STATE OF NORTH CAROLINA ex rel.
NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES,

Plaintiff,

v.

SIERRA CLUB, WATERKEEPER ALLIANCE,
NEUSE RIVERKEEPER FOUNDATION,
WINYAH RIVERS FOUNDATION, ROANOKE
RIVER BASIN ASSOCIATION, and CAPE
FEAR RIVER WATCH, INC.,

Plaintiff-Intervenors,

DEPOSITION OF
KENNETH MARK
RUDO, Ph.D.

v.

DUKE ENERGY CAROLINAS, LLC,

Defendant.

and

STATE OF NORTH CAROLINA ex rel.
NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES,

Plaintiff,

v.

CATAWBA RIVERKEEPERS FOUNDATION,
INC., APPALACHIAN VOICES, YADKIN
RIVERKEEPER, MOUNTAINTRUE, DAN
RIVER BASIN ASSOCIATION, ROANOKE
RIVER BASIN ASSOCIATION, SOUTHERN
ALLIANCE FOR CLEAN ENERGY, and
WATERKEEPER ALLIANCE,

Plaintiff-Intervenors,

v.

DUKE ENERGY CAROLINAS, LLC,

Defendant.

MONDAY, JULY 11, 2016

PINE CONFERENCE ROOM

NORTH CAROLINA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

5505 SIX FORKS ROAD

RALEIGH, NORTH CAROLINA

9:57 A.M.

VOLUME 1

PAGES 1 THROUGH 220
what DENR did with it?

A. No. My assumption is that it would go to Public Water, as per our agreement, and they would take the steps to protect those folks.

Q. Did the Aqua customers who called you -- did they indicate whether they had received any written notification, or what led them to call you?

A. I think they had received some type of notification. The calls that we got were more of the nature of an explanation of the risk.

Q. Now, I believe -- do you remember the levels in the Aqua systems?

A. No, sir.

Q. Now, going back again, I believe you said there were some consensus agreements that then were objected to.

A. Yes, sir.

Q. And what were the ones that were objected to? What were the aspects of the consensus agreements?

A. Well, I think one of the meetings ended when Reeder, who was sitting right across from me at that meeting, we had debated what we were going to do in terms of sending out the Health Risk Evaluations, the language that we were going to be using, the Standards and the Protective Numbers we would be using. And at -- and I am
not sure whether this was the February or the March. I think it was the March meeting.

He essentially asked me a question about would I guarantee to him that we would reach out to the residents and make sure we were communicating the risks and helping them, if DENR agreed to what we were proposing to them to do. And my response was that we would. And he ended his presence at the meeting by, in effect, turning to his folks and going, "Okay, you know, do what they want to do, we are in agreement."

And that was -- and we were ready to move forward based on him saying, "Okay, we are good." And literally, a day or two later, he changed -- he threw up a whole new set of objections and stopped the process right in its tracks. And we essentially spent several days in March scrambling to try to get back to consensus again.

Q. What were the new objections he raised?

A. They wanted language on the Health Risk Evaluation forms that, from our standpoint, and what we had done for over 30 years in protecting private wells, we felt we couldn't do that. They wanted language put on there that stated, in essence, we were overreacting in telling people not to drink their water.

He wanted us to say on the forms, "Well, there
is risk. You shouldn't drink the water, but it is not exceeding any Public Water Standards or any EPA Standards. So this is the maximum risk, and it is" -- you know, it was almost like saying, "Don't drink the water, but don't worry about it," which was -- that was something we had never been asked to do before.

And up to that point, my name was on the forms as the person to contact, which is something that I always want to do, because I want people to call me if they have questions. And once they insisted on this language in there, and Sandy and I objected to that for many, many reasons -- but ethical reasons more than anything -- they -- they insisted.

And our Department, I guess, wanting to make sure we had consensus, agreed to do that. And I said, "Well, at this point, you have got to take my name off of this. You know, I can't stand behind that. That is just -- it is just not right. It is going to confuse people. People are not going to really know whether they should drink the water or not." I mean, it is crazy stuff. It just didn't make any sense.

But once again, it reflected their concern with the fact that Public Water issues were things that they were still concerned about. And because they were concerned about those, they sort of took that to say,
"Well, we want to tell everybody that Federal Standards, it doesn't exceed them. So this is sort of an overreaction." And that was just -- and it put us in a position -- and this occurred on two occasions. The first time this occurred, I said, "Take my name off of this, I cannot -- you know, if we have got to send it out, we have got to send it out. But my name is not going to be on this."

And we are going to now have to make sure that we literally talk to everybody. We were talking about 300 -- 400 families, maybe more. And we were going to have to make sure we talked to them, explained the risk so that they weren't confused by this language that was, in essence, saying two different things.

So that was the first -- first time that happened. And we actually sent out, I believe, some Health Risk Evaluations with that language. And within a day, we had -- we were told to pull it back because they -- they wanted to make more changes.

Q. Now, you said that you had ethical concerns. Could you explain what the ethical concerns were?

A. To my Department?

Q. Yes. And to you, yes. Could you explain, please, what ---

A. Yes. I mean, we did it both in writing and in
meetings with our supervisors, why this was of concern. Our Department agreed that it was a concern. They didn't really want to do it, but I think they felt -- once again, they wanted to make sure that -- I mean, because of the hold up from Reeder and his folks, we were now sitting -- the concern we had was we were sitting on sample results for residents that had been -- we are now -- we are now a week into March, maybe two weeks into March, and we are sitting on sample results from early February and mid-February.

So we have sample results that are of concern to people. And because we are still trying to work it out, we are not able -- we are sitting on them, while people are at risk. And we are not able to tell them that they are at risk. And that was -- that was a concern also. We needed to get to these folks and start working to protect them.

Q. Now, could you explain the nature of your ethical concerns about the language that you referred to earlier?

A. I think it is -- it is what I have already said. It is that, you know, you want -- we always try to, in writing -- let me take a step back. When you tell people that something is wrong with their water, it is -- you know, people take their drinking water for granted.
They assume that, you know, you are going to pick up your bottle or use your tap, and the water is going to be -- it is good water. It is water. Everything is okay. We understand, and we have always understood as a Health Risk Assessment group, that -- and John and I have talked about this on many occasions -- that when you tell somebody something is wrong with their water, it is a very serious matter. It is a quality of life, stunning thing to tell somebody.

