day, you would work
11 how many hours, and so how many cubic yards a day optimum?
12 **MR. BLAHA:** Yeah. We're looking at about a
13 60-percent up time or 60-percent effective time.
14 **MR. FUGLEVAND:** So that works to how many cubic
15 yards per day? 24 times .6 times -- just over 2,000 yards a
16 day. Does that sound right?
17 **MR. BLAHA:** That sounds right.
18 **MR. FUGLEVAND:** So that becomes a controlling
19 factor in production. Just over 2,000 yards a day, if you
20 ran that offloader 7 days a week, maybe dredging 6 days a
21 week, so 30 days, 60,000 yards is -- it is somewhere in the
22 realm of kind of where we are sitting right now, do you

1 think?

2 **MR. HAGGARD:** Scott, we are looking at how many

3 days per year, workdays, about 120 a year?

4 **MR. BLAHA:** 120, yeah.

5 **MR. HAGGARD:** So that would get us about 240,

6 which is about what we accomplished, plus or minus, this

7 year.

8 I think what Scott was talking about -- and we

9 have been looking at some other options to increase

10 offloading, potentially adding direct offload area separate

11 from the trommel area to try to raise that. So those are

12 the types of things we are looking at for design to see if

13 we can actually work through that bottleneck.

14 **MR. BLAHA:** Depending where we end up with the

15 other constraints, resuspension being the ultimate one --

16 John talked about the lock system -- then we look at can the

17 processing facility deal with sediment coming to us at that

18 rate, and if not, then at that point, we would consider a

19 second unloading station.

20 One of the limitations in the current

21 configuration is that we can't direct unload when we are

22 feeding the trommel because of safety reasons, kind of

1 swinging that bucket. You need to swing it by the trommel.
2 So we would look at a way to be able to directly unload
3 while we can do maintenance on the trommel, getting set up
4 for the next barge on the trommel. It takes about an hour
5 to index an empty barge out, bring a full one in, and get
6 set up for the next barge. Indexing is one of the factors
7 that comes into the 40-percent non-effective time.
8 **MS. HOLLAND:** I think EPA really wants to add
9 something on this point.
10 **MR. FUGLEVAND:** We are going to finish with these
11 guys first, and then we will talk to you guys. I appreciate
12 you got a lot of input, but I think we want to finish this
13 discussion.
14 What I am hearing, then, I just heard that if you
15 optimize the offloading system as it is currently
16 configured, you are looking at about 250,000 yards a year of
17 system capacity, and then if it needed to bump to 400,000,
18 is that viable? Is there room at the site to provide
19 basically almost double the throughput or not?
20 **MR. HAGGARD:** That's what we are looking at in
21 design right now, and it looks like we would have room for
22 an offload area further up the canal where we've got a

1 lay-down area right now that is under liner. So that is one
2 of the areas we are looking at. We may have room to do
3 that. We will have to reconfigure some of the processes.
4 **MR. FUGLEVAND:** Because the productivity standard
5 gets to -- if we are looking at the full project of 2.4
6 million, we are looking at numbers -- and EPA has calculated
7 over 500,000 cubic yards a year, and your current system
8 looks like it is set up, optimized to about half of that.
9 So part of the issue that we have to consider in our
10 discussion is the ability to meet all the standards
11 simultaneously.
12 What I am getting a sense of right now is EPA
13 saying with current plant, you are about 250- to 280,000 a
14 year, and you are not sure on what it would take to get
15 beyond that.
16 **MR. HAGGARD:** We can agree on the 250 to 300. We
17 were able to accomplish that.
18 But I think the point on the interaction of the
19 standards is critical here, and that is where you get some
20 of the divergence of views, where the load standard here is
21 going to be critical for us, and at some point, how much
22 material can we really remove without tripping the load

1 standard. We feed that back into, okay, how much do we need
2 to process to get this done in 5 years.
3 That is why getting that load limit set and
4 getting that number is really critical, so we can really
5 figure out what to do on the processing side, what is really
6 required.
7 **MR. FUGLEVAND:** Again, I think what we talked
8 about yesterday, if the load limit for some reason went up
9 quite a bit, it would open up productivity, and whether or
10 not -- again, 12 dredges is a very complex system to
11 operate, but now the offloader is complex. I am just trying
12 to get a sense of if the load limit was released, was moved
13 up, what happens to the constraint on productivity, and is
14 there elasticity there, or is it because of physical
15 constraints, it is not purely elastic?
16 **MR. HAGGARD:** There are going to be other
17 constraints. A lock system is going to be one.
18 I think somebody touched on this yesterday, the
19 uncertainty. We learned a lot. Have we reduced all the
20 uncertainties? I think the answer is no.
21 Let me give you an example. We haven't touched on
22 the other end of this system, which is getting rid of the

1 material. We thought that was going to be the simpler side
2 of things, and it turns out that we remove
3 300-and-some-thousand tons of material. We were only able
4 to get rid of about 100,000 tons, and we are still trying to
5 ship off the remaining material this year.
6 If we were having to dredge again this year, we
7 would have had a real problem staging material and probably
8 couldn't have done it.
9 There are some additional uncertainties out there
10 that we are going to confront. Can we get 400,000 out
11 theoretically? Possibly. Are we going to be able to do it
12 within the load? No. Can we then squeeze it through, even
13 if we were able to get it through the lock system? There
14 are going to be other constraints. We are going to have to
15 work through that in design, but, again, I think it comes
16 back to let's figure out what the right load is here and how
17 do we prioritize and optimize this system the best to get
18 this material processed and off site.
19 **MR. FUGLEVAND:** Okay. Again, I don't hear you
20 saying if the load standard was increased such that we tried
21 to implement the productivity standard for the full volume,
22 which is around 500,000 yard a season. I don't hear you

1 saying that you can do it. I hear you saying that there is
2 a lot of "ifs" that are unresolved, and it is more of a
3 question mark right now of whether or not that could be
4 achieved on a river, a complex system, all the other issues,
5 some very real site constraints. I don't hear you saying
6 500,000 is a doable figure.
7 **MR. HAGGARD:** We haven't demonstrated that we can
8 do that, and, theoretically, we don't think we are going to
9 be able to do that.
10 We are not through design, but what we have seen
11 in some of the other constraints that are starting to come
12 forward, 500,000, 400,000, it is just not going to be
13 practical.
14 **MR. FUGLEVAND:** The other thing, if you could
15 address, the issue of the dredging season. The original
16 season and the original standards back in 2004 was for a
17 7-month program, as I understand. As you got into Phase 1
18 -- well, before you got to Phase 1, it was reduced, I think,
19 to 5.5 months, and that is where you got the
20 89,000-cubic-yard productivity.
21 Now you are talking after experience in Phase 1,
22 instead of 5.5 months, you are now down to more like -- I

1 think 5 months is 126 days. It is 130 days or something
2 like that. And you are talking now about 120 days, just
3 over 4 months, of a reasonable duration to plan for working
4 on the river. Could you speak to that 120 days, so we all
5 kind of understand the constraints? Because I know there
6 are constraints, but if you could explain those to us?
7 **MR. KRUPPENBACHER:** Paul, this is Tim
8 Kruppenbacher.
9 The season, first of all, is constrained by the
10 locks. The lock season is May 1 to November 15. So that is
11 a starting point.
12 As we found last year and as you can see from the
13 river flows, the first couple weeks of May are suspect right
14 off the bat, and we feel that it is not practical prior to
15 May 15th, to plan that period prior to May 15th, just
16 because of the high flows that are seen in that window
17 still.
18 If you go for a 5-month season or May 15th to Octo
19 15th, as we show there, 154 calendar days, that translates
20 into 128 work days.
21 When you look at the experience that we saw
22 relative to high flows and potential resuspension shutdowns

1 and other factors, the 120 days, as we show there, there
2 were 8 days that were taken out of that. This is important
3 to understand. This is for planning the work.
4 It is very unrealistic to plan for every day that
5 is available to be a workday, and that is really where that
6 120 comes from.
7 **MR. HAGGARD:** This is John Haggard.
8 A couple of other factors here, too, go back to
9 the operational constraints on the lock and the fact that
10 once we are done with the dredging itself, then we have to
11 complete the backfilling. So we have to have time for
12 backfilling also.
13 Also, from a safety standpoint, once we get into
14 the lighter parts of the season, now we are in the
15 conditions where our workers now have to be in cold weather
16 gear, in wetsuits, and it just becomes much more of a safety
17 problem, and we just can't do that.
18 The cold weather, safety problems -- and as Tim
19 said, any given year, some of the weather constraints are
20 unpredictable. You can put probabilities around them, but
21 one year, you may be okay on May 1st, working through early
22 May. The next year, we may not be able to work until June

1st, given the flows. What kind of assumptions do you make from a planning purpose?

In my personal view, you don't want to make overly optimistic assumptions on all counts that things are going to go really well and then you get out there and you are always behind. So we try to make reasonable assumptions. We use the experience we saw in Phase 1 to try to judge what is reasonable for Phase 2.

In Phase 2, we have worked much later, but part of our problem having to work much later is we had to, to close out these CUs. It wasn't because we wanted to. I know the canal system, they really were great to work with. They really helped us, bent over backwards with trying to keep the locks open. If it wasn't for the canal system working with us -- and I think you heard from them, they don't want to have to do that every year either -- we wouldn't have been able to finish this year.

It is a good balance. We might be able to squeeze more days in. We might get less days in. But, for planning purposes, the 120 fits pretty well.

MR. FUGLEVAND: In the 120 workdays, you have 22 maintenance days. Is that typically Sundays? You are

1 dredging 6 days a week, and the seventh day of the week is
2 for maintenance and that type of thing? Is that part of it?
3 **MR. KRUPPENBACHER:** That is correct, yeah.
4 **MR. FUGLEVAND:** My experience on a project like
5 this, it is so complicated, it's insane to ever think about
6 working 7 days. It is a death march that you never want to
7 go down because that seventh day gives you the ability to
8 handle all the surprises that happened that week, to run the
9 processing facility an extra day.
10 I would never think that it would even be worth
11 even thinking about seven days a week to run the dredging
12 operation. It is not reasonable. It's not doable. So I
13 agree.
14 And 120 days, as you laid it out, it makes good
15 sense to me.
16 **MR. BLAHA:** Paul, our Phase 1 experience, at least
17 that processing validates that we were planning on
18 processing Sundays. We ended up processing on 15 of the 22
19 Sundays, at least one shift, and we were running the plant
20 ragged and the men ragged at that point. So, from a
21 processing perspective, we need a shift on Sunday to do
22 maintenance and then have a second shift as a buffer for

1 productivity makeup.

2 **MR. FUGLEVAND:** The other experience I've had is

3 you work the people in the field, 12 hours a day, 6 days a

4 week. That is very demanding, and you start to pay a price

5 in productivity and safety.

6 We did a project where we worked 6 days a week, 20

7 hours a day. We worked the crews 10 hours, two 10-hour

8 shifts, and giving them a little extra time each day to kind

9 of drive home and get some sleep and then 4 hours a day to

10 get caught up. In actuality, on that project, our

11 productivity stayed close to the same because operators were

12 fresher and you didn't have the issues and that 4 hours a

13 day you use for the little maintenance stuff that you might

14 have had to shut down.

15 The idea of you don't maximize production going 7

16 days a week, 24 hours a day, actually there is a little bit

17 shorter time, you are looking at 6 days a week, I think it

18 is reasonable for productivity.

19 We have had a nice, long discussion on the issues

20 on productivity. Do you guys have any more slides?

21 **MR. BLAHA:** No, not on this planning.

22 **MR. FUGLEVAND:** So any other questions on

1 productivity?

2 **MR. SCHROEDER:** I have a question regarding

3 de-watering. Right now you are de-watering at the

4 offloading plant or where you go to offloading.

5 **MR. BLAHA:** That's right.

6 **MR. SCHROEDER:** What is the possibility of

7 de-watering at the dredging site, so that you don't

8 transport all the water, you can increase your load in the

9 barges, and reduce the number of barges and reduce lock

10 traffic and so on and so forth?

11 **MR. HAGGARD:** Yeah. I mean, there's two ways of

12 looking at that, and we'll examine it.

13 There is, okay, I pump the water off the top of

14 the sediment. Usually, it takes some time for that sediment

15 to settle in the scow before you want to decant it off, but

16 what do I do with it? I can pump it into another scow or a

17 tanker. You are still shipping the water separately. You

18 still have to manage that at the processing facility for

19 treatment. It still has to go through the lock system. So

20 you are not reducing the number of barges. You are just

21 reducing the distribution of what is in the barge.

22 The other option is that you actually treat the

1 water on the river or somewhere on the land close to where
2 you are dredging, and the downside of that is we are using
3 water to cover the sediment to evade air emissions. And
4 that is one of the key things we learned in Phase 1 is that
5 -- and it is something that EPA required in the end, that
6 when we are dredging high-concentration sediments, that that
7 sediment in the barge be completely covered with water.
8 So, if you pump the water down at the point of
9 dredging, now you have that barge goes to mooring, it is
10 waiting at the locks. It doesn't have to cover water over
11 the top of it.
12 **MR. HARTMAN:** Greg Hartman.
13 Just real quick, I realize we have that picture up
14 there on the dredging operation. I know, Andrew, maybe you
15 could just -- are they actually working there? It looks
16 like they are in the process of dredging. Just exactly how
17 are they moving their bucket in that situation? Is that an
18 actual dredging activity at that time?
19 **MR. INGLIS:** Yeah, I believe so, Greg. We did a
20 test of silt curtains in the south end of CU-18. So you can
21 see the silt curtain is clearly shown there, and to the
22 north, you can see the rig installing sheet pile, actually

1 maybe taking the sheet pile out. So they are doing a
2 redredge pass in CU-18, upstream of the silt curtains. I
3 think you can see the silt curtains don't seem to be
4 actually achieving their goal, and that was a conclusion
5 that we had on the site, that silt curtains are great eye
6 candy, but they don't actually do anything from a practical
7 perspective. In fact, they actually slow your production
8 down because you have to deal with a silt curtain every day.
9 So, going forward, I think our experience jives
10 with a lot of the stuff that is coming out of the academics
11 as well, is that silt curtains aren't an effective remedy to
12 controlling resuspension.
13 **MR. HARTMAN:** Okay. In conclusion, I guess even
14 the simpler -- I am actually asking about the dredge
15 operation itself. In that particular one, they are digging
16 the channel, assuming they are cutting a 60-foot-wide,
17 whatever, channel downstream.
18 **MR. INGLIS:** Yeah, exactly. Yep.
19 **MR. HARTMAN:** The bucket position during that
20 particular setup, is the bucket traveling all the way from
21 the side, the right side looking at the right side of the
22 barge hull --

1 **MR. INGLIS:** Yep.

2 **MR. HARTMAN:** -- around into the hull barge?

3 **MR. INGLIS:** Correct. And we tried it a couple of
4 different ways. We tried it a couple of different ways. We
5 tried moving the bucket in the water. We tried moving the
6 bucket out of the water. We tried doing a vertical lift and
7 then straight over to the scow.

8 I think where we ended up is typically we would
9 try and take the bite, get it up above water, and move it to
10 the scow as quickly as possible to see if that was a source
11 of the resuspension was how the bucket moved to get it to
12 scow. I don't think we really saw that.

13 **MR. HARTMAN:** Okay. Thank you.

14 **MR. MAGAR:** Did you look at that at all
15 hydrodynamically? I guess this may relate to John, too, of
16 just modeling.

17 I would imagine these transition zones are areas
18 of potential scour as you're cutting, and I could perceive a
19 lot of tension in trying to maximize a rate or in operation
20 but also trying to minimize some of those transition zones.
21 Did you ever look at what the hydrodynamics are as you are
22 changing a thalweg or changing the bottom contour and how

1 that might be optimized to minimize resuspension?

2 **MR. CONNOLLY:** To this point, we have not done

3 that. We have looked at changes overall in a post-dredging

4 situation after we have completely changed the bathymetry

5 but not at the detail I think you are looking for, but it is

6 something that the model, given -- you saw the resolution of

7 the model -- we can actually look at and get some sense of.

8 So it is probably something that we could definitely use

9 the model for, but we haven't done so up to this point.

10 **MR. FUGLEVAND:** So any other questions on

11 productivity?

12 [No response.]

13 **MR. FUGLEVAND:** I am curious to hear now -- we

14 have heard a lot of information from GE. Just for the

15 benefit of our deliberations, any perspective that EPA would

16 want to offer on the productivity, in addition to what we

17 heard in the February meeting?

18 **MR. CONETTA:** I'm sorry, Paul. Can you repeat?

19 **MR. FUGLEVAND:** We are just curious. We just

20 heard a lot of information from GE on productivity, and any

21 other information that EPA wants to offer on productivity?

22 We heard quite a bit on productivity in the February

1 meeting, but any other additional information on that?

2 **MR. CONETTA:** I think there is some additional

3 information.

4 **MS. HOLLAND:** Ben, give your name.

5 **MR. CONETTA:** I'm sorry. Ben Conetta, EPA.

6 There is some additional information we would like

7 to supply after reviewing this, and I would respectfully

8 request that if we could do it after the break, just because

9 of our things that we want to put up, to show you some

10 slides.

11 **MR. FUGLEVAND:** And then part of the stuff we

12 talked about earlier too is we're more interested at this

13 stage of hearing about information rather than rebuttal,

14 and, kind of, rebuttal is scheduled for Thursday.

15 I know there's differences of opinion, but I think

16 we would rather like to hear more information on

17 productivity.

18 **MR. CONETTA:** I don't know that it would be so

19 much rebuttal. We will try to keep that to a minimum.

20 **MR. FUGLEVAND:** Okay.

21 **MR. CONETTA:** I think it is how we have looked at

22 and what we've seen some of the -- like bucket bite

1 efficiencies and what we have been able to gather from the
2 information.
3 Obviously, we have talked about the canal season.
4 The canals have been willing to work with EPA and GE very
5 much so. They have extended the season last year.
6 Depending on weather conditions, they can extend the season
7 this year or the next year. That can add more time to the
8 schedule, as it did last year. Those are things they have
9 been very accommodating with.
10 It depends on flow rates. This year, they
11 probably could have gotten out there in April because the
12 spring flood came out sooner. So we had lower -- so there's
13 a lot of issues that are involved with that. We need your
14 input on the 120 days and how to work out the process, and
15 we respect that, but there are other issues associated that
16 can actually maybe push the schedule out and give you more
17 time.
18 One of the other issues that is lost in this is
19 that the DoC is pervasive, and if you are able to get down
20 to your correct DoC and dredge out, you still will not be
21 able to handle that at the unloading facility. There are
22 issues with the unloading facility that need to be

1 corrected.

2 The project needed to be designed for 89- to

3 90,000 cubic yards. It can't handle that. I think we've

4 made some other points. Again, I don't want to be in a

5 rebuttal mode, but I think there are some issues we would

6 like to talk about.

7 **MR. FUGLEVAND:** So what you are saying is, I

8 think, you would like a little bit of time --

9 **MR. CONETTA:** Just a little bit.

10 **MR. FUGLEVAND:** -- to prepare a set of slides for

11 us. So maybe we can just delay your comments a little bit

12 and come back to it and give you a chance to speak to it.

13 Is that what you are saying?

14 **MR. SIMON:** This is Paul Simon with EPA.

15 Can I just maybe suggest that maybe we do the

16 break now as opposed to -- I mean, if you want to move into

17 the deliberations right away, then maybe we should --

18 **PANEL MEMBER:** Weren't we going to go over the

19 tables first, Paul, before deliberations?

20 **MR. FUGLEVAND:** What's that?

21 **PANEL MEMBER:** I thought we were going to go

22 through these tables before the deliberations.

1 **MS. HOLLAND:** Yeah, we are. We need to go through
2 the tables.
3 **MR. FUGLEVAND:** Yeah.
4 So what I am hearing is that EPA would like us to
5 take a break now, so they can --
6 **MR. SIMON:** My colleagues are disagreeing with me,
7 so go ahead with your statement.
8 [Laughter.]
9 **MR. CONETTA:** Don't give a mic to an attorney.
10 There are a couple of things I'd like to bring up.
11 In terms of revisionist history, I think we had our field
12 guys out there every single day with them.
13 **MR. FUGLEVAND:** So are you saying you would like
14 to respond now to what EPA spoke to?
15 **MR. CONETTA:** We'll do it later.
16 **MR. FUGLEVAND:** Do it later?
17 **MR. CONETTA:** There are some points that I think
18 we need to bring out.
19 **MR. FUGLEVAND:** Okay. So the end --
20 **MR. CONETTA:** Whatever way you want to run the
21 schedule, obviously.
22 **MS. HOLLAND:** But are you saying you would rather

1 do it a little later, then take the break with now, and then
2 come back right away?
3 **PANEL MEMBER:** We have other things we can
4 discuss.
5 **MR. FUGLEVAND:** We do, yeah.
6 **MS. HOLLAND:** We have these tables.
7 **MR. CONETTA:** Actually, that's correct. We could
8 go through the tables, like you want to do, and then maybe
9 we could do it after the break, if that is okay with the
10 panel.
11 **MR. FUGLEVAND:** What I think we will do now is we
12 will wait until after the scheduled break --
13 **MR. CONETTA:** Okay.
14 **MR. FUGLEVAND:** -- so you guys have a little time,
15 so Ed can work on getting something together.
16 What we would like to do now in the next half hour
17 is start on the discussion of what is being recommended and
18 changes to performance standards.
19 We gave EPA and GE yesterday our current
20 interpretation and then asked you to redline it, and we have
21 those. So what we would like is each party to speak to it,
22 and maybe we could start with EPA. Is that possible?

1 Do you have those in a form they can put up on a
2 screen on a computer?
3 **MR. CONETTA:** Yes, we do.
4 **MR. FUGLEVAND:** Then maybe you could just talk us
5 through each page, and we can ask questions. We want to
6 make sure we understand what you're recommending as far as
7 changes to the standards go.
8 **MR. GARVEY:** This is Ed Garvey.
9 We are starting with resuspension; is that right,
10 Paul?
11 **MR. FUGLEVAND:** Wherever you want. Just go
12 through all three, where you have changes.
13 Then I understood we got handed back from EPA only
14 a redline on the resuspension. I understand you had no
15 changes to the productivity or to the residuals; is that
16 correct?
17 **MR. CONETTA:** That's correct. We went through the
18 tables, and there are no changes.
19 **MR. FUGLEVAND:** So the tables that we handed out,
20 the ones that we have, EPA is not making any changes to
21 their productivity or residual standard.
22 **MR. GARVEY:** To go through resuspension, then?

1 **MR. FUGLEVAND:** Yeah.

2 **MR. GARVEY:** Okay. We are looking now first at
3 the far-field net PCB line. The redline block there
4 basically says we are going to propose to have a standard
5 for the control level and, I guess, an evaluation level,
6 evaluations levels equivalent to 350 kilograms Tri+ over the
7 length of the project, 667 kilograms is the control level,
8 and the equivalence on a daily basis to be pro-rated based
9 on the rates of productivity. The anticipated rates of
10 volumetric movement in a given year will be 680 and 490
11 grams per day. That is all based on Tri+.

12 **MR. THOMPSON:** I am going to interrupt right away,
13 Ed. You realize this table came right out of your report.
14 So you are changing? EPA Is changing now? We copied this
15 verbatim right out of your report.

16 **MR. GARVEY:** Yes. Yes.

17 **MR. THOMPSON:** Okay. So you are now changing the
18 standard from what was in your Phase 1 report?

19 **MR. CONETTA:** I think it is part of the addendum,
20 and we said in the report --

21 **MR. THOMPSON:** Okay.

22 **MR. CONETTA:** -- that we were going to update some

1 of these numbers.

2 **MR. THOMPSON:** Okay. I just wanted to make sure

3 that I understood what you were saying. Okay.

4 **MR. GARVEY:** Just to point out what's written up

5 on top there, it says 500 milligrams total PCB is what

6 struck out at the top. We are basing it on Tri+ rather than

7 on total, but, essentially, the 500 kilograms is equivalent

8 to 1,500, and the 2,000 would be equivalent to 670. So we

9 really only changed the basis of which we're measuring.

10 Instead of saying 2,000 kilograms total as the standard, we

11 are making 670 kilograms Tri+ as the standard.

12 **MR. BRIDGES:** So, originally, the standard was 650

13 of what?

14 **MR. GARVEY:** Total.

15 **MR. BRIDGES:** Total.

16 **MR. GARVEY:** Total.

17 So we are effectively raising -- I know the

18 numbers are coming out right about the same numbers. I

19 apologize for that. It was 650 kilograms total. We are

20 effectively raising it to 2,000 kilograms total, but we are

21 proposing them as a Tri+, the idea being that that is the

22 one that drives fish. That is the one we should be

1 concerned about.

2 **MR. BRIDGES:** What was the logic where you were

3 justifying the totals previously?

4 **MR. GARVEY:** The reason was we had an estimate of

5 the two -- I mean, the standard stated both 650 total as

6 well as 220 Tri+. It did state both before. We are

7 basically saying we don't want to do total as a real

8 limitation here. We want to do Tri+.

9 **MR. CONETTA:** Yeah. This is Ben Conetta.

10 The original standard, also, all the modeling was

11 done based on Tri+, and, obviously, from a risk perspective,

12 that is the more important criteria, and that is what we are

13 being cognizant of.

14 **MR. GARVEY:** At any rate, but, again, the 670

15 kilograms or the 2,000 -- the 670 kilograms of Tri+ -- I'll

16 try to remember to say which one I mean every time I say it

17 -- and the 2,000 kilograms of total both represent

18 essentially 1 percent, an upper bound right now of what we

19 think of 1 percent of what's in place right now. The

20 estimate is about 150- to 200,000 kilograms of total in

21 place, and so 2,000 kilograms is roughly 1 percent of the

22 upper bound of our estimates right now.

1 **MR. MAGAR:** So may I ask what is the limit? Is it
2 1 percent, or is it 670? What if 1 percent is 1,000 and not
3 670, or what if 1 percent is 350? What is the limit? Is it
4 670 or 1 percent?
5 **MR. CONETTA:** This is Ben.
6 I think, again, the issue is, as we discussed
7 yesterday, we don't know what the mass it, and that gives us
8 a framework to where to set the standard. Our expectation
9 at this point is that that 2,000 number and the 670 is
10 probably on the high side. That is why we accept the 500 as
11 a goal. We think that is probably achievable, and we will
12 talk about why we think it is achievable in terms of where
13 we monitored.
14 Again, we don't know what the mass is.
15 **MR. MAGAR:** Well, you could write it differently.
16 Is it 1 percent not to exceed 670? Is it 670 not to exceed
17 1 percent? You have got two different goals there. You can
18 hit 670, and that might be 3 percent, and they're still
19 good, or you can be above 670 at 1 percent and not to exceed
20 1 percent. I could just imagine I could foresee next year
21 or in 5 years, that's a big problem. Which one are you
22 requiring?

1 **MR. CONETTA:** I think I understand the point. We
2 will try to come back to that maybe later in the conclusion.
3 I think we are going to have some additional analyses on
4 our end to maybe narrow the scope for you.
5 **MR. GARVEY:** Bruce, if you would move over to the
6 next --
7 **MR. FUGLEVAND:** Maybe before -- we also have the
8 daily load equivalents. Are those numbers hard numbers, or
9 are they just for point of reference?
10 **MR. GARVEY:** They are really just point of
11 reference. They assume about 5 percent of dredging-related
12 losses, 5 percent of the annual amount, after the cessation
13 of dredging but post the backfilling, boat traffic, like we
14 saw from October 27th to December 1st. There is an
15 allowance for that.
16 Basically, during the period from May 15th, let's
17 say, to October 15th, we are looking at the pro-rated basis
18 for these inventories, for these masses, 670 kilograms.
19 The thinking is let's just say in a particular
20 year, you are going to remove a particularly hot zone. Then
21 that year needs to have a bigger allowance, if you would,
22 than in another year where you are really doing relatively

1 low-level concentrations. So that year, you don't want to
2 allow as much as in terms of loss. So that was the
3 intention.
4 The numbers are 670 and 500, not the pro-rated
5 ones. It is just to give us a ball park. If you had even
6 productivity through the whole 5 years, that is what they
7 would be.
8 **MR. FUGLEVAND:** So, as far as anything that would
9 drive any decisions, would the gram-per-day criteria -- does
10 it have any enforcement basis, or is it simply a number that
11 was put up there parenthetically? I am trying to
12 understand. Would you monitor daily, and if you got over
13 680 grams per day, would that mean requiring GE to change
14 operations, or is that just basically a point of reference?
15 **MR. GARVEY:** No. The intention with the 7-day
16 running average is to use it as a basis to require changes.
17 Basically, the 500 is a warning level, the equivalent of
18 500 kilograms, which is about 500 grams, 490 grams per day,
19 but the 490 grams per day is essentially where EPA would
20 have the option to require GE to do something. 680 grams
21 per day would be something that EPA almost certainly would
22 require GE to do something.

1 **MR. FUGLEVAND:** So, in Phase 1, again, too many
2 numbers in my head, but it seems to me, was it the
3 grams-per-day criteria that was exceeded often? Was it on
4 the total PCBs? Was that the criteria that was just about
5 every day exceeded last season? I don't remember.
6 **MR. GARVEY:** Yes. Yes.
7 **MR. FUGLEVAND:** So how do these numbers here
8 compare to what they actually normally experienced last
9 year?
10 **MR. GARVEY:** These are still higher than what was
11 experienced last year on average. Waterford -- again,
12 basing this is Waterford. I should make that clear. This
13 is the Waterford load, not the Thompson Island or
14 Schuylerville load. These are at Waterford, but Waterford
15 achieved at the end of the year a half-a-percent average.
16 So Waterford was not over the equivalent as often. In other
17 words, there were a couple of weeks where it was over, but
18 it was not over for the duration.
19 At Thompson Island, it was over for essentially
20 the entire year of the program. That is how we got 2.5
21 percent at Thompson Island, but we only get .6 or .7 percent
22 at Waterford.

1 Anyway, to put it in context, at Waterford, the
2 numbers that we had set, we exceeded for a couple of weeks,
3 not for the 6-month period. Again, that came out about .6
4 percent of what we removed. These are equivalent to 1
5 percent, the higher number, 1 percent, the other number less
6 than 1 percent. Anyway, we see them as achievable given
7 that that's the way we operated in Phase 1.
8 **MR. FUGLEVAND:** So I think what I heard you say
9 too is that we should probably write into this that it is
10 applied at Waterford?
11 **MR. GARVEY:** Right. It is the next one, next one,
12 row down, revised as compliance, load to be at Waterford
13 exclusively.
14 **MR. FUGLEVAND:** Okay, I see that.
15 **MR. BRIDGES:** I have a question on that specific
16 point, and Tim is probably -- he bought me donuts this
17 morning, so maybe we are all aligned in our thinking.
18 [Laughter.]
19 **MR. BRIDGES:** So the concern about load only
20 pertains to the Lower River?
21 **MR. GARVEY:** That's what we're focusing on. That
22 was the original assessment.

1 **MR. BRIDGES:** So you could have whatever load, an
2 infinite load, for the Upper River?
3 **MR. GARVEY:** The way it's written, yeah. I don't
4 think that is a reality because I think you are going to
5 lose -- I don't think you can count on losing an infinite
6 load between Thompson Island and Waterford, but, in theory,
7 yeah. It could, in theory, happen, but we saw about a
8 50-percent reduction, 60-percent reduction in Thompson
9 Island and Waterford.
10 **MR. BRIDGES:** Sure. Well, I guess this gets to
11 me. Given there is some relationship between -- I am going
12 to call it "release." You guys call it "load."
13 **MR. GARVEY:** Okay.
14 **MR. BRIDGES:** Given there is some relationship
15 between release of PCBs due to operational activities and
16 some of these objectives you are wanting to achieve, I am
17 not sure then how you progress toward achieving your
18 objectives for the Upper River if you could have an infinite
19 release within the Upper River.
20 **MR. GARVEY:** My colleague reminded me that we also
21 have the 350 and the 500 thresholds that are not load, but
22 they are concentration based. So that, even though we are

1 not controlling for load at Thompson Island, we are still
2 going to require them to stay below 500 nanograms per liter
3 as a general rule. We may allow some slippage, but that is
4 the intention to keep it below that as well -- not for load
5 -- for release. I'm sorry.
6 **MR. BRIDGES:** Right. But for the vast majority of
7 time in Phase 1, you were below the 500-nanogram-per-liter,
8 but you had a lot more release than was expected.
9 I guess I am concerned as to whether or not --
10 well, first of all, I am concerned whether or not this even
11 meets the definition of a standard, which I think is
12 something is not to exceed, and I am not sure how you are
13 going to ensure that you don't exceed these things, even for
14 the Lower River.
15 But given the Phase 1 experience, it showed that
16 even when you were able to meet the 500 nanograms per liter,
17 which was the vast majority of the time you still had a lot
18 more release to the river by your total calculation.
19 **MR. GARVEY:** Well, I mean, I guess one of the
20 things is that we would say that Phase 1 release rates,
21 while we think we can reduce them, we could live with them.
22 **MR. BRIDES:** Right. Well, I understand that

1 everybody would desire them to be lower. I guess the
2 purpose of standards is to ensure that you achieve that,
3 right?
4 **MR. GARVEY:** Right.
5 **MR. BRIDGES:** It is not an expression of desire.
6 It is an assurance that you meet it.
7 **MR. GARVEY:** Right. And I guess what you are
8 saying is we had 2.5-percent loss at -- release at Thompson
9 Island, to use your word, and I am saying we think that is
10 an acceptable rate of release because with that we still are
11 less than 1 percent at Waterford. So we have kind of
12 rewritten the standard that this is what we learned in Phase
13 1, and we think we should do better than this, but we don't
14 want to do any worse than we did in Phase 1, but that we
15 could live with what we did in Phase 1.
16 **MR. SCHROEDER:** I have a question. The standard
17 is based on total mass. Is there no consideration on what
18 the background releases are otherwise? I mean, is this
19 above background, or is this just the total?
20 **MR. GARVEY:** This is definitely above background.
21 This is a net over baseline.
22 **MR. SCHROEDER:** Okay. So this is a net over

1 baseline?

2 **MR. GARVEY:** Right. They are real baseline loads.

3 **MR. SCHROEDER:** And you can determine what

4 baseline is, which is flow adjusted, based on what season it

5 is and what weather we have --

6 **MR. GARVEY:** Right.

7 **MR. SCHROEDER:** -- during the next 5 years or

8 whatever?

