

STATE OF SOUTH CAROLINA
 ADMINISTRATIVE LAW COURT DIVISION
 Docket No. 09-ALJ-07-0029-CC
 Kiawah Development Partners, II,)
)
 Petitioner,)
)
 v.)
)
 SCDHEC Office of Ocean and Coastal)
 Resource Management,)
)
 Respondent.)
)
 _____)
 South Carolina Coastal Conservation)
 League,)
)
 Petitioner,)
)
 v.)
)
 SCDHEC Office of Ocean and Coastal)
 Resource Management and Kiawah)
 Development Partners, II,)
)
 Respondents.)
)
 _____)

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 SC Court of Appeals

ADMINISTRATIVE HEARING

Monday, August 24, 2009
 1:04 p.m. - 5:37 p.m.
 Tuesday, August 25, 2009
 9:00 a.m. - 7:03 p.m.
 Wednesday, August 26, 2009
 9:00 a.m. - 7:28 p.m.
 Thursday, August 27, 2009
 9:00 a.m. - 6:00 p.m.
 Friday, August 28, 2009
 9:00 a.m. - 4:27 p.m.

The hearing before the Honorable Ralph King Anderson, III, was taken at the Edgar A. Brown Building, 1205 Pendleton Street, Suite 224, Columbia, South Carolina, on the 24th through 28th day of August, 2009 before Cassandra E. Vance, Court Reporter and Notary Public in and for the State of South Carolina.

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1 approaches to things like revetments.

2 Q: Yet on the second page of that, that's marked
3 204, with a big, bold line where he says,
4 "(C)(2), where applicable, the extent to which
5 the overall plan, design of the project can be
6 submitted to together." He quotes the
7 regulation and then he attempts to address why
8 this is not piecemealing, correct?

9 A: Yes.

10 Q: Okay. Right next to you is Exhibit Twenty?

11 A: Right next to me is Exhibit Twenty?

12 Q: On the ledge there, sir.

13 A: (Witness complies.) All right.

14 Q: This is a document entitled -- on the front
15 page it's "Riverbank Protection Advice Based on
16 Field and Model Studies," right?

17 A: Yes.

18 Q: And if you flip to page six of that, he's got
19 design modifications that they're recommending.
20 This is your own expert, right, who prepared
21 this?

22 A: It's one of our experts.

23 Q: Oertel and Basco?

24 A: Dr. Oertel.

25 Q: Okay. It's by Oertel and Basco on the front

1 page, is it not?

2 A: Yeah. I think this part had to do with
3 Dr. Oertel, but go forward.

4 Q: And they recommend increasing the width of the
5 mattress from 40 to 60 feet and to install
6 training jetties, the first two bullets under
7 PowerPoint slide number three, right?

8 A: Right.

9 Q: But you haven't --

10 A: I suggested that yesterday that they did and
11 that was April, it was barely three months
12 after our application, and we considered their
13 recommendations for the increase in the
14 mattress at the hot spots and the training
15 jetties and rejected the latter and said as to
16 the former we would take the advice of Thomas
17 & Hutton, which are more the mechanics, you
18 might say, of revetments because they do them
19 for a living and that was to monitor the
20 situation for a few years and decide if the hot
21 spots needed to be shortened, lengthened,
22 widened or whatever. They're -- it's just like
23 anything else. You have to make slight
24 modifications and adjustments. We didn't want
25 to do the training jetties, nor did Thomas &

1 Hutton advise us to.

2 Q: Your experts advised you to.

3 A: One of our experts did. We have several people
4 that we employ.

5 Q: Well, that exhibit, Exhibit Twenty, if you look
6 on the front page is prepared by Oertel and
7 Basco, right?

8 A: It was.

9 Q: Okay. You said that -- yesterday, you said you
10 didn't want to apply for the training jetties,
11 will increase the size, because you expected
12 the permit any day or decision any day.

13 A: We did. There was a 30-day window. We were
14 already three months into it and we expected to
15 hear any day. We wanted to go ahead and
16 hopefully get the permit, meet with OCRM,
17 discuss any modifications before going to final
18 working drawings, biddable drawings, which is
19 the typical approach of OCRM for all these
20 years that we've been dealing with them, and
21 then move forward and build it. And if we
22 needed to enlarge the width of the mattress,
23 then or later, we would do it. If we had to
24 get a permit or go through that extra step to
25 simply enlarge a piece of the mat at a hot spot

1 later on we would; if they would allow us to do
2 it without that step, we would.

3 Q: Mr. Long, your permit wasn't complete until --
4 your application wasn't complete until late
5 May, was it?

6 A: The application was complete in our view. Your
7 people take the view that every little tiny bit
8 of paperwork has to be in the file before they
9 will consider it and they were extra strict
10 this time for reasons that have been atypical.

11 Q: Well, the Department notified you in May or in
12 June -- let me see here.

13 MR. WHITFIELD-CARGILE: Beg the Court's indulgence
14 for just a moment, Your Honor.

15 Q: May 23rd they requested additional information
16 from you, correct?

17 A: Can you show me the exhibit?

18 Q: Absolutely.

19 (Off the record.)

20 MR. WHITFIELD-CARGILE: Mark this Exhibit Four,
21 please.

22 THE WITNESS: Is it in --

23 MR. WHITFIELD-CARGILE: It's not in your folder.

24 Q: Mr. Long, if you'd flip to the -- one, two,
25 three -- fifth page of this.

1 PRC had applied for a permit and had gotten a
2 permit to do a bulkhead along Beachwalker Park.

3 Q: Now, I'm going to stop you. You're saying
4 they -- had they actually gotten the permit?

5 A: I'm not sure chronologically about that.

6 Q: I don't want you to testify to anything you
7 aren't sure about.

8 All right. So there's an application by
9 Charleston PRC.

10 A: Correct.

11 Q: Was there any -- did you have any understanding
12 about an access corridor? Were there any
13 discussions about an access corridor in the
14 neck of the spit?