If anybody went home, in this room today, and you walked to your door and there was this little notice on your door saying that you water was contaminated, it would just change -- it changes everything. It changes how you look at your day; it changes how you look at water, whether it is public water or your own private well. And it affects how you feel.

And that is part of the reason we were created as a group, to make sure we reached out to people and took the alarm -- took the dread of this situation and removed it for people, and put it in a framework that they would understand what is in their water, they would understand what the risk is, they would be less afraid of the issue because now they understood it, because they had somebody to explain it to them, which is what we do.

And they also had somebody that was going to
stand with them, that was going to work to protect them, to help them get a good water supply, whether it was a responsible party, whether it was a City Council, County Commissioners, the legislature or whoever. So that is what we do to remove the alarm, remove the dread.

And in order to do that -- and this goes, now, to the answer of the question: you want to have a form that you are giving people -- the notice, that is very straightforward, very layman friendly. They look at it and they understand. It says, "It is okay to drink, it is not okay to drink. You may want to give us a call and we will help you with it," and that is what we have always done.

But we have never sent out a mixed signal with the Health Risk Evaluations that we send. People look at them and they understand it. This was a -- the mother of mixed signals. I mean, it was a mixed signal to me. If I got it, I would look at it and go, "Well, I don't know." And I mean, it was so bad that when Dr. Davies instructed me to start calling everybody, which was a very arduous thing, to try and call 400 people, a lot of the people weren't sure what to do because of the language.

And that was -- that was -- it was really
It was tough. And it wasn't necessary. But Reeder and his folks felt to protect, I guess, the sanctity of Public Water -- "We don't want to -- you know, we want to establish that Public Water Standards are the basis for drinking water for everybody" -- and they are not. But they wanted to put that language on there.

So, initially, they put the language -- they wanted to put it at the bottom of the form. And even worse, it was at the bottom, and it was in really tiny letters. So a lot of people might have missed it or, you know -- and then the second time it happened was worse. Let me think.

The second time it happened was the end of March, around April Fool's Day. And we had, I think, 118 Health Risk Evaluations that we were getting ready to send out. And I was -- I was exhausted. And I was going to take some -- a week or two off. And so I finished up the 118 Health Risk Evaluations. Kennedy and I reviewed them. We were getting ready -- they were going to send them over to Eric Smith at DENR to put cover letter on and send out to the residents.

So I left thinking, "Okay, we are -- okay. We are at least starting to do it now." And I am halfway home. I am in a t-shirt, shorts, moccasins. I am ready
to go rest. And I get a phone call from Dr. Davies telling me to turn around -- I was almost at Chapel Hill -- to go back, that the Governor wanted to discuss this. And, I mean, my first reaction was, "Well, I am not really dressed to, you know, go meet with somebody that" -- I mean, I have never talked to a Governor in all of the years I have been here. I was telling the John the other day, I have been in the Governor's mansion, because he had lead problems and we were fixing their water, but I never actually -- but I have never actually talked to a Governor.

So I was a little, even for me, intimidated by this, much less the way I was dressed. She was like "I don't care how you are dressed, they want to talk to you." So I went down to that big old building in downtown Raleigh, and the Governor wasn't there. He participated for a couple of minutes by phone. So I met with -- was it Josh Ellis? Is that his name? I am not sure. I think it is him. And he had an assistant.

And they wanted to talk about what we were putting on these forms. And the Governor called for about, I guess, five minutes or so to sort of -- he was in the middle of some other issues. And I am not exactly sure, even from my notes, because it was -- the guidance
whether he had given Mr. Ellis the guidance what to
talk to us about before we arrived. But he essentially,
you know, was saying, "Okay. We need to discuss the
language on the forms." And then he left it to Mr. Ellis
to do that.

Q. And what did Mr. Ellis tell you?
A. He had a concern. Once again, I don't know
whether this was from Mr. Ellis or from the Governor,
because the Governor never actually specifically said
what, you know, his concerns were. But he had a concern
about what we were telling these folks on the forms.
Their concern was initially telling people not to drink
the water. He felt that was a pretty strong thing to do.

And so I spent probably about a least a half
an hour explaining to them -- because they weren't
familiar with what we did. And this is something we
often have to do with new bosses or people that are not
familiar with our group. I explained to him the Risk
Assessment Process: what we do, how we do it, what we
base it on, that it is all science based. We are not --
we don't go out on limbs, you know. We base it on
science that we can support, that we can defend anywhere
we have to.

And that -- part of the reason that we tell
people not to drink the water, if there is an exceedance,
is because we learned before I came here, 30 years ago -- I came here 27, but before that -- they learned, and the person who hired me explained this to me, that if you just tell somebody there is something wrong with their water, that there is a risk, they have got chemicals in their water that might cause cancer or something like that, and you just say, "Well, that is it, see you later," they had learned early on that that was probably the most alarming thing you could do, because you were essentially telling people there was something wrong with their water, pulling the rug out from under them, and just leaving them lying on the floor to figure out how to get up.

So our branch learned early on that the only way -- the appropriate way, from a moral and ethical standpoint, to do this, and to make sure that we were protecting public health -- which is what our -- you know, our goal is -- what we are supposed to do, was to do what I have talked about today, which was give them information on the use of their water -- bathing, showering drinking, washing clothes, dishes, explain the chemicals to them, what they could do, what they can't do, whether it is a high risk, low risk, how should they look at it, and then to help them take steps to get a clean water supply.
And that was a lesson that our Branch apparently learned the hard way, maybe back in '85 or something like that. Because by the time I had arrived in 1989, they were telling people this part (phonetic) not to drink the water. So that was considered the appropriate thing to do. And I don't think Mr. Ellis quite understood that.