9 **MR. GARVEY:** Well, there is 5 years of baseline

10 data that was collected at the various stations. That

11 spelled out in the standard how to do it, but, basically, it

12 is a monthly combination of concentration and the actual

13 flow. So, using monthly averages of the average

14 concentration in May, June, July, each one gives you a

15 monthly value. Depending on the flow, you had that much, in

16 actuality that gives you the baseline flow, assuming the

17 concentration at baseline is constant.

18 I mean, typical concentrations in the summer were

19 about 50 nanograms per liter during predredging periods in

20 the baseline studies. So those are the kinds of numbers

21 that we're working on top of, but the 350 and the 500 don't

22 take that into account.

1 **MR. SCHROEDER:** Are absolute, right.

2 **MR. GARVEY:** Those are absolutes. But that's how

3 we determine load or release.

4 **MR. THOMPSON:** Presumably, the daily load

5 equivalents can be adjusted based on the year's planning.

6 So they can be pro-rated --

7 **MR. GARVEY:** Right.

8 **MR. THOMPSON:** -- simply the way you did between

9 the EPS and the Phase 1?

10 **MR. GARVEY:** That's right.

11 **MR. THOMPSON:** You know, it would be really

12 helpful when you guys go back and do this if you actually

13 make these statements a little bit clearer for our

14 deliberations for the public record, so that when we get

15 them back from you, it is very clear what you intend by

16 that, including the ability to pro rate 680.

17 **MR. GARVEY:** Would you start over in the next box?

18 That's it.

19 **MR. THOMPSON:** Well, I am also just getting back

20 to Victor's point in that --

21 **MR. GARVEY:** Yeah.

22 **MR. THOMPSON:** -- it's not clear what you intend

1 here. So clarity would be helpful, but go ahead.

2 **MR. GARVEY:** The last sentence in this add-on,

3 direct recognition, what you are saying, Tim --

4 **MR. THOMPSON:** Yeah.

5 **MR. GARVEY:** -- that daily load criteria will be

6 pro rated to reflect annual productivity standards schedule.

7 So, if in this year we are going to take out 2 percent of

8 the inventory -- I mean 5 percent of the inventory, then it

9 will be pro rated to reflect. So, to make that clear, we

10 recognize that, and that is the intention of that statement,

11 anyway.

12 **MR. THOMPSON:** I have a follow-on question. This

13 is interesting. Because we haven't had a chance to read the

14 addendum, I find it interesting, the plus or minus 25

15 percent. Is that based on a Monte Carlo analysis? What do

16 you base that on? Does that mean the standard can float up

17 to 670, what 25 percent would be, almost a thousand

18 kilograms?

19 **MR. GARVEY:** I guess it is intended to reflect the

20 fact that our multiplier, if you would, for how much

21 inventory we have in place has an error on it of about 25

22 percent already. In other words, the 2,000 -- the estimate

1 of what we removed is around 200,000 -- I'm sorry -- 20,000
2 kilograms this year, and based on the dredging footprint and
3 the volumes and everything else that were supposed to come
4 out in Phase 1, that multiplier probably has a 20 -- on the
5 order of a 25-percent estimate, but it is not a Monte Carlo.
6 It is just we recognize that depending on how you relate
7 what you thought you were going to take out versus what you
8 actually take out, you can get a factor of about 25 percent
9 on the multiplier, and that is what that reflects.
10 **MR. THOMPSON:** But, again, then it reflects it
11 gets back to, I think to some degree, Todd's point that if
12 we have mass that would exceed that 25-percent estimate,
13 suddenly, then your estimate would be way over 670 or even
14 670 plus 25 percent. If your total removed mass becomes a
15 greater amount -- you have already said there is uncertainty
16 associated with that, you have some ambiguity, what is going
17 to happen to that number, if the mass exceeds beyond what
18 you have justified to me as a 25-percent increase.
19 **MR. GARVEY:** Right. Well, we did choose among the
20 higher ends -- well, two things. We did choose among the
21 higher estimates of the inventory in place to come up with
22 that. We also ran the FISHRAND model with two different

1 higher -- 600 and then 800 kilogram delivery to the Lower
2 River, but your statement is correct. If the inventory went
3 25-percent higher than the current estimate of 200,000
4 kilograms, then the 670 would presumably go up as well.
5 **MR. THOMPSON:** Then the follow-on question is if
6 you ran FISHRAND and you got up to 1,000 kilograms Tri PCB,
7 is there still only a negligible effect?
8 **MR. GARVEY:** Yes.
9 **MR. THOMPSON:** Okay.
10 **MR. GARVEY:** We ran FISHRAND at double -- we ran
11 FISHRAND at 1,200 kilograms.
12 **MR. THOMPSON:** Okay. That's helpful to know.
13 Thank you.
14 **PANEL MEMBER:** For the Lower River?
15 **MR. GARVEY:** For the Lower River, yes, to be
16 clear. That's Lower Rover.
17 **MR. MAGAR:** Can you comment on what's the travel
18 time between -- I know that there is a distance, but the
19 bulk of dredging the 30-mile distance and relate that to --
20 I think this is kind of relating to what some of my
21 colleagues here are asking. How are you planning to use
22 this to manage, if at all, the dredging process? Because

1 you have got daily loads, but there is a real detail in the
2 timeline of how that relates to the actual dredging
3 practice, or would GE be fine if they exceed this at the end
4 of the whole project? What's the meaning, or what's the
5 implication of going over 1 percent or 670?
6 **MR. GARVEY:** Let me answer the first question
7 first, which is what's the time of travel, if you would,
8 through the Upper River.
9 During typical, let's say, 5,000 CFS flow
10 conditions, the time of travel is about 3 days on that
11 order, 2 to 3 days. At lower flows, you can go to about a
12 week. Let's say 2- to 3,000 CFS. At 7- or 8-, 9,000 CFS,
13 typically it's under 2 days of time of travel, but we are
14 talking about 10 days or less, typically more like 3 or 4
15 days for the majority of the time, and we are controlling
16 not on the basis of a daily load but on the basis of a 7-day
17 running average. So we are already kind of integrating the
18 last 7 days of operation.
19 We are not expecting to say, okay, see that thing
20 you did this morning at 10:00 a.m., that's the thing we
21 don't want you to do. Rather, we're saying this is the
22 general way you are operating things, and the average over

1 the last week has been X, we need to think about
2 improvements that you can make to reduce it because we want
3 to be less than X.
4 **MR. MAGAR:** Okay.
5 **MR. GARVEY:** It is not intended to be a
6 minute-by-minute regulation of what's going on but rather
7 the general way that it operated.
8 I mean, we have water concentrations at the
9 Thompson Island Dam, Thompson Island station and the like,
10 but those are still even 2 days delayed, if you would, from
11 time of collection -- or 24-hours delay between time of
12 collection and when you have your first number. So there
13 was not really an opportunity to say, you know, within real
14 time, any way, shape, or form that what you did this
15 morning, I can see the impact this afternoon type of thing.
16 You have to wait at least 24 hours to see that.
17 As far as the requirements, if they go over 1
18 percent, that one I'll let you -- but I don't believe that
19 there is going to be any strict penalty per se. The idea is
20 to keep it there.
21 **MR. CONETTA:** This is probably more a legal
22 question, but my expectation is that if we are working with

1 GE, I don't believe we will be fining GE if we are all
2 working cooperatively. But, again, it is a legal question.
3 I can't answer that. I don't expect there to be fine.
4 **MR. BRIDGES:** This is a comment or question that I
5 have asked repeatedly, and that is, you know, I am not sure
6 how what I understand the standards as articulated now with
7 notes that at EPA's discretion, we will require operational
8 changes. How EPA ensures that by applying these standards,
9 you are not going to compromise the intended purpose of
10 these EPS's.
11 Is there an upper load limit that is unacceptable?
12 Because this is something you can achieve, but that is
13 setting -- you know, that is a different basis than this is
14 what we think we can achieve, and this is the level above
15 which we will not go, either for purposes of the Lower River
16 or the Upper River, for that matter, because I am still
17 focused on you guys are wanting to achieve a certain amount
18 of recovery over a defined period of time. That is the
19 whole foundation for these EPS's, as I understand them, as
20 described by the EPS documents.
21 So that's what I'm having trouble getting because
22 I don't see how they would be applied with so much unstated

1 with regard to this discretion. I mean, presumably, you
2 could get to a point where you are getting to 500 every day.
3 Maybe you are going to 700 nanograms or something. You are
4 making switches on the fly, but you stay at 700, and you are
5 going and you are going and you are still up. I guess I am
6 not sure how the standard plays out, so that you don't get
7 something bad.
8 **MR. CONETTA:** I think I understand the concern.
9 We have that concern as well. It is not something that we
10 are like closing our eyes blindly to. I think by Thursday
11 -- I don't want to punt, but I am hoping to give you some
12 better direction on how we think this will apply.
13 The biggest issue here is the risk and the benefit
14 to the remedy, are there increased risks to the Upper Hudson
15 based on the higher numbers that we will likely be seeing
16 and removing, but we have got some of that done in the
17 standard. We are going to try to come up with some better
18 explanation for you how we think it applies.
19 **MR. BRIDGES:** Right. Specifically, the influence
20 it has on recovery time, that is the whole kit and kaboodle,
21 right?
22 **MR. CONETTA:** Yes. And we are not doing this

1 blindly. I think there is a real concern. I think part of
2 the problem with looking at it from the Lower Hudson -- and
3 I think Ed sort of mentioned this yesterday -- there is such
4 a huge reservoir of PCBs down there. You can flush a lot
5 more of that PCB down there and not have any real effect to
6 the Lower Hudson, but that doesn't mean we want to flush an
7 infinite amount of PCBs down there.
8 So we are trying to constrain what it really is.
9 We have looked at Tri+ because we think that is the risk
10 driver. It is central to the question about what benefits
11 we'll achieve. Again, I don't want to punt, but give us
12 until tomorrow afternoon, and, hopefully, we can formulate a
13 question in terms of what kind of risk we think we will see,
14 what the benefits will be achieved, which they'll be
15 achieved. We think they still will, based on what we've
16 looked at, but we already have it standard. But we'll try
17 to close it up tomorrow.
18 **MR. FOX:** Do you have plans to address the
19 uncertainty in the inventory more specifically than the last
20 sentence of the proration, I guess? That's a question I
21 have.
22 **MR. CONETTA:** Unless we get --

1 **MR. FOX:** Rick Fox.

2 **MR. CONETTA:** This is Ben again.

3 I think part of the issue is that we are going to
4 have to sit down with GE and try to formulate this and
5 figure out what exactly we think the inventory is. Again,
6 we have got more high confidence areas in Phase 2 than Phase
7 1. Will that mean we will have a lower number than 2,000?
8 My guess is we are going to be around 140 to 170, but that's
9 a guess. I think GE's even modeled it at 180, but maybe we
10 will get lucky and be a lot lower, and those numbers will be
11 high estimates.

12 Again, as bad as Phase 1 was -- I'm not saying it
13 was bad because it seems like the sky is falling if you
14 listen to some of the rhetoric. At Waterford, which is how
15 the standard was set up originally, it still was less than 1
16 percent, and it was always an export rate about what can the
17 technology do, what can we do, and at the end of the day,
18 you didn't look at what risk impacts there was. And we're
19 still going to do that. We are not walking away from that.
20 We don't want to close a blind eye. To us, it isn't
21 release as much as you want; we don't care. We need to be
22 very cognizant of what happens in that river, Upper and

1 Lower, and we are.

2 **MR. FUGLEVAND:** I have one clarifying question.

3 The new number you are talking about, is this 670 kilograms

4 on the Tri+? In Phase 1, I think it was around 200

5 kilograms went past Waterford total PCBs. How much was it

6 Tri+, and how much is left for the next 5 years?

7 **MR. CONETTA:** We will use our numbers. I don't

8 like GE's number.

9 [Laughter.]

10 **MR. CONETTA:** But our number was around 150, I

11 think, at Waterford, and we did it the way the standard

12 requires you to calculate the number.

13 **MR. FUGLEVAND:** So was it 150 total?

14 **MR. CONETTA:** Total. And I think it went to about

15 a 60, but we can get you the actual number, 60 Tri+.

16 **MR. GARVEY:** It is actually on the last page of

17 the handout that we had yesterday, the very last page of the

18 table.

19 **MR. FUGLEVAND:** Okay.

20 **MR. GARVEY:** That first-year allowance, I think it

21 says 60 kilograms or 61. Just turn it right over. It's

22 right on the back.

1 **MR. FUGLEVAND:** Yeah. It says Phase 1 transport
2 at Waterford, 60 kilograms. Okay.
3 **MR. GARVEY:** That's it.
4 **MR. FUGLEVAND:** So then that leaves, then -- if
5 you use 670 as the proposed, it leaves 610 for the next 5
6 years. So 610, 5 years, that is about 120, 122, something
7 like that. That's Tri+, though. And, again, that is 120
8 Tri+ per year. That is twice of what you experienced last
9 year at Waterford. You had 60 last year, and so it sounds
10 like there is a lot of room in there right now. Is that
11 correct?
12 **MR. GARVEY:** That's correct. Yes. Yes, that's
13 correct.
14 **MR. CONETTA:** That's the other thing. It's also
15 based on the production and the volume we're going to be
16 removing.
17 **MR. FUGLEVAND:** Right.
18 **MR. CONETTA:** We expect to remove more, so the
19 number -- one of the other, obviously -- first adjustments
20 -- and this went to your question yesterday about it went to
21 22 to 39 to this, on the basis of how the standards were
22 set, obviously it's the way we are evaluating it. If it was

1 a 1-percent release rate, the numbers would probably have
2 been under what we would have expected. The problem was
3 that the mass was never revised upwards, and so the
4 standards were never revised upwards. We actually discussed
5 or asked GE about changing that number upwards, and that
6 never went far.
7 One of the other adjustments that was made was the
8 amount of mass you actually are going to remove in the CUs,
9 only the annual, but then you adjust it for the mass based
10 on the other CUs. So, if you are taking out more mass this
11 year than next, that number will be -- 122 could be 140 this
12 year, and it would be 110 or 90 the next year, but it's also
13 mass-related in terms of the years you're going to take out.
14 It gets confusing.
15 **MR. FUGLEVAND:** Then just one other question. Is
16 the 670 measured -- again, it's above baseline. But is it
17 going to be measured 12 months a year above baseline or only
18 during dredging?
19 **MR. CONETTA:** The 670, this is a standard or a
20 number for doing dredging. We do have monitoring off season
21 we will be evaluating. I think part of the discussion
22 yesterday went into what kind of redistribution issues did

1 we have. We still feel pretty strongly that we don't have
2 any that affected the Lower Hudson and some of those other
3 stations, and I think we laid out why we think so yesterday.
4 We are very concerned about the data, but the data is very
5 questionable from those automated samplers, and we need
6 actually in the next phase to make sure that those automated
7 samplers are correcting the right data. We need to do
8 diagnostics.
9 The original standard envisioned manual monitoring
10 with a testing program for automated stations. While we did
11 do some testing for the automated stations at their baseline
12 to figure out, those were under very low concentrations and
13 some high flow events.
14 What we need to do to ensure that this data is
15 absolutely correct -- because it's a big issue, it has a lot
16 of implications -- we need to guarantee that the data we are
17 collecting at those automated far-field stations is, in
18 fact, correct.
19 We still scratch our heads about the loss from
20 Thompson Island to Schuylerville to Waterford. Could there
21 be a little bit? Probably. But we still scratched our head
22 at how much we lost.

1 **MR. FUGLEVAND:** The one kind of thing I wanted to
2 tie down is, the standard is now -- to repeat the standard,
3 as I understand it, it is 670 kilograms Tri+ over the life
4 of the project that right now is 6 years, and it is measured
5 at Waterford, and it is only above baseline during the
6 dredging period. So it is basically a 4-to-5-month period
7 that it's applied, and it's not applied to the rest of the
8 year.
9 **MR. GARVEY:** Based on Phase 1 experience, I guess
10 we would consider applying it to the end of November. So it
11 would be May to November.
12 **MR. BRIDGES:** But, for example, that wouldn't
13 include any contribution for the spring flood period.
14 **MR. GARVEY:** Right.
15 **MR. BRIDGES:** Just to put a point of emphasis on
16 it, I hear you guys. You think this is important and all,
17 but you really have to close this mass balance gap somehow
18 because it is not just -- right? I mean, you understand
19 that the --
20 **MR. GARVEY:** I understand your point, yeah.
21 The issue remains -- this past spring, are we
22 seeing dredging-related release during the spring flood, and

1 we're arguing no, at least not at Waterford we didn't see
2 it. There's some suggestion we might have seen it at
3 Schuylerville, but the data, you know, they seem to be
4 somewhat consistent with being both above baseline as well
5 as giving your relationship to flow, which would say, okay,
6 there's the driver at Schuylerville. Thompson Island
7 station, I don't think we have any measures of release that
8 we can rely on, but even the Schuylerville has questionable
9 data because, clearly, three of the intakes were
10 compromised.
11 Unfortunately, we don't have the answer that we'd
12 like to have, Todd, which is, okay, we really know that it
13 stops at the end of December. We don't know that, and at
14 least to this point, the monitoring program had not
15 envisioned or required the extent of monitoring through the
16 off season that would allow you to calculate that. In fact,
17 while you could do it now to see what it was post dredging,
18 your baseline periods -- not a sampling that's in March,
19 April, for instance -- you only really have a lot of high
20 flow samples at Waterford. So we could do it at Waterford,
21 but we couldn't do it at the other stations. We don't have
22 a record of high flow, enough of a record of high flow

1 events at Schuylerville or at Thompson Island.

2 **MR. CONETTA:** Just to add -- we keep talking about

3 high flows -- those stations were never monitored for a high

4 flow event to catch the peak. So it is a little difficult

5 to just apply what we have seen for some high sample results

6 to say this is what the highs would have been.

7 We have seen some samples, I think, in the late

8 '90s that were up over 1,000 at Thompson Island. That was

9 under a low flow. What does that mean compared to -- so the

10 applicability of those high flows to a high flow event

11 doesn't --

12 **MR. BRIDGES:** Sure. Yeah. Well, I'm not just

13 focused on the high flow. Obviously, you're comparing the

14 river under baseline conditions to the river under a

15 dredging scenario, and there is data and theory to support

16 the idea that the influence of a dredging operation extends

17 beyond the period of time that the equipment is actually in

18 the water.

19 So whether or not in a high flow or low flow

20 period, that is what I mean by you got to close that mass

21 balance gap.

22 **MR. CONETTA:** I think that is an issue for us to

1 look at as we go forward, Todd. I am not going to dispute
2 that.
3 **MR. FUGLEVAND:** I think this is a good spot. We
4 will take our 15-minute break, and then we will come back
5 afterward and continue with EPA to finish our questions on
6 resuspension, and then we will move to EPA. So let's go
7 ahead and take the 15-minute break now and come back at 25
8 till.
9 [Break taken.]
10 **MR. FUGLEVAND:** We will go ahead and get started
11 again. What we would like to do is just take another 10
12 minutes or so to finish up the discussion on EPA's
13 recommended changes to the resuspension standard, and then
14 are you ready right after that to talk about productivity?
15 **MR. GARVEY:** We have some observations we want to
16 share.
17 **MR. FUGLEVAND:** Okay. So then we will take 10
18 minutes or so to talk about productivity, and then we will
19 move over to GE to talk about recommended standard changes.
20 So, Todd, do you want to continue?
21 **MR. BRIDGES:** Sure. For EPA, I guess this is not
22 so much a question. I could phrase it as a question, but I

1 won't go through that formality.

2 [Laughter.]

3 **MR. BRIDGES:** One of the concerns that I have --

4 I'll just share the concern -- is that you have to have some

5 basis for recommendations on changes to the operations with

6 respect to the resuspension standard.

7 Presumably, you would want to make recommendations

8 based on your understanding of what is causing you to exceed

9 a resuspension or a release standard, and I think my

10 takeaway from the Phase 1 data is there are significant --

11 I'd call them "knowledge gaps" or "uncertainties."

12 GE yesterday presented their interpretation of the

13 story of what caused what and where the PCs went, but I am

14 concerned that there needs to be a monitoring program in

15 place that not only ensures compliance with the standard but

16 also provides insight to what is actually happening or

17 what's causing, whether it's an open CU or it's dredging

18 being performed i this manner or these scows moving here.

19 There are lots of hypotheses about what specifically is

20 producing these cases.

21 And I notice that in the standard, there was --

22 for example, the proposal from EPA is to eliminate, for

1 example, reduce near-field net suspended solids levels, and
2 then preceding that would be revise the station of
3 compliance for the load to Waterford exclusively. I presume
4 that means there would be no additional monitoring happening
5 within the Upper River, which then gets me to my point,
6 well, then how are you going to figure out what operational
7 change you need to make if you really can't explain in some
8 mechanistic fashion how what's going on in the river relates
9 to the standard.
10 I am not asking for you to respond to that now,
11 but I understand, I guess, you are burning midnight oil in
12 preparation for tomorrow's statement if there's something
13 that you can include in that presentation tomorrow with
14 regard to how you are going to relate cause and effect with
15 activities ongoing in the Upper River, so that you have some
16 basis for making recommendations on modifications to the
17 operation.
18 **MR. FUGLEVAND:** Ed, before you start, can we get
19 it back up on the screen? Because we don't have copies of
20 it.
21 **MS. HOLLAND:** You are plugged in?
22 [Pause.]

1 **MR. KING:** Todd, this is Dave King.

2 Were you looking for a response to that?

3 **MR. BRIDGES:** I'm happy for you to do that. I

4 understand that you guys are working on something to talk

5 about tomorrow. So, if you just want to address it then,

6 that's fine.

7 My concern is equal to GE too. I made the point.

8 You got to have data to be able to relate cause and effect.

9 I think the Phase 1 experience was less than satisfactory

10 with regard to being able to relay these causes and effect.

11 So how are you going to do that? Since you give 5 years

12 coming online, I presume you are going to need to have that

13 kind of information.

14 **MR. KING:** Again, this is David King with EPA.

15 I oversaw the field operations, and one of the

16 things that we have discussed right along with GE is that

17 while we collected a tremendous amount of data, as you know

18 -- you're being buried by it -- is that a lot of the

19 information that we collected, we thought was going to have

20 good input to the operators, so that they could adjust their

21 operations. What we found was that that really didn't do

22 that in a strong fashion.

1 We did find that as the numbers started going up,
2 GE was doing some transects, what we're calling rather
3 near-field and far-field, call it "mid-field," where running
4 these PCB transects during operations allowed us to start to
5 focus on individual operations or groups of operations, and
6 that helped a lot because now that's the kind of information
7 we need, and that's one of our recommendations in our report
8 is that maybe our focus in Phase 2 needs to be more PCB
9 transects near operations or being able to isolate
10 operations, so we can actually have some quantitative
11 analysis of what's going on.
12 So we agree with you. I think that will make a
13 big difference, so we will be doing that.
14 **MR. GARVEY:** Todd, this is Ed Garvey.
15 Just to address your question about the suspended
16 solids adjustments, that is one of those measurements that
17 didn't help particularly in terms of what was going on
18 downfield. What we could find was the PCB transport which
19 was, to everyone's surprise and to a large extent, that the
20 amount of suspended solids that we detected in the
21 near-field was not a good predictor of how much PCBs we did
22 find in Thompson Island. So that's the reason that is being

1 curtailed. That in and of itself is not particularly
2 productive. There certainly are other options.
3 **MS. HOLLAND:** Are there other questions from the
4 panel?
5 **MR. FUGLEVAND:** Now maybe we can move to your
6 discussion on productivity.
7 **MR. GARVEY:** Let me just ask. Are we done with
8 this, or are we not?
9 **MR. FUGLEVAND:** Panel, any more questions on what
10 you have before you from EPA?
11 [No response.]
12 **MR. FUGLEVAND:** I think we are done with it.
13 **MR. GARVEY:** Okay. The compliance point here is
14 at Waterford, that's the lowest that we talked about before,
15 but the understanding is, of course, that although we're
16 setting a low standard at Waterford with monitoring the
17 far-field water column stations at the Thompson Island and
18 Schuylerville stations and the fact that the Stillwater
19 station later on in the program as the dredging moves
20 downstream throughout the operation, just to be clear.
21 **MR. FUGLEVAND:** You just said that you would -- I
22 mean, the statement in writing says that the model showed

1 similar loads at Stillwater, Waterford pool.

2 This is Paul Fuglevand.

3 I think what you just said, Ed, is you are going

4 to continue monitoring at the other locations as well --

5 **MR. GARVEY:** Yes.

6 **MR. FUGLEVAND:** -- although you are only enforcing

7 at Waterford.

8 **MR. GARVEY:** That's right, with respect to the

9 load standard. That's right.

10 **MS. HOLLAND:** Okay. Are you guys ready to move to

11 productivity, EPA?

12 **MR. KING:** This is Dave King.

13 I think Andrew and John made some good points as

14 far as when you look at productivity. There is no silver

15 bullet that we can instantaneously change things, but given

16 the different constraints on the system, both operationally

17 in the dredging work itself and at the de-watering facility,

18 we do feel that that second unloading station will be an

19 obvious one that comes up.

20 Once you get beyond that, let's say we solve that,

21 so we can unload effectively as these barges come up river,

22 the next pinch point maybe the gravity thickener, since

1 there is only one gravity thickener, and then, beyond that,
2 I think John mentioned the disposal issue.
3 We got by with the disposal in Phase 1 because,
4 luckily, we had enough storage area that when there was a
5 problem at the receiving end, we could do that.
6 In Phase 2, if we have that same kind of problem,
7 then that is definitely going to be a constraint on the
8 system. It will probably cause us to stop production until
9 we can relieve some of that pressure.
10 So what we are suggesting there is GE look at
11 maybe having two disposal sites available, so that if we
12 have an issue with one, the other one is available and can
13 move along on that.
14 I think one of the other things -- we were talking
15 about "nibbling." I think that's our term, is "nibbling."
16 One of the things that I saw through this is shoaling.
17 Shoaling is what the contractor would do looking for high
18 areas, and this is an artifact, I think, of the plus or
19 minus 3-inch constraint in the specifications, the contract
20 specs.
21 GE can correct me if I'm wrong, but I think before
22 the contractor could take the bathymetry to GE as being

1 okay, ready to do some sampling, they were held to
2 constraints of plus or minus 3 inches. So, virtually, in
3 every CU, they went back and did this work, the shoaling
4 work, before they could present it to GE, and that added up.
5 I mean, in some areas - and CU-1 is probably the
6 most obvious one -- they were out there 4 or 5 days trying
7 to clean this up, and a lot of this comes down to the debris
8 fields that we're hitting because, when you do the
9 multi-beam bathymetry, if you've got sticks sticking up in
10 any of these cells, it reads it as it's above the standard.
11 As you go out there and say, okay, you dig that out, maybe
12 you kick another stick up. Now that shifts over to the next
13 cell. So that became a real issue.
14 I think moving forward in Phase 2, what we need to
15 do is relax that, so we don't have to be that precise on the
16 early passes. So that when we get to a final pass where
17 everyone's agreed, "Okay, this is going to be the last
18 pass," now take the time to do that final cut, so we have a
19 good bathymetry when we're down to the level that we expect
20 to be. So I think that will help that a lot.
21 **MS. HOLLAND:** Give your name, please.
22 **MR. MULLIGAN:** John Mulligan from EPA.

1 John Haggard mentioned that the constraint in
2 Phase 2 could conceivably be the locks along the canal.
3 Phase 2's production rate would have to average about 3,500
4 cubic yards a day on a 6-day week basis, 140 days of
5 dredging. If you've done it, the 120, you might be up to
6 3,800 or 3,700 yards a day.
7 What we saw in Phase 1 was that many, many scows
8 went through the locks with very little material on them.
9 The average scow, though, was about 420, 421 yards of
10 sediment and a batch of water. The scows are being loaded
11 to 8 feet. Andrew mentioned that they took pains to fill
12 the scows up, so they would move them from one spot that was
13 shallow to a deeper spot, then move them to a third spot and
14 top them off. Well, it just didn't happen. It was 421
15 yards going up.
16 The scow in 8-foot drafts carries about 1,500
17 tons. Some scows went up at 900 cubic yards of solids, one
18 of the best ones, but a lot went at 600. But the average
19 was 421.
20 Now, if you put 3,500 yards in -- if you deliver
21 3,500 yards a day with the scows and you can put 700 tons on
22 a scow of solids, that is 5 scows a day through the locks.

1 They've got to go up, and they got to come back down again
2 after -- that's 10 lockages.
3 A realistic number for the amount of lockages you
4 can get in Lock 7, which is a slow lock because it's filled
5 from the high point of the Champlain Canal, is between 45 to
6 50. Theoretically, they could do 70 or 72 lockages a day,
7 but from a practical point of view, 45 to 50 is a good
8 number.
9 I think the maximum traffic day in Lock 7 last
10 year was about 48 lockages. So it shows you can do the 50
11 at least, the 48.
12 And on that particular day, there were only 3 or 4
13 lockages at night in the 12 hours, from 6:00 at night till
14 6:00 in the morning. So you had lots of room to bring scows
15 from the night.
16 But I fail to see how the lockages did tie us up
17 that much. I understand that as you move down river and you
18 have to go through a number of locks in a series, it may be
19 that you get hung up in a queue trying to get into a lock,
20 so you'll slow down on the delivery schedule, but if you can
21 unload them and get them back, I think they can deal with
22 the fact that you will have matching the queue. When you're

1 coming up from way down Waterford, last year of the job,
2 you're probably going to take 10 hours to get up there.
3 It's going to be a long trip, maybe 12. You're talking less
4 than 10 miles an hour, most of them. So that's a long trip,
5 and they got to go back down again. Your time of travel
6 could be constrained, but I don't think the locks would.
7 **MR. CONETTA:** Just to follow up on John Mulligan
8 about the locks, the canals have been very open with us and
9 GE about doing anything reasonable to get the project done.
10 Ben Conetta.
11 The canals, and Joe Moloughney spoke before, that
12 they are very open to helping the project get done and
13 completed, anything reasonable. Obviously, it could go to
14 extend in the season, depending on the situation, as I think
15 I mentioned before. So, while there is a limitation
16 possibly, depending on whether there are certain things that
17 we can't adjust right now and know going into it, there are
18 adjustments that can be made on a season-by-season basis.
19 **MS. HOLLAND:** EPA, do you have other presentation
20 points or rebuttal?
21 **MR. CONETTA:** We are not going to try to too much
22 rebutting already.

1 [Pause.]

2 **PANEL MEMBER:** While you guys are looking, can we
3 ask that everybody's presentation be made available to us
4 today, both GE's and what you guys have put together? Thank
5 you.

6 **MR. GARVEY:** This is Ed Garvey.

7 This is the average thickness of the material in
8 the scows, what we observed. This is what was in the scow
9 based on volume removed and the reporting draft of each
10 scow. So this is the thickest of the materials in the
11 scows. We are not talking about a very thick bottom. Part
12 of the issue here is the last foot of material is
13 particularly difficult for them to get out, and so staying
14 away from a low level in the scow is the whole point. It's
15 that you don't spend a lot of time taking out that last
16 foot. The idea is to have it fuller. So this is just an
17 observation of the amount of material in the scow, and we'll
18 share that with you as part of the slides.

19 **MR. FUGLEVAND:** So, Ed, could I just clarify what
20 I see? Paul Fuglevand.

21 Was that an observation made at the offload dock
22 of how much material was in the scow when it was pulled to

1 the dock to offload? Is that what that is?

2 **MR. GARVEY:** Bruce, do you know what that -- Bruce

3 says yes. Bruce and Shane McDonald did this.

4 **MR. FUGLEVAND:** Then who was making that

5 measurement?

6 **MR. McDONALD:** This is Shane McDonald.

7 What you have is the amount unloaded divided by

8 the average area of a scow. From each scow, how much was

9 unloaded, divided by the inside area of the scow.

10 **MR. FUGLEVAND:** Where did you get the amount

11 unloaded?

12 **MR. McDONALD:** That's in the Parsons tables from

13 GE. It's for every scow that was unloaded.

14 **MR. FUGLEVAND:** Okay. So Parsons said the

15 quantity in cubic yards that was unloaded?

16 **MR. McDONALD:** Yes.

17 **MR. FUGLEVAND:** And you just divided that by the

18 cross-sectional area of the scow?

19 **MR. McDONALD:** The inside area.

20 **MR. FUGLEVAND:** Yeah, the plan view of the scow.

21 That's the amount that they would have unloaded in thickness

22 in the scow?

1 **MR. McDONALD:** Correct.

2 **MR. FUGLEVAND:** We saw some pictures. Sometimes
3 they came in and the material in the scow was stacked. So
4 it didn't come in dead level. So it came in stacked. So,
5 in some cases, it might have been stacked 6-feet high, but
6 since it was a triangle, it might have only meant 3 or 4
7 feet on average. Is that correct?

8 **MR. McDONALD:** That's correct.

9 **MR. FUGLEVAND:** Okay.

10 **MR. MAGAR:** I don't understand what the message is
11 here of this.

12 **MR. McDONALD:** The message here actually is if you
13 look at the -- what I wanted to present here and I didn't
14 have is the actual volume. This is speaking to something
15 that John had said. The volume that was unloaded, the
16 average was 420-some-odd cubic yards. That equates to the
17 2.0 or 1.9 in the middle there, and that gives you an idea
18 of the range in this.

19 **MR. MAGAR:** But, if you have an area that just
20 requires 100 cubic yards and you have to bring a scow in and
21 now it's partially full, I am not sure how you are asking to
22 manage that or to get it to be full.