15 A: I think there were, yes. In kind of developing
16 that ongoing conversation, that the access
17 corridor to the spit became one of the
18 considerations. We certainly didn't want
19 anything to happen -- we were really concerned
20 about end conditions on the PRC permit. If
21 they put a bulkhead, there would have been
22 probably -- there are usually some -- if you
23 don't design it correctly and don't take --
24 aren't really careful, you'll have some adverse
25 end conditions and we were worried that adverse

1 end conditions would contribute to increased
2 erosion in that area and actually narrow the
3 spit even more.

4 Q: Did you make any recommendation to KDP about
5 involving other consultants to work with you?

6 A: Oh, yes, certainly. Again, I had grave concern
7 about the PRC bulkhead and then when we were
8 asked to design the bulkhead/revetment, I said,
9 "What do we need to do to protect that?" I was
10 concerned what would happen in -- not only in
11 that area, but also other impacts.

12 Q: Did you make any recommendations about
13 involving other consultants?

14 A: Yes, I did. I suggested they hire Dr. Oertel
15 and Dr. Basco.

16 Q: Did they do that?

17 A: Yes, they did.

18 Q: Did your firm work in conjunction with
19 Drs. Oertel and Basco in addressing the issues
20 there near the neck at the river bend on
21 Captain Sam's?

22 A: Yes. Yes, we did.

23 Q: Did Drs. Oertel and Basco provide you certain
24 information and opinions related to what they
25 believed to be the processes at work out there

1 at Captain Sam's?

2 A: Yes.

3 Q: At some point, taking into account those
4 recommendations, did you make a recommendation,
5 you, Thomas & Hutton, make a recommendation to
6 KDP about a suitable method to stabilize the
7 river bend?

8 A: We did. We looked at, I mean, a number of
9 alternatives investigated, bulkhead, riprap, to
10 geotubes, a number of things that could have
11 been used, and it was our recommendation that
12 they use the concrete mats.

13 Q: Why did you recommend that they use the
14 concrete mat as opposed to the other
15 alternatives you mentioned?

16 A: Well, from all the systems that we were aware
17 of, it seemed like that is the softest, most
18 compatible system out there. We can lay it on
19 the existing ground, follow the existing slope.
20 There's the opportunity, we believe, it could
21 fill in with sand. Once we put it down, it
22 could fill in with sand. We've seen them used
23 in other locations where they've become
24 completely naturalized. They might get filled
25 in with sediments and marsh grass start growing

1 through them or other vegetation.
2 So this articulated concrete block we felt like
3 was the best solution. It's kind of in keeping
4 with the whole essence of Kiawah where, you
5 know, we need engineering solutions to
6 problems, but we also need engineering
7 solutions that blend with the environment that
8 we're creating.

9 Q: Had Thomas & Hutton designed other bulkhead or
10 revetment projects using articulated concrete
11 block?

12 A: We have, yes.

13 Q: What was your experience with their use in
14 terms of performance?

15 A: We've had excellent results. I mean, the ones
16 that we've used, used them for a couple of
17 different applications, but we've had very good
18 results with them.

19 In fact, one is on Kiawah itself at Cinder
20 Creek where it's completed vegetated. You
21 can't even see -- can't even tell it's there.
22 One on Daniel Island, it's becoming totally
23 propagated with Spartina and other native
24 grasses. I mean, we've just had very, very
25 good results with them.

1 Q: Did KDP follow your recommendation?

2 A: Yes, they did.

3 Q: Who prepared the application that I believe is
4 Petitioner's Exhibit Ten? Did your firm
5 prepare the application?

6 A: Yes, our firm prepared the application.

7 Q: Was it a double application?

8 A: Yes, it was a joint application to OCRM and to
9 the Army Corps of Engineers.

10 Q: Is that typical?

11 A: That's very typical.

12 Q: Why do you have a joint application? Please
13 explain in simple layman's terms why you have
14 to go to two agencies, the Corps and OCRM.

15 A: Well, there's a federal permitting process and
16 a state permitting process and in order to
17 somewhat streamline the process, they agreed to
18 a joint application procedure several years
19 ago. And so that's -- I mean, that's just the
20 process. You submit a joint application. It
21 goes both to the Army Corps of Engineers and to
22 OCRM and they generally process them on a
23 parallel track.

24 Q: Yesterday, we took a look at some of the pages
25 of the application; in particular, we spent a

1 little bit of time on page seven of seven. If
2 you want to look at it, you can. And it would
3 be in the --

4 A: I remember. That was the one that showed the
5 schematic of the articulated concrete block mat
6 and the bulkhead.

7 Q: That's correct. And if you can answer this
8 question without looking at it, please do. Was
9 there anything unusual about that schematic
10 rendering in terms of what you would do
11 typically in seeking permitting for a structure
12 like this?

13 A: No, this is pretty typical. I mean, I -- you
14 know, we show in general terms pretty -- I
15 mean, they're somewhat schematic because it's
16 not a final design, but we show in general
17 terms what's -- to portray what we want to have
18 permitted to put in the critical area.

19 Q: In your many years of dealing with OCRM in
20 seeking permits, have you, on behalf of various
21 owners, submitted applications to OCRM for
22 similar projects with comparable detail?