And I think after we explained it to him, I think he understood a lot better why we were doing it this way. And I think the thing that the Governor wanted us to do was to try to explain to each person individually what their risk was, either numerically if possible. And that is just not something we are able to do on a Health Risk Evaluation because, number one, as we explained to Mr. Ellis, the sample results are a snapshot of that day. So the risk could change by the time we are looking at it maybe a week later or, in this case, unfortunately, a month and a half later. And that it is really misleading to tell them numerically what the risk is without more information to support it. And you really can't do it numerically for non-cancer and toxicity end points.

So I think he understood that. And I think at that point, the crux of the conversation was, “Well, how can we relate the degree of risk -- you know, how else
could we address it?" And I think the suggestion might
have been made by one of the other folks, that because
this was coming from DENR -- this concern -- that if DENR
wanted to address or try to address numerically or in
some other way, themselves, in their letter -- their
cover letter, they could feel free to do it. Because we
really couldn't do it in our letter. It really wasn't
appropriate.

So that meeting was left with, "Okay. We will
probably put some language in the cover letters." And,
you know, he said, "Go on vacation. Rest." And when I
came back, to my, I guess, "surprise" is mild, they had
pulled the 118 Health Risk Evaluations back again because
there was another dispute from Tom Reeder and his group.
Once again, they wanted additional language put on the
forms that they knew that I would not -- would not have
been acceptable to me. It was even more confusing.

And they now wanted us to put it in the
statement in the line where we were telling people not to
drink their water, basically saying, "Don't drink the
water, but we are overreacting." That is essentially
what it says. And they knew I would have a problem with
it, so it was done while I was gone. When I got back, it
was -- they had re-sent them with this language. So, you
know -- so we were stuck with it. And there was nothing
we could do about it. And I think that was a -- that made it even more important that we talk to everybody.

But these are the kind of things that were going on with DENR and Tom Reeder. I mean, this was -- I mean, I had never seen anything like this before.

Q. When you were called to the Governor's office, or to meet with the Governor, did anyone from HHS go with you?

A. Kendra Gerlach, who was our public relations person, went to the meeting. And she probably took notes, also.

Q. But Dr. Davies did not go with you?

A. I am not -- no, she didn't go. I am not sure whether she was in town or not.

Q. And the Secretary didn't go with you?

A. No. I was just told just to go over there. It was probably because we had already finished. The Health Risk Evaluations were about to be sent out. I think there was an urgency, and they just said to turn around and go back.

Q. How did the Governor learn about this?

A. I have no idea. I would imagine that, you know, the heads -- I know the Secretaries, Dr. Wos, and I am not sure who was the secretary, whether it was van der Vaart or not at that time. Obviously, these were --
because of the issues involved, you know, it was clear that these decisions were being made not at the peon level by me and Sandy and those folks, or even, you know, Eric Smith or Debra Watts, but these were decisions that were being decided at the tops of our departments. So if the Governor was aware of that, I wouldn't be a surprise.

Q. Who was at the meeting other than Mr. Ellis and yourself and the Government Relations person?
A. Just Kendra Gerlach.

Q. So there were just three people there and the Governor on the phone?
A. Four. There was four of us. It was Mr. Ellis and his assistant, myself and Kendra Gerlach.

Q. During the meeting, did anyone mention Duke Energy?
A. I don't think so.

Q. Tell us what the Governor said about his concern or why he had called you over there.
A. I just think he was concerned about, you know, making sure that what we were telling the residents, you know -- like I say, I think it gets back to sort of like, “to know us is to love us,” you know? It is the kind of thing where what we do, it concerns a lot of people that are just coming -- that are not familiar with how we work.
And then they are very surprised to see that what we do is all science based, peer reviewed published science. We vet everything that we do. We do our homework. We explain what we do to people.

So a lot of times -- for example, the thing I mentioned earlier about Neuse Crossing, we had to go to our department at the very top and first tell them -- explain to them who we were, how we work, because they had never worked with us before. And so a lot of that is, is that a lot of people have their own viewpoint about how they think we should do issues related to drinking water and how should we communicate with people, and what we should tell them and not tell them. And a lot of people have opinions of that.

And that is -- you know, we understand. We have always understood that. And that is why a lot of times we have to sit down, explain who we are, how we do what we do. And most -- pretty much every time -- but there will be one exception we will talk about later -- every time we explain this to people, whether they are in our department, new bosses, new state health directors, new heads of departments, after they listen to us when we explain to them what we do, they usually understand and they work with us.

Q. I think you answered this, but just in case my
memory is wrong, have you ever been summoned by a Governor before?

A. Just to the mansion to -- they had very old plumbing over there. This was maybe -- this was when Governor Hunt was the Governor. And he asked that we come over there and take water samples and look under the sinks and everything, and look around and see if we could get the lead out of their water supply, make recommendations whether they should be drinking it or not, things like that. But I never actually spoke with the Governor.

Q. Have you ever been summoned before by a Governor about an issue of public concern before?

A. No.

Q. To your knowledge, has anyone else in your group ever been summoned to meet with the Governor before?

A. I am certain that this has occurred, yes.

Q. But you don't -- with respect to this issue, has anyone in your group met with the Governor with respect to this issue?

A. That, I don't know.

Q. Now, did you learn why the change was made in the letter while you were out?

A. No.
Q. And the change -- was the change made in the Health Risk Assessment?

A. It was made -- well, I think they left the tiny little writing at the bottom of the form, but they also added language basically saying this was the maximum risk, literally right after we are telling people not to drink their water. And it was just amazingly misleading and dishonest language.

Q. Now, was anyone’s name on the health forms that went out? I know you said yours was not. Was anyone’s name on it?

A. I believe all there was was a phone number for our group for people to call.

Q. Did others in your group object to their name being put on the form or not, if you know?

A. I don't -- I don't think anybody else was asked to put their name on there, to my knowledge, but we all objected to the language. Very much so. But we were overruled on that.

Q. So in terms of the revised language, was there anyone at HHS who agreed to the language?

A. Well, the Department would have agreed to the language. I know they did so very unwillingly, at least from, you know, the folks that we had been working with. But I believe at that point in time, they were also
driven by the idea that, you know, because of Reeder holding this up for so long and just essentially, you know, just throwing monkey wrench after monkey wrench into the process, that they just needed to get to a place where he would agree to let us go forward, because we had been sitting on these sample results so long. We needed to start addressing them.