1 **MR. McDONALD:** Well, almost every scow or quite a
2 few scows actually were filled from multiple CUs.
3 **MR. MAGAR:** Okay.
4 **MR. McDONALD:** So you would take it someplace
5 else.
6 **MR. MAGAR:** Okay.
7 **MR. FOX:** Does this factor in the water that's in
8 the scow?
9 **MR. McDONALD:** No. The water -- there's a
10 separate number for the water.
11 **MR. FOX:** Does EPA have a recommendation for water
12 management? We seem to have a conflict here on the water
13 where when GE was asked can they treat the water on the
14 river, they felt that was in conflict with having to keep
15 the sediments wet.
16 **MR. MULLIGAN:** Let me speak to that.
17 **MS. HOLLAND:** Give your name again, please.
18 **MR. MULLIGAN:** John Mulligan.
19 I mentioned the volumes that were in the scows. I
20 also talked about the fact that if you could get 700 yards
21 in the scow, you would be able to get through Phase 2.
22 700 yards at about 1.23 to 1.4 tons per cubic yard

1 would give you somewheres of 1,000 tons. That leaves you
2 about 500 tons for water in the scow. Well, the average
3 scow came through somewhere around 80 to 5,000 gallons of
4 water, hull of 100,000 gallons of water. That was needed to
5 cover the sediments to reduce volatilization. 100,000 of
6 water is about 410 tons or something. So, with your 700
7 yards of solids and 400 yards of water, you still only have
8 1,400 tons, with 1,500 you can carry at an 8-foot draft.
9 Now, Andrew said that they took scows to three
10 different locations at times. They'd fill in the shallow
11 areas, and they'd move to a deeper spot, then bring them out
12 probably to the navigation channel where you have typically
13 12 feet or at least 10 and load them up the rest of the way.
14 If they do that in Phase 2, lockages won't be a problem,
15 and the water won't be a problem.
16 The question of water comes up when you're looking
17 at these mini scows, the so-called "mini scows." These
18 things are required because you can't get into the shallow
19 areas where you've only got 3 foot in depth without doing an
20 awesome amount of over-dredging. So they use these small
21 scows and the smaller excavators and dredges to fill. The
22 problem with them is that they only could hold about 25

1 cubic yards of material before you had to empty them. So,
2 in the 1-yard bucket, if you're getting a bucket every 2
3 minutes, it's not very long before you got a filled-up mini
4 scow, and you have to haul it away. When you try to move
5 that scow because you have water in with the solids, the
6 water will slosh over the walls. The walls are only about
7 30-inches high. In fact, they might only have been 2 feet.
8 I don't remember what the number is. We measured them in
9 the field.
10 So they had to keep a foot of free board in the
11 scow for water. So you could have a mound in the middle,
12 but you had water running out side because these steel
13 walls. You better have a foot of free water, or you'll
14 slosh the water out.
15 So what's suggested there was while you were using
16 mini scows and they're going to be in one spot for a long
17 time, to reduce the number of trips where you have to flip a
18 scow every 45 minutes or something and to dredge, put a
19 small pump in it, put a tanker out there, and pump from four
20 or five of these mini scows into a tanker. You keep that
21 water level in the mini scows down.
22 They accomplished this in some of the CUs last

1 year by draining the buckets. They'd hold the bucket above
2 the water for 3, 4, 5 minutes to let the water drain out.
3 **MR. FUGLEVAND:** John, I think we're getting into
4 kind of rebuttal stuff here.
5 **MR. MULLIGAN:** Okay.
6 **MR. FUGLEVAND:** Also, we got late-started. You
7 guys were late getting into the room. What I'd like to do,
8 could you quickly just run through your slides? Let's just
9 take maybe 5 minutes, and we need to move in, because we've
10 lost some time, and I think rebuttal stuff is really for
11 tomorrow.
12 **MR. MULLIGAN:** Okay.
13 **MR. GARVEY:** This is some of your observations,
14 just so that you can see. This is the bucket filling rate.
15 This is for CU-1. I have one for each of the CUs, but,
16 basically, what this is, is the ratio of the volume removed
17 each day divided by the number of bucket bites that day.
18 What you see is on different days, you have different rates
19 of bucket efficiency. So, if you would, we're calling them
20 "bucket efficiency." If you got 40 percent here, you could
21 drop to about 20 percent here. This was a 6-inch pass. So
22 this is a very low efficiency, if you would. They are not

1 going down very far, and they are using a large bucket.
2 This represents roughly 2-, 3-inch passes on
3 average, perhaps a 6-inch and a polished pass, if you would,
4 or a smoothing pass, but, anyway, this is just CU-1. I have
5 similar ones for other ones, and that's kind of the point.
6 This one looks about even.
7 Sorry. Some of this is a little out of sequence
8 here.
9 This is CU-2, now hedging up a little. We also
10 see some really high bucket filling -- quote/unquote,
11 "filling rates." What this represents are buckets that are
12 not able to close, and so what ends up happening is you
13 don't get an accurate count of the number of buckets, but
14 this is still a measure of what's going on in the operation.
15 That's why we're able to correlate it with the amount of
16 resuspension and the like because these buckets that are
17 running at 100-percent filled are not really 100-percent
18 filled. What they are really representing are bucket bites
19 that are not getting counted.
20 So we see that in CU-2. We see that in some of
21 the other CUs. Here's another one at CU-3. It's a function
22 of the amount of debris in the river, to some extent. It's

1 also a function of sometimes how fast they were going in a
2 given pass, but it's striking.
3 This is the variable that we used to correlate
4 with the prediction of downstream loads. This is not flat,
5 constant 50 percent or 45 percent, but rather it moves
6 around a lot, and that we are able to correlate this
7 variable with the amount of resuspension, the amount of
8 release in the scow, to use Todd's term, downstream to
9 Thompson Island. So that's really the point here. You can
10 see a whole range of different filling rates.
11 This is CU-6. Let me get down to CU-17 and 18
12 which has larger buckets. You see CU-17 runs pretty
13 steadily. Notice the 5-cubic-yard buckets run at relatively
14 steady level. Again, you've got some low ones and some high
15 ones. Anyway, that's the observation. The bucket
16 efficiency is simply measured as a volume moved by the
17 number of bucket parts recorded by the instrumentation. It
18 varies with tide, and we correlate that with load.
19 The other point I wanted to make about this --
20 **MR. BRIDGES:** Well, what was the correlation?
21 **MR. GARVEY:** It was simply a predicted variable.
22 **MR. BRIDGES:** Okay.

1 **MR. KERN:** I think the thing that this --

2 **MS. HOLLAND:** Give your name again, please.

3 **MR. KERN:** Sorry. John Kern.

4 When we're getting multiple cycles and so we've
5 got over 100 percent apparent filling rate, it means the
6 bucket didn't close. So it means you're losing sediment in
7 that cycle or that group of cycles. So it's essentially a
8 surrogate for sediment coming out of the bucket. Whenever
9 we get over 100 percent or even over, which is probably 50
10 percent, we're probably double-counting the cycles. That
11 means the bucket didn't close.

12 **MS. HOLLAND:** Okay. Ed?

13 **MR. GARVEY:** One more series of figures I'm going
14 to show.

15 **MS. HOLLAND:** It's not showing.

16 **MR. GARVEY:** Yeah, I know that.

17 **MS. HOLLAND:** Okay.

18 **MR. GARVEY:** I am trying to find my way through.
19 I can't see. I apologize.

20 [Pause.]

21 **MR. GARVEY:** This is Ed Garvey again.

22 This is a portion of CU-7. I'm just going to

1 trace these days through the operation. Again, our
2 observations are that they don't stay in once place to do a
3 pass, that they move around a lot. They come back, and they
4 hit high spots after they're done with the dredging.
5 They're not just digging to the depth, the desired depth.
6 This is just a sequence of events in CU-7. Just
7 watch the dots. I'm just going to change the page, and each
8 day is another day, and the dots are color-coded for the day
9 of the removal.
10 So, starting with the 20th --
11 [Pause.]
12 **PANEL MEMBER:** No, you're good. You're good.
13 Just page down.
14 **MR. GARVEY:** All right. Page down. Oops, so
15 let's go through this again.
16 Here is the first, second day, third day, fourth
17 day, fifth day. So they're moving generally across the CU.
18 Then you see they'll begin to fill in, in the middle there,
19 start to come back and do another pass in the middle of the
20 CU. So the point here is the difference, for instance,
21 between these two passes.
22 So we're seeing them come back across. That's the

1 observation. It's as simple as that. It's not a "dig a
2 hole" and "move the hole across," but rather to come back
3 and essentially do a lift at one thing and come back or do a
4 lift in an area and then come back to your high spots.
5 That's what our observation is.
6 That's all.
7 **MS. HOLLAND:** Any questions from the panel?
8 **MR. MAGAR:** How did chemistry -- was that the
9 second round? Is that after doing chemistry and returning,
10 or is this all for the first cut, first run?
11 **MR. GARVEY:** This is single pass.
12 **MR. MAGAR:** Single pass.
13 **MR. GARVEY:** It's a single pass.
14 **MS. HOLLAND:** Paul, are you ready to move on, or
15 do you have any other questions?
16 **MR. FUGLEVAND:** Now what we would like to do is
17 just clarify. We have talked about EPA's recommended
18 changes just to the resuspension standard. Now we would
19 like to move and talk with GE and have GE walk us through
20 their changes.
21 And you have recommended changes to all three of
22 the productivity standards. So we'll turn it over to you

1 and your computer, and we'll follow along.

2 **MS. HOLLAND:** We are switching computers.

3 [Pause.]

4 **MR. CONNOLLY:** Okay. I will walk you through our

5 redline. Before I do that, I just want to correct a fact.

6 At Waterford in Phase 1, EPA's proposed 7-day

7 average standards were exceeded. A control standard was

8 exceeded for about 3 weeks of the project. The evaluation

9 standard was exceeded for about a month and a half of the

10 project.

11 I think Ed had said he didn't believe they were

12 exceeded, but, in fact, they were.

13 What we have added to what you guys had put

14 together was some additional information based upon the

15 latest thinking that we had and the development and

16 completion of the work developing our model.

17 You can see that what we have added here is the

18 idea that the load standard should be developed for both the

19 Upper and Lower Hudson, a point that I made in my

20 presentation, and that the standard for the Upper Hudson

21 should be based on benefits to fish.

22 We had showed you a proposal for a process that

1 would allow us to do that, and that the standard for the
2 Lower Hudson should be based on the comparison of the load
3 relative to that which occurred with MNA. So the only
4 really change there, relative to what you guys had, was the
5 addition of the Upper Hudson load standard.
6 We put some additional text at the bottom just to
7 indicate that in our view the model that we've developed,
8 the PCB fade and bioaccumulation model, should be the basis
9 for determining the allowable loads and should consider the
10 full impact of resuspension, including the redeposition
11 phenomenon.
12 In my presentation, I went through some ideas of
13 how we may incorporate the redeposition phenomenon in the
14 modeling in order to take account of its impact on both load
15 and fish, and so we would propose to do that, getting some
16 help from you guys in terms of what might be a reasonable
17 scenario for that.
18 And that, you know, the numbers that we get should
19 be based upon minimizing impacts to fish in the Upper Hudson
20 and ensuring dredging accrues a benefit in the Lower Hudson.
21 Those are the changes in terms of what you had
22 before. So it really focuses on just two points. One is an

1 additional standard for the Upper Hudson and reinforcing
2 that we believe that the way to do this is using the model
3 that we've developed.
4 **MR. BRIDGES:** John, at the risk of stating the
5 obvious, what you have provided is an outline for a process,
6 not a standard.
7 **MR. CONNOLLY:** Yes.
8 **MR. BRIDGES:** If I understood what you said
9 yesterday correctly, if my recall is accurate, you would
10 provide to the panel a detailed report of modeling and the
11 actual standard --
12 **MR. CONNOLLY:** Yes.
13 **MR. BRIDGES:** -- the first part of June?
14 **MR. CONNOLLY:** Yes.
15 **MR. BRIDGES:** This obviously creates a challenge
16 because --
17 **MR. CONNOLLY:** Yes, it does, and we understand
18 that. We're working as fast as we can.
19 **MR. BRIDGES:** At some point, I mean, I guess the
20 panel -- this is maybe for us to discuss at some point. I
21 mean, I don't know how we do that. The charge is very
22 specific in the Consent Decree that we are supposed to be

1 evaluating proposed standards, not outlines for approaches
2 for standards.
3 **MR. FUGLEVAND:** Todd, on that, my thought is that
4 tomorrow, after we have heard the closing statements from
5 the two groups, we are going to spend part of our
6 deliberation time tomorrow afternoon talking about schedule
7 because we will have what other proposals are on the table,
8 but I agree. The schedule keeps moving.
9 **MR. CONNOLLY:** Yes. And I apologize.
10 We did provide you one number yesterday, which was
11 if we do not consider the redeposition phenomenon, that the
12 model indicates that an appropriate load for the Lower
13 Hudson may be, for total PCB, 1,200 kilograms. So that's at
14 least a starting point. We indicated that that is an
15 overestimate because of the additional impacts associated
16 with redeposition, which gets to the other point that you
17 just raised.
18 **MR. FUGLEVAND:** John, one point of reference.
19 **MR. CONNOLLY:** Yes.
20 **MR. FUGLEVAND:** 1,200 kilograms total PCBs or Tri?
21 **MR. CONNOLLY:** Total PCBs.
22 **MR. FUGLEVAND:** Let's keep stating that because

1 they are radically different.

2 **MR. CONNOLLY:** Yeah. During dredging in Phase 1,

3 the average ratio at Waterford between Tri+ and total is

4 2.5. The functional equivalent of 1,200 is about 500. So

5 it's sort of similar to the EPA's number for Tri+. Did I do

6 that right, 1,200 divided by 2.5?

7 The other point that I want to make here, Todd

8 brought up this idea of mass balance and accounting for the

9 component of the load that occurs off-season. Although we

10 didn't state it here, we think it's implicit that the

11 allowable load includes all load associated with the

12 dredging, including the load that comes after the dredging

13 project.

14 EPA has a view that we haven't seen a lot of load

15 after the dredging project. They raise questions about the

16 validity of the data.

17 We share some concern with some of the data but in

18 a very restricted sense, really the high flow data at

19 Thompson Island. Outside of that, we fully believe that all

20 the data are high-quality data, data that were collected

21 using stations that had been thoroughly QA/QC'd under EPA

22 supervision and continued to just go through rigorous QA/QC

1 during the entire dredging project. There is no reason in
2 our mind to question any of the data outside of the Thompson
3 Island data during that high flow event.
4 In terms of the proposed numerical criteria, we
5 really haven't changed our position relative to what you
6 guys had written down from our previous writings, other than
7 to add at the end the idea that this should be a hard cap,
8 as we made the point, and that it should remain fixed, a
9 not-to-exceed number, to ensure the remedy achieves its
10 intended benefits.
11 We talked yesterday about being somewhere between
12 zero and infinity, and somewhere in there is the point at
13 which we begin to impact the benefits, and that is really
14 where this load needs to be set at. There has to be a
15 ceiling that you cannot exceed.
16 **MR. BRIDGES:** Well, let's take the scenario,
17 unlikely though it might be, you get to the end of year one
18 and you have reached your -- or let's pick another one. You
19 get to year three, and you've hit the ceiling. So what are
20 you going to do?
21 **MR. CONNOLLY:** If the ceiling is derived
22 appropriately, such that -- let's say we've used the models

1 and we've set load standards and we say, "we don't want to
2 exceed these because if we exceed these we are having a
3 negative impact in the Lower Hudson River, and we have
4 compromised the benefit to the fish in the Upper Hudson
5 River by a certain percentage." If the data we have been
6 collecting all along continue to bear out what the models
7 have been saying, so at the end of 3 years we're looking
8 back saying, "Yeah, there's no reason to doubt what the
9 models have said," then it seems you ought to stop because
10 this project, if it continues, is now a mass removal project
11 for mass removal's sake and not a remedial project to
12 achieve benefits. So, in our view, you would have to stop
13 at that point.
14 **MR. FUGLEVAND:** Are you okay with that?
15 **MR. BRIDGES:** Okay. Well, I know this is just all
16 kind of a "what if" kind of thing, and you can get to crazy
17 stuff, but you have to consider scenarios, though they may
18 be unlikely, for Engineering Performance Standards to kind
19 of work in reality. If you do set a hard cap, it doesn't
20 seem unreasonable to ask what would you do if you get to the
21 cap.
22 **MR. CONNOLLY:** Yes.

1 **MR. BRIDGES:** So, if you get to the cap and you
2 say, well, we got to stop, what does "stop" mean? Will you
3 stop removing PCBs from the river? If 30 or 40 percent of
4 your inventory remains in the river at that point, what do
5 you do with that? What is the contingency then if you hit
6 the cap? What actions do you take?
7 **MR. CONNOLLY:** I think there are two parts to
8 responding to that.
9 The first is that if we believe, based upon the
10 Phase 1 experience and the cumulating Phase 2 experience,
11 that we may, in fact, hit this cap before we get completely
12 done, then we really should, as we had advocated in my
13 presentation, try to do this dredging as smart as we can in
14 terms of figuring out what are the high-value areas in terms
15 of benefits, which part of the dredging program gives us the
16 biggest bang for the buck in terms of reducing PCB levels in
17 fish, reducing load to the Lower Hudson, and prioritize the
18 dredging project, so that is what you are doing first.
19 So, if at some point you get to where now you
20 think "I'm going to be doing more harm than good," I have
21 tackled the areas that have hopefully given me as much of
22 the benefit as I can accrue. At that point, I think there

1 needs to be some discussion of what comes next.

2 Clearly, you can't continue to dredge and take

3 mass out for mass sake because of what's happening. Whether

4 at that point "stop" means nothing happens or "stop" means

5 something else happens in some sort of an adaptive

6 management scenario is something that I think would have to

7 be worked out between GE and EPA.

8 **MR. FOX:** Is the 1,200 number a number that is not

9 going to change? Maybe everyone else is clear about this.

10 In early June, is this number possibly going to be a

11 different number based on modeling?

12 **MR. CONNOLLY:** It's our expectation that

13 incorporating redeposition into the modeling analysis will

14 reduce the number. So the final number that we expect to

15 come out with is a number that's less than 1,200.

16 **MR. FOX:** Okay. So 1,200 is a max.

17 **MR. MAGAR:** We've also seen numbers that show the

18 early model under-predicted the amount of natural or

19 background load or suspension that's coming down the river,

20 at least that was some of the results that EPA was showing,

21 that the actual measured concentrations were much higher

22 than the model predicted concentrations, which would tell us

1 that the MNR component would be a higher number, would it
2 not?
3 **MR. CONNOLLY:** That's based upon the old models.
4 **MR. MAGAR:** Right.
5 **MR. CONNOLLY:** The 1999 models.
6 The new model we have developed does not have that
7 bias.
8 **MR. MAGAR:** Okay. I wanted to make sure that we
9 are not comparing different models to different numbers, but
10 that we're using a consistent set of information that is
11 reflecting our current understanding of what would be an MNR
12 background.
13 **MR. CONNOLLY:** Yes. We believe we've got a model
14 that is accurately reflecting MNR. We now pretty much, the
15 baseline loads, 2004 to 2008 -- and one of the things you
16 didn't see but is in the packet that we had sent around is
17 the validation of the model by starting it in 1977 and
18 running it up to 2004.
19 The plot that you see is actually not the final
20 plot. We've made another tweak to the model. It even looks
21 better now. But we pretty much nail the long-term natural
22 recovery in the system from 1977 through the 2004 period,

1 and then the calibration period from 2004 to 2008, we nail
2 the annual loads. So we are very confident that this model
3 is accurately reflecting natural recovery processes and
4 rates of natural recovery in the system.
5 **MR. SCHROEDER:** My understanding, this load is
6 actually going to be applied annually, as opposed to another
7 kind of project, in which case it's not just going to come
8 up suddenly 3 years out that we are not meeting this, that
9 we will know after the first year.
10 Looking at the results you have for some of the
11 sites that you worked on, that the resuspension rates are
12 not equal in all areas, and I would take it that the areas
13 such as CU-18 where you had sheet piles, the resuspension
14 rates were a lot smaller.
15 **MR. CONNOLLY:** Yes.
16 **MR. SCHROEDER:** And even in the East Rogers Island
17 or East Canal, at least much smaller where you had flow
18 control.
19 So there are alternatives that can be imposed or
20 management options beyond -- they may impact productivity
21 and such things, but there are things that can be done to
22 reduce the resuspension and the load, and that those

1 decisions could be made after the first year, if you're not
2 approaching your load.
3 **MR. CONNOLLY:** Yes, they could. There are pluses
4 and minuses associated with some of those.
5 We had lots of air exceedances when we --
6 **MR. SCHROEDER:** Which could be controlled with
7 carbon or something too.
8 **MR. CONNOLLY:** There are other impacts,
9 constricting the channel, for example, that might cause
10 erosion in part of the channel we're not constricted, but
11 those are things that we can actually evaluate with the
12 model.
13 **MR. SCHROEDER:** Right.
14 **MR. CONNOLLY:** So, yeah, as we're going along, if
15 it looks like we are going to exceed the standard, there
16 could be some additional work saying what else can we do to
17 reduce resuspension, which may allow us to get further down
18 the road.
19 I think we're willing to do that, as long as
20 things fit the definition of "practicable."
21 **MR. SCHROEDER:** Right.
22 **MR. FUGLEVAND:** Let me just kind of, John, open it

1 up a little bit. If we start with the 1,200 kilograms
2 total, wasn't there, by your measurements, 200 kilograms in
3 year one that went past Waterford?
4 **MR. CONNOLLY:** Yes.
5 **MR. FUGLEVAND:** So, if we take 1,200 minus 200,
6 that leaves us 1,000.
7 **MR. CONNOLLY:** Yes.
8 **MR. FUGLEVAND:** If we divide it by 5 years, it's
9 200 per year.
10 **MR. CONNOLLY:** Yes.
11 **MR. FUGLEVAND:** So I read into that, that
12 basically it would be similar productions each year. Your
13 kind of rule of thumb without a model would be if you did
14 285,000 in year one and you released 200 and if it's kind of
15 the annual kind of -- not necessarily a goal but divided by
16 5, that means we may be somewhere in the 250- to 300,000
17 yards a year may be possible. To keep under this 200
18 kilograms at Waterford is just kind of a ball-park idea.
19 **MR. CONNOLLY:** Mm-hmm.
20 **MR. FUGLEVAND:** Then, if I take it another step
21 and say what if we accounted for the redistribution and
22 dropped it to, say, 800, if I drop it to 800 as a total, I

take off 200 for year one. That leaves me 600. 600 divided by 4 is -- what is that? 150 a year.

MR. CONNOLLY: 150.

MR. FUGLEVAND: So, at 150 a year, we're more like -- if we just scale it for the prior year, we're more like in the 175, 190,000 cubic yards per year.

MR. CONNOLLY: Mm-hmm.

MR. FUGLEVAND: So, to just understand what you're saying, to kind of put it into context from a productivity perspective, is that how you see that it might unfold on a cubic-yard basis, before we now start talking about where we're going to spend those cubic yards?

MR. CONNOLLY: I think on a real high level, that's fine.

The issue here, as we get further downstream, we get less of the drop.

MR. FUGLEVAND: Right.

MR. CONNOLLY: So we may send more to Waterford than what we saw in Phase 1 for that reason.

MR. FUGLEVAND: Okay. So then one of the questions that Todd asked would be contingency plans.

MR. CONNOLLY: Yes.

1 **MR. FUGLEVAND:** So I am just trying to unfold this
2 and understand it better.
3 Let's say we bought into this, and we've had more
4 release than we anticipated, but now we somewhat have a
5 cubic-yard budget because that's where we're getting a lot
6 of our release. I guess I would see the next step might be
7 to do limited dredging with more capping in order to provide
8 the containment of whatever we're leaving behind, but we're
9 going to be limited to how much we dredge, so we'd use more
10 capping in order to have a remedy that achieves a
11 remediation goal. Is that a possibility?
12 **MR. CONNOLLY:** Yeah, that's within the realm of
13 possibility, and that would be something GE and EPA would
14 have to discuss.
15 It's important, I think, to keep in mind that even
16 at this sort of load limits that the modeling is suggesting,
17 there's still a lot of sediment that can be dredged. It's
18 still a substantial remediation project, a substantial mass
19 removal project under any scenario here.
20 **MR. MAGAR:** In the way you're viewing this, then
21 -- and this kind of comes back to the question I was asking
22 yesterday about the cumulative curve versus maybe a recovery

1 curve.

2 Does the rate of release then matter to your

3 models?

4 **MR. CONNOLLY:** Yes.

5 **MR. MAGAR:** Because why not spread this out? You

6 said before, for I think reasons that you don't want to

7 prolong an exposure, but it seems like a slowed release

8 going out to 6, 7 years might be advantageous, compressing

9 it all to 1 year, if you could actually possibly do that

10 would be -- certainly get through the pain a lot faster, but

11 then you'd have a much higher release.

12 So how do you view the rate of release impacting

13 the productivity and your operations in that -- let's just

14 call it 1,200 for now still.

15 **MR. CONNOLLY:** Based on our analysis with the

16 model and sort of just intuitively, slowing down gives you a

17 lower annual load, but at the end of the day, you still wind

18 up with the same total. So slowing down doesn't get you out

19 of the box of how much load will you ultimately release.

20 It does help against the 500-part-per-trillion

21 standard. If you're going slower, there would be less times

22 you would exceed 500. So it helps from that perspective,

1 but it really doesn't help from the cumulative load. You'd
2 just get less load each year, but you're going for a longer
3 time, and so, eventually, you get to whatever load you're
4 going to get to.
5 **MR. MAGAR:** But you might have a different final
6 profile, a different sedimentation on the surface sediments
7 for this, especially the near-field but then this 30-mile
8 stretch.
9 **MR. CONNOLLY:** Oh, I see where you're going.
10 **MR. MAGAR:** I would think you would have somewhat
11 different outcomes than when you have natural recovery.
12 **MR. CONNOLLY:** Yes.
13 **MR. MAGAR:** Following that, you are going to have
14 different dilution effects. Doing it in 1 year versus 5
15 years, I mean 4 or 5 years may not make much of a
16 difference, but I think that would be worth evaluating what
17 those outcomes are.
18 **MR. CONNOLLY:** Yeah, I see where you're going,
19 and, obviously, that's something you can test with the
20 model.
21 One of the nice advantages of now having developed
22 this next-generation model is that we can do a lot of "what

1 ifs."

2 **MR. MAGAR:** Right.

3 **MR. CONNOLLY:** And I think it does provide us an

4 opportunity to look at things, and a lot of creative

5 thinking can go into it.

6 **MR. SCHROEDER:** John, is all load created equal?

7 Does the distribution of the load matter, such as if it

8 occurs primarily during high flow events versus occurring

9 during low flow events?

10 **MR. CONNOLLY:** One of the things that we took away

11 from Phase 1 was that the amount of resuspension we get

12 increases with flow.

13 **MR. SCHROEDER:** Yes.

14 **MR. CONNOLLY:** So flow does matter. Velocity does

15 matter.

16 **MR. SCHROEDER:** Yes. But does it have the same

17 effect biologically or on the recovery? Because now you're

18 talking about grams versus concentration.

19 **MR. CONNOLLY:** Yes. Yeah. I have to think that

20 one through. I'm not sure of how that would work.

21 **MR. MAGAR:** That kind of gets to my question, too,

22 Paul. It's thinking of this in grams versus concentration.

1 **MR. CONNOLLY:** Yes.

2 **MR. MAGAR:** It would be nice to bring this into a

3 concentration method.

4 **MR. CONNOLLY:** Yeah. And we promise to at least

5 address that particularly for you based on providing some

6 additional materials, which we should be able to provide you

7 by lunch time or after lunch.

8 **MR. SCHROEDER:** Right. Because biological effects

9 we normally think of are concentration-driven, not mass.

10 **MR. CONNOLLY:** Yes, not mass-driven. Yes. That's

11 a very good point.

12 **MR. THOMPSON:** John, a clarification question from

13 me.

14 So you are suggesting -- or you suggested we would

15 be able to see some results by early June from the model.

16 **MR. CONNOLLY:** Yes.

17 **MR. THOMPSON:** Has EPA gone through the model?

18 **MR. CONNOLLY:** They have not. The first time EPA

19 saw the model was about a week ago.

20 **MR. THOMPSON:** So we would just be in a position

21 of being presented something from GE that EPA really hasn't

22 had a chance to evaluate and weigh in on.

1 **MR. CONNOLLY:** Yes, that's true, although we have
2 suggested to EPA that they bring in some of their modeling
3 experts, and we would work with them to allow them to review
4 the model, and we'd be willing to do that as quickly as EPA
5 could mount that effort.
6 **MR. THOMPSON:** I understand that, but I do have to
7 ask Ben.
8 **MR. CONETTA:** We haven't seen the model. First we
9 heard of the number was here, Monday or Tuesday, whenever we
10 talked.
11 **MR. THOMPSON:** Okay.
12 **MR. CONETTA:** We have talked about -- they've said
13 they've developed their model.
14 **MR. THOMPSON:** Just before our deliberations this
15 afternoon, then. So we basically have 25-some-odd days for
16 them to be able to come up to speed and say, "Yeah, we agree
17 with this." I'm not sure that's practicable, to be honest.
18 **GE PRESENTER:** I mean, what we did about a week
19 and a half ago when we were actually able to get a document
20 together and calibration, which is the one you've seen --
21 **MR. THOMPSON:** Yeah.
22 **GE PRESENTER:** -- we sat with the division

1 director and some of his staff. The director in New York
2 City went through it and said, "Here is a tool. Obviously,
3 you guys are going to have to go through this." We laid out
4 a process for doing that, and we got a pretty good reception
5 on the willingness to take a look at the model, try to work
6 with us. They need some time to go through it, obviously.
7 It's the tool that's available now. There's
8 nothing else available to do what we believe needs to get
9 done in terms of load analysis.
10 But at least what we heard from the regional
11 management was pretty positive in terms of being open to
12 looking at this. So, hopefully, we can proceed in a really
13 constructive way on this.
14 **MR. THOMPSON:** Okay. I don't need to pursue that
15 any further, but I just needed to understand that piece.
16 Thank you, guys.
17 **MS. HOLLAND:** So any other questions to GE about
18 what's up on the screen on standards, or did you folks have
19 more to present from GE?
20 **MR. CONNOLLY:** We had some redline on residuals.
21 **MR. BRIDGES:** While people are turning the page,
22 I'll make just one other observation.

1 It takes us back to kind of first principles, and
2 that's the conceptual model. That is taking the kinds of
3 observations that Victor was making earlier and Paul about
4 where the sediment, the contaminated sediment particles were
5 going and where the PCBs are going in the system in relation
6 to the benefits, whatever those are.
7 They are defined, and the standards relate to
8 them. So that would probably be very helpful to everybody
9 -- I know it would to me -- to be able to get closer to
10 understand what the modeling is, but this conceptual
11 framework, laying that all out.
12 **MS. HOLLAND:** We have only got about 20 minutes
13 till lunch. I was just wondering if you wouldn't like to
14 get through this first.
15 **MR. BRIDGES:** I'm not asking for them to give me
16 the conceptual model now, Melinda. I'm just making that
17 observation while they turn the page.
18 **MS. HOLLAND:** Why don't we go forward with your
19 next page, then.
20 **MS. BENAMAN:** This is Jennifer Benaman.
21 The next page is on residuals. We didn't have any
22 redline to the proposals that you all had summarized, except

1 for some clarification on the removal tolerance suggestion,
2 having to do with compliance to grade.
3 The redline that we have focuses on the rationale.
4 In the copy that the panel had sent us last night, these
5 were blank. So we just filled these in to show you all the
6 rationale beyond the proposals.
7 Essentially, the idea that you guys have heard
8 before, the fact that in high-confidence area, after the
9 design cut, we had substantial removal of mass, close to 90
10 percent in these high-confidence areas.
11 In low-confidence areas, after two passes, we
12 effectively removed 90 percent of the mass in all the CUs,
13 except for CU-1.
14 So, to just tick through the rationale beyond all
15 these proposals, but, in general, all of your proposals as
16 you wrote them or as you summarized them from our report
17 were accurate.
18 **MR. MAGAR:** Putting aside this issue about the
19 calibration or the co-alluding PCBs -- and I know there's a
20 difference, the way you're calculating mass and total PCB
21 concentrations -- does EPA concur with that 90-percent
22 value? This is another place where a lot of times, we're

1 getting numbers from one group or the other, and you all
2 might agree. I'm not sure. If you do or don't agree, I
3 don't know that it's very controversial, but it would be
4 nice to know if the 90 percent is consistent with your
5 observations.
6 **MR. GARVEY:** This is Ed Garvey.
7 We recognize that after two dredging passes, they
8 do achieve 90 percent mass removal.
9 I guess our point is that it's only 60 percent,
10 the first one. So the 90 percent is two passes already, and
11 then there is typically a residual pass to clean up the
12 remaining surficial sediments. Sometimes there is, not
13 always, a residual pass, but the first pass is not in that
14 frequency. It's at 60 percent.
15 **MR. MAGAR:** I'm not asking if you agree with their
16 conclusions, but I just would like to -- a number of times
17 when we see numbers, I may ask again if you are on the same
18 page with the numbers. That's helpful to know that there's
19 not at least disagreement there.
20 Thank you.
21 **MR. GARVEY:** Yeah. We agree.
22 **MS. HOLLAND:** Jennifer, did you have more to

1 present?

2 **MS. BENAMAN:** Not unless there's questions.

3 **MR. BRIDGES:** I have a question. What does

4 "encountered" mean? When hard bottom is encountered, does

5 that mean one bucket in an acre, encounters a hard bottom or

6 a clay? How do you know you've encountered hard bottom or

7 clay?

8 **MR. INGLIS:** Can you hear me? This is Andrew

9 Inglis.

10 The process -- well, obviously, the first step

11 when encountering hard rock is you're going to touch it with

12 the bucket, right? So the flag goes up, we've got rock. We

13 have a process that we worked through with EPA during Phase

14 1 that allows us then to -- you saw the cut lanes. Taking

15 one bucket in the center cut lane, take one bucket on the

16 port perimeter, and then another bucket on the starboard

17 perimeter, if all three of those buckets are also rock, then

18 you move ahead. If one of those buckets comes up with

19 sediment, then you take that until you get to grade. You

20 dig the next one until you get to grade if there's sediment.

21 You are basically doing a contour dredging of the rock.

22 I don't know if that answers your question, Todd,

1 but it's following the process that was developed in Phase 1
2 that EPA approved.
3 **MR. BRIDGES:** Okay. So this is something you
4 would step through for each acre.
5 **MR. INGLIS:** As currently defined, that's the
6 process, yeah.
7 **MR. SCHROEDER:** It's for each advancement of the
8 dredge in that acre, you would find it?
9 **MR. INGLIS:** Right.
10 **MR. SCHROEDER:** Okay.
11 **MR. FUGLEVAND:** So are you proposing a change from
12 what you worked out in Phase 1, or are you proposing to
13 continue that? Because, as it reads here, if you encounter
14 rock, you wouldn't continue. So is it the way you defined
15 encountering rock is what you're also proposing for Phase 2?
16 **MR. INGLIS:** It really means we're not going to
17 then go back and cover that area again. We covered bucket
18 refusal areas, in some tight cases, once, twice. So, once
19 that's established, that's it.
20 **MR. FOX:** So, Andrew, would it be fair to say that
21 you would do that process that was outlined in Phase 1 once
22 and only once?