23 A: Yes, lots of them.

24 Q: Is it typical to have construction drawings in
25 every instance for a project like this when you

1 put in the application?

2 A: I don't remember when we had construction
3 drawings beforehand. I mean, I think -- there
4 may be a case, but it is more typical that we
5 submit these schematic drawings and then once
6 we get a permit, then we do the final design
7 and final construction drawings.

8 Q: When you do the final construction drawings, is
9 that done in conjunction with OCRM?

10 A: Well, we usually send them a set of plans so
11 they know what's going on, yes, so -- you know,
12 occasionally, they'll be a slight tweak on the
13 permit. In fact, it's probably -- in this kind
14 of environment, it's as much a rule as it is
15 the exception that when you get a final design,
16 you'll tweak something a little bit different
17 than what you anticipated.

18 Q: In this instance, after you submitted the
19 application to OCRM on February 29, 2008, did
20 OCRM ever come back to you and ask for more
21 clarification over your drawings or
22 construction drawings or anything like that?

23 A: No, they did not.

24 Q: Did you believe that what you were proposing
25 constituted a comprehensive solution?

1 **A:** Well, we did. You know, we looked at lots of
2 things and we felt like it was a good
3 comprehensive solution, protecting all the way
4 from the park down through the neck area where
5 the zone of erosion was occurring.

6 MR. WALKER: At this point, Your Honor -- well, let
7 me qualify a little bit more.

8 **Q:** Mr. Bohannon, you're a licensed engineer. Does
9 your license include or would you have the
10 authority under your license to design
11 structures like this revetment?

12 **A:** Yes.

13 **Q:** Do you have people in your office who also
14 design structures, revetment structures?

15 **A:** Yes, we do.

16 **Q:** Are these competent, capable people?

17 **A:** Very competent, very capable.

18 **Q:** Have you, in your career, evaluated designs for
19 structures like this to determine whether they
20 are sufficient for their intended purpose?

21 **A:** I've been the project manager, project
22 principal on a number of these where we
23 evaluate them, yes. Now, the detail design, I
24 have not done, but in general, to make sure it
25 meets the intended purpose and -- yes.

1 Q: In this instance, before the application was
2 submitted, did you review those seven drawings
3 that were part of the application?

4 A: Yes.

5 Q: Did you consider them to be sufficient?

6 A: Yes, I did.

7 Q: Do you consider the design to be sufficient --
8 or, first, let me ask you, what do you
9 understand to be the purpose of this revetment?

10 A: It's to stop the erosion that's occurring on
11 that bank, which is contributing -- which is,
12 you know, the migration of the bank. It's sort
13 of two things. It's that erosion's occurring
14 primarily on the bank and then the migration of
15 the bank towards the -- or the bank of the
16 Kiawah River towards the ocean.

17 Q: In addition to designing bulkheads and
18 revetments, have you monitored bulkhead and
19 revetments that you've designed once they're in
20 place?

21 A: Our firm has done that, yes.

22 Q: Have you observed what's gone on with other
23 bulkheads and revetments?

24 A: Oh, yeah, we've seen lots of them.

25 Q: Does that assist you in determining what's an

1 **appropriate solution for erosion control?**

2 **A: I believe it does, yes, sir.**

3 MR. WALKER: Your Honor, we would ask the Court to
4 certify Mr. Bohannon and as an engineer to
5 render opinions about the engineering
6 sufficiency of this structure.

7 THE COURT: You said as an engineer. Do you mean as
8 an expert?

9 MR. WALKER: As an expert, Your Honor.

10 THE COURT: All right.

11 MS. ARMSTRONG: No objection, Your Honor.

12 MR. WHITFIELD-CARGILE: No objection, Your Honor.

13 THE COURT: All right. He's so qualified.

14 **Q: At this point, Mr. Bohannon, I want to walk**
15 **through the project specific regulation dealing**
16 **with revetments and bulkheads. Do you have**
17 **that in front of you?**

18 **A: Yes, I do.**

19 **Q: And that's Regulation 30-12(C). Are you**
20 **familiar with that?**

21 **A: Yes, I am very familiar with it.**

22 **Q: Subpart (C)(1) specifies: "In an attempt to**
23 **mitigate certain environmental losses that can**
24 **be caused by these structures, the following**
25 **standards are adopted," and I'm going to go**

1 through them one by one:

2 "A, Structures must be designed to conform to
3 the critical area line upland boundary to the
4 maximum extent feasible and constructed so that
5 reflective wave energy does not destroy stable
6 marine bottoms or constitute a safety hazard."

7 I would like you to tell the Court whether or
8 not the design that your firm submitted to OCRM
9 is in conformance with that standard.

10 MS. ARMSTRONG: Objection, Your Honor, on a number
11 of grounds. One, he's getting ready to make a
12 kind of legal conclusion about whether this
13 regulatory provision has been met and you need
14 to make that determination.
15 The other thing is, this really requires an
16 opinion, whether stable marine bottoms are
17 going to be destroyed. And I think that as an
18 engineer, he doesn't have the qualifications to
19 determine whether this is a stable marine
20 bottom and whether it's going to be destroyed.
21 I mean, we've already heard that there's not
22 really been much of a design even for this
23 structure, so I think, you know, he's not --
24 he's definitely not qualified in that area to
25 give those kind of opinions about destroying

1 stable marine bottoms. And he's already said
2 that they've not really done a design of this
3 structure. All we've got is what's in the
4 application.

5 THE COURT: All right. The -- I'll get to you.
6 The qualification didn't -- it didn't
7 include qualifying specifically as an
8 expert in constructing revetments, did
9 it?