But I know from the standpoint of Dr. Davies, is that she had -- her concerns were such that when I got back, she basically set down with Dr. Shehee and myself and said, "Okay Ken, you need to start calling people. We need to make sure we are, you know, at the top of our game with risk communication, even more importantly, because of the language that could be confusing the folks."

Q. Let me put the question a little bit differently: did anyone in your group agree with the language?

A. I don't think they did, no.

Q. Now, once those letters went out, was that the end of the dispute over the so called "Do Not Drink" letters? Was that the conclusion of the dispute, or was there another one?

A. I would say that it is sort of yes and no, because now we encountered a problem. Once we saw the
or hexavalent chromium. It really just doesn't matter to us, because we are basing our numbers on hexavalent chromium. And in all probability, there probably wouldn't be any exceptions.

In other words, if they had a chromium level, and we are saying, you know, "Hexavalent chromium is elevated, don't drink the water," the total chromium is probably still going to reflect it, I would think. So, you know, I don't think it is -- to us, it is not that big an issue, I would say. I mean, it is just their interpretation of the information they want to present. But what we are saying and what we are telling people is still consistent.

Q. If you look at the HHS form, under the first block, it says, "While this recommendation represents the maximum in health protection, your well could still meet all the criteria -- would still meet all of the criteria of the Federal Safe Drinking Water Act for public drinking water sources." Is that the language that was added while you were on vacation?

A. Yes. And it is also language that they put in their -- their cover letter. And that is what I thought was decided. But because -- if you -- you look at that last sentence, the first statement, "While this recommendation represents the maximum health protection,"
that is not true. So it is an untrue statement.

Q. And why is it not true?

A. Because it may not, you know. Now, the second part of that is, it is true because of what is not said. There isn't a standard for -- there is no criteria specifically for -- in the Federal Safe Drinking Water Act for hexavalent chromium. So it is a true statement, because there isn't one. But it is also misleading and sort of -- it is not cool to do that. It is just not a -- this is not the kind of information we should be giving people, because it is misleading.

And that is what our objection was, is that -- you know, what we are telling people is there is an increased risk, and we don't think you should use your water. And give us a call, let's talk about it. Let's let us help you. If you get in a fix, let's let us help explain it to you. Let us do our job, which is what we have been doing for 30 years.

We are very good at this. We have done probably, at least, a hundred thousand of these, if not more. Let us do our job, that is what our message was. We know what we are doing. We have done this before. We have done this helping your department on hundreds and hundreds of occasions. You know, why all of a sudden are we putting all of this -- this misleading stuff in here.
That was what our -- we didn't understand it.

Q. In your career, had you -- had this happened with any other notice you had sent out in connection with DENR?

A. Well, you know, there have been occasions when -- and this is true with also County Health Departments, who we work very closely with. If we have a new form or we are updating a form, we want to talk to the folks we are working with over in DENR, over in County Health Departments, Environmental Health folks. We want them to look at our forms. We want their comments.

A lot of times they help make what we are saying better. They clarify it, make it simpler, make it more to the point. Especially County Health Departments have been really helpful doing that over the years. So we want to have input. We want to have -- these folks, we are working with them. We are out there in the field with them. We are going to people's homes with them.

You know, we want them to understand it. And we want the folks -- the residents to understand this. And, you know, we want to be able to communicate. So -- but this (indicating) is sort of the opposite of that. This is throwing impediments up, barriers to what we are trying -- to keep it straightforward.

Q. Did you or anyone else at HHS or DENR, for
that matter, ask that either the cover letter or the HHS form tell people that there was no Federal Safe Drinking Water Act Standard for hexavalent chromium and vanadium?

A. I am sorry. Could you -- could you say that again?

Q. I am sorry. Did any one in your department at HHS, or even anyone at DEQ ask that the HHS form or the DEQ letter include a statement that there is no -- there are no Federal Drinking -- Federal Safe Drinking Water Act Standards for hexavalent chromium and vanadium?

A. This is -- this was not asked for by our department. This was asked for by Reeder and -- you know, specifically, and their department.

Q. You may have misunderstood my question. Did anyone ask that the information sent to the residents tell the residents there is no Federal Safe Drinking Water Standard for hexavalent chromium or for vanadium?

A. This is confusing. Are you saying whose suggestion was this?

Q. No. Let me back up.

A. Yeah.

Q. All right. This letter says that, "Your well would still meet all the criteria -- all of the criteria of the Federal Safe Drinking Water Act for public drinking water sources." Okay? The letter doesn't
contain a following statement that, "However, there is no Federal Safe Drinking Water standard for hexavalent chromium or vanadium."

A. I got it.

Q. Did anyone suggest that the HHS form or the DEQ letter should tell people that there is no such chromium standard?

A. Yeah, we suggested that. At our -- I can only speak for, you know, our Branch, you know. We -- yes, we said, you know, if you are going to say it meets all criteria, we also need to say that there isn't a specific MCL for hexavalent chromium and vanadium. I mean, that came from us. I don't know -- above from us, I can't speak for them.

Q. And what was the response from DEQ or your Department?

MS. LeVEAUX: Objection.

THE WITNESS: Well, it is not on there. So, I mean, obviously, our concerns were turned down on that.

BY MR. HOLLEMAN:

Q. Now, normally, where would somebody's name appear on this HHS form?

A. At the bottom, where it says, "For further information," a lot of times it will say, "Please contact Dr. Kenneth Rudo of the Occupational and Environmental
Epidemiology Branch," and the phone number that is give there.

Q. And then this little language in small print at the bottom, who asked for that to be included?
A. Reeder.
Q. Now, what was the standard you used in determining .07?
A. Excuse me? Say that again.
Q. What is the standard, in words, that you used to determine .07 as a Health Screening Level for vanadium -- I mean for hexavalent chromium?
A. It would be an approach.
Q. Approach.
A. How did we arrive at that number?
Q. Yes.
A. The approach would be based off of studies in the scientific literature that looked at cancer and non-cancer end points for hexavalent chromium. We would have looked for the key studies that were utilized -- that would be utilized to calculate something. If it was cancer, we would look at the 2 year bioassay studies.