1 **MR. INGLIS:** Exactly. Exactly. Once it's
2 defined, it's defined. Move on.
3 **MR. FOX:** Thank you.
4 **MR. GIBSON:** Rick, if I could just elaborate on
5 that a little bit.
6 One of the de-loops we got into was not so much
7 that we covered the whole area, the bedrock area once, we
8 were able to then get a residual sample in there, in a crack
9 or crevice. It would come back with PCBs, and then we'd
10 have to go back out and repeat the process.
11 So what we're specifically requesting there and
12 also in clay areas is we go through once, we sample for the
13 purposes of determining backfill or cap, and then we go
14 forward with that.
15 **MR. FOX:** But it would be, for lack of a better
16 term, a good-faith effort at getting your best shot at
17 dredging in that one pass?
18 **MR. GIBSON:** Exactly. Our Phase 1 experience
19 shows that the limitations of the dredging technique will
20 leave a veneer material on the rock surface, and we don't
21 want to bang our heads trying to get that last little bit.
22 **MS. HOLLAND:** So do you want to go over your last

1 page?

2 **MR. BRIDGES:** Can I ask another question about

3 this one? Debris of various types and varieties was an

4 issue in Phase 1, and I'm not sure what information you have

5 with regard to how it will be encountered in Phase 2.

6 My specific question in this regard is, have you

7 considered the value of test pits, of digging test pits?

8 **MR. GIBSON:** Yeah. In fact, in Phase 1, we did a

9 number of test pits in CU-1 to try to get a sense for how

10 deep the debris was.

11 In answer to your question, EPA has made the point

12 that debris correlates with PCB contamination and sediment,

13 and we have data from Phase 1 that shows that that's not the

14 case. If you expand your look into Phase 2 areas and look

15 at the SSAP cores and look at where we characterized woody

16 debris in the core samples, you will see that there is a

17 wide spectrum of PCB concentrations.

18 So we are concerned about just dredging until you

19 are done with debris, that you could be moving a lot of

20 clean sediment.

21 I think the point was made yesterday during the

22 residuals presentation that the basis of our approach to

1 modify the residual standard is -- and particularly in
2 low-confidence area that may be getting impacted by debris
3 -- is to take that first design cut and then sample in an
4 effort to penetrate down through the debris. We think that
5 that will improve our ability to get through those difficult
6 sampling conditions.
7 **MR. THOMPSON:** I'd like to come back real quickly
8 to the point on clay and bedrock. What is, in your opinion,
9 a reasonable amount to leave over top?
10 I think you, in fact, earlier had used 6 inches in
11 the documents. So, if you had 6 inches or less, your
12 proposal was to fill that 3 inches?
13 **MR. GIBSON:** For the purposes of Phase 1, the
14 process that we worked out with EPA was a redline of less
15 than or greater than 6 inches.
16 **MR. THOMPSON:** So would that be the same?
17 **MR. GIBSON:** I don't know that we've -- well, I'll
18 defer to -- I don't think we've proposed to deviate from
19 that threshold.
20 **MR. HAGGARD:** John Haggard.
21 If it's defined as a dredge area and there's
22 greater than 6 inches locked on it, we would go back. The

1 question is if you have a 10-square-foot in a pocket and a
2 crevice, it's just going to take some judgment.
3 **MR. THOMPSON:** Well, then my question is if this
4 is what you did in Phase 1, you are now proposing to change
5 that? Why are you changing what's working or what you're
6 doing?
7 **MR. HAGGARD:** It's getting rid of the -- and just
8 clarifying this is how we are going to operate going
9 forward, that we don't have to go back and keep going back
10 after small amounts of material. It allows us to just have
11 very good clarity on what the rules are going forward.
12 **MR. THOMPSON:** Okay.
13 **MS. HOLLAND:** Okay. So now are we ready?
14 **MR. FOX:** One more quick question. Would you
15 propose to do a confirmation sampling and then decide
16 whether it was a backfill or a cap? Is that sort of where
17 you're heading?
18 **MR. HAGGARD:** Correct.
19 **MR. FOX:** Okay.
20 **MR. FUGLEVAND:** Another kind of related question I
21 have on the residuals, when we were out there for our site
22 visit, I think it was the 1st of October, and I believe it

1 was in -- I can't remember which spot we were at, but we
2 observed the dredge putting a lot of clay in the barge and
3 asked why. And it had to do with the residual standard.
4 As I understand it, you had to dredge a minimum
5 thickness, and then you had distance between borings, so
6 when you had your model -- so, even though you had a basis,
7 in some cases, you had to remove more clay than you thought
8 because of a variable bottom.
9 Maybe explain that a little bit more again. We
10 were at the end of the dredging season, and it still looked
11 like you were taking out a lot of clay. What was going on
12 then, and then how would what you're proposing now have
13 changed that?
14 **MR. GIBSON:** I have the microphone. Bob Gibson.
15 [Laughter.]
16 **MR. GIBSON:** What you were seeing in October was
17 the effects of our residual passes, and in some of those
18 areas where we would take a first cut in clay, we found the
19 clay, we verified the clay surface. We've gone back in
20 again and collected core samples. Again, the same issue,
21 residual materials sitting on the clay surface comes back
22 with a number that says redredge.

1 Again, it's just simple. We're looking to
2 short-circuit that process, go through it once, acknowledge
3 that there could be residual sediment sitting on the clay
4 surface and not try to go back again a second time.
5 **MR. FUGLEVAND:** So, then in the new scenario, you
6 would collect data that you would use for deciding whether
7 to cap or backfill, but you wouldn't go back with a dredge
8 again and fill barges with mostly clay with a layer of
9 residual on top?
10 **MR. GIBSON:** Exactly right, Paul.
11 **MR. FUGLEVAND:** Okay.
12 **MS. HOLLAND:** All right. Why don't we do the last
13 page.
14 **MR. BRIDGES:** Can I just ask -- this is just
15 brief. So, on this point about the 10-foot-by-10-foot
16 compliance grid cells, I mean, EPA showed that daily
17 scenario where you were hopping around in a cell. Is the
18 hopping around on that last day, this 10-by-10-foot grid
19 cell issue?
20 **MR. KRUPPENBACHER:** Actually, what you saw there
21 was not.
22 **MS. HOLLAND:** And give your name again.

1 **MR. KRUPPENBACHER:** Tim Kruppenbacher.

2 What you saw there in CU-7, we spent about 5 weeks
3 in that CU. That was after we had been in there for several
4 weeks already. What you saw was we had delineated clay in
5 that center area. There was also a bridge at the southern
6 end of it with five piers across the river, and it was
7 sequencing the work around the clay, around the bridge
8 piers, and also there were several rock obstructions, areas
9 of refusal that we worked around.

10 We went back to those as part of the cleanup, and
11 it gets back to working around the obstructions that we had
12 to deal with in there. So that was really what was driving
13 what you saw in that frame there.

14 **MS. HOLLAND:** Okay.

15 **MR. HARTMAN:** A real simple question on that.
16 That just prevented you from doing an upstream-to-downstream
17 activity?

18 **MR. KRUPPENBACHER:** That's correct. That's the
19 type of conditions that were encountered that would prevent
20 an upstream-to-downstream.

21 On a clay area, we would identify the clay,
22 identify the limits, and then we would go back and try to

1 clean up around it prior to final for acceptance.

2 **MR. HARTMAN:** Okay, thanks.

3 **MR. FUGLEVAND:** So any more on residuals?

4 [No response.]

5 **MR. FUGLEVAND:** So now we can move to the changes,

6 proposed changes to the production standard.

7 **MR. GIBSON:** As you can see, there's very little

8 change here. We're simply proposing the project be

9 completed in 5 years for Phase 2, and that based on what we

10 heard from the panel in February, that we would track our

11 productivity, our progress each year by area remediated.

12 You will note that we removed the PCB mass as a

13 metric under the productivity standard. After thinking

14 about it, we thought it would be more appropriate to track

15 PCB mass removed within the context of the net PCB load, as

16 those are directly related.

17 Any questions?

18 **MR. THOMPSON:** I'm sorry, Bob. Would you clarify

19 that, please?

20 **MR. GIBSON:** Yeah. In our evaluation report, we

21 suggested that the metric to track productivity should be

22 modified from volume sediment removed --

1 **MR. THOMPSON:** To area, right.

2 **MR. GIBSON:** -- to area removed and PCB mass

3 removed. What we've made, a change here in this draft,

4 suggesting that we take out the PCB mass removal metric and

5 move it over to the resuspension standard --

6 **MR. THOMPSON:** Oh, I see. Okay.

7 **MR. GIBSON:** -- as it pertains to load.

8 **MR. THOMPSON:** Thank you.

9 **MR. FUGLEVAND:** So, again, the big thing on this

10 standard then is weighting from your analysis to see what

11 the numbers might be. So this is basically still a part of

12 the process, and we need to crank the numbers and see where

13 those come in.

14 **MR. MAGAR:** Just to be maybe a little redundant

15 again, that will have some justification for your thinking

16 that 5 years is an appropriate timeline?

17 I mean, you say here complete in Phase 2 in 5

18 years. What is the basis of that, besides that was the

19 number that's been on the books for a long time?

20 **MR. HAGGARD:** John Haggard.

21 Two different things to look at. One is the

22 project, when it was described and when record decision was

1 being set and what was conveyed to the communities, that
2 this was a project that was going to be done in 5 years, and
3 there was a commitment to do that. We think we should try
4 to honor that commitment.
5 Secondly, every additional year we dredge, we are
6 going to be causing impacts on the river, fish, increased
7 water. So every year we do that, if you add a year, you
8 have increased that duration by 20 percent. Add 2 years,
9 you've increased it, you know, 40 percent.
10 So it is trying to do what makes sense, to get it
11 done in 5 years, and not sacrifice that because it is an
12 impact each year we are out there, and as we are seeing with
13 resuspension, we can have that impact actually extend
14 beyond.
15 **MR. FUGLEVAND:** Paul Fuglevand.
16 We have heard this described as one of the
17 biggest, if not the biggest, remediation projects. If we
18 look at some other sites around the country, they are not
19 doing them in 5 years. Commencement Bay was 15 years, and
20 over 15 years, they did, what, a million-and-a-half yards.
21 The Fox is not a 5-year project. I think they currently had
22 7 or 10.

1 **MR. FOX:** It's going to finish in 2016.

2 **MR. FUGLEVAND:** So what I haven't seen is other
3 than kind of the initial goal in the ROD of 5 years, I
4 haven't seen anything that really refines that. I haven't
5 seen anything that you would then use that logic to apply to
6 other sites, to say, "Oh, these other sites have gone
7 overboard in doing 10 years," or whatever.

8 For example, if you change the duration beyond 5
9 years, since it was in the ROD, does it take a ROD amendment
10 to change that, or is it an ESD type of issue? How, I
11 guess, rigid is the 5-year number from your perspective?

12 **MR. HAGGARD:** Let me touch on the first point.

13 Again, we go back to once the metric is what if it
14 takes longer -- a negative impact for longer, other than the
15 community structured in that additional year -- I mean, the
16 other way to look at it is sort of this balancing point
17 where if we finish this in 5 years, we start accruing the
18 benefits of the project. So, at some point, where does that
19 start getting lost on the benefit side? So 5 years was set,
20 and we think there should be an attempt to stay with that.
21 So we are not advocating change to the 5 percent.

22 **MR. BRIDGES:** At the risk of provoking the ire of

1 my chairman, who accused me of philosophizing on this point
2 earlier --
3 [Laughter.]
4 **MR. BRIDGES:** But I'll note that since by terminal
5 degree has the word "philosophy" in it, I guess I'm at
6 liberty to do that.
7 It seems to me on this very point that this
8 production-based objective function is too simplistic. I
9 mean, it just is.
10 **PANEL MEMBER:** I agree.
11 **MR. BRIDGES:** I'm pontificating now. I guess I'm
12 not philosophizing.
13 I don't really think it's a philosophical
14 question. An objective function is an engineering question.
15 What is the objective function for this operation?
16 So you wanted to do it in 5 years. That was an
17 arbitrary selection. I guess that's what I'm hearing, you
18 know, 5 is half of 10, 10 is a good number, so 5 is -- I'm
19 not suggesting -- apologies for the sarcasm.
20 So it seems like it was pretty much a selection of
21 what they thought they could do, but then there are these
22 tradeoffs. I don't like to use the word, "conflicts" among

1 the standards, but they are clear tradeoffs that exist among
2 the standards, and you have to settle those tradeoffs,
3 right? And you have to have an objective function to do
4 that or some notion of it.
5 Because one thing you're trading off, if there's
6 these relationships between productivity and resuspension or
7 load, right, so adjustments that you're making to that
8 affect potentially the recovery period -- so this is a much
9 more complicated -- and getting it back to the standards, I
10 don't think unless we -- there's some settling or some
11 settlement agreement about what the objective function is,
12 you can't really settle those tradeoffs. Therefore, you
13 can't really render an opinion about what the Engineering
14 Performance Standards should be. I mean, that's the train
15 of the dilemma.
16 **MR. HAGGARD:** John Haggard.
17 Can I offer you a perspective on that? When you
18 look at is there a project that makes sense that meets the
19 fundamental standards, the resuspension standards and those
20 standards, we think there is. We think there's a project
21 that can be done in 5 years. So, with that, we think 5
22 years makes sense.

1 It is pretty simplistic, but, again, can we meet
2 the project benefits? Can we meet the key fundamental
3 standards in 5 years? We think so.
4 **MR. BRIDGES:** Right. Well, I hear what you're
5 saying, John, and I appreciate the fact, all else being
6 equal, everybody would like to be done in 5 years rather
7 than 6, but the problem is not everything else is equal.
8 That's the dilemma.
9 I think it is very much an engineering problem.
10 It's smack dab in the middle of these Engineering
11 Performance Standards and how you set them. If there is a
12 basis that all the parties want to stick to that 5 years is
13 5 years, then you can impose that constraint on the
14 objective function, and you solve for the rest. But you
15 have to understand that doing that has implications for how
16 you do that settling and recovery rate and everything else.
17 So that's the end of my philosophizing, if you
18 want to call it that, but I think it's an engineering issue.
19 **MR. FOX:** Just to nail that down, I think 7 years
20 ago, three of us in this room recommended that the
21 productivity standard be subordinated at some level, and
22 some consideration at least for Phase 1.

1 **MR. CONETTA:** Well, just to answer your question
2 about the ROD amendment, if that's an EPA question, it is a
3 legal question. It would not require a ROD amendment, nor
4 would it require an ESD, but it is a legal question. We
5 want to be out in 5 years.
6 **MR. FUGLEVAND:** Right. What Ben just said is to
7 change it beyond 5 years, even though it was in the ROD, it
8 is not significant enough. It would not require a ROD
9 amendment, and it would not require any ESD. Okay.
10 **MS. HOLLAND:** Are there other questions on this
11 topic?
12 [No response.]
13 **MS. HOLLAND:** How about we break for lunch? All
14 right?
15 **MR. FUGLEVAND:** This is a good time to break.
16 When are we coming back?
17 **MS. HOLLAND:** 1:30.
18 **MR. FUGLEVAND:** 1:30.
19 **MS. HOLLAND:** Anyone who has not signed up for
20 public comments, you need to do that by one o'clock, if you
21 want to speak this afternoon.
22 [Luncheon break taken.]

1 **Panel Deliberations (continued)**

2 **MS. HOLLAND:** Paul, do you want to introduce our
3 process we're going to start on next?

4 **MR. FUGLEVAND:** Yep. So we're going to move into
5 a different stage of the meeting where we start our more
6 direct deliberation process, and, again, we have four Charge
7 Questions that we were given to address. So the first thing
8 we're going to do is, in essence, what we call an "input
9 survey" of the panel members, where we're just going to go
10 around the table and ask each panel member to just state
11 where they're currently at on the Charge Question. So we
12 will start with Charge Question 1 and then move to 2 and 3.

13 We are not at the stage of necessarily making
14 recommendations but more of where each panel member just
15 sees the project, our review process right now on each
16 Charge Question.

17 I will read Charge Question No. 1, and then we
18 will get input. While we are doing this, we are having one
19 of the panel members -- Tim Thompson is just going to try
20 and capture in bullet form the comments that he is hearing,
21 just so we have something to go back to as we continue our
22 deliberation process.

1 Question 1. Does the experience in Phase 1 show
2 that each of the Phase 1 Engineering Performance Standards
3 --
4 **PANEL MEMBER:** John, you're trying to kill us
5 here.
6 **MR. FUGLEVAND:** Need hearing protection.
7 **PANEL MEMBER:** I've never paid more attention to
8 John Connolly in my whole life.
9 [Laughter.]
10 **MR. FUGLEVAND:** He was short and to the point too.
11 [Laughter.]
12 **MR. CONNOLLY:** I apologize.
13 **MR. FUGLEVAND:** Does the experience in Phase 1
14 show that each of the Phase 1 Engineering Performance
15 Standards can consistently be met individually and
16 simultaneously?
17 So we will go ahead and start with Paul Schroeder.
18 **MR. SCHROEDER:** Well, my first response to this is
19 that it's evident by suggested modifications from both GE
20 and EPA that they both feel that these standards cannot be
21 met individually and simultaneously in Phase 2.
22 The data, I think, shows that they were not

1 individually and simultaneously consistently met in Phase 1.
2 The resuspension standard exceeded several times requiring
3 slowdown in operations or stoppage of certain dredging
4 operations.
5 The residual standards, I would say could not be
6 rationally applied, as I think they were intended to be.
7 One of the biggest causes was the often unknown depth of
8 contamination, which required a lot more production cuts and
9 sampling than I think the standard was intended.
10 The productivity standard also did not seem to be
11 met, and even the peak monthly did not quite meet the peak
12 monthly goal. And that was often caused by interactions
13 with the other standards, so not simultaneously.
14 So that is the short answer in terms of what
15 happened in Phase 1.
16 Projecting this to Phase 2, which is what the
17 question's intent is, my first comment regarding that would
18 be that it appears that the Phase 2 dredging plan and
19 operation that is proposed is essentially the same as what
20 was being done at the latter half of Phase 1, and that the
21 conditions, as I think John pointed out yesterday, are not
22 going to appreciably change in terms of velocities, water

1 depths, and different things. So some of the same issues
2 will still apply.
3 Some improvement is likely to be obtained in Phase
4 2 based on what was learned, but it seems unlikely the
5 standards as they are set up now can be met in Phase 2.
6 I think there's a lot of uncertainty in some of
7 the data still on the way we look at or interpret it,
8 especially with regards to resuspension. We cannot really
9 understand how much of the losses were caused by free
10 products from dredging debris and such things, what was the
11 true contribution or magnitude of the contribution from
12 losses of settled residuals, and how much we can improve
13 this.
14 I asked the question yesterday of both EPA and GE
15 as to what do they think their change in resuspension
16 loadings would be or production based on changes in
17 activities and what do you think it can achieve, and the
18 gist of it was that small improvement could be achieved
19 probably in the resuspension standard. I think that's what
20 John gave us, and EPA said that they understand some of the
21 variables attributing to it, but they have not been able to
22 quantify yet the relationship and how much that would

1 change. So projecting again to whether or not we can meet
2 these in Phase 2 at this point is very uncertain.
3 The residual standards was largely met, but it
4 took an excessive number of cuts, and the closure was not
5 timely and had impacts.
6 So I think that's pretty much my thoughts on the
7 matter.
8 **MR. FUGLEVAND:** Greg?
9 **MR. HARTMAN:** Taking a look at the Phase 1
10 question, basically I took an estimate on just what the
11 actual production rate of the dredges would have been or,
12 let's say, could have been. I did this by identifying that
13 there were really two situations with the original dredge
14 operation that were entirely different than I think the
15 remaining dredging operations would be for the next 5 years.
16 The first one deals with the CU-01 dredging
17 activity, and that was clearly spelled out in the reports
18 that the CU-01 was not representative of the dredging, the
19 way the dredging should have been performed or the way the
20 dredging probably will be performed for the next several
21 years. On that one alone, I anticipated that you could get
22 another 20,000 yards in a dredging season, if that dredging

1 season was performed exactly like Phase 1.

2 The second issue was the start-up of dredging.

3 Basically, when they started dredging in May, they had one

4 or two dredges actually on site, and it took them clear

5 until July before they had a full complement of dredges out

6 on the site and working. I'm anticipating that GE would

7 start this next year of dredging with all the dredges

8 commencing at the same time, pretty simple assumption.

9 If they did that, they literally would have

10 increased their production rate on the order of 70,000 cubic

11 yards for the year. So those two numbers added to the

12 actual dredging of approximately 280,000 yards -- means that

13 they could have accomplished a 370,000-cubic-yard-per-year

14 dredging activity. 370,000 cubic yards per year works if

15 you only have 1.6 million cubic yards remaining to be

16 dredged. That production rate gets there.

17 But we now are identifying a significantly greater

18 amount of material to be dredged for the remaining 5 years.

19 So, based on that, the Question 1 or Charge 1, can they

20 meet the standards for productivity, no, they can't, and

21 that's based upon just the dredging alone. It does not

22 consider -- you know, it does not relate exactly what the

1 increase in the downstream resuspension or residual dredging
2 -- it does not address that issue.
3 That's it.
4 **MR. FUGLEVAND:** I'll let Tim get caught up.
5 **MR. THOMPSON:** There's no way I can type this, and
6 we've got a court reporter doing this. We're going to catch
7 the major bullets. I can do that, but I just can't keep up
8 with these guys.
9 **MR. FUGLEVAND:** Okay.
10 **PANEL MEMBER:** You got Greg's name in.
11 **MR. THOMPSON:** I got his name in.
12 **MR. FUGLEVAND:** Yeah, you did good.
13 [Laughter.]
14 **MR. THOMPSON:** One or two succinct statements, I
15 can capture. Maybe I would suggest after this --
16 **MR. FUGLEVAND:** Do you want me to paraphrase it?
17 **MR. THOMPSON:** If there's things you want me to
18 just absolutely put on this screen, I'll be happy to do
19 that.
20 **MR. FUGLEVAND:** Yeah, that's good. Let's do that.
21 **MR. HARTMAN:** Increased productivity due to CU-01
22 difference and increased productivity due to a late start of

1 several dredges, a lot of the dredges. If they had
2 completed that action, I'm saying that you would have had
3 370,000 cubic yards dredged during the Phase 1 period.
4 Due to prediction of increased volume for the
5 remainder, remaining 5 years, this production rate would not
6 complete the dredging in 5 years.
7 **MR. THOMPSON:** Paul, do you want to go back and
8 capture anything? Do you want to give me two bullet points?
9 I'm not as fast as this guy down here.
10 **MR. FUGLEVAND:** Let's come back to it.
11 **MR. THOMPSON:** Okay.
12 **MR. FUGLEVAND:** So you can think about it.
13 We'll go ahead to Rick Fox.
14 **MR. FOX:** Okay. Tim, I'll stream, and then I'll
15 swing back and give you some bullets.
16 **MR. THOMPSON:** That would be great.
17 **MR. FOX:** I agree with Paul and Greg that the
18 Phase 1 experience showed that the Engineering Performance
19 Standards will not consistently, individually, or
20 simultaneously be met for Phase 2.
21 Individually, regarding resuspension, we talked a
22 lot about resuspension so far and a lot of the issues that

1 have come up. What I am going to do is just talk about some
2 issues that were a problem with the Phase 1 and the current
3 EPS, just to frame how I am thinking about this with regard
4 to the other questions.
5 I am still not convinced that PCB oils aren't a
6 significant contributor to this. That's going to be my
7 first bullet, Tim, if you want to get a head start.
8 To the extent practicable, I think the NAPL should
9 be characterized and managed when encountered.
10 The depth of contamination is also an issue, in my
11 opinion, regarding the resuspension standard, and the big
12 issue in my mind that I have with the resuspension standard
13 is the fact that the CUs were left open for so long, and a
14 lot of activity and a lot of river flow and a lot of the
15 nepheloid-type layer that was unconsolidated was free to
16 move around and cause a lot of resuspension along with the
17 oils.
18 I think the data isn't there to tell us how much
19 recontamination. I don't think we have a robust enough
20 dataset to tell us how much recontamination is an issue,
21 both in the near-field and the far-field, Upper and Lower.
22 As far as residuals, I think the poor

1 characterization of the DoC -- and Paul said this, but the
2 poor characterization of the DoC addled the use and analysis
3 of the standard. In my opinion, without a good DoC, since
4 we didn't have a good DoC, we were unable to test the
5 residual standard very well.
6 It seems that walking into this project without
7 vertical reference of the cores and so many incomplete cores
8 and poor core recoveries really made us shoot in the dark.
9 As far as the productivity, it seems clear that
10 without changes to the overall system, productivity, given
11 the target on a volume basis and extrapolation of what the
12 volume remediation will be in the future, we'll have a
13 difficult time meeting it, but, to me, that's not really the
14 question.
15 It was brought up by Todd at the last meeting, and
16 GE is recommending that we look at this project on an aerial
17 basis. If you look at how much area we completed versus
18 what we were supposed to, we got just over half. A lot of
19 yardage and that's a good thing, but since we have no idea
20 what the yardage target is, I think I'd rather see this
21 thing measured on an aerial basis.
22 So, simultaneously, the interaction of the

1 standards is key here. The productivity standard, as I
2 mentioned toward the end of the session this morning, I feel
3 that should be at least somewhat subordinated to the other
4 two standards. Residual standard and resuspension standards
5 are more measures of protection and the health of the
6 system, both short and long term, and I think less so
7 productivity is. I'm not saying that this project shouldn't
8 be finished as quickly as it can.
9 In my mind, the fact that it mainly started with
10 poor delineation and leaving the COs open for so long. So
11 that's sort of the observations I have from Phase 1 pretty
12 succinctly with how we move to the next questions.
13 Tim, do you want to grab some bullets?
14 **MR. THOMPSON:** I'll grab some bullets.
15 **MR. FOX:** Okay. The first one is the PCB NAPL
16 contributed significantly to the resuspension, I think.
17 **MR. THOMPSON:** Okay.
18 **MR. FOX:** Leaving the CUs open for most of the
19 season contributed in various ways.
20 We did not collect good information to determine
21 recontamination downstream.
22 Poor characterization of the depth of

1 contamination was an issue with the residual standard, and
2 because of that, Phase 1 didn't really test the standard, in
3 my mind.
4 As far as productivity, that we were able to meet
5 the volume, I don't feel that's a good measurement of
6 productivity going forward.
7 And an overall goal for moving forward should be
8 closing CUs as fast as possible.
9 **MR. FUGLEVAND:** So, Rick, just to clarify, do you
10 have an answer to the specific question, yes or no?
11 **MR. FOX:** No.
12 **MR. FUGLEVAND:** The question is no?
13 **MR. FOX:** The answer is no, yeah.
14 **MR. BRIDGES:** Is it my turn? Chairman, do you
15 want me to go?
16 **MR. FUGLEVAND:** Yes, sir.
17 **MR. BRIDGES:** Oh.
18 I'll try to speak in bullets, and if I have to
19 tell the story afterward, I will. Okay?
20 [Laughter.]
21 **MR. FUGLEVAND:** The opposite of Rick.
22 **MR. BRIDGES:** The EPS were not met in Phase 1,

1 either individually or simultaneously, from my perspective.
2 That would be Bullet 1.
3 I guess Bullet 2 is that determining whether they
4 could be met in Phase 2 requires more information than has
5 currently been analyzed and formulated. So I'm inclined to
6 say that I don't think they could be in following phases,
7 but the question is really asking to make a prediction.
8 Next bullet would be more mechanistic
9 understanding is needed relating operational activities as
10 well as the standards to one another, and for purposes of
11 informing the development of revised standards, harkening
12 back to comments I made before we ended for lunch, I think
13 what is needed is a more complete and transparent objective
14 function, however they wish to develop that objective
15 function, so they can revise these EPS.
16 So the story is -- well, probably the story
17 probably speaks for itself, but there are a lot of
18 uncertainties and, I'd have to say from my perspective, a
19 surprising number, given the intensity of monitoring. I
20 guess you'd have to call it maybe the most monitored
21 dredging project in the history of the modern world. I
22 don't know. Maybe that's not much of a stretch, but it

1 still, nevertheless, surprises me that it's not more
2 straightforward to relate things happening in the river to
3 exceedances of the standards. So I think more work is
4 needed there with existing datasets.
5 But more to the point, what to do in the future, I
6 think there is a need for the use of a quantitative tool --
7 if you want to call that a "model" or a "numerical
8 framework" or "mathematical framework" -- is needed in real
9 time or something closer to real time that the team can use
10 while they're in the river, can update their understanding
11 of what's happening. They can make more informed decisions
12 about tradeoffs among these standards and what actions to
13 take to try to control problems that they observe in
14 relation to the standards. I see that as a need, that these
15 standards and the way they are being used to inform their
16 operations within the river needs to be adaptive in that
17 more quantitative sense -- I don't think something that good
18 engineers are going to be able to intuit based on their
19 experience and work through. There are just too many things
20 moving at the same time, too many variables, many more than
21 28. There are too many variables operating here, and I
22 think validated or not, there's got to be some numerical

1 framework that helps inform the operation in something
2 that's closer to real time.
3 That's it.
4 **MR. THOMPSON:** I'll just speak and then catch my
5 bullets at a break.
6 **MR. FUGLEVAND:** Okay.
7 **MR. THOMPSON:** I'll put my name down.
8 **MR. FUGLEVAND:** So you don't forget.
9 **MR. THOMPSON:** In case you forget me.
10 I'm going to start -- well, I'm going to start to
11 say that, no, these were not met simultaneously, but, in my
12 mind, there is still an open question whether at least the
13 resuspension could have been met individually. I have many
14 more questions than I have answers right now.
15 Actually, I'll stop and say thank you, everybody,
16 for all the information. It's been overwhelming, but you
17 guys made a great effort.
18 My kickback to 2003 in the peer review that the
19 three of us sat on, I can start with noting that it was
20 noted at that time the EPS, at least for resuspension, could
21 not be met, that the model was based on a flawed assumption,
22 that total suspended solids would be the measure of PCBs in

1 the river. And the peer review stated that.
2 Subsequent response to that said, "No, we don't
3 believe it and think it's going to be the right metric."
4 Well, we hoped that that and as well our call in 2003 for
5 more near-field monitoring to be able to answer these
6 questions, which again was because we've got suspended
7 solids, we can answer these questions.
8 I would dearly hope that -- and this is more of a
9 hope -- that the peer review responses that you hear this
10 time will be taken more, perhaps -- "seriously" sounds too
11 harsh, and I don't mean it that way, but absorbed and
12 applied in the future.
13 So, starting from that point, I'm going to agree
14 with my colleagues that the depth of contamination issue
15 still raises a lot of questions in my mind, and I think
16 really that in order to go forward, we have to get a real
17 clear idea of that, and we have to do that proactively.
18 There are methods, absolute readily available and
19 easy methods, to actually being able to achieve getting the
20 cores in the Hudson River. I know this from personal
21 experience, the little that I sampled, as many samples as
22 has been collected on the Hudson, but I would say there are

1 well over a thousand over the course of my career. I think
2 that the depth of contamination issue impacted all aspects
3 of the EPS.
4 I already noted that on resuspension, the model
5 projections could have not -- in the EPS could not have or
6 did not foresee or take into account the PCB release, yet I
7 have to admit -- I don't know if it was serendipitous or
8 what -- I was still impressed with the fact that the
9 objectives were off, but they weren't off as much as I
10 thought they would have been, based on the conditions.
11 Open CUs clearly contribute to the resuspension
12 standard, gets back to the depth of contamination, but the
13 more recent data that have come from -- I think it was GE --
14 was that the methods of dredging, as good as they were, as
15 hard as they were, I think the focus on productivity -- I'm
16 beginning to believe very likely contributed to both the
17 inability to meet the resuspension and the residual
18 standard. I am still evaluating that. We'll probably get
19 into discussions amongst ourselves on that, but I agree with
20 Todd's statement earlier.
21 The operational objective here is not mass
22 production, but the interplay, the required interplay with

1 the productivity standard, I think had an impact on the
2 resuspension and residual criteria. As we discuss this,
3 I'll be really interested in looking at that point, changing
4 the productivity and particularly the way things were
5 operationally done on the dredge side, would those have a
6 positive impact on the resuspension and residual. I suspect
7 that's the case, but I think we need to explore that with
8 you guys.
9 **MS. HOLLAND:** Are you done, Tim?
10 Ready for Victor?
11 **MR. MAGAR:** Yes. This is Victor Magar.
12 I'll begin with the residual standards and then
13 the resuspension standards.
14 The question is whether these -- let's go back to
15 the charge: Does the experience in Phase 1 show that each
16 of the EPS (Engineering Performance Standards) can
17 consistently be met individually and simultaneously? I
18 think that "and," "and simultaneously" is clearly very
19 important.
20 Have they been met in Phase 1? The residual
21 standards were not. In Phase 1, there was a final CU
22 average of 1 milligram per kilogram Tri+ PCB concentration

1 in only one CU. From what I had read, that was CU-17. The
2 average Tri+ PCB concentrations in the capped areas were
3 greater than 6 milligram per kilogram Tri+. For all the CUs
4 where capping was performed, most were greater than 10. So
5 just achieving this 1 ppm goal was clearly very challenging.
6 Only three of the ten CUs, CU-3, 17, and 18,
7 achieved the noted objectives of not more than one sample
8 greater than 15 and no samples greater than 27. I
9 understand there is a lot of backing off of many of these
10 goals, but it's clear that those kinds of goals, those kinds
11 of targets were very difficult to achieve.
12 There may be reasons. There's depth of
13 contamination and the delineation. There's presence of wood
14 debris. There's bottom conditions that I think created a
15 lot of unique challenges, and I am going to return, like
16 Tim, to the 2003-2004 peer review where this was an area
17 that we had very strongly critiqued the standards.
18 I remember voicing myself specifically but also
19 coming out of the review was that these were both very
20 challenging, time consuming, and yet this was all being
21 implemented, despite the heavy lifting, the final work being
22 done by the backfilling and the capping alternatives to

1 dredging.

2 So there was this cycle of having to go through

3 repeated dredging and yet always end up at a capped or

4 backfilled surface, which was really doing the final work.

5 So I think there is an opportunity to really rethink how

6 these residual standards are being managed and how they are

7 being used to achieve the dredging goals.