10 MR. WALKER: No, but I would ask that he be
11 qualified --

12 THE COURT: Well, laying -- or you can either seek
13 that qualification now or you can --

14 MR. WALKER: I'll ask some more questions.

15 THE COURT: Okay.

16 **Q: Mr. Bohannon, have you, as the principal in**
17 **Thomas & Hutton, been involved with and**
18 **actually been the supervising engineer on**
19 **permit applications for bulkheads and**
20 **revetment?**

21 **A: Yes, I have.**

22 **Q: Have you been integrally involved in the**
23 **designs of those structures?**

24 **A: Yes, I have.**

25 **Q: Have you met with permitting agencies,**

1 including the Army Corps and OCRM, to discuss
2 the facets of those structures?

3 A: Many, many times, yes, sir.

4 Q: Do you, in the course of that, apply
5 engineering principles to the various facets of
6 those structures?

7 A: Yes, sir.

8 Q: Does your engineering experience include not
9 only designing them, but overseeing the
10 construction of them?

11 A: Yes, it does.

12 Q: Have you seen this occur in the field?

13 A: Yes.

14 Q: Have you monitored them?

15 A: Yes.

16 Q: And based on all that, do you believe that from
17 an engineering standpoint you have sufficient
18 familiarity -- or do you have familiarity,
19 working familiarity with all the principals
20 involved?

21 A: Yes, I do.

22 Q: As an engineer.

23 A: Yes.

24 MR. WALKER: I'd ask that he be qualified.

25 THE COURT: Qualified in what regard?

1 MR. WALKER: Qualified as an engineer to render
2 opinions about revetments and bulkheads on the
3 coast of South Carolina and this one, in
4 particular.

5 MS. ARMSTRONG: I don't have an objection to him
6 being qualified as an engineer. I think maybe
7 my objection was misunderstood. I'm talking
8 about --

9 THE COURT: I understand your -- before I can get to
10 what you were arguing about, I had to get to --

11 MS. ARMSTRONG: I got you. Okay.

12 THE COURT: -- this point first, so we weren't there
13 yet.

14 MS. ARMSTRONG: Okay. I apologize.

15 THE COURT: Any objection to that qualification,
16 Mr. Whitfield-Cargile?

17 MR. WHITFIELD-CARGILE: I don't have an objection to
18 him being qualified as an expert in engineering
19 to render opinions about bulkheads and
20 revetments in South Carolina, but --

21 THE COURT: Okay. Well, we'll get to the later
22 part.

23 MR. WHITFIELD-CARGILE: Okay.

24 THE COURT: If you're going into the testimony,
25 let's get to that later. Okay. So he's so

1 qualified in that regard. Now, the question
2 that started all this, if would you repeat
3 that.

4 MR. WALKER: I'll break it in -- yes, sir.

5 The question was: Does the design that Thomas
6 & Hutton did for this revetment meet the
7 standard that's set forth in (1)(a) of
8 Regulation 30-12(C), that structures must
9 designed to conform to the critical area line,
10 upland boundary, to the maximum extent feasible
11 and constructed so that reflective wave energy
12 does not destroy stable marine bottoms or
13 constitute a safety hazard?

14 THE COURT: All right. I'll sustain her objection
15 as far as the way it's asked. I think that he
16 can testify, from an engineering standpoint,
17 whether the revetment meets the requisites
18 of -- that you're fixing to go through. So you
19 can ask the question in that regard.

20 MR. WALKER: I will.

21 THE COURT: But, now, what's your position on that?

22 MS. ARMSTRONG: I'm not sure I understand your
23 ruling exactly, Your Honor.

24 THE COURT: Well, his question simply was, did the
25 structure meet the requirements of the statute.

1 I don't know if he can just testify to the
2 legal conclusion of whether they meet the
3 requirements of the statute. He can testify
4 based on engineering principles whether the
5 structure is designed to conform with the
6 requisites of the statute. So that's what I'm
7 trying to limit his testimony to, that of his
8 expertise.

9 MS. ARMSTRONG: Okay. I would agree with the first
10 part, that he could -- would be qualified to
11 testify about whether the structure's designed
12 to conform to the critical area line. But when
13 we get to the part about whether it's designed
14 so that it doesn't destroy stable marine
15 bottoms with reflective wave energy, that
16 absolutely, I believe, calls for an opinion in
17 either hydrology, geology, some sort of, you
18 know, scientific -- or marine biology that
19 would -- I think he's not qualified to give an
20 opinion about what the marine bottom is and
21 whether it's going to be destroyed.
22 And we're also looking at, you know, wave
23 energy, which is something that KDP's got
24 experts in these other areas and I don't think
25 that this witness has been qualified in those

1 areas.

2 THE COURT: All right. Mr. Walker, what's your
3 response?

4 MR. WALKER: I'll rephrase the question, Your Honor.

5 THE COURT: All right.

6 MR. WALKER: I'll break it into pieces and then we
7 can fight about a piece.

8 THE COURT: Okay.

9 MR. WHITFIELD-CARGILE: Your Honor, I've got an
10 additional objection that might help.

11 THE COURT: It will help?

12 MR. WHITFIELD-CARGILE: No, I don't know

13 it -- sorry. It seems that Mr. Walker's going
14 to continue to draw his opinion.

15 Mr. Bohannon's testimony was that they haven't
16 designed the structure yet, and so it's all
17 speculation.

18 MR. WALKER: Your Honor, we don't have construction
19 drawings. The general concept of the structure
20 has been provided. We will come forward with
21 the construction drawings, but the concept is
22 sufficient.

23 THE COURT: I think he's already testified to that
24 pretty clearly that the schematics are typical
25 of what you draw when you don't submit the

1 construction drawings until a later date, so --
2 at least that's the testimony I heard. If I'm
3 wrong ...