We would also look at what EPA has said on the subject. A lot of times we look at what California said. They have got a vast number of toxicologists, and they do really good work. And we have worked with them and
helped, you know, on a lot of issues over the years, in addition to a lot of other states. So we would look at what other states would do.

We would look at EPA regional data, screening levels that they may have calculated. We would probably talk to the ATSDR. They are a branch of CDC that does Human Health Risk Assessment.

Q. And can you tell us for the record what ATSDR is, if you remember?

A. Agency for Toxic Substances and Disease Registry.

Q. Okay.

A. I may not have said that in many years. So, in other words, we want to look at the peer reviewed published scientific literature. We want to look at how our interpretations of the literature would match up with EPA, other agencies, state and federal. We want to look at -- you know, derive what is called a Cancer Slope Factor, which is based on the number of tumors -- specific tumors, numbers of tumors -- from whatever key study we are going to look at.

If we are looking at cancer, it would be based on -- for non-cancer what maybe the most sensitive end point is, toxicity-wise, to calculate a reference dose. And based on that, we calculate an advisory level that
may be recommended as a Groundwater Standard eventually.

Q. The footnote says that the .07 represents a lifetime cancer risk for an adult at one in one million. Is that a benchmark you used in a lifetime risk for an adult of one in one million?

A. Well, in North Carolina, we are -- when we are calculating what might become a Groundwater Standard that we would use for protection of drinking water, the law states -- there is, like, a six-part guidance for how to calculate a Groundwater Standard. And for a cancer calculation, according to the North Carolina 2L Law, the cancer risk that we base if off is one in a million lifetime cancer risk.

Q. Is that a Standard that is widely used in the toxicology field, apart from the North Carolina Statute?

A. You know, I think different states, even federal agencies, may use a range for a lifetime cancer risk, generally from, say, one in ten thousand to one in a million. A lot of times, it may depend on how you are using it, what you are using it for, what kind of economic impact it may have if you are promulgating a standard, those kind of issues.

But from our standpoint -- and this is important -- that we are not concerned with adjustments of a number for technological feasibility or economic
reasons, or philosophical reasons. We are required by
what we do to protect health, to base our Health Risk
Assessments strictly on science -- peer reviewed science,
published science, and the values that come from there.

Q. There is a fact sheet that is attached to the
notice for chromium and for vanadium. Do you know who
wrote those?

A. We did.

Q. Now, after the letter went out -- I noticed
some letters went out on different days. Why did that
happen, do you know?

A. It is just -- it is just that as samples came
in, as they were sampling -- eventually we started
re-sampling into the summer. And so it is, in essence,
as DENR would get sample results back from the
laboratories, they would send those results to us, and
then we would do the Health Risk Evaluations.

Q. Let me show you -- just so we have got this in
the record -- what has been marked Exhibit 274, and see
if you recognize that document?

(Witness peruses document.)

A. There is a little interference with your
"close all tabs" and "close current tabs."

(Discussion off the record)

Yes, sir. Go ahead.
Q. Do you recognize this?
A. Yes.

Q. And what is it?
A. This would have been the calculation for the hexavalent chromium Health Protective Value that was calculated by the Division of Waste Management at DENR for us.

Q. And then that was provided to you?
A. For review. And -- we would review it and see if we were in agreement with our counterparts over in DENR.

Q. Did you agree with what was in 274 -- Exhibit 274, or did you have some disagreements?
A. No, we were in agreement. And just to -- just to clarify, we have a standing agreement with the North Carolina Division of Waste Management, because they have a Health Risk Assessment Group within that division. And we work very closely with them. And so the calculations that we did, and a lot of the work that we did on this issue, was in concert and agreement with them.

Q. And did they agree with the .07 standard for hexavalent chromium?
A. Well, they calculated it, and we reviewed what they did and the basis for it. Yes.

Q. And what is Exhibit 275?
asked us specifically for our help.

You know, we -- you know, to a great degree we had to have the separation of hexavalent and total for us to do our job as requested by DENR and to protect the folks that might be impacted. So this was Sandy Mort just sort of laying out what the issues were based on what the cancer risk would be if we used the MCL, what the cancer risk would be if we used the current Groundwater Standard for total chromium.

And because the rule in the law was stating that we utilize -- my understanding, neither the MCL or the 2L Standard were based on the cancer end point for hexavalent chromium, or even total chromium. They were very dated standards. So we didn't even have a number that we could use that was based on the latest science. So that -- number one, that is the reason for redoing it or re-suggesting a number.

But the law -- and this -- I think probably by the 16th of February, probably we had had that meeting where Chris Hoke, our lawyer in our Department, had explained to us that, you know, "This is what the CAMA Law says and this is what the 2L Law says." And CAMA was saying use 2L, 2L saying use one in a million. So we were sort of, you know -- we are bound legally, according to what our Department was telling us, to recommend the
drinking water value for hexavalent chromium based on a one in a million cancer risk.

And we were just explaining to our folks in our Department what the cancer risk would be at the other standards that were -- existed for total chromium. And my guess is is that this would have also been presented to DENR as an explanation of why we were doing this.

Q. And for the record, it says, "The Federal Safe Drinking Water Act approved Maximum Contaminant Level for total chromium is 100 micrograms per liter in finished drinking water, and the State Groundwater 2L standard for total chromium is 10 micrograms per liter. Both standards are for total chromium, which consists of trivalent chromium and hexavalent chromium. Neither the MCL nor the 2L standard are for hexavalent chromium alone. The MCL and the North Carolina 2L standard for total chromium are dated and no longer protective of public health, based on the principles by which the North Carolina 2L standards are based." Did you agree with what was in the e-mail?

A. Yes. I think that is one of the things we were trying to -- you know, our Department at this point understood the -- you know, what we were recommending was based on law, in terms of degree of protection. And I think at this point we were also trying to communicate
Q. And then the e-mail goes on to say, "Based on an updated cancer slope factor for hexavalent chromium as referenced in the Toxicological Review of Hexavalent Chromium in Support of Summary Information on the Integrated Risk Information System -- or IRIS -- and the health-based drinking water level calculated by DENR toxicologists and reviewed by DHHS toxicologists, a one in one million excess lifetime cancer risk for protection of public health results in a groundwater concentration of 0.07 micrograms per liter." And I guess you -- did you agree with that?