8 I think there is an opportunity. This isn't

9 necessarily just about dredging less. I think these

10 standards need to be thought of to really provide

11 engineering direction, so that we can help manage the

12 project and achieve the dredge removal targets, the goals,

13 and the final cleanup levels.

14 With respect to the resuspension, in many cases,

15 most of the time they were met. I think we had some

16 exceedances as production had ramped up. I think there are

17 opportunities to be able to reduce some of the resuspension.

18 So the PCB concentration standard was exceeded on three to

19 ten occasions, depending on how we're looking at the

20 numbers, but not consistently exceeded. And I think some of

21 the tension will come in when we try and bring all three of

22 these standards together to look at the productivity, the

1 resuspension, and the residuals.

2 I still struggle with the load approach and would

3 like to have a clearer understanding -- and I think we are

4 going to get there -- but of what this means in terms of

5 risk or exposure and both in terms of near-field and

6 far-field.

7 I think that suffices for what I have right now.

8 I have them bulleted. I can pass them to you

9 later, if that's all right.

10 **MR. THOMPSON:** Okay. Yeah, that's fine.

11 **MR. FUGLEVAND:** So, first, the answer to the

12 question to me is clearly a no. They were not met

13 individually and simultaneously during Phase 1.

14 The second part is Phase 1 did not provide

15 evidence to me that they could be met individually and

16 simultaneously during Phase 2.

17 Just some background for that, on the resuspension

18 performance, there was 1,080-grams-per-day standard. It was

19 exceeded at Thompson Island, I think, for most of the

20 project. It wasn't exceeded downstream, but the way the

21 standards were originally written, I interpreted that to

22 include Thompson Island.

1 The second part was the load standard -- was
2 exceeded at Waterford, and so there was that. And I didn't
3 see anything in the potential changes right now for Phase 2
4 that would indicate that those would change dramatically
5 from what happened during Phase 1.
6 On the productivity perspective, I was interested
7 in reading in the original productivity standards a
8 requirement that said sediment that may be dredged that will
9 not count toward meeting productivity standard includes any
10 sediment dredged out of the design cut. The volume of
11 design cut in Phase 1 was 140,000 yards, approximately.
12 They didn't hit the 200,000-cubic-yard standard and didn't
13 come anywhere close to the 265,000-cubic-yard standard.
14 There was then a mid-field correction, as it were,
15 to my perspective, kind of a concerning amount of times when
16 they kind of midstream the numbers not working, so we'll
17 change it, change the approach midstream in the project
18 saying we're going to count all of the unplanned inventory
19 towards that. So, if you use the revised metric saying
20 we're going to count the inventory that wasn't in the
21 original dredge plan, then we get up to numbers.
22 But I think it's interesting to circle back.

1 There was a black and white standard issued that said you
2 could only count the stuff in the original design inventory,
3 and by that standard, it severely failed on the standard.
4 As far as the productivity standard as we might
5 apply it to Phase 2, if we take the current projected volume
6 remaining, it calls for somewhere between on the order of
7 500,000 cubic yards per season for the next five seasons. I
8 went through a calculation, a production calculation using
9 the bucket-fill factors and cycle times and cubic yards per
10 hour and all the data generated, and then I look at an
11 effective time of more in 50 to 55 percent.
12 If we look at a lot of new work projects or
13 environmental projects that are complex, you might get in
14 the 50 to 55 percent effective time. It's very rare you get
15 above that because of all the factors we've been talking
16 about.
17 So, if I apply a 50 to 55 percent effective time,
18 I use the production rates achieved by the dredges, I get
19 for the fleet that we have and giving some time for capping
20 -- I get around 375- to 400,000 yards possible on the
21 dredging side, assuming that you have resolved the issues at
22 offloading, but I couldn't get a number higher than that.

1 So that begs another question of going forward,
2 could the productivity be met. Based on what I see so far,
3 I don't think that number of the 500-some-thousand yards per
4 year can be met with kind of the way the site is set up now.
5 Again, the one issue that was pointed out by both
6 presenters, both now and in February, that a significant
7 issue of concern is depth of contamination, it seems to me
8 it had a real impact on the resuspension and the production
9 as well, and unless that is somehow resolved, I see that as
10 a major issue that is going to affect future phases as well.
11 I guess you could add that estimated production,
12 375,000 yards, Phase 2.
13 **MR. THOMPSON:** 375?
14 **MR. FUGLEVAND:** Yeah.
15 **MR. THOMPSON:** Okay. Anything else?
16 **MR. FUGLEVAND:** So are there any comments from the
17 panel before we go to Question 2?
18 [No response.]
19 **MR. FUGLEVAND:** So we will queue up now. We are
20 just going to do the same thing. We are just going to go
21 around and do a little input survey on where folks are at on
22 Question 2, and I'll read it first.

1 This time, we'll start with Todd and work our way
2 back around this way, mix it up.
3 Question 2. If the answer to Question 1 is no and
4 if EPA and/or GE (General Electric) have proposed modified
5 Engineering Performance Standards, does the experience in
6 Phase 1 and any other evidence before the panel show that it
7 will be practicable to consistently and simultaneously meet
8 the Engineering Performance Standards that are being
9 proposed in Phase 2?
10 So, Todd, if you would address GE's proposal
11 separate from EPA's and comment on them separately?
12 **MR. BRIDGES:** Okay. Well, my first response to
13 that question is that I don't think that the panel yet is in
14 possession of a specific proposal from either of the
15 parties. I mean, I'm going to say some things, but that's
16 my first observation. I don't think they're done yet in
17 making their proposals. So I don't think I'm in a position
18 to answer the question.
19 I could comment on the direction that they're
20 heading, and that's what I was intending to give comments
21 on.
22 **MR. FUGLEVAND:** So it would probably be

1 appropriate that I just kind of make that comment for
2 everybody. That was part of our conversation during lunch,
3 is that we are not yet in possession of recommended changes
4 in the performance standards. We have some, but we heard
5 EPA and GE both say this morning that they're working on
6 some changes, and so we're not able to fully address this
7 question yet, but we do have a sense of where you're going,
8 and so we are going to provide, for purposes of our
9 deliberation, kind of what our thoughts are on what we have
10 currently heard and where that might be going.
11 **MR. BRIDGES:** Yeah. So, with that in mind, some
12 of the bullets that I think need to be kept in mind in
13 developing standards, first of all, to be able to develop
14 them, you have to have an understanding, one, of the
15 processes the standards are intended to control; two, the
16 quantitative relationships among these processes; and three,
17 the influence of remedial actions on those processes and the
18 relationships among those standards.
19 I think this understanding is still developing
20 which based on the continual analysis that I think both EPA
21 and GE are engaged in -- so that, you know, makes a question
22 in my mind when are they going to be at a point where they

1 think they have standards for us to consider in specific.
2 One observation I would make, I think, in respect
3 to the existing standards that were used in Phase 1, I think
4 the current standards are, I would say, incomplete in
5 regards to relevant processes, and what I mean by that is --
6 I'll give a couple of examples.
7 The residual standard as such only considers
8 residual within the dredge prism. I guess it could be
9 argued that, well, the resuspension standard handles
10 residual outside of the dredge prism, but I don't believe it
11 does adequately.
12 What's the relationship between resuspension and
13 load? I know resuspension at the dredge and load, there
14 remains considerable uncertainty it seems in regards to
15 those processes.
16 I think there's a lot of improvement that can be
17 made in just some of the semantics of the standards, what is
18 meant by residual versus resuspension versus load that would
19 be helpful, and in relation to that, I think one fruitful
20 way to proceed would be to develop what -- I'd call it an
21 "operational conceptual model," not the sort of baseline
22 conceptual model that people are accustomed to doing in an

1 RI, but an operational conceptual model that allows everyone
2 to understand what these standards are and what their
3 relationship to the processes going on are, so you can see
4 what's covered and what's not covered. I think that would
5 be very useful.
6 Another point I would make is that I think my view
7 is I think the standards -- as I understand the intentions
8 expressed in the ROD that these standards are intended to
9 protect, there needs to be an explicit treatment of what I'd
10 call the near-field versus the far-field or maybe, in the
11 terminology of this project, the Upper River versus the
12 Lower River. I think it's insufficient to develop a
13 standard that only addresses, say, the Lower River.
14 As I understand the objectives of the project, the
15 intention is to facilitate recovery in the Upper and the
16 Lower River. So, therefore, we need standards that address
17 both of those intentions explicitly. In developing
18 standards, I think they should be developed in that fashion.
19 I wouldn't think it would be useful to get to a
20 point somewhere down the road in Phase 2 where somebody is
21 saying, "Well, X-hundred kilograms of PCB disappeared
22 between what we were doing in the river at the dredging and

1 our monitoring station." That, quite frankly, is an
2 unacceptable condition. It is just not acceptable to be in
3 that situation.
4 That gets to my point that the standards need to
5 be comprehensive with respect to these processes, so you
6 know what's happening and how it affects the objectives
7 you're trying to achieve, which the standards are guiding
8 you toward.
9 **MS. HOLLAND:** So, Tim, do you need Todd to sum
10 your bullets up?
11 **MR. THOMPSON:** Yep.
12 **MS. HOLLAND:** Or, is what he have up there enough,
13 Todd?
14 **MR. BRIDGES:** Well, I would just add another
15 bullet, Tim, if you want. Just say there needs to be more
16 of a process understanding that relates the standards to the
17 operational processes, and maybe just the last one, because
18 I sounded like I stressed it, that these standards need to
19 address what the objectives are for the Upper River as well
20 as the Lower River.
21 That will do.
22 **MS. HOLLAND:** So, Paul, who did you want to go

1 next?

2 **MR. FUGLEVAND:** Are you ready?

3 **MR. FOX:** Yeah, I'll go.

4 **MR. FUGLEVAND:** Okay. Rick.

5 **MR. FOX:** How long do you want me to talk for?

6 **MS. HOLLAND:** We had said 5 minutes each. To.

7 **MR. FOX:** Okay. Up to 5 minutes, okay.

8 Well, I think Paul summed it up well that I am not
9 entirely sure where the standards stand right now and what
10 we're being asked to comment on, in particular with the
11 resuspension standard, but to address the question head on
12 based on where we stand right now, looking at the residual
13 standard, I feel that a lot of the issues related to the
14 residual standard can be dealt with by having a good DoC.

15 Since neither EPA nor GE is recommending a
16 proactive determination of DoC, I think that is going to
17 cause problems in the long run with the residual standard
18 unless there is some operational changes made, or maybe it's
19 a change to the residual standard on how we manage
20 residuals, because I hit on this when I was talking about
21 the Charge Question No. 1, and that is that the two big
22 issues that I see are depth of contamination and how long

1 the CUs are open, and I think those two interplay into all
2 three of the EPS very strongly.
3 Going a little bit into the specifics of the
4 residual standard, EPA is recommending taking the eight
5 primary cases down to four. They are talking about removing
6 the 20-acre averaging, elimination of the 99-percent UCL.
7 Harkening back to 2003, one of the recommendations
8 that the panel made was the standards are way too complex,
9 and so any simplification is welcome. I see some progress
10 towards simplification, and I agree with that.
11 To me, the standards that are proposed need to try
12 to make sure that we are in a situation where we know the
13 most going into the project and we do the best job of
14 getting out what we can and then we close the CU, and so all
15 the standards should, as Todd put it, be set up to measure
16 how we're doing for that, including the overall
17 effectiveness of the project.
18 I think that the productivity standard -- I agree
19 with EPA's proposal to relax that, if necessary, and the way
20 the discussion went later. So I agree with their proposal
21 on that. I don't really see a reason why we need to stick
22 to 5 years on the productivity.

1 As far as the resuspension standard goes, I think
2 the biggest issue with the resuspension standard, if we're
3 going to have a goal that's based on an inventory, then we
4 need to know that inventory, and I don't think we're
5 anywhere near understanding with inventory of PCBs in the
6 remedial footprint is or what should be dredged within the
7 footprint. So, again, this DoC issue is circling around
8 into the resuspension standard.
9 I tend to agree with trying to look at the overall
10 risk related to "export releases," as Todd calls it, of PCBs
11 as a result of the dredging project, the entire project.
12 If, indeed, there are none or limited effects on the Lower
13 River due to the project, then I can see some benefit in
14 putting in a cap, but we have to really understand what the
15 standard is. Otherwise, we're going to say we have the
16 standard and, well, whoops, we didn't meet it, so we're
17 going to relax it and say it's okay, you know, we did our
18 best. That is not a true standard, as Todd was saying.
19 I look at just a little bit of specifics on GE's
20 proposals, especially with regard to the residual standard,
21 which is the area that I am putting most of my focus on, and
22 in a general sense, I agree with where GE is headed in

1 trying to get the CUs closed. I think, as we stated
2 earlier, we should try to get in a situation where we're not
3 chasing residuals over clay or hard bottom, but that's
4 predicated on doing as good a job as practical in a rapid
5 fashion on the first pass on those areas.
6 I think I'll just stop right there because I have
7 exceeded my 5 minutes.
8 Tim, I'll get you some bullets later.
9 **MS. HOLLAND:** Okay, great. Thanks, Rick.
10 So you want Greg to go next?
11 **MR. FUGLEVAND:** Go, Greg.
12 **MR. HARTMAN:** Okay. My answer to the second
13 question here is I thought about taking the Fifth, but I
14 can't answer absolutely. I do believe, though, that the
15 dredging operation itself can be significantly improved in
16 terms of resuspension and residual conditions. Productivity
17 may not be quite as good, but it could still be very close
18 to what we saw completed in Phase 1.
19 How much is difficult to determine? I do not see
20 in the effort, in all the preparation here, see anything,
21 any real recommended action by either GE or EPA on the
22 dredge operation and the specific effort to improve or

1 reduce resuspension and residual.

2 I do think, though, if the offloader -- the major

3 problem, of course, is the offloader. If the offloader

4 problem is addressed and production is improved, this will

5 make a very significant obvious improvement for the annual

6 production.

7 **MS. HOLLAND:** So, Tim, do you want to try to sum

8 anything up for Greg?

9 **MR. THOMPSON:** Depends on whether Greg wants to

10 sum up. If we're going to collect them, you're not going to

11 the potty until I get your bullets, okay?

12 **MR. BRIDGES:** E-mail them now.

13 **MR. THOMPSON:** You can have yours now.

14 **MR. BRIDGES:** No, you already got mine.

15 **MR. THOMPSON:** You can go.

16 **MR. BRIDGES:** Well, they can e-mail them to you

17 now.

18 **MR. THOMPSON:** There you go. That's fine. E-mail

19 them in, so I can get them in the break.

20 **MR. FUGLEVAND:** Okay. Paul?

21 **MR. SCHROEDER:** Well, EPA and GE have proposed

22 modifying the EPS, and the effects of these proposed

1 modifications, I don't think are very well defined in terms
2 of what kind of impact they will have on the ability to meet
3 the performance standards in the future.
4 The resuspension standard being a load of 1
5 percent at Waterford as proposed by EPA and GE, I gather,
6 considering redeposition, where they might be going, it
7 might be a half-a-percent release being the acceptable
8 level.
9 These releases, based on Phase 1 experiences, are
10 still not going to be particularly easy to meet without
11 significant controls and changes in dredging plan and
12 operations, which I don't really see in the plan at the
13 moment. So that is why I don't really think that that's
14 particularly good.
15 Losses, even under restricted flow events, as we
16 said in the East Channel, Rogers Island, you know, whether
17 perhaps as large a 1.5 percent, if you take into
18 consideration a deposition between there and Waterford,
19 perhaps you did drop out two-thirds of material, which would
20 get you close to the half-a-percent if you had really
21 controlled conditions for dredging and control of potential
22 erosion of residuals.

1 So, yes, it's possible to achieve those things and
2 perhaps even achieve a standard that, as I said, may be what
3 GE will propose, but that would require some flow
4 augmentation or control, which is not in the plan.
5 So, like I said, I think it takes significant
6 controls to do this. We can get to those levels with cheap
7 piles. We did achieve that, I think, more or less, in those
8 conditions. Again, it requires a different re-plan.
9 With the plans we have, I think it will still be
10 very difficult to meet the resuspension standards that they
11 are proposing.
12 With regards to residuals, I interpret the
13 EPA-proposed residual standard to be not very significantly
14 different than what they were essentially applying at the
15 end of Phase 1 in practice, and perhaps they might not agree
16 with that characterization.
17 As such, though, without a clear delineation of
18 the depth of contamination, I do not see that that standard
19 is going to significantly change productivity or
20 resuspension in those changes. So, again, I don't think
21 that that is going to get us very far.
22 The GE proposal, which would be, I would say, less

1 characterization or less cuts, you know, would probably get
2 us farther along the way. I still don't know whether or not
3 we meet it.
4 The productivity, I think I concur with some of my
5 other panel members here, which is there would need to be
6 some changes in operations and manner of handling things, be
7 it de-watering barges or some other sort of volatilization
8 control for barges in order to increase loads, whether it's
9 improve offloaders' capabilities or processing capabilities.
10 Those things all may be necessary, in essence, to meet
11 productivity standards.
12 So doing this in 5 years and maintaining that
13 productivity standard may be difficult without some
14 modifications in the overall operations, and so I am not
15 confident at all that the proposed standards would be
16 individually, consistently, simultaneously met.
17 **MS. HOLLAND:** Are you going to e-mail your bullets
18 too?
19 **MR. SCHROEDER:** Oh, absolutely.
20 [Laughter.]
21 **MR. FUGLEVAND:** So I'll go next.
22 I first want to comment on the resuspension

1 standard being proposed by EPA. I don't think that that
2 standard could be met simultaneously with your proposed
3 productivity standard for a couple of reasons. One is that
4 I think the current data does show a relationship between
5 production and release. That hasn't, in my mind, clearly
6 been shown otherwise. So, if you double productivity in a
7 given year, I see some issues there.
8 By changing the load standard down river, I think
9 that has helped, but I think there are going to be maybe
10 other unanticipated issues that would make complying
11 difficult.
12 I think one of the issues that is more of a gut
13 feel than based on any other fact, I don't know if we have
14 the data to show, but the issue of leaving the CUs open for
15 a long time causes a problem for a few reasons. One is that
16 the sediment currently on the bed has, to some degree,
17 self-armored or hardened, so that it is less erosive, and as
18 soon as we take a dredge and we churn it up, we generate a
19 layer, a fluff layer, a soft layer that's more easily
20 eroded. So the action of dredging, by leaving that exposed
21 surface open for sometime, increases the erosion.
22 The second thing is I think the type of bucket --

1 I think a level-cut bucket has benefits for controlling how
2 we dig, but I think a level-cut bucket, the way it works is
3 it plows through the sediment, and it remixes it and remolds
4 it, and you generate a larger soft slur that's more easy to
5 erode. So, by leaving the cuts open for a long period of
6 time, that we have a problem in getting things done.
7 I think that then rolls back to the issue of depth
8 of contamination. I just have a difficulty proceeding into
9 a project not knowing. I guess it's probably the engineer
10 in me that would like to know before I jump.
11 I think the poor characterization of the depth of
12 contamination, we're still looking at, I think, 40-percent
13 uncertainty in the next phase. It means that you have to
14 stop, leave the area open, go back, core it and test it. So
15 I think from the perspective of GE's proposed approach of
16 dealing with the depth of contamination, that's going to
17 leave areas open longer and be an adverse contribution to
18 the release.
19 Let me look at my notes.
20 I think from a practical perspective of the
21 question, can they be achieved, I think the proposed changes
22 being proposed by GE come closer to being able to achieve

1 them individually and simultaneously, and that doesn't
2 necessarily mean that it means all of your ROD objectives.
3 It just means that they're set in such a way that they
4 wouldn't be triggered as easy.
5 I tend to be a proponent of get in and get out as
6 fast as you can. I like the idea of a well-defined depth of
7 contamination before you start, get in, dig to it, stop, and
8 place back filler cap and get out. That is more captured in
9 the GE proposal.
10 I think that would be good for now. I'll pass it
11 on to Victor.
12 **MR. MAGAR:** Thank you, Paul.
13 I do agree in large part with my colleagues. I am
14 going to build off of one of the things that Todd had said.
15 I see this very much as a kind of DQO problem. I
16 mean, I think our objectives are not well formulated, so
17 we're collecting data that is not directly related to our
18 goals, and even part of that may be data that can't readily
19 be connected to our goals, like the resuspension standards
20 that have several days of a lag. It comes to what the
21 standards are meant to do, and in my mind, the standards
22 themselves are not the remedy. The remedy is removal,

1 removal and backfill, or removal and capping remedy. The
2 standards are meant to help guide both the remedy and trying
3 to churn a certain level, a certain outcome from that
4 remedy.
5 I'd like to build on what I think is common ground
6 that I heard, that I believe the two groups, that GE and
7 agency's, would agree to, I would hope so, and I think both
8 would very sincerely want to meet these goals.
9 One is to remove the material efficiently.
10 Another one would be to close the CUs quickly.
11 A third would be to achieve some meaningful risk
12 reduction at the outcome of this project.
13 And the fourth and perhaps even the most
14 challenging is to minimize unintended consequences of the
15 work.
16 I think that if we build on that common ground and
17 look at the objectives, I think we can achieve those four
18 goals. So, in that context, I think we have an ability to
19 develop standards that could achieve those goals. I don't
20 necessarily think those that have been proposed are going to
21 accomplish that yet.
22 I like the idea very much of getting to, say, a

1 90-percent removal, which GE had proposed, and trying to get
2 to a cut line, I think as Paul had just indicated, going in
3 and going out quickly, making this as a process much more
4 efficient, but I think that really can't come for free.
5 If we are going to rely more on capping, for
6 example, I was unimpressed with the capping approaches that
7 I heard last time. I think we'd have to look at capping in
8 maybe thinner lifts, gradual lifts, trying to do this in a
9 process that is, again, quick and efficient but that ensures
10 a more robust cap.
11 I think that's going to also have to come with
12 some monitoring, and it really came as a surprise to me that
13 these caps have not been monitored. So there's no real
14 understanding at the outcome of the backfill area or the cap
15 material, and they'll have to have some monitoring, both in
16 terms of the short term and long term. There has to be some
17 assurance that there is going to be stability based both on
18 the model and some monitoring.
19 But I think 90 percent of a removal is a very
20 reasonable goal for something like dredging in the natural
21 environment, and I think our attempt to get to 99 percent or
22 to try and use dredging to polish or to create very low

1 levels, I think we've seen at many sites and repeatedly.
2 This is not unique to this site. It's very difficult to
3 achieve, and it expends a lot of unnecessary energy at a
4 time when we don't want to waste energy, and I mean that in
5 the sense of just literally using fuel, energy, and carbon
6 releases because of that.
7 I will stop there.
8 **MR. THOMPSON:** Where I'm at in my evaluation
9 process now is that I don't believe that either of the
10 standards proposed by EPA or GE can be achieved unless
11 either one of two things is relaxed. That would be either
12 time or volume, and I think we've heard good arguments both
13 ways. Normally, that's better, faster, cheaper, but, in
14 this case, I think it's just better or faster. I'm
15 empathetic with GE in that there is no cheaper in this
16 particular option.
17 But I would look at and approach this somewhat
18 differently from the productivity standard, start there,
19 because I am, as I said earlier in my comments -- I am as
20 yet not convinced that some of the residual might have had a
21 better opportunity to be achieved or the resuspension with
22 different dredging methods, and we should explore those

1 because I'm sure these guys are saying what are you talking
2 about whenever any of us have said that.
3 But right now I don't see a compelling reason.
4 There hasn't been advance to complete the project in 5
5 years. In fact, I see a number of reasons why that should
6 be relaxed, so that we could reevaluate the method of
7 dredging and just to give sort of a glimpse, as opposed to
8 dredging narrow lanes, a thousand feet, for example, in CU-2
9 where the first lane was dredged a thousand feet, about
10 50-feet wide, and exposing -- basically creating a new
11 thalweg in the river where a lot of erosion could take place
12 and resuspend materials, why wouldn't you do what I think is
13 more common environmental dredging, start at the top of the
14 CU, dredge across, move down, dredge across, maintain your
15 slopes, move that way.
16 There were real good productivity reasons. I
17 understand the reason why that was done, but I think by
18 relaxing the standard for productivity for the time, one
19 could look at ways of perhaps doing that better.
20 The residual standards, I find myself reading GE's
21 proposal and saying that this is right, but this is also
22 right between in 2003, the peer review recommended that's

1 exactly the approach that should be taken. Get a good cut
2 line. Dredge the cut line. Close that fast.
3 Having said that, the 2003 recommendation and if
4 GE's proposal were to be accepted or we would recommend it,
5 absolutely, you have to have complete confidence in your
6 depth of contamination. That means, in my opinion, either
7 taking the core all the way down to bedrock or taking it to
8 clay, characterizing it all the way to the bottom and being
9 really confident that you've characterized it.
10 Granted, you are still going to have uncertainty.
11 I realize that. Some of that, we'll get to what kind of
12 recommendations could occur, but I agree close the CU as
13 fast as possible. Even if that means dredge to your cut
14 line, cover with a thin veneer of 2 to 3 inches, and you
15 then go back and you core again to this side, do you need a
16 cap, or do you need just backfill? I think we could do
17 that, but it requires a proactive characterization of DoC.
18 On the resuspension criteria, right now I would
19 say that from what I have observed and heard and read, I
20 think the standards for resuspension advanced by EPA are, at
21 least right now, based in something I understand better
22 because the numbers appear to be consistent with Phase 1. I

1 will be interested in looking at how they're protective of
2 resources, fish, and ecological health in the river, but I
3 like GE's approach. I like the merit of it, but, boy, right
4 now just to think about going through and establishing a new
5 model and the process it will have to be gone through at
6 review and agreeing on the model, getting the peer review,
7 going through the public, I think that's a long, long
8 process that there probably isn't time for.
9 So, at this point in time, I would say, at least
10 from my understanding right now -- I would say the
11 resuspension criteria proposed by EPA will probably be
12 adequate to move forward.
13 This is maybe jumping ahead a little bit, but I
14 would like to see more near-field monitoring, and we are
15 going to talk about that to some degree. I have not seen a
16 proposal really from EPA or GE on exactly what we would do,
17 but we have so many questions that we would like to have
18 answers to, and, again, not having that near-field data
19 means that we're only supposing or speculating how much
20 comes from the dredge bucket, how much comes from spillage,
21 how much comes from -- well, there is data. I don't mean to
22 suggest there isn't. There is some, but how much comes from

1 open CUs, how much comes from the fact as the way we dredge,
2 we can't really make as learned an answer as we'd like to.
3 So tweaking the process going forward, I really think needs
4 to have a better defined near-field monitoring program.
5 I'll stop there.
6 **MS. HOLLAND:** Paul, it's about ten to three. It's
7 taking us at least about a half an hour or a little longer
8 to go around each time. Do you want to do another round, or
9 do you want to take a short break and come back?
10 **MR. FUGLEVAND:** I think we'd like to take one last
11 round and get it done and pretty much have it. I think
12 we've already captured a lot of Question 3 in what we said
13 on Question 2. So I think we will go ahead and go around
14 the table on Question 3 before we take our break.
15 Let me read it, and then we'll let Victor start.
16 Question 3. If the experience in Phase 1 and
17 other evidence before the panel does not show that it will
18 be practicable to consistently and simultaneously meet the
19 Engineering Performance Standards that are being proposed
20 for Phase 2, can the Phase 1 Engineering Performance
21 Standards be modified, so that they could simultaneously be
22 met in Phase 2, and if so, how?

1 So, again, we still have a lot of questions just
2 on Question 2, but I think just to kind of go around the
3 table and kind of get our thoughts out, we'll comment on
4 Question 3. If some of the comments were already covered in
5 Question 2, you don't need to restate them here.
6 So, Victor?
7 **MR. MAGAR:** I do think I captured much of this in
8 -- I don't know what the answer is for -- I can't really
9 provide numerical standards, but I do believe there is an
10 opportunity to come to standards that can achieve, again,
11 what I think these four goals I'll restate are, to remove
12 the material efficiently, to close the CUs quickly, to
13 achieve some meaningful risk reduction when all is said and
14 done, and to minimize some of the unintended consequences of
15 the activities of the remedial action itself.
16 I would go back. I would actually complement a
17 lot of what Tim had said with respect to what we talked
18 about for the residual standards, and we did talk about this
19 in 2003-2004. So I think our opinion on this remains very
20 consistent with that time that this is about efficiently
21 getting to some cut level, putting some background material
22 -- backfill material on the cut area or the dredged area,

1 and then being able to at least certainly have some
2 assurance that that was done properly, and then move on to
3 the next area.
4 I am still struggling some with the MNR approach
5 and the MNR boundary for the downstream monitoring or for
6 the resuspension standard, and I struggle with it because it
7 continues to be put in terms of a load standard, which is
8 something that is difficult to understand what that means in
9 terms of exposures.
10 I think it's a very interesting concept in terms
11 of MNR that we not exceed natural conditions. It would be
12 unfortunate to do things that are worse than we began, than
13 what we began with.
14 There's an MNR component that we have to consider
15 for the whole river. It's not just the downstream residuals
16 or resuspension limit. I think there is some kind of
17 engineering practical limits to how much we're going to be
18 able to reduce residuals or resuspension and release, and so
19 we just need to figure out what are those boundaries and
20 what's going to be acceptable, and then figure out how can
21 we back off from there to what's an acceptable amount that
22 could be removed or should be removed.

1 I am thinking that is not very well formulated at
2 all, so I'm going to have to come back to that. Now that
3 I'm on the record, it's all permanently inscribed.
4 I think I will just leave with I believe strongly
5 there's an opportunity to bring these standards together to
6 really support this remedy, and that there is some
7 opportunity there for us to provide some assistance to this
8 group.
9 **MR. FUGLEVAND:** You're next.
10 **MR. THOMPSON:** I'm going to be very short. I
11 think I captured everything I wanted to say in my previous
12 comments, except for just I wanted to say I'm hoping we have
13 more discussion. I am not persuaded one way or the other
14 with any of the elements I put forward, except for depth of
15 contamination. I absolutely believe that has to be done,
16 emphatically, but everything else, I still have a lot of
17 open questions. We're still getting data. We're still
18 getting standards. I don't have any further thoughts on
19 this right now.
20 So, Todd?
21 **MR. BRIDGES:** Are we going -- is it my turn?
22 **MR. FUGLEVAND:** Yep, it's your turn.

1 **MR. BRIDGES:** So I guess this is asking what our
2 opinion is on how to develop these standards if we don't
3 agree with what's been proposed.
4 Well, if you just wanted to consistently and
5 simultaneously meet the standards, as I referenced earlier,
6 the simple way to do that would be to raise a resuspension
7 of residual standards to infinity. I mean, nobody would
8 challenge the fact that you -- I mean, of course, it would
9 be easy to consistently and simultaneously meet those
10 standards if they were at infinity, and I presume that you
11 could actually have a pretty high production rate if those
12 standards were infinity.
13 But I am just assuming that that wouldn't be
14 considered a reasonable or appropriate or responsible
15 standard to have a resuspension rate of infinity and a
16 residual standard of infinity, because it wouldn't be
17 consistent with achieving an objective of accelerating
18 recovery in the river beyond what would be projected to be
19 achieve with MNR alone, at least that's the logic I
20 understand based upon the information that's been provided
21 to us and actually what's actually in the EPS standards as
22 they exist now.

1 I would make this observation that both GE and
2 EPA, where they seem to be headed with the EPS standards, as
3 I interpret where they're heading, seems to be a slightly
4 different direction to apply standards -- I put "standards"
5 in quotes -- than the way it was done previously, and I
6 think that's positive, and I'm going to interpret that here
7 for you.
8 So the intention of the standards is to guide
9 decisions and actions towards some defined outcome, and
10 having an overly narrow focus on whether you are above or
11 below a standard at any specific point in time is much less
12 important than how you use the information you've gathered
13 in the process to inform your future actions.
14 Am I making myself clear to you, Tim?
15 My concern about this, having not standards that
16 are set -- my concern about that is that there are clearly
17 multiple variables and multiple objectives that are in play
18 here that are germane to the project, and all of those
19 things taken together pretty much define a complex system.
20 Heretofore, at least in Phase 1 and the way people
21 are talking about Phase 2 now, it sort of looks like we'll
22 just work it out. I don't mean that in a disparaging way,

1 but we'll just work it out and use our best judgment, and I
2 just think the complexity that exists in this system clearly
3 is beyond what can be achieved by we'll just work it out,
4 we'll get together, we'll have a meeting, and we'll
5 determine what our best course of action is, which is the
6 reason why I argue.
7 Maybe when we get into the discussion, I might
8 have a point of disagreement with my colleague, Tim, but
9 that's why I think there's value in having some mathematical
10 framework, whether or not you want to call it some
11 "agreed-to model" or whatever, but you've got to have some
12 rational framework within which you are going to operate to
13 inform these decisions because I think the complexity
14 exceeds the intuitive capacity of most humans that I know.
15 Now, the danger of what I am suggesting is that --
16 here's that "Bridges is talking about all this complex
17 project" -- is that -- and I know many people like this,
18 and, in fact, the people that I am going to describe who are
19 most inclined to take this view are the people who make the
20 most money; that is, they're the highest up in the
21 organization, right? The closer to the top you get, the
22 more inclined they are to dismiss the complexity and say,

1 "Look, it's not that complicated. Just get that mass out of
2 the river, and do it by 5 years. We're done. I don't know
3 why you guys are complicating this thing," you know.
4 But my experience has been when I've confronted
5 that exact reaction is that you get a very suboptimal
6 outcome, and I've had this experience many times on
7 projects, whether the driver is scheduled -- not a dredging
8 project but just the driver is scheduled. So you're near
9 the schedule, and you get pressure from above to meet the
10 schedule, so you make modifications to your project,
11 shortcuts. You pull things out, you know. You're
12 reconstructing the whole thing to meet the schedule, and
13 then you still can't meet it. So what happens? The
14 higher-ups, they extend the schedule.
15 Now you have a completely bastardized project that
16 you've completely reformulated, which is now suboptimal,
17 because you were trying to hit a schedule, and they moved
18 the schedule out. So you go along with this goofy project
19 again until you get close to the schedule, and you're
20 getting close and you're not going to get it. So you start
21 throwing more stuff out, and you don't hit the schedule, and
22 then they move the schedule again.