4 MR. WHITFIELD-CARGILE: If on the one hand, Your
5 Honor, he's going to argue that what's in the
6 drawings aren't the plans, that they don't have
7 the construction plans, and then on the other
8 hand he's going to then render opinions as to
9 whether or not this conceptual sketch is
10 sufficient; it's a Catch 22.

11 THE COURT: That's where you can cross-examine him.

12 MR. WHITFIELD-CARGILE: I understand that, Your
13 Honor. But if that's his testimony, I think
14 it's all speculation.

15 THE COURT: All right.

16 MR. WHITFIELD-CARGILE: And I join in
17 Ms. Armstrong's objection as to the expertise.

18 THE COURT: All right.

19 **Q: Mr. Bohannon, when you, as an engineer, and the**
20 **engineers in your firm design a bulkhead or**
21 **revetment, do you take into account the**
22 **reflective energy of wave action?**

23 **A: Yes, sir, we do.**

24 **Q: Is that one of the essential considerations**
25 **that you take into account?**

1 **A:** One -- yes, in fact, because that was one of
2 our concerns here.

3 **Q:** Is that something you're trained to take into
4 account?

5 **A:** Yes.

6 **Q:** Is it something from an engineering standpoint
7 you're capable of dealing with --

8 **A:** Yes, sir.

9 **Q:** -- and you deal with?

10 **A:** Yes, we're capable of doing that.

11 **Q:** Is that part of your engineering experience and
12 training?

13 **A:** Yes.

14 **Q:** Turning to the design that was submitted here,
15 did your firm design this bulkhead and
16 revetment to conform to the critical line?

17 **A:** Yes, we did.

18 **Q:** To the maximum extent feasible; is that
19 correct?

20 **A:** Yes, we sure did.

21 **Q:** Did your firm design the bulkhead and revetment
22 taking into account reflective wave energy?

23 **A:** Yes.

24 **Q:** Tell us about that, how it's taken into account
25 in this design.

1 **A:** Well, clearly, whenever you put a vertical face
2 against -- on a shoreline in any kind of
3 waterway, you're going to get some kind of wave
4 action up against that. And if you don't do
5 something to protect that toe against that
6 reflective energy, it's going to cause even
7 more exacerbated erosion. So that's just one
8 of the things --

9 **Q:** And when that happens --

10 **A:** -- you'd have to do.

11 **Q:** -- Mr. Bohannon, does that erosion occur on the
12 bottom?

13 **A:** Oh, yes.

14 **Q:** And it disrupts it?

15 **A:** Yes.

16 **Q:** In this particular design, does the revetment
17 part, which is the articulated concrete block
18 matted over the bank, play into reflective wave
19 energy?

20 **A:** Yes.

21 **Q:** How so?

22 **A:** Well, it prevents that reflected wave from
23 causing erosion on the bottom.

24 **Q:** With respect to the bottom, does it help
25 stabilize the bottom?

1 **A:** Yes.

2 **Q:** In this instance, was there anything that you
3 could perceive from an engineering standpoint
4 that would make the design you submitted a
5 safety hazard?

6 **A:** We didn't -- no, there's nothing that we saw
7 that would create a safety hazard.

8 **Q:** Mr. Bohannon, was the structure that you
9 designed to be constructed within 18 inches
10 from existing escarpments along the bank?

11 **A:** Yes, that's -- that regulation has been in
12 place as long as I can remember.

13 **Q:** Is there any of the proposed location for the
14 revetment where marshlands are adequately
15 serving as an erosion buffer?

16 **A:** Up next to the park, there's some of that where
17 there's an escarpment there and the marsh is
18 doing part of that. But it's still -- it needs
19 to be protected, even though there's some marsh
20 there. But the marsh is doing some of it, but
21 not a complete job and --

22 **Q:** Is it still eroding despite the marsh in front
23 of it?

24 **A:** Yes. Yes, it is.

25 **Q:** From an engineering standpoint, based on what

1 you could see and the design you came up with,
2 does the bulkhead -- combination bulkhead and
3 revetment prohibit -- or, excuse me, adversely
4 effect public access?

5 **A:** I don't think so. I don't know why people
6 couldn't still access that area if they wanted
7 to.

8 **Q:** Mr. Bulkhead -- not Mr. Bulkhead.

9 MR. WALKER: I think I should leave now, Your Honor.

10 That's a new Marvel superhero, Mr. Bulkhead.

11 **Q:** Mr. Bohannon, I'm looking at some of the other
12 considerations that must be taken into account
13 by the Department. From an engineering
14 standpoint, does the bulkhead/revetment, will
15 it contribute to erosion?

16 **A:** We don't believe so. We actually think it's
17 going to prohibit erosion.

18 **Q:** From an engineering standpoint, do you see
19 where this structure would cause shoaling of
20 channels or create stagnant water?

21 **A:** No. That's one of the things -- one of the
22 reasons we wanted Dr. Oertel and Dr. Basco
23 involved, make sure it wouldn't -- evaluate the
24 entire system and make sure it wasn't going to
25 be a problem.

1 Q: Have you been out and walked the site, the
2 specific location where it's proposed?

3 A: I have, yes.

4 Q: In the specific location where proposed, do you
5 see oysters on the bank in any particular spot
6 where it's proposed?

7 A: There were a few there, a couple of old dead
8 trees and stuff, an old rusty pipe. There was
9 some oysters growing on those.