A. Yes. And it also was true that in addition to IRIS containing the cancer slope factor that we agreed with, they also -- it was also utilized, I believe, by California EPA, OEBA. I believe they used the same cancer slope factor. And I also think New Jersey did. And I believe it was also -- I think, initially, we also saw that -- I think it was EPA Region 9 had a screening value based on the same cancer slope factor.

So there was a consistency of -- a consistency across the board of state and federal agencies with the cancer slope factor that we were utilizing. So we were very scientifically comfortable with what we were recommending, in addition to having very solid peer
reviewed published science to base it off of.

Q. And then the e-mail concludes, "The Excess lifetime cancer risk at the MCL, or 100 micrograms per liter, is one in 700. The cancer risk at the North Carolina 2L groundwater standard, or 10 micrograms per liter, is one in 7,000. Both the MCL and the North Carolina 2L groundwater standard for total chromium present an elevated excess lifetime cancer risk above the North Carolina target risk level of one in one million for hexavalent chromium, which is identified as a mutagenic carcinogen. The excess lifetime cancer risk estimates for the MCL and the North Carolina 2L standards calculated using the 2L rule method result in an unacceptable level of excess lifetime human cancer risk."

And did you agree with those statements?

A. Not only do I agree with it, but we still -- we still stand by that. And that is still what we believe to be true.

Q. Now, did this language make it into the DENR letter, or for that matter, into the HHS form?

A. I think, to a certain degree, it is in there, because -- you know, the part about the one in a million cancer risk is in the bottom of the form. In terms of what it would be at the total chromium standards, no. I don't think there was anybody -- I don't -- I don't
recall if anybody asked to have those numbers put in there or not.

Q. And the information about the excess lifetime cancer risk estimates for the MCL and the North Carolina 2L standards, that is not included in the materials, is that correct?

A. No. Just the one in a million.

Q. I guess this is 493.

(PLAINTIFF-INTERVENORS EXHIBIT 493 WAS MARKED FOR IDENTIFICATION.)

Exhibit 493 is an e-mail dated March 13, 2015, from Dr. Shehee to Eric Smith and Debra Watts, copied to you. Do you remember the e-mail?

A. Very well.

Q. Can you explain the context for this?

A. Yes. This is -- I think this was the first one. This was -- we were -- I know I have got a really -- I have an e-mail, I think, that responds to this. But this was the first time we had -- before this happened, we had reached consensus between the two Departments. Our Department already had -- was in agreement with what we were doing. And now, as it -- this was as a result of the March 6th agreement where Tom Reeder says "Go ahead and do this." And then there was some more discussion because he pulled it back, like, two days later. And
then a couple of days later, apparently they all worked it out.

And then on Friday, March 13th, they told me to go ahead and send out what he had. We might have only had, maybe -- I don't know how many we had by this point -- sample results, but this was a Friday. I did the Health Risk Evaluation -- I remember this very well -- I did the Health Risk Evaluations. I was going to run them over by hand to Eric Smith, but it was -- it was probably 3:00, 3:30 on Friday, and he was leaving early.

He said, "Just bring them over on Monday," because, you know, they wouldn't have sent them out over the weekend anyway because they had to get their cover letters. But we were done. We were in consensus. We were, you know, all dancing to the same tune.

So I was about to run them over. And he says "Bring them over on Monday." Then we got a call from Dr. Davies going, "I hope you didn't send these out yet, you know -- these Health Risk Evaluations. We have got to pull them back." So I said, "Well, we were going to send them out but we hadn't done that." So they took a deep breath and were happy we hadn't sent them out because apparently there had been this -- "we," you know -- Sandy and I and Mina, I guess -- had thought that this issue was -- about this additional language had been decided
and not to put it on there.

So we had -- you know, and then we were -- we actually had an e-mail from Dr. Davies to -- for us to start sending these out, that we were in agreement. And then we had to pull them back. They insisted on putting this language in.

Q. Who is "they"?

A. DENR -- Reeder and his folks. Our Department -- I think part of this is -- and this -- by March 13th, I think the people above us in our Department were getting weary of this -- this battle, which is what it was. You know, we were -- it was just -- it was very, very -- we had not really encountered anything like this before -- any kind of resistance, then agreement, then more resistance then more agree -- it was just -- it was foreign to us, I guess.

And, you know, the impression I was getting from our Department was, like, "We have just got to get these out." You know, does this -- is this language, you know, is it untrue? Is it this or that? And we would give our opinion, but, you know, they weren't -- you know, I think, you know, they were making decision based on, you know, they really wanted to move forward. And if it didn't really actually negate what we were saying, they were willing to put it on.
And we still objected, you know, from within our group. We have e-mails with our very, you know, strong objections. But, I mean, you know, when we are told to do something, we are told to do something. You know, there are lines that we can't cross, both morally and ethically, which is why I removed my name from this at this point. But, you know, orders are orders.

So this is when -- the first time we pulled it back and then didn't send them out again. This would happen either one or two more times between March 13th, 2015, and a week or two into April when I was -- came back from vacation.

Q. Can we mark this as Exhibit 494?

(PLAINTIFF-INTERVENORS EXHIBIT 494 WAS MARKED FOR IDENTIFICATION.)

Exhibit 494 is an e-mail -- two e-mails. One begins from you to Dr. Shehee, dated Sunday, March 15, and then a subsequent on the same day from you to Dr. Shehee.

A. Yes, yes.

Q. Do you remember these e-mails?

A. Yes, I do.

Q. All right. The first one says, "Mina, this is the HRE version that I am recommending. Since we now have an absolutely scientifically untrue human health
statement insofar as it pertains to chromium on the bottom front of our HRE form, i am removing my name from the HRE form and -- as an initial reviewer. I have attached my recommended version of the HRE form. It still has the OEEB contact information, but I cannot, from an ethical and moral standpoint, put my name on a form with this absolutely untrue human health statement insofar as it pertains to chromium. If you want me to, I will still do the HREs and give risk communication information to NC residents for the sample results, but I do not want my name on this form. Sincerely, Kenneth Rudo, Ph.D. Toxicologist, North Carolina Division of Public Health." And is that the e-mail you sent?