1 So that's what I mean by just taking a simplistic
2 approach. All you're trying to do is hit the schedule. You
3 start making modifications, and you end up with a very
4 suboptimal outcome. If we knew you were going to extend the
5 schedule by 3 years, say that up front, and then we'll make
6 the decisions here that are appropriate to achieving our
7 objectives at 3 years.
8 The reason I took so much time on describing that
9 particular scenario is I am a little bit concerned about the
10 expression of we'll extend the project based on our
11 discretion that seems to be articulated by EPA.
12 Now, I'm not suggesting that that's what you would
13 do. I'm just saying in my practical experience, those are
14 the kinds of situations you can get in. You start making
15 decisions based upon the current schedule, but you wouldn't
16 have made those same decisions if you were going to extend
17 it in the first place, right?
18 So that's a long story to get at the simple point
19 that it's a complex system, and I think people need help.
20 When it comes to complex systems and mathematical frameworks
21 or logic, however you want put it -- are going to be needed
22 to help inform this project as it steps through Phase 2

1 because I just do not have enough faith in human intuition,
2 no matter whose it is, to feel confident that you are going
3 to get to the best end state possible just going on human
4 intuition or best experience judgment, whatever you want to
5 call it.
6 **MR. FOX:** So, Rick?
7 **MR. BRIDGES:** I'll send you my bullets later on
8 that.
9 [Laughter.]
10 **MR. FOX:** Wow! Why did I sit next to him?
11 [Laughter.]
12 **MR. FOX:** Maybe I'm more optimistic than realistic
13 at times, but I hear what Todd is saying. However, I think
14 we have a lot of experience from Phase 1 which gives us an
15 opportunity. So we understand this system better than we
16 did, we collected a lot of data and monitored the system.
17 Some of it was really, really good data. Some of it was
18 pretty good data, and some of it didn't help us as much.
19 But, to me, maybe I am saying it the exact
20 opposite of Todd, maybe not, but I think adaptive management
21 is key here, and trying to set up a process and a framework
22 -- and this is maybe more where I agree with Todd -- if we

1 have a framework in place ahead of time that allows for
2 adaptive management.
3 So, when I look at data collection activities
4 related to this project, it should either measure attainment
5 of or lack of attainment of a standard that we set in place
6 or it should try to inform our adaptive management process
7 to try to move us toward optimization of this project.
8 You have heard several times on the go-arounds
9 that -- and I'll say it again. This is roughly the third
10 time I've said it just in this afternoon, is if we can get a
11 situation here we take an optimal density of data, depth of
12 contamination where we have vertical control on the cores,
13 good core recoveries that informs a robust geostatistical
14 model -- I agree with the Kriging approaches, that that can
15 do a good job -- hit a reasonable dredge cut line, set up a
16 process where we measure attainment of our judge elevation
17 where a stick is not going to kill us, but really looking on
18 an aerial extent, you know -- on the Fox River, 90 percent
19 of the area has to hit the target elevation. There is on
20 plus or minus 3 inches, except for over 10 percent of the
21 area, and then we have a robust enough confirmation sampling
22 plan where we feel that when we analyze the samples, we

1 understand what that surface looks like, in a sense.
2 I like the idea of going for that target elevation
3 and then putting sand -- collecting a sample and putting
4 sand on or even putting sand on and collecting a sample, but
5 let's do a good job of defining our DoC, get the material
6 out as best we can where we make sure we don't have a
7 situation where we're a creating a thalweg, where we could
8 have some slumping and we have question about whether it's
9 generated residuals in the classic fluffy sense or if it's
10 just a big chunk that tipped over and looks like the ends
11 are too stuck, and because, as Victor said, the heavy
12 lifting is done by the sand put in place.
13 And depending on what we have left behind, we can
14 convert that into a cap that has permanence, armor cap, or
15 we can be in a situation where it's a backfill, or we have a
16 big blow.
17 I think Todd said at another meeting we had, the
18 second coming of hell, and then we dredge the sand out plus
19 that and do it again; obviously, a rare occurrence, but
20 that's a process that I think is workable. We get to a
21 situation where we're meeting the goals of the ROD, where
22 we're taking most of the mass out, and we're focusing on

1 risk reduction, and we're doing the best job we can of
2 minimizing resuspension because we are getting in and out of
3 the system quick.
4 I'd like to see the residual standard that allows
5 capping, the concentration, relax. I am not a fan of
6 prescribed over-dredging. When we have a situation where we
7 don't understand the variogram of our data because our data
8 that were going into creating that variogram were so spotty,
9 and then the last thing is -- Todd has hit on this a lot,
10 but I believe that we need to understand the overall effects
11 of the releases on the system and collect data toward that,
12 so we can start to hone in on how big of a problem it is,
13 and if so, if it is a big problem, how we deal with it.
14 **MR. BRIDGES:** Now, Rick, I want to point out that
15 you started out laying the groundwork for disagreeing with
16 me but came around to agreeing with me completely.
17 **MR. FOX:** Well, I said that in my second --
18 **MR. BRIDGES:** Well, I just want to make the --
19 that's the course that all smart people take.
20 [Laughter.]
21 **MR. BRIDGES:** They come right around.
22 **MR. FOX:** Now I feel dumb.

1 [Laughter.]

2 **PANEL MEMBER:** The smarter people just disagree

3 with you from the get-go.

4 **MS. HOLLAND:** Greg.

5 **MR. HARTMAN:** Okay. Well, looking at the No. 3

6 question in the charge here, trying to answer it

7 specifically, I think the experience for me in Phase 1 and

8 other evidence does not show that it would be practical to

9 consistently and simultaneously meet the Engineering

10 Performance Standards. That it asks can the Phase 1

11 Engineering Performance Standards be modified, so that they

12 could consistently be met in Phase 2, and if so, how, if I

13 had the answer to that, I would certainly spit it out right

14 now.

15 But I do think it's kind of obvious that the two

16 parties are not reading off the same script. They are not

17 progressing forward with the same goals in mind. So I think

18 what I can say about that simply is that -- how can they be

19 modified? Well, I think the first thing to do is,

20 hopefully, the peer review group here will provide some

21 responses to your questions that will allow GE and EPA to

22 sit down and say how do we get this job done, not how do we

1 get it done our way.

2 And that's simply it.

3 **MR. SCHROEDER:** Well, my first comment that I want

4 to make about developing perhaps our proposals for

5 modifications is that the standards, as I see them right

6 now, do not actually reflect the goals of the project. The

7 standards really actually sort of treat this project more as

8 a source control project for the Lower Hudson than it does

9 as a remediation project. It's trying to eliminate the

10 source, mass removal, you know, in the Upper Hudson, and

11 limit the transport of contaminants through Waterford, as

12 opposed to treating the Upper Hudson as well.

13 When I think the standards need to be modified and

14 while I would say as an environmentally responsible manner,

15 I think much along what Todd has been saying, is that we

16 need to consider perhaps the impacts on the Upper Hudson

17 Pool as well.

18 Anyway, in doing that, I don't believe that we can

19 really give out environmentally responsible Engineering

20 Performance Standards that could be consistently and

21 simultaneously met without improvements in the project, in

22 the characterization of depth of contamination, perhaps the

1 adoption of some sort of innovative controls. Of course,
2 these must be practicable, and that's always one of our
3 discussion points.
4 In addition, something that Rick just said as
5 well, that perhaps we need some sort of residual
6 stabilization immediately after dredging, lay down a 1- or
7 2-inch layer of sand even before we characterize it, so it
8 is not exposed for days; it's exposed for hours.
9 I think we should propose standards that meet
10 environmental goals and then leave it to you to figure out
11 how to make it happen, but our charge is to make it
12 practicable. So we do have to consider how we can make it
13 happen. So that is one of the things I think we struggle
14 with, but that's really what I think is the direction we
15 should be going in, in the development of our standards.
16 **MR. FUGLEVAND:** Well, I'm just going to basically
17 say that if I were king -- I think both EPA and GE have
18 offered a lot of good insight on what's going on, on the
19 site, and I think both are offering components that when
20 blended together would get us to a project that, I think,
21 addresses both the real goals of the ROD, but I think also
22 Victor had four parameters that I thought made a lot of

1 sense.

2 Kind of from a broad perspective, I think the

3 first issue on residuals is a practice that several of us

4 have spoken about of, first, having a very good depth of

5 contamination definition before you put the dredge out

6 there. It provides a lot of benefits for all of the

7 parameters, but have a well-defined dredge prism, go out and

8 dredge the prism, and it might be one or two stages.

9 We are seeing some projects where we have chosen

10 to do a two-stage dredging project where we do mass removal

11 first. Then they come right behind it with a cleanup pass

12 to kind of clean up the last residual. That may or may not

13 be necessary here, but a well-focused program gets to grade

14 and immediately place a backfill on it, and then you use

15 testing to decide whether you need to finish it out as a

16 cap. But it gets the areas. It gets the mass removed, kind

17 of the 90-percent number we talked about, and it gets the

18 area then capped and immediately providing benefit.

19 I think on the issue of -- it's, to me, almost a

20 residual issue, but it hasn't been addressed. It's outside

21 of the dredge prism. I think that needs to be addressed

22 because I think material lost, whether it is 10 miles or 40

1 miles, it will have an impact long term on how the site
2 recovers. So that needs to be addressed and thought about
3 and incorporated.
4 I think on the issue of productivity, I don't see
5 a reason to limit the project to 5 years. It's not typical
6 for remediation projects like this to happen in 5 years, and
7 I believe that it could extend longer and not really have an
8 adverse impact but might actually provide a benefit long
9 term.
10 Then, again, I think the issues of residuals and
11 how to address them, I think we've had some good input from
12 other panel members that I think bring those into
13 perspective.
14 So that's basically a summary.
15 I think that wraps up Rounds 1, 2, and 3. It is
16 quarter after three, and so we have a break planned for how
17 long?
18 **MS. HOLLAND:** They are usually 15 minutes.
19 **MR. FUGLEVAND:** So we'll come back at 3:30.
20 **MS. HOLLAND:** Panel members, we need to huddle
21 over in the corner.
22 [Break taken.]

1 **MS. HOLLAND:** Everybody in the back, if you would
2 come take your seats, please.
3 So, Paul, do you want to sum up, or do you want to
4 invite back full comment?
5 **MR. FUGLEVAND:** So, before we get started, I just
6 heard from EPA that they have a clarification for us on
7 their recommended performance standard. Again, I understand
8 from us, the one that was uncertain, is it 1 percent, or is
9 it 670 kilograms, as far as the one standard?
10 So, if you guys could clarify that for us?
11 **MR. CONETTA:** This is Ben Conetta from EPA.
12 And the easy answer is it's 1 percent.
13 **MR. FUGLEVAND:** Okay.
14 So then the Engineering Performance Standard on
15 resuspension, instead of right now it talks about Tri+ PCB
16 inventory of 670 kilograms, we're going to basically change
17 that to 1 percent of the mass that --
18 **MR. CONETTA:** Of inventory.
19 **MR. FUGLEVAND:** Of the inventory, okay.
20 Any clarifying questions from the panel on that
21 before we move on?
22 **MR. SCHROEDER:** My main question is how do you

1 know how much mass you have. Since you don't know your
2 inventory, how would you know what you achieved, and how
3 certain are you about what the mass is after you dredged?
4 **MR. FUGLEVAND:** Paul, I don't think we are going
5 to get into that dialogue now.
6 **MR. SCHROEDER:** Okay.
7 **MR. FUGLEVAND:** They are giving us a number that's
8 1 percent, and then we can get engaged in that later.
9 **MR. BRIDGES:** Well, we can get in that dialogue.
10 **MR. FUGLEVAND:** We can get in that dialogue, but
11 it's not --
12 **MR. BRIDGES:** My question is why not 1.1.
13 **MR. FUGLEVAND:** So, before we get into the --
14 **MR. BRIDGES:** Or .9.
15 **MR. FUGLEVAND:** Before we get into the
16 deliberation --
17 **MR. BRIDGES:** Oh, I thought we were in the
18 deliberation.
19 [Laughter.]
20 **MR. FUGLEVAND:** The panel asked me to make clear
21 that I thought I had made clear before, and that was the
22 process we just went through was kind of a flow of

1 consciousness, where you're at now, so we could have a way
2 to basically start our dialog.
3 So don't anybody go to the bank and say they heard
4 the panel say this and it's in the paper tomorrow morning.
5 That's not the case at all. We have a deliberation that's
6 going to take us into June, and we're just trying to kind of
7 float up some trial balloons, and then we can all toggle
8 with them and see where that takes us.
9 That's going to be the same for the rest of this
10 deliberation for the next 2 days. We're just talking, and
11 you guys just happen to be sitting there listening to our
12 conversation -- is the process, and it's not going to be
13 until we actually get to a report of any form where thoughts
14 will congeal. So that's just a background.
15 So, for the rest of the afternoon, we are going to
16 just have more of kind of an open dialog. We are going to
17 throw stuff out and kick it around, and I'll just turn it
18 over to the panel.
19 **MS. HOLLAND:** Do you want to make Greg start,
20 since he's so quiet?
21 [Laughter.]
22 **MR. FUGLEVAND:** Not at all. We're going to see

1 who jumps in.

2 **MR. BRIDGES:** I'm going to ask Tim why he thinks

3 --

4 **MR. THOMPSON:** I was going to ask you. I know

5 where we're going.

6 [Laughter.]

7 **MR. BRIDGES:** So I think your pessimism with

8 respect to the use of an updated model, I mean, there are

9 basically two directions that the group could proceed -- I

10 mean, the team could proceed. They could proceed forward

11 with 10-year-old technology, right, you know, using modeling

12 results that are 10 years old, essentially, understanding

13 that's represented by that, or they could proceed on the

14 basis of some update process.

15 But your pessimism about whether or not they could

16 actually achieve that maybe is rooted in the history of this

17 project and the slow progress that GE and EPA have -- the

18 grueling progress that they sometimes achieved in reviewing

19 each other's modeling activities and blah, blah, blah. Is

20 that the pessimism, the basis of it?

21 **MR. THOMPSON:** I would say it's more cautionary

22 than it is pessimism.

1 There is no doubt that -- it isn't just this
2 process. Having seen this unfold on the Lower Duwamish, on
3 the Willamette, on the Fox, modeling processes, to get those
4 agreed to, take a great deal of time and discussion.
5 They're wonderful tools. I believe in them.
6 Rick will know I worked on the Fox River, and that
7 was a very important part of our decision-making process,
8 and they were useful, and I recognize how far we've advanced
9 since then.
10 Having said that, one of the advantages of what we
11 have right now is, yes, an incomplete and inadequate model
12 was used to set a standard, and then they went out and found
13 out they couldn't hit that standard, but now we have data
14 associated with that. We also have data on what's happening
15 to the downstream resources.
16 We can argue about -- and the two parties are
17 still discussing whether those downstream resources are
18 affected or they are not affected, fish in particular. We
19 have at least EPA and New York DEC lining up saying, "This
20 just isn't an issue. They're okay," and we have GE saying,
21 "But it is an issue."
22 So I'm not feeling compelled to go back and have

1 to go through that long modeling exercise, even though I see
2 the value to it. Don't get me wrong. I see the value to
3 it, but I think it's a 2- or 3-year process. But, in the
4 meantime, what you really can do is look at, at least the
5 fish data, and look at what was accomplished at Phase 1 and
6 make some decisions about Phase 2.
7 Does that mean that a model after the end of, you
8 know ,maybe the first year of Phase 2 could be worked on and
9 could be used at that point? Yeah, sure. But it's just
10 rooted in, if you will, sort of, I think, a more realistic
11 assessment of how long it takes to bring these through.
12 Remember we would still have to go not just
13 through EPA. Even if those two parties were to agree on a
14 model, we still have a large public input. It would have to
15 go through a public process because there is a model that's
16 rooted with the public, in their mind, ingrained in the ROD.
17 While valuable and I have full faith in EPA and GE's team
18 to be able to do that model, I just think the process is
19 going to slow us down for 3 or 4 years.
20 **MR. BRIDGES:** I want to respond briefly to your
21 presumptuousness, but --
22 [Laughter.]

1 **MR. BRIDGES:** First of all, there should be some
2 -- there's got to be efficiency that can be gained in the
3 process in terms of, yeah, you reach agreement on a
4 framework that you are going to proceed under.
5 As you lay out in a typical Superfund kind of mode
6 of tit-for-tat kind of interplay, I think, yeah, that's not
7 a particularly good way to proceed, but there are probably
8 different models of interacting that they could probably
9 pursue.
10 I guess the other thing is absent the use of a
11 numerical framework, they are going to be making decisions,
12 I guess, based on some mental model that is not subject to
13 any review by anybody.
14 **MR. THOMPSON:** Mental model would be how are fish
15 tissue concentrations changed.
16 **MR. BRIDGES:** That is my concern because I don't
17 trust what goes on behind the eyes because you can't
18 evaluate it, right? So that is my concern is that I'm
19 wanting there to be more transparency in how these decisions
20 are being made and there be more opportunity to examine the
21 rationality and the interplay of these processes.
22 I accept your point that there are challenges with

1 respect to how you get to that point and how they get to it,
2 but I don't view that as the panel's problem. Quite
3 frankly, that's their problem. That's their problem on how
4 they get to that point where they have some logic framework
5 and how long it's going to take them to get to that, but if
6 the panel thinks they need something like that as opposed to
7 just what goes behind the eyes of a dozen people and what
8 they figure out, then that's the recommendation of the
9 panel.
10 **MR. THOMPSON:** Well, Todd, you know, we're in
11 remedy action. We're not in remedial decision --
12 **MR. BRIDGES:** No, it's not a remedial. This is
13 completely in my mind an operational tool. It's an
14 operational tool. They've got moving parts all over the
15 place in this.
16 **MR. THOMPSON:** Okay. I don't share that, but
17 okay.
18 **MR. HARTMAN:** Paul, is it possible we can talk a
19 little bit about the dredge production, the dredge
20 operation, and the information that Tim got out, the
21 dredging process or progress? Can we take a look at that
22 real quick and talk about it?

1 **MR. THOMPSON:** Oh, wait a minute. It will take me
2 a second to do this because --
3 **MR. MAGAR:** I'm going to add something while
4 you're doing that to the modeling discussion because we are
5 using models. Both sides, both teams have brought up
6 models, model results, to help understand or to communicate
7 some of their understanding of what's happening.
8 So I do agree with Todd that the ability to use a
9 new -- or update a model with today's state-of-the-art
10 technology would greatly reduce the level of uncertainty
11 compared to the uncertainty we have with this much older
12 model, and we saw one example that was just the number of
13 cells that are going to be used to -- and the nodes for
14 these models, which is greatly expanded with our current
15 computing power, bathymetry and other things.
16 But it may not be a -- I think a lot might just
17 depend on the questions that we're asking and what we're
18 asking of the model, and I think it can be bounded within
19 the data that we have.
20 So one question I think I've already asked and I
21 think I'm very interested in is what is the fate of the
22 300-plus kilograms that have disappeared in this process,

1 and there is just a finite area where that's going to land.
2 I did a calculation -- and I've said this before
3 -- that came up with taking over 30 miles of .016 milligrams
4 per kilogram. That seems very, very small to me. That's
5 infinitesimal.
6 **MR. FOX:** In what lift?
7 **MR. MAGAR:** In a 1-centimeter lift over 30 miles,
8 200-feet wide.
9 So I'm hearing from GE that it's much greater than
10 that, but even if I took that, even if I'm off by 100, then
11 I'm 1.6 milligrams per kilogram. That's still not -- it
12 doesn't seem like it's 5 times.
13 So I think there is a tool now. There is an
14 opportunity tot responsibility and resolve this and try and
15 understand what are the impacts downstream, and I would
16 concede that my calculations may very well be wrong, and
17 they're obviously very simplistic, but I think that I would
18 hope that the teams would work together to work with this
19 newer -- this model, not having two competing models. I
20 hope we're beyond that but actually can have a single model
21 that is QA'd and can agree to --
22 **MR. SCHROEDER:** I mean, can we get around some way

1 the, perhaps, need or dependence on the modeling for
2 projection of these things by the way we change the
3 performance standards to instead of all the loading being
4 considered at Waterford but instead would be considered at
5 various locations, such as quarter of a mile downstream from
6 any major dredging operation or whatever, and then look at
7 the resuspension standard there, in which case there would
8 be a certain amount of control and limits to what the
9 deposition and redeposition would be, in essence.
10 **MR. FUGLEVAND:** I think, Paul, a good point is
11 this whole issue of redeposition of how do we get our arms
12 around it. I think we've talked about that's an issue of
13 concern, that it just seems like I thought Victor -- was it
14 Victor that put it, or was it Paul that this seems more like
15 a source control project where you're just looking
16 downstream at source control? But it's almost like not
17 paying attention to the first 40 miles.
18 **PANEL MEMBER:** Yeah.
19 **MR. FUGLEVAND:** It's like the first 40 miles are
20 sacrificed. So how do we get a handle on the redeposition,
21 except for by a model? Do you guys have other ideas on how
22 we could get our arms around the redeposition issue? Will

1 it take a model, or can we do it empirically?

2 **MR. FOX:** I think we should measure it. I'm with

3 Tim. When you talk about risk assessment or modeling,

4 there's so much at stake, and trying to resolve those things

5 so quickly is just terribly difficult, especially when

6 there's a lot at stake.

7 **MR. MAGAR:** But if you sample these cells now, to

8 get the statistical number appropriate to get a reasonable

9 or statistically significant difference between what we saw

10 before and what we see now, I think it would be very

11 challenging. You'd have a lot of sampling outside of the

12 certification units to do that.

13 And if we use a model that has the resolution

14 that's shown right here, which is essentially what we have

15 right now, then it's not -- I mean, it was good for its

16 time, but it's not worth our time right now to rely on.

17 **MR. SCHROEDER:** Well, I agree. I think it would

18 be very challenging because I've gotten down some quick

19 calculations, just like you, and if you assume the

20 deposition occurs only in deposition areas, that whole

21 dredging proposal would limit deposition to 1 to 2

22 centimeters in these areas. So, after what we've done

1 already, it would be very hard to see it, and if it's not
2 stable and it gets moved and transported from there, you
3 won't find it either. So going out and trying to chase a
4 residual in some of these areas would be really very
5 difficult.
6 **MR. THOMPSON:** If that's all it is, it's moot to
7 chase it. It's moot to even model it, to be honest.
8 **MR. BRIDGES:** Why? Why is it moot?
9 **MR. THOMPSON:** It's relatively thin.
10 **MR. BRIDGES:** Well, that's where the bioavailable
11 productivity is concentrated.
12 **MR. THOMPSON:** Well, we don't know.
13 **MR. BRIDGES:** I think one of the objectives
14 mentions -- I thought it mentioned -- bioavailable PCBs.
15 Now, I'm not sure if that's ever defined in any of the
16 documents they produce.
17 One practical definition, well, biology has to be
18 able to come in contact with it, right?
19 **MR. THOMPSON:** I understand that.
20 **MR. BRIDGES:** So, if you're 6 feet down --
21 **MR. THOMPSON:** It's not an issue.
22 **MR. BRIDGES:** Okay. Unless you've got some

1 erosion scenarios or something like that. I'm fairly
2 confident that if it's concentrated in the top 2
3 centimeters, it's probably bioavailable.
4 **MR. THOMPSON:** Just to reiterate, I am not
5 opposed, and I think the model is a very good idea, but I do
6 not believe that it's worth holding the process paralyzed
7 for 2 to 3 years, and I believe, I truly believe, it will at
8 least be a year process, if not more.
9 **MR. BRIDGES:** Right. I'll just repeat and say
10 that process ain't our problem. That process is their
11 problem. If we think the tool has merit, then I guess their
12 response to that could be "can't get it done," so we're not
13 going to accept that.
14 **MR. MAGAR:** Or, can we begin dredging next year?
15 Are we do paralyzed that we have nothing to dredge, nothing
16 to work on next year --
17 **MR. THOMPSON:** I think they have plenty to work
18 on.
19 **MR. MAGAR:** -- and can proceed with this and
20 actually adaptively manage this project?
21 **MR. BRIDGES:** The format of this, I'm not even
22 sure what GE is doing right now. Well, I generally

1 understand, but there has to be some way of -- Rick and I
2 were talking -- quantitative adaptive management process,
3 not, "Well, we did this. That didn't work, so we did
4 something else." That's not adaptive management. You know,
5 "We did this. It didn't work. We did something else, so I
6 adaptively managed."
7 I've said, well, if that's the definition, my
8 daughter is probably the best adaptive manager known to
9 mankind because I put this dress on, that didn't work, I
10 took it off, I put another one on.
11 **MR. MAGAR:** And now she's part of the permanent
12 record.
13 **MR. BRIDGES:** Yeah, that's right.
14 [Laughter.]
15 **MR. BRIDGES:** I didn't say which daughter, so I
16 can always deny.
17 But you have to have a quantitative framework to
18 inform, I think, the kind of adaptive management that's
19 needed in this process when you're defining these
20 relationships. It may not be some gargantuan model, but the
21 rationale, the logic has to be --
22 **MR. THOMPSON:** I'd like to segue to the discussion

1 that Greg asked me to put up here, but I want to come back
2 and say the need for a model to reexamine resuspension or
3 residual really is predicated on the assumption that what
4 was advanced in the EPS failed in and of itself, not because
5 of production or production methods but because it could
6 never have succeeded, no matter what happened.
7 So I think we need to examine this issue. I know
8 we've had some discussions about it. So, Greg, please.
9 **MR. SCHROEDER:** I was going to say what we have
10 now failed. I mean, how would we define failure in this
11 case? That we saw impacts to Lower Hudson, or what?
12 **MR. THOMPSON:** The standard works, I'll say it
13 that way.
14 **MR. SCHROEDER:** Okay.
15 **MR. THOMPSON:** But exactly why, we're not clear,
16 and had things been done differently, as we discussed, would
17 it have been better? We don't know the answer to that
18 question, but we have not explored that at all. So I think
19 productivity is worth discussion.
20 **MR. HARTMAN:** Take a look at -- well, you've got
21 the --
22 **MR. THOMPSON:** CU-2?

1 **MR. HARTMAN:** Yeah. That's good.

2 **MR. THOMPSON:** Okay. So these are the -- okay,

3 fine. Thank you.

4 So these are the bucket prints that I've imported

5 into Google Earth that we received, and I would say

6 masterfully. Thank you whoever at GE put these together.

7 These were very simple to bring in.

8 So what we have here, this is the first lane of

9 dredging at CU-2, and it was pretty consistent. You can see

10 five, six -- this is seven, right? This is seven here.

11 **PANEL MEMBER:** Nine.

12 **MR. THOMPSON:** This is nine? Oh, sorry. Yeah,

13 five is up here. I want to come back to nine. I have a

14 question about that.

15 So I think one of the first things that we

16 observed was -- and rightly so -- this is fairly standard

17 production dredging to go down a lane. It's very efficient,

18 and it's a good way to do so, but the first thing that

19 struck us when we looked at this and we began to ask our

20 questions -- because then the next lane started -- and went

21 forward was, as this was being dredged, you are creating --

22 oh, we got a pointer going?

1 **PANEL MEMBER:** If you like.

2 **MR. THOMPSON:** As it's being dredged -- and this
3 is pretty typical of the way at least, again, based on the
4 sheet piles that we did get -- the way this was approached.
5 So we created a new thalweg down the center of the river.
6 So some of the questions that arose in our
7 discussions was why would dredging not sort of progress this
8 way, as it somewhat was in both CU-1 and CU-17,
9 interestingly enough, when this way -- this proceeded all
10 ways down. So, as the river increased in flow, we had
11 opportunities for resuspension. We had opportunities for
12 slumping to occur in the middle of it, I understand. We can
13 see in this area here, we were able to observe what Andy
14 described as the 20-percent over-dredge, but, during this
15 period of time and as we progressed through it, again, it
16 was pretty similar. You go this way, very effective, very
17 efficient.
18 The bucket overlap was awesome, as we looked at
19 it. It was very, very good.
20 So a question in our head was, okay, they -- what
21 we hadn't discussed was it was real clear that this was what
22 the dredging contractor thought was the most efficient,

1 quick way to get the sediment out.

2 The question that I think I posed to both you and

3 Paul is, is this really something you would do in an

4 environmental dredging project associated with in other

5 places.

6 **MR. HARTMAN:** Yeah. Simply put, doing the long

7 dredge line, you are creating -- you're not doing it on a

8 cross -- doing the whole river down at once. Basically, you

9 are opening opportunity for immediate sloughing into a

10 dredged area, which how many of the samples taken after

11 dredging to see if it satisfied -- you know, if they met

12 their requirement, how much of that sediment sampling was

13 actually flushed into the site after they dredged it and,

14 four or five days later, they continued dredging, and the

15 thalweg creation that you have there, that's a potential

16 source.

17 And it seems like looking at when they were

18 digging the clay material, if I read it right, if I remember

19 right, you had -- I think it was a surprise -- to sample the

20 clay areas and found that it actually was contaminated above

21 the acceptable level.

22 That's what I read. Maybe somebody else read

1 something different in the reports, but it seems like that
2 would be an indication of a redistribution due potentially
3 to the long cuts.
4 **MR. FUGLEVAND:** Tim, could you put up CU-3?
5 **MR. THOMPSON:** Well, I have to look at a date.
6 I'll see if I've got anything. Hang on a second.
7 **MR. FUGLEVAND:** So let's get some -- I got the
8 date. It's 09-07-07. So it would be September. So it's
9 starting July 7th.
10 **MR. THOMPSON:** Okay. Again, I'll reiterate I
11 didn't pull everything in here, but that would be -- okay.
12 So you can see it just appeared on the screen right there,
13 and here we go.
14 **MR. FUGLEVAND:** Do you want to point to where it's
15 at?
16 **MR. THOMPSON:** Okay. So, on the 7th -- whoops,
17 wait a minute. Started on the 7th, okay. So, on the 7th,
18 it's right -- hello -- there, that little bit there, and so
19 then we go to the 8th, 9th, 10th. Here is one where they
20 did go that way.
21 **PANEL MEMBER:** Yeah.
22 **MR. THOMPSON:** Except for again, some of these --

1 I'm absolutely sure there were probably really good
2 operational reasons, and you guys at the back table are
3 probably chomping at the bit wanting to tell me why that is.
4 And I don't have it, Paul, everything from 3, 7-13 and
5 7-20.
6 **MR. FUGLEVAND:** One of the things we did get in
7 addition, we got these color plots of the bucket prints by
8 day, and I think if you look at -- we've got each one of the
9 passes. So, when you look at CO-2 -- CU-2, you know, it's
10 evident that they're doing long dredge lanes.
11 **MR. THOMPSON:** I'll look in that file.
12 **MR. FUGLEVAND:** But, if you look at other places
13 like CU-3, it's done more in chunks and working its way down
14 in both passes.
15 So what I didn't see is a consistent pattern. I
16 saw an occasion on CU-2 where they dug a thalweg, but I saw
17 in a lot of other ones -- for example, CU-5, they started at
18 one bank, and they worked their way across. So I don't
19 think we can conclude just because it was an issue at CU-2
20 that it was the primary approach. I think the approach from
21 the bucket pattern sequencing to me looked like it was --
22 I'd almost say random, looking at it, not knowing what's

1 going on.

2 Sometimes they do a chunk up here in an area.

3 Then they move down and do a chunk and then back. In

4 listening to Andrew speak yesterday, he said they had all

5 these other constraint that they're trying to keep the

6 dredges operating. So I don't think focusing on CU-2 is

7 necessarily realistic for what was going on in the project.

8 It was an example of a long thalweg, but there are a lot of

9 others that --

10 **MR. BRIDGES:** Paul, I'm trying to ask what the

11 point of this is. Where are you guys going with this?

12 Where are you going with this dissection of what the

13 dredging -- what they did, you know, how they operated?

14 What are you trying to figure out?

15 **MR. HARTMAN:** I think what we're trying to figure

16 out is they made a lot of second, third, and fourth redredge

17 operations, and part of that was determined based on

18 sampling of the previous dredging activity. In fact, what

19 is a primary source of redistribution, we have been talking

20 about it. That was, okay, so it's not restart a

21 contamination point, so we need to redredge it. That's one.

22 But then the other thing is the resuspension, the

1 resuspension of material and the high level of readings
2 downstream here, and I guess what I'm getting at is the
3 dredging activity should be accomplished in more of an up
4 river towards a down river.
5 **PANEL MEMBER:** Right.
6 **MR. FUGLEVAND:** Bank to bank, not necessarily one
7 channel.
8 **PANEL MEMBER:** Right.
9 **MR. BRIDGES:** I mean, it seems to me I don't think
10 it's going to be possible to determine what -- based on the
11 data that they have in hand, determine what's causing the
12 resuspension.
13 But I would be interested in knowing, as a
14 percentage of their operational time, how much time it took
15 them to get through the -- I guess I'd call them the "two
16 production cuts," the two lifts. How much of the percentage
17 of their total operating time in Phase 1 was spent doing
18 that as opposed to the other stuff, the other lifts, going
19 back?
20 **MR. FUGLEVAND:** Yeah.
21 **MR. BRIDGES:** I think that would be interesting to
22 know, especially with respect to the proposals that are on

1 the table for how they operate in Phase 2.

2 **MR. HARTMAN:** Just off the top of the head, you

3 would think that a cross-cut versus a down-channel cut is

4 going to take up significantly more time, significantly more

5 time being less actual dredging time and more movement of

6 the dredge between cuts.

7 **MR. BRIDGES:** But, I mean, the casual impression,

8 I don't think anybody has said anything about this, but that

9 there was a lot of time on these more cleanup passes and

10 going back and moving the dredge over and doing this, but

11 breaking down the percentage of time that was spent on those

12 two first lifts, which I guess in most cases would have been

13 the production lifts versus the other, would allow you to

14 make a better projection, it seems to me, as to how -- what

15 gain in efficiency could be made in the second phase, and

16 maybe combined with some ideas you guys might have about how

17 much time, additional time, would be required for the

18 bank-to-bank approach.

19 **MR. MAGAR:** But we're trying to answer two

20 different things. I think one is achieving a target

21 concentration and trying to meet this residual standard by

22 repeated cutting.