10 Q: Have you gone out and seen these ACB mats after
11 they've been in the intertidal zone for a good
12 bit of time?

13 A: Yes, sir, I have.

14 Q: Do oysters often cling to them?

15 A: Oh, they generally propagate in that intertidal
16 zone, yes. I say that, if they're not covered
17 with marsh -- with mud. But the areas where
18 the ACB is exposed, the oysters will propagate.

19 Q: There's been some discussion about the length
20 of the revetment. How is the length and the
21 location of the revetment determined?

22 A: Well, we went out in the field. I mean, we've
23 had survey data and a number of studies done.
24 We've actually been in the field and located
25 kind of the beginning and end the erosion zones

1 and that's where the revetment -- we're asking
2 to put a revetment. It's pretty clear when you
3 go in the field where it starts and stops.

4 **Q:** And when you scaled it out, did it come to
5 whatever the distance is, 2,763 or 83 feet?

6 **A:** I think it's 2,783.

7 **Q:** Is that what the scaled distance was?

8 **A:** That was the scaled distance.

9 **Q:** Within the last two weeks, did you go out and
10 walk the site, again?

11 **A:** Yes, sir, I did. In fact, I was out there last
12 week.

13 **Q:** Who did you go out with?

14 **A:** I went with Mark Permar.

15 **Q:** Did you go from one end to the other?

16 **A:** We walked from one end to the other end and
17 then some.

18 **Q:** Did Mark take a series of pictures?

19 **A:** Yes, he did.

20 **Q:** Have you seen those pictures?

21 **A:** I have.

22 **Q:** Do those pictures fairly and accurately depict
23 what you saw when you went out there?

24 **A:** Yes, they do.

25 **Q:** Do they fairly and accurately depict the

1 **proposed location of the revetment?**

2 **A: Yes, they do.**

3 MR. WALKER: These are photographs that were
4 included on the disk that I gave you last
5 Thursday afternoon that said they were from
6 Permar.

7 MS. ARMSTRONG: Are you providing us copies of
8 these?

9 MR. WALKER: Yes. Well, I've already provided a
10 disk with all the pictures on them.

11 MS. ARMSTRONG: Right, three days ago or something
12 like that.

13 MR. WHITFIELD-CARGILE: Are these the ones -- let me
14 see if I can find these and pull these out.
15 Are these copies we can keep, Trenholm?

16 MR. WALKER: Excuse me?

17 MR. WHITFIELD-CARGILE: Are these the ones you're
18 using?

19 MR. WALKER: Yes.

20 MR. WHITFIELD-CARGILE: Okay.

21 MR. WALKER: (Tendering.)

22 **Q: The first thing I'd like for you to do,**
23 **Mr. Bohannon, is tell us whether you went**
24 **through all those pictures to select some**
25 **pictures that you thought were representative**

1 of the entire location.

2 **A:** Yes, sir, I did. There were quite a large
3 number but, again, I wanted to kind of portray
4 from beginning to end just a couple of
5 photographs, because I think there were 60 or
6 80 or -- a good number of them, but wanted to
7 pick some out that kind of were -- that were
8 representative of illustrating what's actually
9 in the field.

10 MR. WALKER: Your Honor, we would offer these
11 photographs as Petitioner KDP's Exhibit
12 Seventy-five?

13 MS. ARMSTRONG: No objection, Your Honor.

14 THE COURT: Mr. Whitfield-Cargile?

15 MR. WHITFIELD-CARGILE: No objection, Your Honor.

16 THE COURT: They're admitted.

17 (KDP's Exhibit Number Seventy-five-A through G was
18 admitted into evidence.)

19 **Q:** Mr. Bohannon, if you would step down and I'd
20 like for you to go through these photographs
21 with His Honor.

22 **A:** Sure.

23 **Q:** Why don't you use these and then you can
24 refer -- when you refer to a picture -- and let
25 the lawyers come over -- when you refer to a

1 picture, refer to the exhibit number in the
2 right corner, Seventy-five-A, and we'll hold it
3 up here.

4 A: Okay. This is picture number Seventy-five-A.
5 This is the very beginning of the revetment.
6 You can kind of see in the photograph there's
7 a fence post here. There's a fence by the
8 park. You can see how it's leaning out in the
9 photograph and kind of -- this is kind of
10 turning in towards Trenholm, if you will, which
11 reflects -- which is represented on the drawing
12 where the revetment turns at the very end. So
13 this is the very beginning on -- at the park
14 end of the revetment (indicating). And you can
15 see there's some marsh grass in front of that.
16 But, again, there's signs of erosion because
17 that post is leaning, that bank's continuing to
18 erode.

19 Q: Seventy-five-B.

20 A: This is Seventy-five-B. Again, following along
21 the park, you can see even more pronounced here
22 that erosion occurring and this vegetation is
23 falling off along this area (indicating). You
24 can see more of the fence and how it's leaning.

25 Q: All right. Seventy-five-C, is that in front of

1 the park?

2 A: No, that's much farther down. That's on down
3 that -- maybe even around where I called the
4 "bite."

5 The reason I took this photograph, I think it
6 was interesting because we were -- last week we
7 had some pretty high tides, about six, seven --
8 six to eight tides (sic). You can see a real
9 line here where that real high tide had caused
10 erosion even last week (indicating).

11 Q: And where's the escarpment on this? If you can
12 put your finger on Seventy-five-C.

13 A: Well, the escarpment is right here
14 (indicating). You can see right at the base of
15 that escarpment this line of erosion that's
16 occurring even last week.

17 Q: You said it's around the bend. Between this
18 location and the park, is there an escarpment
19 like the one that's shown in Seventy-five-C?