A. Yes.

Q. And could you explain -- you may have already done this -- but for the record could you explain what was the absolutely scientifically untrue human health statement as to chromium on the form?

A. Well, it is -- what is on here (indicating) is different than what this was -- I don't have the -- you know.

Q. Okay, right. What were you referring to?

A. It was probably another version of this that was -- probably had -- I think had something about the Public Water Standard on there. More consistent with the
language that is in the top of this. This (indicating) is the untrue part here.

Q. And when you say "untrue part here," it is the attachment to Exhibit 279 under "Test Results and Use Recommendations," is that right?

A. Yes.

Q. Yes.

A. I mean it is -- this is embarrassing. I mean, it is just -- this is the last thing I ever wanted, to have something like this where I am just -- I am just -- this is -- I am stunned. Okay? I mean, I just -- I can't believe that this is going on in the world now, but it is. But, I mean, it is just -- this is -- this is just not how we do our work.

I mean, we are trying to protect public health. We are trying to protect people. We are trying to help people. We are trying to help people protect their water. And this is ground that we have just never been on in all the years I have been here.

This is -- there are a lot of things that have happened pertaining to this that has just never happened before because we are the scientists. We are the ones that have the knowledge and the information, and we can defend this for our department. We can defend it for the residents. If we have to, we could defend it for Duke or
1 with the Governor, is that right?
2
3   A. Yes.
4
5   Q. And your handwriting, I must confess, is much
6 better than mine, but I can never tell if I am reading
7 people's handwriting correctly. So would you please read
8 into the record the entry at the bottom you just referred
9 to, and then the entry about your meeting with the
10 Governor?
11
12   A. Okay. "4/2/15 - Finished coal ash, 3 hours
13 OT. Finished coal ash drinking water evaluations.
14 Approximately 118. Took them over to DENR. Mina okayed
15 additional statement at the bottom of the Health Risk
16 Evaluation forms, but Sandy and I suggested stating that
17 the HRE is not complete until re-sampling that we
18 requested is performed."
19
20   Top of the next page, "Called by Megan Davies
21 and told to go over to the Governor's office and meet
22 with Governor's Press Secretary and Kendra Gerlach about
23 coal ash forms. Mr. Ellis, the press person, took a call
24 from the Governor about something else, but told him we
25 were there for the coal ash well issue. Mr. Ellis wanted
26 me to put some specific health risk information
27 individually for each person so we could play down the
28 health risk.
29
30   "I explained in detail how we did our risk
assessments and the approach based on cancer and non-cancer risk, and as a result we could not predict specific risks for non-cancer end points. He then wanted us to add the statement about how this risk is the maximum risk and not over MCLs, and I told him we could not ethically do this on our HRE forms because it would not be true and correct, and it would be misleading.

"We discussed our concerns with DENR and their fighting with us about vanadium and chromium-6 and trying to ethically compromise our risk assessment process. He asked if we could come up with language to suggest to put on DENR form about their and his view of the degree of risk and the MCL issue, and we all came up with some language for suggestion to DENR. I also warned him very clearly about documentation of e-mails, meeting notes, et cetera, about what DENR has tried to do to compromise the HRE process in protecting the residents water around these sites." So I was there about one and a half hours.

Q. Now, the language he requested relating to the MCL ended up in the HRE form that was sent out, is that right?

A. I would say it did, yes.

Q. All right. After -- so after you come back and the forms go out, I gather you spent time talking to residents?
A. I have to say, I don't really remember if we did or not. We actually may not have, specifically, but he definitely -- he did have questions about why did we tell people not to drink their water. He had some concerns about that. And I sort of explained to him what I have explained here about why we do that.

Q. What happened next?

A. I think you have to fast forward to probably early, mid-January. Mina got a request from Randall to -- Dr. Shehee got a request from Randall to -- probably around the 16th of January or something like that, to write a letter that she would sign stating that we were going to retract the Health Risk Evaluations that we did last year to the residents, and tell them -- the ones that were -- you know, had levels of hexavalent chromium below 10 parts per billion, we would tell them that their water was safe to drink.

Q. And did he ever discuss this with you?

A. No.

Q. Did she explain to you why this was happening or why the change?

A. She did not. She was -- she was stunned by it. This was -- in essence, it came out of nowhere. We were not expecting this. We didn't see it coming.

Nobody had ever asked us to do that before. This was
unprecedented. I mean, this was -- telling people that
we protected that -- we were going to tell them now that
what we told you was not safe is okay, when it is not, is
-- I mean, for obvious reasons, it is just not something
we had ever been asked to do before.

I mean, there are lots of situations where we
fixed a drinking water source or the contamination had
passed on by, and it was no longer a risk. And at those
times, we told people their water was safe. But it was,
because things has changed.

But this was a situation where we had no new
data to say anything had improved. It was not like we
had filtration systems or we had run water lines to these
folks. Nothing had changed. And he was asking Mina to
write a letter for Mina to sign to tell the residents
that their water that we said wasn't safe was now safe.

Q. So what did you and Dr. Shehee then do?
A. Well, Mina -- you know, she was like, "Do you
want to write the letter?" I went "No," I said, "I can't
do that." And I went, you know, "What are you going to
do?" And she was, like, "Well what do you think I should
do?" And I was, like, "I don't know, you know. I can't
tell you what to do; you are my boss. But, obviously,
you know how I feel about it." So I think she went home
and talked to her husband, thought about it, and she came
worked at it, DENR worked at it, we worked at it. We all
did our jobs at that point the way we do, you know, what
you are supposed to. Everybody did their jobs once we
had that agreement. Everybody worked to do it. So we
had consensus.

But, you know, here we had a situation were I
feel -- I honestly feel that we, as a Department, and as
-- and as a peon toxicologist at the bottom of the ladder
rung, we protect -- our job is to protect public health.
AND we did that. But what happened recently is that --
you know, the State Health Director's job is to protect
public health. And in this specific instance, the
opposite occurred. He knowingly told people that their
water was safe when we knew it wasn't.