1 If that's all done in one corner or one area of a
2 CU or how that's achieved, but to get to that point and to
3 meet those goals is one goal. The other one is just the
4 productivity of getting through this. There's some
5 competing factors there, as I think we can see.
6 I believe one thing that's being asked and I think
7 would be helpful to have answered is whereas this may be
8 very efficient from a productivity perspective, how much is
9 this contributing to resuspension.
10 If one of our goals in coming out of it, I think
11 one thing I heard a lot of people say -- and I've been
12 emphasizing this -- is CU closure, rapid CU closure, is the
13 way that they're going from upstream to downstream, is there
14 an opportunity there to more rapid CU closure.
15 One is the repeated cuts, and one is the way we're
16 moving around throughout each cell.
17 **MR. BRIDGES:** I understand that. I'm just saying
18 with the data that they have in hand, there's no way to
19 apportion their release to these various sources, I don't
20 think. At least I haven't heard it articulated.
21 I mean, that doesn't mean they couldn't. I mean,
22 that's what I'm particularly interested in, them making

1 improvements to the monitoring regime that they deploy for
2 Phase 2, so that they can get to that and better inform
3 operational adjustments.
4 **MR. MAGAR:** I mean, if they could get to closure
5 in these portions and place the backfill versus --
6 **MR. THOMPSON:** Sure.
7 **MR. MAGAR:** -- just doing a particular corner
8 right here and taking care of that, I'm not sure there would
9 be very much of a difference, and I guess I don't have a
10 good understanding if this is just all being left open until
11 the entire CU is resolved or are they actually getting
12 closer on these areas, or are they moving through this
13 incrementally.
14 **MR. THOMPSON:** It will be open till -- through
15 summer.
16 **PANEL MEMBER:** Yeah.
17 **MR. BRIDGES:** So, if they had in Phase 2, let's
18 say, if they have some close near-field monitoring going on,
19 right, they should be able to --
20 **MR. THOMPSON:** It would be helpful.
21 **MR. BRIDGES:** Yeah. They should be able to
22 directly attribute, I think more directly attribute --

1 **PANEL MEMBER:** Right.

2 **MR. BRIDGES:** -- you know, how long the cell is
3 open or based on some of the stuff we've discussed about
4 getting them closed more frequently. I mean, I think there
5 would be value in that as opposed to just sampling down at
6 Waterford.

7 Honestly, I'm not saying there is no value in
8 those data with respect to the Lower River, but there's no
9 way that's going to tell you anything about what's
10 happening, however many miles up where you're actually doing
11 business.

12 **MR. MAGAR:** Right, especially once we go out full
13 scale. Yeah.

14 **MR. THOMPSON:** I don't disagree with anything
15 you're saying, except the assumption that you had on
16 building a model was that dredging was, in fact,
17 contributing to everything that we saw, and that the way
18 that the dredging was done perhaps had no influence on how
19 much was resuspended, and we're simply pointing out that,
20 yes, this would have had an influence in addition to the
21 CUs, the way it was done. It would have an influence on how
22 much was resuspended.

1 Again, total dredging operation influenced that
2 resuspension, but if we had gone from upstream to downstream
3 and close behind this, would we have, indeed, seen those
4 same levels, and you're right. We don't have the data to
5 answer that question.
6 **MR. SCHROEDER:** No, we don't have the data at this
7 site.
8 **MR. THOMPSON:** Correct.
9 **MR. SCHROEDER:** We have what has been learned at
10 other sites in terms of what's happened, and common values
11 out there for other sites are resuspension by the dredging
12 activity immediately, might be 1 percent of the material
13 being dredged, and residuals from a dredging operation might
14 be 5 percent of the material being dredged.
15 We're seeing values of -- well, I mean, just like
16 inside the sheet pile wall, values of a half-to-1-percent
17 buildup of losses in the cell, which goes along with the
18 resuspension, not residual erosion, and we're seeing values
19 being given to us, like 4 percent in some of the higher flow
20 areas without control perhaps being lost, which is
21 comparable to saying, "Well, we must have lost most of the
22 residuals," if you take that analogy.

1 So it would be logical for us to believe that if
2 we can find a way to stabilize the residuals very quickly,
3 as I suggested earlier, in hours rather than weeks, that we
4 can probably save 3 percent or reduce the resuspension 75
5 percent.
6 **MR. THOMPSON:** But you would probably agree you're
7 not going to be able to do that dredging in this direction.
8 **MR. SCHROEDER:** Right.
9 **MR. THOMPSON:** You're still fluffing at that
10 point.
11 **MR. SCHROEDER:** At that point in time, it's a
12 question of stabilization of the residuals, which may become
13 recontaminated somewhat, but then you would have to do
14 additional capping or covering of that.
15 **MR. MAGAR:** I don't know if that's -- I mean, I
16 guess you have -- you mentioned the sloughing. I'm not sure
17 you can't just dredge this segment and then get it to
18 closure, but I think there would need to be some
19 demonstration that that is acceptable that it's not
20 sloughing.
21 I'm all for trying to maximize productivity, and I
22 think that makes good sense, or maybe it's some compromise

1 and we don't do the entire length at the CU --

2 **PANEL MEMBER:** Right.

3 **MR. MAGAR:** -- but we do it in half or third

4 segments, but I would leave that to the dredging

5 contractors.

6 But if we could look at this quickly and get

7 closure on this segment because that's complete, I think

8 that would be a very good thing.

9 It seems intuitive that something like this where

10 it looks like they kind of went completely across and are

11 moving down would be better, but I think I can appreciate

12 that that might be less productive.

13 [Pause.]

14 **MR. FUGLEVAND:** We'll go straight up to Hudson

15 file, one more, and then it's bucket maps combined, so just

16 show the full page.

17 **MR. THOMPSON:** There we go. Oh, no, that's what I

18 want, right there.

19 **MR. FUGLEVAND:** So this is just this color

20 sequence map that shows how they dredged each CU area, and

21 the color scale is time.

22 So, if you look at the right-hand side, the

1 earliest date is darkest green, and it goes down through the
2 light green, yellow, and then into red. So, by looking at
3 this map, you can see how they approach different -- so this
4 is -- and there is a page for every dredge pass that they
5 do.
6 So, here, this is the design cut at CU-01, and you
7 can see they started upstream in the green. They work to
8 the right bank and to the yellow, and then it looks like
9 they eventually then -- it looks like kind of then work
10 their way down to the orange and back to the red.
11 So, again, they started up here in the green,
12 worked to the yellow, and then down here, it looks like into
13 the orange and then backfilling some of the red. But, in
14 this case, it wasn't kind of creating kind of the long fall.
15 If you go to the next one, this is now -- this is
16 for the first redredge pass, same kind of sequence, pretty
17 much doing the green up at the end, and then working their
18 way down sequentially, next one.
19 This is a next pass, and, again, you can see they
20 start up here in the green, and they work their way to
21 yellow, then down to orange, back to red. This was, I
22 believe, a -- was this where the non-spud area was? There

1 is some delineation here that show up. I'm not sure what it
2 is.
3 You go to the next one. So now we're still in
4 CU-1, and this is a third redredge. Again, now this is --
5 again, we can see some green here happening and then back
6 into the yellow and red.
7 But now if you just kind of, Tim, click to the
8 next one, this was the fourth redredge pass, again, mostly
9 working from upstream down.
10 Next one. Now, this is CU-2. Again, this is the
11 design pass, and now we see more of a delineation here and
12 off to the side.
13 Next one, Tim. This was the first redredge.
14 Next one. And, again, here now they're almost
15 working upstream in this one. If you just kind of scroll
16 through them, you're just going to see the different
17 patterns. There's not one pattern. You can just kind of
18 flip through and work your way through and just kind of --
19 This is CU-3, and, again, here we saw in this one
20 they started up here, a big block of green, and then jumped
21 to the middle in the yellow, who knows what was going on,
22 some green here, yellow, back to orange, to red. So there's

1 a lot of factors we don't know, but the main point of these
2 pictures, you get a good sense of the sequence of operations
3 of the dredge.
4 And they had some that followed the ideal pattern,
5 a lot that didn't.
6 **MR. BRIDGES:** So why don't you explain to me the
7 non-dredger? So let's say there are no obstructions,
8 bridges or pilings or things like that, in this stretch.
9 Let's just say it's just a fantasy stretch. How should it
10 be done?
11 **MR. FUGLEVAND:** So what Andrew talked about and
12 kind of the normal protocol is you go upstream to
13 downstream, and you go from top a slope down. So what you
14 might see normally is -- you might do maybe the first part,
15 where you'd work in the upstream part. You might do the
16 left bank and right bank before you move to the middle if
17 you're going to kind of peel the banks down, if they're very
18 high. If it's a fairly flat bottom, it's not as important.
19 But you would tend to work in blocks, working your way
20 down, so that anything that you disturb goes downstream.
21 Now, here, if you dredge here, and then if you
22 move back up upstream and dredge here, then the local

1 near-field redeposition is going to fall back in an area
2 that you had already dredged, and so the issue would be
3 getting recontamination in this area from the area before.
4 So the ideal sequence is always to have anything
5 you strip going down river, so it's not recontaminating, and
6 also starting high bank working in, so that if you have a
7 bank that kind of sloughs, it's going to slough to an area
8 that hasn't been dredged yet.
9 When we look at the patterns on here, we see just
10 a wide variety of sequences. That means that there could
11 have been, like I think Greg was saying, evidence that the
12 dredging pattern might have caused some residuals to
13 accumulate in areas that you had already dredged.
14 What we don't see, we don't see a single pattern
15 of how they approached them. It was variable, and as Andrew
16 described, there was a lot of other things you're trying to
17 balance on the project.
18 Again, this is CU-3. One of the concerns here is
19 if you create a new thalweg, a long channel, right down the
20 middle, then you create some changes in the hydraulics, so
21 you get higher velocity moving here and getting more scour.
22 So, by creating a new thalweg for the river, does that

1 exacerbate the redistribution, the release component? We
2 don't have any data to say one way or other. We just have
3 the supposition that if you create this new channel, you're
4 going to get higher velocities there, and you may get more
5 scour and problems. So that was one of the things we talked
6 about as one of the adverse effects of creating that long
7 channel in the middle.
8 The other thing that's happening is you're now
9 going from center channel to the outside, and if this is
10 higher in bed elevation, then there is more potential for
11 spillage or sloughing from the adjacent bank into the area
12 you just dredged.
13 **MR. HARTMAN:** I mean, the report also clearly
14 pointed out -- I guess the GE report pointed out that there
15 was increased sediment release or resuspension during
16 dredging, and this seems to -- it's important. I mean, it's
17 important in the overall project effort.
18 **MR. BRIDGES:** Well, I mean, I get the sense from
19 the reports and the presentations and whatnot that there's a
20 fair amount of pressure for productivity.
21 So, if I ask you guys, Paul and Greg, is that
22 reflected in the pattern that you see here, I mean, I hear

1 that's what you're saying, that you can see pressure for
2 productivity reflected in the operational practice.
3 **MR. FUGLEVAND:** Well, when we talked to Andrew
4 about it this morning, that's part of what he was saying.
5 To keep the dredges working, they had to move the dredges to
6 a different location. Are they going to shut the dredge
7 down because of -- you know, we can't go into Area B because
8 of these other constraints, so you have an option, shut it
9 down or move it to another location that isn't optimal, but
10 at least you are keeping the dredge going and keeping
11 production up.
12 He gave a list of a lot of the parameters they
13 were trying to balance, and so that is the productivity
14 piece of it that they were trying to keep the dredges
15 working, i.e., productivity up, while dealing with all these
16 other site constraints, and then we see it evidenced in the
17 pattern sometimes of how they dredged an area. So it's
18 evident in the patterns, and I think it somewhat validates
19 what we were described.
20 **MR. BRIDGES:** Well, I mean, I guess it's rational.
21 You said a productivity standard, right? You're telling
22 somebody to hit it. So it's completely rational. You

1 establish the operational incentive structure, right?

2 **MR. FUGLEVAND:** Right. This is a good example of

3 how there's a tension between the productivity standard and

4 the other standards because now we're creating a

5 less-than-optimal situation of how we open up an area and

6 expose it.

7 Again, we don't know how adverse it is. We just

8 know that we can see that there are different scenarios that

9 we're allowing to unfold that we could avoid.

10 **MR. SCHROEDER:** Do you think we have data

11 sufficient to determine what change in productivity would

12 happen if we would do it in the most environmentally

13 friendly manner or controlling resuspension and residuals?

14 I mean, is that possible for us to say, "Well, it looks like

15 50 percent of the time, they're dredging outside of the way

16 we would do this in order to maintain productivity, so,

17 therefore, we really need to increase the life of the

18 project 50 percent" or something of this nature? I mean,

19 that is a little simplistic, but --

20 **MR. FUGLEVAND:** Yeah. We could go and look at the

21 plots and see when they're out of normal sequence and get a

22 sense of what percentage that is.

1 If it was a sense on how often other site factors
2 -- you know, this isn't just a generic plot, piece of
3 ground, with nothing else going on - how often other site
4 factors drove them out of the optimum, you can look right at
5 figures that it's fairly often that that happens, but, yeah,
6 you could crank some numbers on that.
7 **MR. THOMPSON:** But if you're asking do we have the
8 data to be able to say how resuspension would change or how
9 residuals would change, I don't think we do.
10 **MR. SCHROEDER:** No. It just suggests how we would
11 change the number of dredging seasons in order that they
12 perhaps could more optimally perform the work --
13 **PANEL MEMBER:** Right.
14 **MR. SCHROEDER:** -- for the other concerns.
15 **MR. FUGLEVAND:** Again, it's definition of
16 "optimum."
17 What we don't know is how adverse this sequence
18 was. So trying to go to the 5-year productivity, even
19 though they have to jump around, we don't know how adverse
20 it is. We just know that in an ideal world how we might
21 approach it, but we don't have a way to quantify what the
22 adverse impact is of moving everything around.

1 **MR. SCHROEDER:** But if we would propose that they
2 would cover or cap quicker and that the adverse -- I mean,
3 the juxtaposition of the various dredging would preclude
4 that from doing that somewhat. Otherwise, you're
5 recontaminating your closure. So we are going to have to
6 transform to that form of logistically progressing from
7 upstream to downstream, from upslope to downslope, in order
8 to facilitate more rapid closure.
9 **MR. FUGLEVAND:** Right.
10 If we were looking at closing it as rapid as we
11 can, which I think was the plan when they started -- that
12 was day one, and by day five, things started to change, but
13 to sequence it such that we get an area open, finished, and
14 then backfilled, so we could move to the next, I think it
15 would be appropriate to look at as GE and EPA are looking
16 ahead to say you could look at the data and see how many
17 days you had where you couldn't do that and then think about
18 that and plan on that, if that's how you want to go.
19 But I think we have data now to at least say it's
20 not an ideal site, with no other constraints. It may be
21 very difficult to implement the ideal and then plan for
22 what's realistic.

1 **MR. FOX:** How far ahead would the dredge have to
2 be before we'd recommend backfilling? Anyone have a feel
3 for that?
4 **MR. FUGLEVAND:** My gut feel would be I wouldn't
5 mind being a couple hundred feet ahead, just because what
6 happens is, as we saw on the site, things don't always go as
7 planned, and so, by leaving yourself at least a couple
8 hundred feet, at least, then when they have to bring a barge
9 in they didn't plan to bring in and it has to sit a funny
10 way and you got props and all that kind of stuff, trying to
11 stay away -- I wouldn't say you have to stay a mile away,
12 but I would say you want to stay kind of out of enough ahead
13 of yourself that there's little chance that you're going to
14 be bringing equipment back into there that might cause a
15 problem.
16 **MR. HARTMAN:** Paul, on this subject of dredging,
17 we've learned -- I am trying to find -- EPA was proposing --
18 EPA was proposing, you know, a different approach to their
19 cut thicknesses. Can anybody lay their hands on that here?
20 Looking at that, maybe it's I don't understand what they're
21 trying to do here, but it seems to be excessive. It seems
22 to be what's the real approach to digging this. Is it

1 removal of the contaminant layer and then a 6-inch approach,
2 or is it --
3 **MR. FUGLEVAND:** Are you talking about like the
4 9-inch over-dredge? Is that what you're talking about?
5 **PANEL MEMBER:** Yes. Yeah. Maybe somebody can
6 better explain exactly the point.
7 **MR. MAGAR:** I think some of this is going to be
8 driven by what these -- what the performance standard is
9 going to end up being.
10 If we can get to like a target depth, I think that
11 will be one criterion, a certain concentration, the idea of
12 overcut. I think that all plays in.
13 In my mind, this is all about rapid closure. If
14 we go on the premise that exposures occur at the sediment
15 surface, then if there is an exposed sediment, the longer
16 there is an exposed sediment surface, the longer there is an
17 ecological exposure. So it is working toward getting to
18 rapid closure.
19 I would think that makes sense that it's going to
20 help reduce downstream release and resuspension release, but
21 I know that it will bring closure and create a clean
22 sediment surface at that exposed space as quickly as

1 possible.

2 **MR. FOX:** Especially with the given that

3 everything is going to either have backfill or a cap,

4 ultimately.

5 **MR. MAGAR:** I mean, I am going on that as the

6 premise.

7 **MR. FOX:** So what we're talking about is

8 continuing the process that's set out but just really

9 accelerating it.

10 **MR. MAGAR:** Right. Yeah, it would be different if

11 we were targeting a clean level that we were just going to

12 stop and then allow to just dredge to a contamination level.

13 **MR. FUGLEVAND:** The idea, the concept that if you

14 dredge an area, you break kind of the existing kind of

15 physical strength of the surface sediment, so you have a

16 much looser or disturbed sediment, more easily eroded, and

17 if you leave that open for a couple months, how much have

18 you exacerbated the release problem; whereas, if even a few

19 inches of sand after dredging on top of that is effective in

20 kind of containing that until you get around to final

21 surface.

22 So the idea, you wouldn't have to put in a final

1 backfill. It might just be, you know, several inches would
2 provide kind of an immediate kind of cauterizing of that.
3 **MR. MAGAR:** I am not sold on that idea. I'd be
4 careful with that. You're adding inches to the material.
5 This is for the same reason that I'm not a fan of the
6 overcutting.
7 I don't like the idea of having to remove clean
8 material and transport it a couple thousand miles to Texas.
9 Unless you have some confidence that you are going to leave
10 it in a place, even 1 or 2 inches over the acreage that
11 we're talking about, it is a very large volume of sediment
12 that then might have to be removed again. Under what
13 condition, maybe I don't understand.
14 **MR. FUGLEVAND:** I wasn't proposing that you would
15 dig it out. I was saying dig to grade when you're done,
16 that even if the first step was in placing your backfill, if
17 the first step was just a thin layer of sand as the first
18 step that you're going to finish, but never was the intent
19 of having to dig it out. I wouldn't throw it out and then
20 test and say --
21 **MR. MAGAR:** Oh, I thought you meant then re-
22 sample, then say, "Oh, it wasn't enough." Okay, okay. Then

1 that makes sense.

2 **MR. SCHROEDER:** Well, I would think that the

3 premise of that would be that they would have to have a

4 high-confidence core and a well-known depth of contamination

5 in order to proceed down that path. Otherwise, arguably,

6 they could decide to go ahead and decide that they need to

7 dredge 2 more inches of area because they don't have the

8 depth of contamination established, and that that may be a

9 preferable option, which I wouldn't preclude them from

10 taking, but that's their call. They can achieve both, then.

11 **MR. THOMPSON:** I think the premise was that you

12 put the material down. You put the material down, and then

13 you sample to determine whether it was just backfill or a

14 full cap.

15 **MR. MAGAR:** Okay. So it's a backfill-cap

16 decision, not a more removal decision.

17 **PANEL MEMBER:** Yeah. I think that's the way.

18 **MR. BRIDGES:** Unless you encountered a second --

19 hell or something. You could have --

20 **PANEL MEMBER:** A CU-1.

21 **MR. BRIDGES:** Yeah.

22 But, I mean, all of this -- not to get us back to

1 standards, but this operational mode is predicated on the
2 fact that resuspension matters. One of my interpretations
3 of the proposed standard from EPA is I'm not sure that it
4 does matter or to what extent it matters.
5 **MR. FOX:** I don't think it's all predicated just
6 on that. I think that's only part of it.
7 The other part of it is to what extent do we go
8 for that last few percent of mass from a residual
9 perspective.
10 **MR. BRIDGES:** Right. So resuspension or residual.
11 **MR. FOX:** Right.
12 **MR. BRIDGES:** Well, stating the obvious, GE and
13 EPA with their proposals thus far as presenting a different
14 basis for the standards, right? And we're presuming -- you
15 know, the approach we're going now, which I don't have any
16 trouble with -- because my view is, I think, resuspension
17 and residual matters. It matters to the long-term recovery
18 of the river. It just does. But what remains unclear to me
19 still is how much it matters, how can you quantify that.
20 So I think this is a reasonable approach to
21 proceed, but I am just trying to think forward to how it
22 would be received. If it doesn't --

1 **MR. SCHROEDER:** I agree. I mean, if we were to
2 leave 5 percent of the mass underneath that fill or cap,
3 compare that to letting the resuspension materials which may
4 be the same, 3 or 4 percent almost, very similar in mass in
5 some sense, in one sense you're going to make it all
6 bioavailable, and the other is you're going to sequester it.
7 Intuitively, in terms of our mediation and
8 protection of an environment and being responsible, it would
9 be much better to sequester it than to make it all
10 available.
11 **MR. FUGLEVAND:** That's a very good point.
12 So back on what you said, there becomes a real
13 tradeoff that if you keep chasing the residual, you are
14 putting more into the water column. You're releasing more,
15 and you're adding that to the inventory that's moving
16 downstream, and it's going to be bioavailable and in the
17 system.
18 Whereas, if you stopped at the 90 percent and just
19 threw down a cap and sequestered it, that it's no longer
20 available, and you stop the bleeding sooner, and it may have
21 a net positive benefit by stopping sooner because you're not
22 kicking it up into the system.

1 **MR. BRIDGES:** I think sequestered might be an
2 overstatement of what that would be, but you definitely
3 reduce the flux.
4 **MR. FUGLEVAND:** Right.
5 **MR. SCHROEDER:** If not sequester, isolate it.
6 **PANEL MEMBER:** Well, you've reduced the flux.
7 **MR. MAGAR:** I see two goals being achieved. One,
8 there is a mass removal goal, and then there is also a goal
9 to create a clean sediment surface. I think the latter is
10 really, like I've said, what is ultimately going to do the
11 work in terms of ecological recovery and immediate risk
12 reduction.
13 **MR. BRIDGES:** I'd be curious to know what the
14 surface of Phase 1's --
15 **MR. MAGAR:** I'd be very curious. I think it's --
16 **PANEL MEMBER:** What do those surfaces look like.
17 **PANEL MEMBER:** Yep.
18 **MR. FUGLEVAND:** You mean from like a chemical
19 value, from concentration?
20 **PANEL MEMBER:** Mm-hmm.
21 **MR. FUGLEVAND:** Yeah.
22 **PANEL MEMBER:** Well, I'd also --

1 **PANEL MEMBER:** I think that's a very reasonable
2 question.
3 **MR. FOX:** -- like to know. Yeah. I'd like to
4 know where that comes from, whether it's redeposition on top
5 or it comes from the placement itself.
6 **MR. FUGLEVAND:** Right.
7 **MR. BRIDGES:** Well, I mean, I'm not sure anybody
8 would know, but I'm still curious as to what the surfaces of
9 those --
10 **MR. FUGLEVAND:** Well, if you took a core through
11 that backfill material and you --
12 **PANEL MEMBER:** Carefully cut.
13 **MR. FUGLEVAND:** -- just sampled it, if you're not
14 seeing any PCBs in the sand until you get down to the --
15 then you know that -- and it's only at the surface, that
16 tells you one thing.
17 If you go and sample it and it's PCBs mixed the
18 full column, now it could be, well, did they all of a sudden
19 in one year all move through the column, or was it when it
20 placed, was it placed in a manner that kind of intermixed
21 with the residual material and caused that problem.
22 I have seen both. You can dump it in and bomb it

1 in, so that it stirs up a lot, or you can broadcast it in
2 and have only a transition zone of an inch thick and
3 everything else is clean above it.
4 **MR. BRIDGES:** Well, given that it was close to --
5 my understanding of it, it was close to bank to bank, right?
6 Whatever would be on the surface now, assuming you don't
7 have this, what you're saying, it's not coming from below.
8 It's obviously coming from above. That would be the result
9 of the disappeared PCBs, right?
10 **MR. THOMPSON:** Not necessarily. At CU-17, there
11 is still residual material. It is probably less than 10 ppm
12 right upstream of that, and it was not dredged. I would
13 almost guess it's going to normalize to whatever the
14 concentrations are in the area around it.
15 **MR. HARTMAN:** Saying all this, we all kind of
16 agree that there is general agreement about the depth of
17 contamination and the sedimentation sampling, if you will.
18 That seems to be a topic following this, but it seems to me
19 the sampling, we talked about it, needs to be done. We want
20 to make some kind of a recommendation on sampling, replace
21 all you lost in little confidence samples or do more or do
22 less in how it's sampled?

1 **MR. FUGLEVAND:** Before we jump to that new
2 subject, I think we were just trying to wrap up on the fact
3 that dredging is related and production is related to
4 residuals --
5 **PANEL MEMBER:** Yeah.
6 **MR. FUGLEVAND:** -- and resuspension, and that
7 we're just kind of wrestling here, the subject started how
8 you do it will make a difference. We just don't know how
9 much difference it's going to make, and the whole idea of
10 then, if we're dealing with sand and backfill, that it may
11 not mean as much because, if we're doing it in a way that
12 even though we generate some residuals, if we're doing some
13 backfill and sand, as long as work from upstream to
14 downstream and are careful, how they do the dredging may not
15 be as critical as compared to if we were just leaving the
16 surface open. I think it's kind of where we've circled in.
17 **MR. THOMPSON:** Say that last part again?
18 **MR. FUGLEVAND:** That from a residual's
19 perspective, within the dredge footprint, if we're going to
20 backfill it with sand, sequencing is not as important
21 because we're going to be backfilling, but the other issue
22 is that downstream, method may make a difference because

1 we're going to release it before the material is out.

2 **MR. THOMPSON:** Maybe perhaps I'm not understanding

3 you, but I would think if we're going to backfill, the

4 sequencing is very important because you want to start and

5 go from upstream to downstream, so that you're not dredging

6 upstream again and recontaminating the cap you just put in

7 place. Perhaps, again, I misunderstood what you were trying

8 to say.

9 **MR. FUGLEVAND:** No. I meant from the capping

10 perspective, you'd always want to be capping from upstream

11 to downstream, so you can't re-contaminate, but how they

12 work within a CU area, within a CU area, the sequencing may

13 not be as critical because we're going to cap the residuals?

14 **MR. THOMPSON:** Again, I'm not clear. I would

15 think sequencing the dredging -- is that what you're

16 speaking about?

17 **MR. FUGLEVAND:** Yeah. The sequencing of the

18 dredging within a CU may not have as big an impact on the

19 residuals within it because we are going to put sand on top

20 of it. So, if we leave 3-inches residuals versus 6, based

21 on how sequenced it, it may be somewhat moot because we're

22 going to put sand on top of it.

1 But the issue is if you dredge it in a sequence
2 that is adverse, you are going to maybe release more
3 material downstream and have a bigger adjacent residual.
4 **MR. SCHROEDER:** So you are asking whether or not
5 the sequence matters within a CU if you stabilize the
6 residuals immediately after dredging, like a daily cover,
7 like in a landfill or something, and then come back and cap
8 it from upstream to downstream when you finish the whole CU?
9 **MR. FUGLEVAND:** No. I wasn't -- wait. I don't
10 know. I hadn't thought about the idea of a daily cover. I
11 was more thinking once a CU was finished, so maybe we're
12 talking --
13 **MR. SCHROEDER:** Well, I think a CU is open way too
14 long during the dredging process, and that you lose a lot of
15 the residuals --
16 **MR. FUGLEVAND:** Yeah.
17 **MR. SCHROEDER:** -- during that dredging period to
18 get to your cut line. I don't know how many days it is, but
19 isn't it like a month, 3 weeks or something?
20 **MR. FUGLEVAND:** It's even more than that. Yeah.
21 **MR. THOMPSON:** I think we're talking about --
22 **PANEL MEMBER:** Part of production cuts.

1 **MR. THOMPSON:** For CU-2, we're talking between the
2 1st of July and the 17th of July.
3 **PANEL MEMBER:** Well, right. So, like I said,
4 about 3 weeks.
5 **MS. HOLLAND:** Just to let you guys know, 10 more
6 minutes on this session.
7 **MR. SCHROEDER:** There's a lot of losses possible
8 in 3 weeks.
9 **MR. THOMPSON:** Paul, I guess I'm still wanting to
10 make sure I understand you're saying. What I thought I
11 heard you originally say was that this particular example in
12 CU-2, one would want to -- may I borrow your pointer again?
13 Thank you. -- would want to dredge, say, these areas first
14 and then dredge and backfill and dredge and backfill and
15 just proceed downstream, sort of bank to bank as you go.
16 When I thought it, then I heard you say a moment
17 ago, well, it didn't matter, I could go ahead and dredge
18 this lane, then these lanes and then these lanes, because
19 I'm going to cover anyway.
20 **PANEL MEMBER:** No, no, no.
21 **MR. THOMPSON:** That's what I thought I heard you
22 say.

1 **MR. FUGLEVAND:** If I'm inconsistent, it's true.
2 [Laughter.]
3 **PANEL MEMBER:** I'm with you.
4 **MR. FUGLEVAND:** But it's part of just trying to
5 think this thing through, and so I was wondering -- I agree.
6 I think optimal would be to start at the top, maybe even
7 dredge as soon as you got far enough ahead, to cover, and
8 that would be ideal. That would be ideal for minimizing
9 both residual -- I mean the release that's going to go
10 downstream, and I think that's a focus.
11 I was saying, though, from the perspective of
12 residuals that you generate within the footprint, because
13 that is another issue of sequencing, that residuals within
14 the footprint, if we capped it at the end, we may not be as
15 concerned about method because we're putting material on top
16 of it anyhow, if we're going to isolate it, but I think
17 method will have a bigger impact on what's released out of
18 the CU because we are not placing any sand outside of the CU
19 to buffer that release. We are only buffering what's inside
20 the CU.
21 **MR. SCHROEDER:** Right. I think you're allowing a
22 lot more material to move out of the CU --

1 **MR. FUGLEVAND:** You are.

2 **MR. SCHROEDER:** -- and never get handled.

3 **MR. FUGLEVAND:** That's right.

4 **MR. FOX:** I think we're trying to figure out how
5 important the release is versus the residual. If it's more
6 of a residual management process, then alls we have to do is
7 ensure that there's no dredging upstream of the sand
8 placement.

9 If it is a release process that is very important,
10 then we have to sequence it more carefully, and then we
11 might really cut into productivity and our ability to have
12 dredges working in different areas.

13 **MR. FUGLEVAND:** I'd agree.

14 **PANEL MEMBER:** Yeah.

15 **MR. THOMPSON:** I think we began this whole
16 conversation just kind of wanting to highlight that tension,
17 at least from my perspective. If in the ROD, there is a
18 mass goal that needs to be achieved, then the productivity
19 has got to be relaxed in order to be able to achieve that
20 and get the net benefits downstream.

21 Again, recognizing the constraints that you
22 operate or predict of these standards and all the other

1 things GE has to face, if you don't want to relax the time,
2 then you're going to have to probably reduce the amount of
3 material you move because, very clearly, Phase 1 showed
4 people moved a lot more material than you otherwise expect.
5 So it's just that tension.
6 **MR. MAGAR:** You lost Todd somewhere along the way.
7 [Laughter.]
8 **MR. BRIDGES:** Everybody is looking at me.
9 **MR. FUGLEVAND:** Things haven't circled back to him
10 yet, so he keeps waiting for that.
11 **MS. HOLLAND:** You've got 5 more minutes.
12 **MR. FUGLEVAND:** Todd?
13 **MR. BRIDGES:** Yeah. Well, there's no -- I mean,
14 if they went in and took two passes, you'd have to set up a
15 tree or a decision tree for how you do this, but let's just
16 say for simplicity sake, you go in, you make two passes,
17 you've got 90 percent or better of the mass. You move down.
18 I don't know what they call these other -- it's CU-2-5,
19 CU-2-4. I don't know what those 4, 5 are like there.
20 **PANEL MEMBER:** Sub.
21 **MR. BRIDGES:** Huh? Yeah.
22 So you're operating two ahead, and you're

1 backfilling, you know, at the same time. I mean, that
2 approach -- I mean, you're still getting -- it's still a
3 mass removal activity --
4 **MR. FUGLEVAND:** Right.
5 **MR. BRIDGES:** -- but the thing that appeals to me
6 there is that this operational practice directly addresses
7 the other standards, which are the residuals and the
8 resuspension, which you're now taking operational action to
9 minimize. If you could combine that with monitoring closer
10 to home here, so that you could actually develop some
11 confidence that you're achieving that objective of
12 minimizing resuspension and residuals, that could compromise
13 your recovery rate.
14 **MR. MAGAR:** We have certainly highlighted, like we
15 saw, many of said, the kind of tensions that are there. I'm
16 sure we'll hear about this and get some response in terms of
17 what is practicable.
18 **MR. BRIDGES:** Tomorrow maybe.
19 **MR. MAGAR:** Tomorrow maybe.
20 But one thing, we have to be careful not to try
21 and design this ourselves.
22 **MR. THOMPSON:** Oh, yeah.

1 **MR. MAGAR:** That is really their job, and there is
2 a lot of nuances and subtleties, but I think we can propose
3 some concepts that may make sense and certainly are worth
4 thinking about, again, coming back to this idea of
5 efficiency, effectiveness, and rapid closure, and trying to
6 bring those together somehow.
7 **MR. BRIDGES:** Right. But what we're talking about
8 here really just addresses resuspension and residual --
9 well, I would say release and resuspension that's due to
10 open CUs.
11 **PANEL MEMBER:** It's just one component.
12 **MR. BRIDGES:** We spent 40 minutes talking about
13 just open CUs, not resuspension, release, say, at the dredge
14 head, for example, which is another part of this process.
15 But I think restricting, to me, the number of
16 passes you take clearly gets to that, right? You've got
17 less interaction between the bucket and the bottom if you're
18 limiting the number of passes.
19 **MR. SCHROEDER:** I certainly agree. We would
20 encourage the use of big dredges, get as few a number of
21 bites as possible, but I think they'd say we like to use
22 their 5-cubic-yard bucket whenever they can anyway.

1 **MR. FUGLEVAND:** Mm-hmm. Yeah.

2 **MR. BRIDGES:** I'm just bringing attention to the
3 fact there's another pathway here that we have to consider.

4 **MR. MAGAR:** Well, I think this came up because
5 this was an area where those of us that started to look at
6 this originally saw an opportunity to have an effect on
7 this, on the resuspension and release. So I agree. I mean,
8 this is definitely one component of the whole system, but it
9 seems more challenging, for example, to try and manage the
10 scows. Those have to move back and forth.