20 A: Oh, yes. Yes, this escarpment continues all
21 the way around. You'll see there's another
22 picture even farther down. It gets lower as we
23 get towards the very western end of it where
24 the terminus -- this escarpment becomes lower,
25 but it continues all the way around.

1 Q: What is Seventy-five-D? Is that farther down
2 the bank?

3 A: It's just farther down the bank. Again, you
4 can see the escarpment continuing right on
5 down. In fact, even this illustrates how it
6 begins this reveal much less here, maybe only
7 a couple of feet here, but you can see that's
8 probably four feet or so here (indicating).

9 Q: "Reveal" -- will you tell -- we don't know what
10 a "reveal" is. Will you tell me what a
11 "reveal" is?

12 A: The "reveal" is the height of the exposure of
13 escarpment. The height from the bottom -- from
14 the shoreline up to the top of the escarpment
15 is where I'm calling the "reveal". You can see
16 that erosion line continuing right on along,
17 all the way along there (indicating).

18 Q: How about Seventy-five-E?

19 A: Seventy-five-E I thought was interesting
20 because it shows --

21 Q: First, is this even farther down the shore?

22 A: This is almost at the terminus. We are
23 standing pretty close to the terminus on the
24 western end looking -- and it's interesting
25 because you can see how the marsh juts out here

1 **(indicating) and the escarpment ends right**
2 **along here (indicating). That's the terminus**
3 **of the revetment at this point. I mean, it's**
4 **just so clear when you go out there where the**
5 **erosion -- this erosion ends.**

6 THE COURT: Would the bulkhead be limited to the
7 height of the escarpment right there?

8 THE WITNESS: Yes. What we would do is to stop the
9 bulkhead actually short of the height is where
10 I'd like to have it, just below the top of
11 the -- if this is the escarpment (indicating),
12 I'd like to put the bulkhead just below it so
13 that we were right on the very edge of it, so
14 it would stop the erosion. But we don't want
15 it to be above the top edge of the erosion.

16 THE COURT: So the bulkhead there appears -- it
17 would only be about two or three feet?

18 THE WITNESS: Right. Correct. Yes, sir. Very,
19 very ...

20 THE COURT: How far would the block go out?

21 THE WITNESS: About 40 feet (indicating).

22 THE COURT: Well, if the block went out 40 feet, it
23 would pretty well cover all the sand that's in
24 that picture?

25 THE WITNESS: Yes. Yes, sir.

1 THE COURT: Why does the block have to go out that
2 far?

3 THE WITNESS: Well, because this is the zone of
4 erosion and we believe that the shoreline is
5 going to continue to erode. There's some
6 velocity erosion occurring along here, as well,
7 as the erosion's coming -- and that's part of
8 what's causing this whole phenomenon. You
9 remember that --

10 THE COURT: What kind of erosion?

11 MR. WALKER: Velocity.

12 THE WITNESS: Velocity erosion. What happens when
13 the velocity in the river gets high enough it
14 starts causing sediment transport, which causes
15 this to erode away, which then causes more and
16 more -- and it's not -- it's clearly not as
17 severe --

18 MR. WHITFIELD-CARGILE: Your Honor, I'm going to
19 object to that last bit of testimony about
20 velocity erosion and what's causing it. He's
21 an engineer. I don't think he's been at all
22 qualified -- in fact, he testified at his
23 deposition that he had no training geology,
24 geomorphology or any of that stuff. If he's
25 relying on his experts, that's all hearsay.

1 Q: As an engineer, do you consider these dynamic
2 principles that you just discussed in designing
3 a structure like this?

4 A: All the time.

5 THE COURT: Your objection is overruled.

6 Q: Now we're down to Seventy-five-F and there's a
7 picture of you in a blue shirt.

8 A: Yes.

9 Q: Now, where are you standing?

10 A: I'm standing at the terminus of this revetment.
11 You can see the slope (indicating), a pretty
12 significant slope here, but you can also see
13 the edge where this marsh clearly stops here,
14 which is the end of the revetment (indicating).

15 Q: Following up on Judge Anderson's question, how
16 high would the bulkhead part of the
17 revetment -- well, first let me ask, do you
18 think you, when you got to construction
19 drawings, you would have the vertical face of
20 a revetment -- excuse me, a vertical face of
21 the bulkhead where the escarpment tapers off?

22 A: Actually, what I want to do when we get in the
23 final design is, in these areas where there's
24 a shallow enough reveal, to actually just
25 lose -- just do away with the bulkhead and have

1 that revetment, just like we did Daniel Island
2 where we might just do a slight bit of fill
3 material in here so we can take it right up to
4 the very edge so it's just one continuous slope
5 instead of having this vertical face.

6 **Q:** If it's a vertical slope in that location and
7 if there were a creature trying to come up it,
8 assuming it -- if there's a creature that can
9 walk over the block, would there be anything to
10 step over when it got to the land under what
11 you're suggesting in these areas where there's
12 not much of an escarpment? Would it be level?

13 **A:** It would be basically level, right. You
14 wouldn't --

15 **Q:** Or uniform.

16 **A:** Uniform, yes. Level. Not level, because level
17 is level, but it would be uniform, without that
18 vertical face (indicating).

19 **Q:** And Seventy-five-G, being the final picture,
20 are you still standing in the same location?

21 **A:** Same location, just another shot showing how --
22 where that zone of erosion actually really
23 stops.

24 **Q:** I want to go back to Seventy-five-E, which is
25 one looking, I guess, west; the last two were

1 well-built concrete bulkheads.