And that was alarming to these people, I have
heard from a lot of them since this happened. They were
alarmed by that, which is also his job not to alarm them.
But by doing that and retracting it, which is
unprecedented, it was alarming. So his job was to
protect health, but he didn't do it. His job was not to
alarm people, but he alarmed people. He alarmed us, you
know.

But at the same time, no matter how I feel
about it professionally, it is his right to do it as our
boss. And we understood that. But we did everything we
could to try to let him know that this was not -- this was not protecting health.

Q. I believe you said while you were -- maybe before you left on leave, you had tried to talk with Dr. Williams. And how did you make that effort?

A. I just asked my supervisor, I said, you know, "Can you go up the line if maybe before I leave I can go talk to him and maybe -- you know, maybe I can talk him out of it." You know, I mean, I don't know what I was thinking. I just thought that, you know, maybe, if he has a conversation with one of his technical folks, maybe he will, you know, reconsider because ---

Q. Did you ever get a response?

A. No, not really.

Q. Any kind?

A. No.

Q. Now, I believe you said initially what he told Dr. Shehee was to tell people who had 10 parts per billion or less that it was safe to drink their water -- that was the letter he was going to send out?

A. I have some notes here. I am not sure. Let me just refer to my notes.

(Witness peruses document.)

I have three pages of notes on -- the first set of notes is from 1/21/16. The second set of notes is
1/25/16. The third set of notes is 2/8/16, about when we first heard about this, and ---

Q. Can we make those an exhibit, please?

(PLAINTIFF-INTERVENORS EXHIBIT 497 WAS MARKED FOR IDENTIFICATION.)

And Dr. Rudo, just to shorten the process, if you would just read those and the dates, that would be helpful.

A. "1/21/16 - Met with Mina. She told me Dr. Williams, State Health Director, wants us to retract the HREs we did, over 400, for the residents adjacent to the coal ash ponds. I believe this is highly unethical and possibly illegal, and I need some guidance on the legality of this. I told Mina that I cannot and will not do this retraction as it would result in putting residents at an increased cancer risk, in addition to all the ethical and possibly legal problems with this. In 27 years working with -- for state government, we have never been asked to retract the more than 150 thousand HREs we have done. It is not right to be asked to do this, and I will not do this."

"1/25/16 - Mina is in discussion with our Department about the order to retract the coal ash HREs. She told the Department I will not do this and she will not do this."
1 until 9:00 p.m."

That was what you had the e-mail earlier about. As it turned out, the fax did not work. That is why I was going to take them over personally. And then we were -- you know, then we were told not to do it. And I had to come back to the office and make changes, so I was there until 9:00 p.m.

"3/15/15 - In office for 15 hours. Reviewed updated HRE form and sent Mina an e-mail removing my name from the form because of DENR's insistence of adding an MCL statement that implies 100 ppb of total chromium, which includes chromium VI, is considered safe. This is a scientifically untrue human health statement. Thus, from a moral and ethical standpoint, I have removed my name from the HRE form, and I cannot ever tell people an MCL for total chromium with 100 ppb is considered safe. It is not safe."

Q. thank you. Could you remove those pages so they can be made an exhibit, please?

(Witness complies.)

(PLAINTIFF-INTERVENORS EXHIBIT 499 WAS MARKED FOR IDENTIFICATION.)

MS. LeVEAUX: Can we go off the record for a minute?

MR. HOLLEMAN: Sure.
Q. Do you know if it dropped the levels of the carcinogen?

A. It did, yes.

MR HOLLEMAN: If we could take about a five minute break, I may be almost through.

MR. HOLLEMAN: OFF THE RECORD. 3:31 P.M.

(A BRIEF RECESS WAS TAKEN.)

MR. HOLLEMAN: ON THE RECORD. 3:35 P.M.

MR. HOLLEMAN: That is all I have. Thank you Dr. Rudo.

MR. LONG: Anita, you want to go first?

MS. LeVEAUX: Yes, If you don't mind.

DIRECT EXAMINATION 3:36 P.M.

BY MS. LeVEAUX:

Q. I would like to just say at the outset, thank you for being here, Dr. Rudo. My name is Anita LeVeaux. I am Special Deputy Attorney General for the Attorney General's Office representing DENR, which is now known as the Department of Environmental Quality.

A. Yes.

Q. And I am going to ask this deposition be held open so I will have an opportunity to review some of your notes and your information, and later bring other questions that we may have. So I am going to be brief, with just a few questions.
This is just something that -- it doesn't make any sense to me. I can't understand why they would do this.

Q. Let me ask you this. How long did it take to develop the .07 part per billion hexavalent chromium screening level?
A. Would you -- are you talking -- do you mean how long did it take to actually physically calculate it, or have it vetted by both Departments to the point where we were going to use it?

Q. Well, let's start with how long did it take to calculate it?
A. I would have to ask Hanna and David how long it took them to do it. It was a pretty straightforward calculation.

Q. Over at DENR?
A. Yes.

Q. Okay. Did you spend any time calculating it?
A. I reviewed the calculations. I reviewed the basis for the calculations. I reviewed the science, the NPT 2008 bioassay -- 2 year bioassay that was done where -- the basis for the cancer slope factor. I reviewed that information.

Q. And what other literature did you review in that process?
A. I probably -- I probably reviewed over a
hundred peer review published paper looking at cancer and non-cancer end points, looking at mechanistic end points, looking at -- to a significant degree of mutagenicity of hexavalent chromium, which was a major concern.

I reviewed documents from EPA, from California. I am not sure if we looked at anything from ATSDR or not. I would have to go back and look. But the primary thing was I was looking at the individual studies, the scientific literature.

Q. Could you look at --

MR. LONG: And Myra, I might need your help here as well -- Exhibit 274, which you showed him earlier.

THE WITNESS: Okay.

BY MR. LONG:

Q. So we are showing you what has been marked as Exhibit 274. And you testified earlier that this was the actual calculation of the .07 part per billion number for hexavalent chromium.

A. Okay.

Q. And my question for you is about the carcinogenic potency factor.

A. Uh-huh.

Q. What does that mean?

A. That is -- that is the number that is derived