11 **MR. BRIDGES:** Right.

12 **PANEL MEMBER:** So I can't say they need to use
13 less scows.

14 **MR. BRIDGES:** So the principal objection that
15 we've heard thus far of the proposal beyond the operational
16 ones is going to be, well, now you're essentially capping
17 more material than we wanted capped.

18 **PANEL MEMBER:** Yeah.

19 **PANEL MEMBER:** Well, what I saw from the numbers,
20 we already are.

21 **MR. THOMPSON:** We already had --

22 **PANEL MEMBER:** Okay? There's none of these -- you

1 know, I think, again, one CU made it below 1 ppm, and I
2 think everything is at 3 ppm or above. So there's just a
3 reality there. So we can keep dredging multiple times to
4 get to -- but we're not getting down to these low numbers,
5 which is not atypical for dredging sites, especially as
6 complicated as this.
7 **MR. FOX:** Yeah. But we also might have been able
8 to do it better if we had good DoC's. So, I mean --
9 **PANEL MEMBER:** Yep. I think we all concur. I
10 think everybody sees the DoC as a big issue.
11 **PANEL MEMBER:** Still, it wouldn't be perfect, but
12 it's not going to be --
13 **MR. SCHROEDER:** I believe also the GE proposal to
14 change the criteria from when you could backfill rather than
15 cap, you know, going from 1 --
16 **MR. FUGLEVAND:** To 3.
17 **MR. SCHROEDER:** -- to 3 parts per million Tri+.
18 **MR. FUGLEVAND:** Tri+, yeah.
19 **MR. SCHROEDER:** And so there is a way to reduce
20 capping in addition to just dredging to clean.
21 **MR. MAGAR:** Yeah. I would change that criterion
22 further. If we're going to -- just this 90-percent removal

1 target, for example, that there be more of a burden on this
2 backfill and cap material for some level of permanence
3 because now there is a potential to leave a lot more
4 material behind.
5 **MS. HOLLAND:** And I'm going to let Victor have the
6 last word. Since Todd is out of the room, that might work.
7 [Laughter.]
8 **Opportunity for Observe Comments**
9 **MS. HOLLAND:** Anyway, we need to move on into our
10 public comment opportunity.
11 I think you can turn the overhead off, a little
12 less noise.
13 I just want to remind our members of the public
14 that you can give us a hard copy of your remarks, give it to
15 myself or to Steve up here or Alison. I think she may be
16 out of the room -- oh, there she is. Okay. Alison is over
17 there. And it will go into the record.
18 We have 12 people who want to give comments, so
19 we've divided the time up, and as per our ground rules, each
20 person gets 4 minutes.
21 Steve will be helping me keep time. To be fair to
22 everyone, we need you to stick with your time.

1 The first person will be Sharon Ruggi followed by
2 Lisa Rosman.
3 Sharon, again, your name and affiliation for the
4 record, Thanks.
5 **MS. RUGGI:** Okay. I am Sharon Ruggi. That's
6 spelled R-u-g-g-i. And I am a part of CEASE, Citizen
7 Environmentalists Against Sludge Encapsulation.
8 I've heard some discussion here today about the
9 need for understanding the impacts to the Upper Hudson from
10 dredging, and I totally agree.
11 Throughout the reassessment, we were assured that
12 the standards were set to be productive of the community and
13 the environment. It was our assurance.
14 It is imperative that we understand what is
15 happening to Upper River fish, and there must be standards
16 that will be protective of the residents. It is
17 unconscionable for EPA to suggest that standards be removed
18 from the Upper Hudson.
19 You know, we recently have heard "drill, baby,
20 drill," and many signed onto that until an oil tanker sank
21 resulting in an environmental disaster. EPA seems to say
22 "dredge, baby, dredge." We can only hope that the end

1 result will also not be detrimental to our environment.
2 I go back to the addendum one more time. I heard
3 a couple of you mention that you had not had the chance to
4 adequately read the addendum, and yet here we are trying to
5 address critical issues. I would suggest a necessity for
6 another peer review session after these documents have been
7 absorbed. So I, once again, request that you ask for
8 additional time.
9 The 5-year project is important to my community,
10 and this point again goes back to assurances. The dredging
11 operation is extremely disruptive to the Upper Hudson
12 residents. Though there has always been tremendous
13 opposition to dredging, since it is here, there seems to be
14 a feeling let's get on with it, get it done, but get out in
15 5 years, get out just as quickly as possible.
16 Along with this thought, I have heard discussion
17 of prioritizing the areas to be dredged, which seems
18 reasonable.
19 In Phase 1, there was time spent removing PCBs
20 from under debris, PCBs that would never have become
21 bioavailable, which goes to the discussion, is this a mass
22 removal project or is it a remediation project.

1 Thank you very much.

2 **MS. HOLLAND:** Thank you.

3 Lisa Rosman followed by Jay Field.

4 So, Lisa, again, your name and affiliation.

5 **MR. ROSMAN:** My name is Lisa Rosman, and it's

6 spelled R-o-s-m-a-n, and I work for NOAA's Office of

7 Response an Restoration.

8 NOAA provided written technical comments as well

9 as Joint Trustee comments on the Phase 1 evaluation reports.

10 I will highlight some of the main points contained within

11 NOAA's letter and recommend that the peer review panel read

12 those comments for more details.

13 My comments today represent the opinions of the

14 Federal Trustees.

15 GE's proposal for a hard cap on load as a

16 modification to the resuspension standard is incompatible

17 with EPA's remedy for the Hudson River. Their proposal

18 decreases dredging and newly incorporates inventory capping.

19 The Federal Trustees are not supportive of that approach.

20 In addition, capped designs were developed primarily to

21 isolate residual PCBs and might require a redesign and could

22 lead to increased armoring. Any hardening of the river

1 bottom should be addressed through habitat mitigation
2 consistent with EPA's contaminated sediment guidance.
3 Two, a reduction in sediment removal under GE's
4 Engineering Performance Standards' modifications has the
5 potential to contribute to the long-term load to the Hudson
6 River since significantly more inventory and surface PCBs
7 will remain in the river and will continue to be at risk of
8 scour and downstream transport.
9 Three, the benefits from Upper Hudson River
10 remediation outweigh the short-term impacts to the Lower
11 Hudson, allowing for the elimination of load as a standard.
12 Phase 1 did not provide evidence that redeposition in the
13 Lower Hudson associated with load over the Federal dam led
14 to increased fish PCBs. The Federal Trustees do not
15 anticipate long-term impacts to surface sediment or fish
16 concentrations in the Lower Hudson River from implementation
17 of the 2002 remedy.
18 Four, best management practices employed during
19 Phase 1 did not effectively address release of NAPL.
20 Measures to monitor, contain, and capture NAPL should be
21 developed and effectively implemented. NOAA has extensive
22 experience with responding to oil spills, and our comments

1 provide potential measures for characterizing and tracking
2 the 3-D plume and containing and collecting the NAPL.
3 Five, the 2009 Phase 1 load may have been impacted
4 by unanticipated increased erosion within and PCB loading
5 from the West Channel of Griffin Island due to mid-2009
6 installation of a bridge replacing an underside culvert by a
7 property owner at the upper end of the channel. That
8 greatly increased flows through this highly contaminated
9 backwater channel to the Upper Hudson. Baseline monitoring
10 did not capture this change in condition.
11 Six, flows in the West Channel of Rogers Island
12 were the highest on record during the dredging time period
13 due to diversion of flows from the East Channel of Rogers
14 Island to the West Channel. The West Channel is shallow and
15 highly contaminated. Sediment scour during these extreme
16 events would contribute to elevated loads observed further
17 downstream.
18 **MS. HOLLAND:** You have one minute.
19 **MS. ROSMAN:** Seven, the Federal Trustees support
20 navigational access dredging as envisioned in the ROD, and
21 there's more details that you'll see when I hand this in.
22 And we support a proactive approach to Phase 1 dredging to

1 minimize underestimates of depth of contamination, maximize
2 inventory removal on the first dredge pass, minimize fine
3 grading of inventory sediments, and reduce resuspension, and
4 suggest that the method used to develop the Phase 1 dredge
5 prism should be revised in Phase 2 to deal with
6 underestimates of DoC and MPA and incorporate uncertainty
7 into the final dredge prisms and cut lines because this will
8 serve to improve compliance with the Engineering Performance
9 Standards.
10 Smoothing of horizontal boundary lines, demarking
11 certification units could increase dredging and backfilling
12 efficiency and improve productivity.
13 **MS. HOLLAND:** And your time is up.
14 **MS. ROSMAN:** Thank you.
15 **MS. HOLLAND:** Do you want to hand --
16 **MS. ROSMAN:** I am going to clean it up.
17 **MS. HOLLAND:** Okay, cool. Thank you very much.
18 Next is Jay Field and Althea Mullarky, if I am
19 reading this right.
20 **MS. MULLARKY:** Yes.
21 **MS. HOLLAND:** And 4 minutes each, remember.
22 So, Jay, again, give your affiliation and name.

1 **MR. FIELD:** Hi. My name is Jay Field. I've
2 worked for NOAA on the Hudson River Project for over 20
3 years. So I can appreciate the challenge the panel faces,
4 reading all the reports, sifting through all the data, and
5 looking at all the comments, and I appreciate your
6 willingness to take this on.
7 I'll present my perspective on a couple of issues
8 that were discussed during the meeting this week,
9 redeposition and modeling.
10 Redeposition of suspended material outside the
11 dredge prism is a very important process to understand.
12 Unfortunately, the planned attempts to quantify the
13 magnitude of the problem with supplemental data collection
14 was unsuccessful, and for the reasons that EPA discussed
15 yesterday, the data from the sediment traps and the
16 relocated cores provided best marginal insight into this
17 issue.
18 The panel should be aware of the difficulty in
19 addressing this problem, given the existing background
20 concentrations.
21 For example, the average concentrations in the top
22 2 inches of the sediment outside of the aptly dredged Phase

1 CUs is more than 40 ppm total PCBs. Much of this contamination is in shallow water, highly susceptible to disturbance from vessel traffic.

The situation is even more challenging in Phase 2. To assess redeposition in Phase 2, you need to take into account baseline.

The average concentration in -- of total PCBs in the top 2 inches in River Section 2 at the moment is 35 ppm. Due to the much higher cleanup standards in River Section 2, the average total PCB concentration in the top 2 inches outside the Phase 2 dredge areas is in River Section 1 -- in River Section 1 is 8 ppm and 17 ppm in River Section 2.

We recommend that EPA and GE develop a comprehensive and well-designed study for implementation in Phase 2 to improve our understanding of this process.

Modeling. We learned at this meeting that GE has developed the next-generation version of their previous Upper Hudson River model, and this state-of-the-art model now nails the natural recovery data. This is important because, as we now know, the data from the SSAP and BMP demonstrate that the earlier models significantly underestimated the PCB concentrations in the sediment

1 surface throughout the Upper Hudson River as well as the
2 load to the Lower River.
3 PCBs in the sediment surface are not recovering
4 that rapidly as the models predicted and are not being
5 buried.
6 The earlier models used by GE and EPA were also
7 state-of-the-art models, developed by two of the top
8 modeling teams in the country. These models also claimed to
9 nail the data, but because they overestimated natural
10 recovery, they underestimated the difference in benefits
11 between the selected remedy and monitored natural recovery.
12 **MS. HOLLAND:** You have one minute.
13 **MR. FIELD:** These new models of higher spatial
14 resolution, high-quality data, better bathymetry -- and I
15 think I heard John say they even have stainless steel knobs
16 --
17 [Laughter.]
18 **MR. FIELD:** But they still must use the same
19 problematic historic data, incomplete information on key
20 parameters, black boxes for processes not well understood.
21 The new data, no matter how extensive, only represent a
22 short time scale, relative to the proposed temporal

1 extrapolations.

2 From our analyses of the baseline monitoring and

3 historic fish data, we learned the pitfalls of relying on

4 short time series to estimate temporal trends, even with

5 high-quality data collected specifically for that process.

6 Models can give us an important perspective on

7 processes we need to understand to make decisions, but they

8 only provide one line of evidence. Much as I respect Dr.

9 Connolly's expertise and experience as a modeler, I

10 certainly would not advocate giving his model the authority

11 to make decisions, as GE proposes.

12 **MS. HOLLAND:** Thank you. Thank you very much.

13 Althea Mullarky and then Dave Adams.

14 **MS. MULLARKY:** Hello. I'm Althea Mullarky. I'm

15 from Scenic Hudson.

16 Scenic Hudson together with several partners,

17 Clearwater and Riverkeeper, Clean Action Ocean [sic], and

18 the Trouts Unlimited, submitted observations to EPA for you

19 to read that go into much more technical and more data-based

20 remarks on the Phase 1 reports that were submitted.

21 We want to make a comment today that we are still

22 fully committed to the long-term ecological and economic

1 recovery of the Hudson River. I think this is really
2 important and perhaps should be added to one of the goals
3 that you listed.
4 We know that one of the driving principles and
5 what helped frame our remarks to you is the belief that the
6 Engineering Performance Standards were intended to provide
7 technical requirements and operational guidelines for the
8 duration of the dredging operations but were carefully
9 constructed to allow EPA and GE flexibility on achieving
10 firmly established remediation.
11 I was in the Navy, so I compared Phase 1. When I
12 have to report back to this to people I work with, they said
13 how did Phase 1 go, I compared it like when I was in the
14 Navy. It's a "shakedown cruise." You go out there, you see
15 what works and you see what doesn't work, and you make
16 adjustments accordingly. I hope that's what the process --
17 this is taking place right now.
18 We believe that the scientific and technical
19 expertise exists within GE and EPA to remove this
20 contaminated soil as a plan for Phase 2 hopefully with your
21 help in focusing. The long-term benefits to the whole
22 Hudson River system, the ecology, the economy, and the

1 public health are dependent on GE and EPA demonstrating this
2 expertise going forward.
3 Our comments were very much in line with one of
4 the things I've heard the past couple of days. Loads. We
5 urge caution if you are going to revise those loads.
6 Consider the implications on the remediation objectives.
7 Underestimated DoC, we hired an independent
8 scientific expert to help us understand the voluminous
9 reports that were given piecemeal to us, like last Monday,
10 to help us understand the data that was in there, and a key
11 thing was underestimated, depth of contamination, both from
12 our read of it and also from Dr. Bohlen's report as well,
13 which is attached to our comments. We believe this is
14 extremely important.
15 We want to commend EPA also for outlining in their
16 report several operational processes that could be improved
17 to help meet the Engineering Performance Standards, among
18 them underloaded barges. I noted one thing. They also
19 noted that contributing 1,400 hours of wait time as the CUs
20 halted operations, as they halted for scows, 1,400 hours of
21 not doing anything stood out for us.
22 Narrow channel depths with access dredging. We

1 really encourage you to strongly consider limiting the
2 capping during the dredging operations. That is contrary to
3 what the ROD established as part of the remedy.
4 We also consider long-term economic recovery
5 important, and the canal core is committed to doing
6 navigational dredging at some point --
7 **MS. HOLLAND:** One minute.
8 **MS. MULLARKY:** -- and having caps in the dredge
9 area is going be contrary to that.
10 I want to finish up by saying that we strongly
11 encourage the removal of that contaminated sediment from the
12 navigational channel while the necessary expertise,
13 manpower, and equipment is already in the water and
14 operating.
15 Thank you.
16 **MS. HOLLAND:** Thank you.
17 Dave Adams and George Hodgson will be next.
18 Give your name again and your affiliation, please.
19
20 **MR. ADAMS:** My name is David Adams, and I want to
21 start by clarifying a little bit who I am. After graduating
22 from MIT in 1950 with a chemical engineering degree, I went

1 to work for GE and worked there until my retirement in 1988.
2 However, my comments that I have made, making today, and
3 that I have made on many reports since the early 1990s
4 regarding this project are based on my role as a member of
5 the Saratoga County Environmental Management Council and
6 have no connection to GE.
7 In reflecting on the reports that I've read -- and
8 my comments today are based on the final Phase 1 and Phase 2
9 reports, not seeing the supplement nor had opportunity to be
10 here yesterday -- I have concluded in my mind that the
11 dredging has two main objectives. One is to reduce the load
12 that goes to the Lower Hudson River to a value less than
13 what would occur under MNR, MNA, whichever term you like;
14 also, in the Upper Hudson River, to reduce the concentration
15 of PCBs in fish to safe levels at a faster rate than would
16 be achieved without dredging.
17 With regard to the load to the Lower River, it is
18 very important, in my mind, that the load of MNA or MNR to
19 the Lower River be estimated because the larger that load
20 is, the less significant any resuspension effects from
21 dredging are on achieving the goal of lower load. However,
22 if the lower load without dredging is small, then,

1 obviously, resuspension effects of the order of, say, 2,000
2 kilograms could have a major impact and maybe even never
3 achieve the stated goal.
4 With respect to the fish, I believe that the data
5 that was presently taken shows that there has been an
6 increase in the PCB concentrations in fish, and I think it's
7 very important that this question of distribution of
8 resuspended sediment into areas that aren't being dredged be
9 thoroughly evaluated, a plan established to do that and
10 carried out, before any further dredging occurs.
11 And, in fact, if modeling and the sampling shows
12 that these objectives of lowered load to the Hudson River
13 than would occur without dredging and faster recovery of the
14 fish cannot be achieved, then that brings up to my mind the
15 question that's been hiding all along, is why are we digging
16 these PCBs up.
17 **MS. HOLLAND:** You have one minute.
18 **MR. ADAMS:** And if that answer is that the goals
19 won't be achieved, then the PCBs, in my mind, should be
20 left, sequestered where they are not available to the river,
21 and the equipment that's in the river and the facilities
22 could be put to a useful purpose by doing the navigational

1 dredging that's needed, but New York State has not yet, not
2 now able to do.
3 Further amplification are in my written notes and
4 my comments, and I hope you'll review them.
5 **MS. HOLLAND:** Thank you.
6 Next is George Hodgson and then Manna Jo Greene.
7 **MR. HODGSON:** My name is George Hodgson. I'm
8 director of Saratoga County's Environment Management
9 Council. I've worked for many years with Dave Adams, who
10 just provided you with some comments.
11 I just want to start off that I am very
12 disappointed with the information management of this project
13 with EPA coming out with a 211-page addendum in the eleventh
14 hour, foisted upon the peer review panel and the public,
15 without ample time to review it. I just think that's a very
16 poor move.
17 Again, as others have said, I think it pushes that
18 project a little further out, and that, in all fairness to
19 you seven dedicated individuals, additional time should be
20 granted you to digest this information before doing your
21 final report.
22 Public comments on the Phase 1 evaluation report,

1 Saratoga County EMC has entered public comments on every
2 significant technical document in the last 28 years on the
3 PCB project, first the assessment and now the reassessment.
4 That information, the deadline was last Tuesday.
5 The information I have, that was, I think, put on a CD and
6 sent out late last week to the panel, again, who many of
7 which were on a weekend break and maybe traveling on Monday,
8 did not have the benefit of not only our comments but other
9 comments that were put out there. So, again, I think, EPA,
10 you got to do a better job than this.
11 So, with that, I think Dave said it all. You'll
12 get a copy of some more specific information about -- and
13 what I've heard you say is getting our arms around this with
14 finite data, that load information that will allow you to
15 make a determination of what is going on over the Troy Dam
16 and how protective is the remedy or is the MNA of when that
17 crosses.
18 And 1 percent of an unknown number just doesn't
19 cut it with me.
20 And I hope the panel will provide some useful
21 information to EPA. The last two days was very
22 enlightening. And I think GE, it sounds like, has a very

1 good model, and, personally, I think we ought to pay
2 attention to the new information and come up with a best
3 possible project that we can to the benefit of both down
4 river and up river, people and fish.
5 Thank you.
6 **MS. HOLLAND:** Thank you.
7 Manna Jo Greene and then David -- I'm not sure if
8 I can pronounce this right -- Arting? We couldn't quite
9 read your writing. The organization is SECMC, maybe. So,
10 just so you know, you're queued up next.
11 Manna Joe, go ahead.
12 **MS. GREENE:** Thank you.
13 First, I want to say that I'm really honored to be
14 part of this process.
15 **MS. HOLLAND:** Go ahead and repeat your --
16 **MS. GREENE:** Oh, yes. I forget. Manna Jo Greene,
17 G-r-e-e-n-e, and I am the Environmental Director for Hudson
18 River Sloop Clearwater. And I am very honored to be part of
19 this process. It's really something to be proud of for all
20 of us. I am really impressed.
21 The ultimate goal of the project from our
22 perspective is to get the PCBs out of the Hudson River.

1 Although MNA is a valid parameter to compare active
2 remediation to, it is not the equivalent of removal.
3 Since 2001, Clearwater's comments have
4 consistently urged a proactive approach to preventing
5 sediment resuspension and volatilization to achieve that
6 goal without doing preventable harm. If the designers of
7 the ROD and the remedial design knew what we know now -- and
8 some of you have been part of that process -- that there is
9 considerably more PCB in the river than previously measured
10 and modeled, the hard numbers would likely have been higher
11 and are now being adjusted, I think appropriately, by EPA to
12 address this new information.
13 We share concerns that have been raised over the
14 past couple of days about contaminated sediment ending up in
15 areas that will not be captured by dredging. This
16 contamination will have short- and long-range effects but
17 can be successfully limited by various measures, most
18 importantly extending the wharf and related equipment to
19 assure scow unloading efficiencies, care in dredging,
20 earlier and more widespread use of control measures such as
21 sheet piling, silt curtains, absorbent booms, et cetera,
22 less decanting, better access, and improved near-field

1 monitoring for PCBs, not total suspended solids.

2 With regard to the tension between the three

3 Engineering Performance Standards, the emphasis on

4 productivity should be on efficiency, that is, the rate of

5 removal, processing, and disposal, not the length of time it

6 takes, except that work areas should be closed as quickly as

7 possible to prevent increased resuspension that is above

8 baseline that these areas are prone to.

9 Being a registered critical care nurse before

10 becoming what my friends now call an "earth nurse," I'm

11 going to take the liberty of making a medical analogy. I

12 liken this to taking a patient to the operating room,

13 opening them up, and finding --

14 **MS. HOLLAND:** One minute.

15 **MS. GREENE:** -- finding out that the extent of the

16 cancer is considerably more than the biopsy and the MRI

17 showed but telling the surgeon, "Look, we only allowed 50

18 minutes for the surgery. So take what you can get easily,

19 the low-hanging fruit model approach, and then get out."

20 Given that PCBs are known carcinogens to humans

21 and other species and that the river is a living ecosystem,

22 this is not such a far-fetched analogy, and you might even

1 think of the Upper Hudson as the contaminated area and the
2 Lower Hudson as the rest of the body.
3 And this is the one and only opportunity we have
4 to clean up the PCBs from the Hudson River ecosystem. It
5 should be done as thoroughly as reasonably possible. EPA
6 has offered a series of reasonable modifications, which we
7 believe should be implemented. We recommend slower, more
8 careful, more deliberate dredging in Phase 2, informed by
9 the best depth and extent of contamination that --
10 **MS. HOLLAND:** Your time is up.
11 **MS. GREENE:** -- can be generated efficiently.
12 **MS. HOLLAND:** You can submit the rest.
13 **MS. GREENE:** I would like to be able to submit
14 comments in writing. So I will do that for the rest of my
15 comments.
16 **MS. HOLLAND:** Okay. Thank you so much.
17 **MS. GREENE:** I also would like to ask that we have
18 additional opportunity to comment directly to the peer
19 reviewers during this process. Terminating our input at
20 this point would be -- [audio break].
21 **MS. HOLLAND:** Thank you.
22 Okay. Next, we've got David. I'm not sure about

1 the last name. Arting? Is he still here? The organization
2 is SCEMC. This was a David something.
3 **MR. ADAMS:** That is SCEMC.
4 **MS. HOLLAND:** Oh, okay. So we had it twice. Oh,
5 signed up twice. Okay. Thank you very much.
6 Then Bob Foley and Joe -- I'm sorry. I am going
7 to slaughter this one -- Moloughney, the Canal Corporation.
8 I can't -- somebody else wrote them down, and then
9 we can't read everybody's writing. So please forgive me.
10 So Bob and then we'll have Joe. So introduce
11 yourself, Bob.
12 **MR. FOLEY:** My name is Bob Foley. I work for the
13 U.S. Department of the Interior. We're one of the natural
14 resource agencies working on the Hudson River along with the
15 EPA.
16 We work very closely with the National Oceanic and
17 Atmospheric Administration. Lisa Rosman just provided you
18 with a series of comments. The Department of Interior wants
19 to go on record that we agree with those comments.
20 I have one additional one to make for you. So I'm
21 going to try to keep this short.
22 In the 2002 ROD, it envisioned that there would be

1 some dredging for -- in support of a better navigation
2 channel and access dredging. It was thought that this would
3 improve productivity and reduce resuspension of contaminated
4 sediments. Better use of preplanned access dredging would
5 allow use of vessels with increased depth and increased
6 productivity, such as through the use of a 5-cubic-yard
7 bucket to remove inventory. We'd like you to consider that
8 as one of the options, if you hadn't discovered that
9 particular point already.
10 In closing, thanks for the opportunity to address
11 you. I hope that you will consider the points that you are
12 hearing today and believe that your consideration of these
13 points will assist your decisions in your future
14 deliberations.
15 Thank you.
16 **MS. HOLLAND:** Thank you.
17 So next is Joe, and then last two people are Kevin
18 Farrar and Wayne Richter from NYSDEC.
19 **MR. FARRAR:** Joe, I think left about 10 minutes
20 ago.
21 **MS. HOLLAND:** Oh, okay.
22 **MR. FARRAR:** I'll be happy to take his time,

however.

[Laughter.]

MS. HOLLAND: Then Kevin Farrar. So, Kevin, give your name again, spell your last name.

MR. FARRAR: Sure. My name is Kevin Farrar, F-a-r-r-a-r. I work at New York State Department of Environmental Conservation, New York State DEC.

I am going to provide a few thoughts on what I think are the main issues you're talking about here over the last few days: concerns over the losses of PCB during Phase 1 and how it impacts Phase 2 and the potential revisions to the standards that you are talking about for the second phase.

DEC's views on the PCB releases during Phase 1 are this. The impacts to water column were more significant in the vicinity of the dredge and the next several miles downstream. You guys can see that.

The decrease with distance downstream till the mid Hudson, our State DOH was gathering water supply data down there, and they didn't see any decreases at all in '09 over previous years.

The impacts to fish in the river, similar to those

1 seen in the water column, most severe near where the
2 dredging was done and diminished downstream to the point
3 where DEC believes the area in Albany and Troy showed
4 negligible, if any, impact, and that's different than other
5 folks' view. But we believe these impacts are modest and to
6 be expected when implementing a remedial project of this
7 scale.
8 We continue to believe the overall impacts
9 associated with the dredging work greatly outweigh the
10 short-term impacts associated with implementing the remedy.
11 The benefits outweigh the impact. That's our view.
12 Past experience of other loading events in the
13 Hudson River, notably releases from the GE Hudson Falls plan
14 site in the early '90s, along with some other dredging
15 projects in New York State -- our example would be
16 Cumberland Bay, for example -- provide the perspective that
17 leads the State to infer that the dredging-related impacts
18 will abate within a few years after the dredging has ended.
19 The impact's releases from the Hudson Falls plan
20 site, for example, in the early '90s is particularly
21 informative to us. Surface water PCBs were significantly
22 higher for all of '91 and all through '92 than they were

1 last year -- significantly higher.

2 However, after the source control measures that GE

3 implemented, addressed releases from the plan site, fish PCB

4 concentrations returned to their previous levels within 2 or

5 3 years. So we've seen it happen before in this river, what

6 happens -- load, take it away.

7 We anticipate a similar response after this

8 dredging is completed, and it's also important to note that

9 throughout the time this loading event from Hudson Falls was

10 occurring, there was negligible, if any, impacts on the fish

11 concentrations in the Lower Hudson River.

12 There's really two ways to address concerns with

13 PCB releases during Phase 2, improvements to operations or

14 dredge less, and that's the two points of view you're

15 hearing here today.

16 We don't believe it's appropriate that this issue

17 be resolved by simply doing less remediation. DEC believes

18 that the operational improvements are available to allow PCB

19 losses during Phase 2 to remain within an acceptable range,

20 and there's a lot of talk about revising the standards as to

21 what "acceptable" is, but we think that we can get this

22 project to within whatever the standards are that are

1 developed for Phase 2.

2 **MS. HOLLAND:** One minute.

3 **MR. FARRAR:** Thanks.

4 We've made -- DEC has made several

5 recommendations. You may have had an opportunity to take a

6 look at the report that we submitted in February. We still

7 stand behind them and hope that you will continue to keep

8 them in mind.

9 It's also important, I think, to note that if the

10 panel is going to take into account what the objectives are

11 and the benefits of the remediation and trying to make your

12 choices about recommendations for changes to the standards

13 for Phase 2, I also think that it is very important that you

14 be willing to make specific recommendations on operational

15 changes for Phase 2. If you're going to look at benefits,

16 you got to look at how are we going to maximize the benefit

17 by changing the operations to minimize the releases of PCB

18 from the project.

19 Providing guidance to EPA and GE on optimizing the

20 operations is to me an important element of your panel's

21 response to your charge.

22 I had some thoughts on specifics related to the

1 standard, but I am going to run out of time.

2 **MS. HOLLAND:** Well, you can --

3 **MR. FARRAR:** So what I'll do is I'll just hand

4 them to you --

5 **MS. HOLLAND:** That's great.

6 **MR. FARRAR:** -- and you can let the gentlemen read

7 it.

8 Thank you very much for your efforts.

9 **MS. HOLLAND:** With that, thank you.

10 **MR. FARRAR:** I appreciate that you guys have a lot

11 of work to do. You've done a lot already, and I just want

12 to say thank you very much on behalf of the DEC. Thank you.

13 **MS. HOLLAND:** Wayne Richter?

14 **MR. RICHTER:** Hi. My name is Wayne Richter. I am

15 a research scientist with the Division of Fish, Wildlife,

16 and Marine Resources in the New York State Department of

17 Environmental Conservation.

18 Now I'll talk to you about PCB levels in the fall

19 collected fish, particularly from 2009, what we can learn

20 from them.

21 I'm not going to go into the sort of dueling

22 statistical arguments. Again, you've had a chance to read

1 the reports. You've heard the presentations, and I'm sure
2 you're going to come to your own conclusions about the
3 statistics and the disagreements.
4 What I want to do is step back a little bit from
5 the statistics and talk about what the fish tell us that's
6 really relevant to decision-making for Phase 2.
7 A brief summary of what we have seen with the
8 fish, we have general agreement that PCB levels in fish went
9 up in the immediate vicinity of the dredging. There is no
10 disagreement about that.
11 Further downstream, both EPA and DEC found, using
12 slightly different statistical methods, that no evidence of
13 a rise in PCB levels in fish, Stillwater, Albany; whereas,
14 GE using different statistical methods said there was a
15 significant difference.
16 Another thing, we saw levels rise between 2008 to
17 2009 at the Feeder Dam -- this is a reference site --
18 upstream from all the dredging, and although the rise was
19 very small, because the levels are small, there was a rise.
20 So there are things going on.
21 So the main statistical argument really has been
22 whether PCB levels went up in those downstream fish,

1 Stillwater, Albany area, and whether the rise was due to
2 dredging. Our own State agencies say that it is not
3 demonstrated by the evidence. GE says yes.
4 To see what matters here, I think we need to look
5 at whatever happened in context, just what the numbers --
6 one part of that context is that we expected PCB levels to
7 go up from dredging.
8 We certainly expected some resuspension of PCBs.
9 We know that levels went up, as Kevin just mentioned to you,
10 after the release in 1991 on the Upper River from Allen Mill
11 and after the Cumberland Bay remediation in Lake Champlain.
12 We furthermore expect that the levels are going to
13 go down in the Hudson River, like they did at these other
14 sites. If there is any surprise actually from last year's
15 fall data at Albany and Troy, it's that we didn't see
16 something that everybody could create, that they really all
17 went up, that there wasn't a strongly unambiguous effect.
18 It's arguable.
19 The other part of the context is to look at the
20 long-term pattern of the data. If you look at a time series
21 from Thompson Island where the dredging was, Thompson Island
22 Pool, and the fish, you'll see something is really different

1 in 2009. There was a local effect to fish, and we expect
2 that to go down.
3 If you look, on the other hand, at the Stillwater
4 time series or the Albany time series and even, to some
5 extent, to the North Cumberland, Fort Miller time series,
6 there is no way that you would really pick out 2009 in that
7 time series as something unusual.
8 **MS. HOLLAND:** One minute.
9 **MR. RICHTER:** Okay.
10 What this tells us is that any effect with small
11 -- the take-home message here is that whatever statistical
12 significance you can extract from these data, nothing really
13 happened that's out of the ordinary or untoward that gives
14 us concern. We see nothing in the fish data that alarms us
15 to the point where we think that a change in the remedy, a
16 curtailing of the remedy should be done. There are,
17 obviously, operational improvements that can reduce
18 resuspension. So we don't think we need to dredge less to
19 address the fish.
20 I also want to briefly address GE's proposed
21 framework for a load standard for the -- to protect fish on
22 the Upper River. Basically, they are going to do some kind

1 of an average of what you'd expect from modified natural
2 attenuation versus dredging, and this just isn't a sound
3 approach.
4 Our approach is -- our goal is not to sort of get
5 an average over long term that's less bad than what we'd get
6 if we did nothing.
7 Our goal is to achieve lower PCB levels in the
8 fish, to reduce risk to humans and ecological receptors. We
9 want a recovery of the fish resource. Again --
10 Give me about 30 seconds.
11 We want to accelerate natural attenuation, and we
12 don't see any value to the fish from leaving more PCBs in
13 the river.
14 Thank you.
15 **MS. HOLLAND:** And you're welcome to hand in your
16 notes.
17 **MR. RICHTER:** I do have a statement with a little
18 bit more detail.
19 **MS. HOLLAND:** Okay, great. Thank you very much.
20 **MR. RICHTER:** Thank you very much.
21 **MS. HOLLAND:** Thanks very much to all of you.
22 Okay. That's all of our public commenters.

1 Paul, anything from you folks to wrap up?

2 **MR. FUGLEVAND:** I don't have anything.

3 **MS. HOLLAND:** Okay. So 8:00 a.m. tomorrow

4 morning.

5 Thanks you, every one.

6 [Whereupon, the meeting was recessed, to reconvene

7 at 8:00 a.m. on Thursday, May 6, 2010.]

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