2 Q: I want to talk a little bit about -- get more
3 specific about this revetment, but first I want
4 to ask you, in getting ready to testify here
5 today, did you review reports that were
6 prepared by KDP's experts, including Drs.
7 Oertel and Basco, Dr. Kana's work and some work
8 from Southeastern Surveying? Did you have an
9 opportunity to review those documents?

10 A: Yes.

11 Q: Okay. And what did you conclude from reviewing
12 those various reports?

13 A: I guess there were a couple of things. One, it
14 was difficult for me to determine what the
15 consensus erosion rate was along that shoreline
16 from reading the various reports. There was
17 more than one expert for KDP that provided a
18 study that was attempting to quantify the
19 amount of erosion along that shoreline and the
20 erosion rates didn't all agree. And with some
21 of them, it was difficult to tell along which
22 perpendicular line they had determined an
23 erosion rate.

24 It's obvious to me, just standing in the field
25 and looking at some of the sequences of aerial

1 photography, that the rate of erosion is
2 variable along that shoreline where the
3 revetment is intended to go and so, you know,
4 if you report one erosion rate, that certainly
5 doesn't encompass that variability.

6 So, you know, in evaluating the need for a
7 structure to reduce the rate of erosion along
8 a half a mile of that shoreline, it was very
9 difficult in looking at the various experts'
10 opinions to determine what the consensus
11 erosion rate was.

12 And, second of all, what I found particularly
13 interesting in reports that I read that were
14 produced by both Basco and Oertel was there
15 seemed to be a concern amongst their own
16 experts about whether or not the structure
17 could withstand continued migration of the
18 river channel. There was concern amongst their
19 own experts about the possibility of the
20 undermining of the structure.

21 And, certainly, I share some of those concerns.
22 If the structure is put in place, that will not
23 halt the -- necessarily halt the migration of
24 the salt marsh point bar which is moving
25 towards the island. That will further

1 constrict the channel, increase the flow
2 velocities in the channel, deepen the channel
3 and put the toe of the revetment, as designed,
4 at immediate risk.

5 And, you know, I know that the engineers who
6 designed the structure have attempted -- seemed
7 to have attempted to address that by using the
8 articulated concrete block and making it a
9 sloping surface, but if I were the folks who
10 were going to pay for that revetment, you know,
11 I think I'd be very concerned about how long
12 that structure is going to function, even in
13 place as designed.

14 Q: When you talk about the toe of the structure,
15 you're talking about the structure that's
16 furthest into the channel bed or below --

17 A: Right.

18 Q: -- mean low water line?

19 A: The base of the structure.

20 Q: Okay. And so explain to me what that process
21 is that causes the constriction. What happens
22 to the area at the toe of the revetment when
23 there's a constriction in the channel?

24 A: Well, if one bank of the river keeps moving and
25 you hold the other one in place, then the river

1 on the geology of the coast?

2 A: Well, the general idea of the Coastal Barrier
3 Resources Act was to take a snapshot in time
4 and find sections of barrier island coast that
5 had not been developed and to remove the
6 federal government from responsibility from
7 those coastal areas if development did occur.
8 So there were a number of barrier island
9 sections, undeveloped barrier islands that were
10 mapped into the CBRA system and essentially
11 didn't -- it wasn't a prohibition on
12 development, by any means, but it was a program
13 designed to remove federal subsidies and
14 enticements from that development.

15 Q: So what happens when there is development in
16 the CBRA zone?

17 A: Well, what's supposed to happen if you develop
18 a CBRA zone is that that area becomes
19 ineligible for federal subsidies, for federal
20 subsidies for things like beach nourishment
21 and, you know, even federal subsidies for
22 rebuilding after hurricanes and a wide variety
23 of federal monies for those areas is supposed
24 to be off limits.

25 Q: So what is your understanding of how funding

1 would be -- where would funding come from if
2 there was a residential development on the spit
3 and a hurricane did hit that area and caused
4 some damage.

5 A: Well, in North Carolina North Topsail is a CBRA
6 barrier island that was developed by private
7 developers and it's been impacted three times
8 in the last 12 years by hurricanes and almost
9 all of the funds spent on rebuilding the
10 infrastructure around it -- not talking about
11 rebuilding homes here, but we're talking about
12 things that public assistance dollars usually
13 go to, all of the funds that have been used to
14 rebuild the roads and the power grid and that
15 kind of stuff, has come from state taxpayers
16 and from local taxes, not from the federal
17 government.

18 Certainly, any CBRA area that's developed in
19 the state of South Carolina, the state has to
20 understand that they will need to assume
21 responsibility for the consequences of
22 developing that section of barrier island.

23 Q: We were talking about -- earlier about this
24 actual revetment structure itself and I'm
25 wondering what would be the impacts of a

1 revetment like the one that's proposed on the
2 physical environment of Captain Sam's Spit.

3 A: I think it's very important to understand that
4 from the perspective of a coastal scientist and
5 a physical scientist that erosion is not
6 necessarily a negative process. Erosion does
7 not equal bad. It can't have a blanket
8 negative connotation, because if we didn't have
9 coastal erosion of bluffs and things like that,
10 we wouldn't have beaches. We wouldn't have
11 spits. You know, we wouldn't have many of our
12 coastal features. So erosion is a natural
13 process.

14 When there is a certain amount of erosion along
15 a bluff shoreline, like the one on the back
16 side of Kiawah, the sand from that retreating
17 bluff builds the beach that we looked at in
18 those photographs. The sand that comes from
19 that eroding bluff feeds other environments
20 that are in the river and also end up on top of
21 wetlands to allow them to accumulate.

22 So if you wall off a half a mile of shoreline
23 from, you know, even small amounts of retreat
24 and erosion, then over the long term you're
25 going to be losing a certain amount of your