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PUBLIC MEETING MINUTES REGARDING PROPOSED REMEDIAL ACTION PLAN SITE 89 OPERABLE UNIT 16 (OU16) MCB CAMP LEJEUNE NC

5/24/2012

CAROLINA COURT REPORTERS, INC

PUBLIC MEETING

PROPOSED REMEDIAL ACTION PLAN (PRAP)

SITE 89, OPERABLE UNIT 16
MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA

MAY 24, 2012
COASTAL CAROLINA COMMUNITY COLLEGE
444 WESTERN BOULEVARD
JACKSONVILLE, NORTH CAROLINA 28546

* *

MEETING MODERATOR - MS. CHARITY M. RYCHAK
DOI CO-CHAIR
MCB CAMP LEJEUNE EMD/EQB
BUILDING 12, McHUGH BOULEVARD
CAMP LEJEUNE, NORTH CAROLINA
28542-0004

PRESENTER - MR. MATTHEW LOUTH, CH2M HILL

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LIST OF ATTACHMENTS

NO ATTACHMENTS PRESENTED

COURT REPORTER'S NOTE: The public meeting portion of the Proposed Remedial Action Plan (PRAP) meeting convened at 6:00 p.m., in Room 102 of the Business Technology Building, Coastal Carolina Community College.

MS. CHARITY M. RYCHAK: Hello. Good evening. Welcome. We are going to be starting the evening with the Proposed Remedial Action Plan. This is going to be our public meeting. Just like the last one we had, if you guys have any questions at the end of the presentation, please say your name beforehand and then speak your question. Everything will be recorded. And, without further ado, we'll let Matt with CH2M Hill take it away.

MR. MATT LOUTH: Okay. Matt Louth with CH2M Hill. Good evening, everybody. Tonight we're talking about Site 89. And for members who have been around for a long time, we have been talking about this site for a few years. For some of the new people in the crowd, this is one of the sites that we've been working on, gosh, 13 plus years. There is a lot of investigations, a lot of clean ups already at the site, and now we're almost to the finish line, almost to the goal line. So the purpose tonight is to give you the Proposed Remedial Action Plan for Site 89, which is part of Operable Unit 16.

So the purpose of tonight is to present the alternatives to clean up Site 89. The groundwater there; you

know, we have been dealing with the groundwater for years. We have done soil remediation at the site. So, basically, hopefully everyone was able to get a copy -- it's up here if you did not get a copy of the -- of the -- I'm going to call it a PRAP; that's our acronym for the Proposed Remedial Action Plan. For the PRAP, it kind of lays out the alternatives. You know, it gives the background of the site, the history, all of our clean up to date, all of the treatability studies, any actions we have taken out there at the site. It kind of lays out the history and tells the story of the site, and talks about the risks that we have to deal with at the site. Our risk is a groundwater risk at the site. So it lays out the alternatives that we have to evaluate as part of the CERCLA program for the groundwater. We're looking at the source areas, some downgradient areas, and also surface water that's been impacted. So that's the whole purpose of the PRAP is to lay everything out in a nice story. It gives the public a chance to comment on the alternatives that are evaluated and being selected. Because the next step is for us to move into the ROD, which is the actual Record of Decision to move forward with the action at the site; carrying forward, that gets signed off by the Navy and the EPA in concurrence from the State. So tonight we'll present the alternatives, and then ask for any questions you may have. There is a public comment period that's one month

in length; that gives ample time for the public to ask questions that we will take in, answer the questions and take into consideration into the final remedy for the site.

So a little bit about community participation, which is a critical component of us working within the CERCLA program. You know, some of the outreaches to the community from the Navy and the base, you know, this RAB is one of them. You know, formed back in 1995, the Navy and the base continually solicit input from the community on our proposed actions. We have done site tours with the community and the RAB. We have our community relations plan for outreach to the community to make sure we are keeping them notified of our clean up program on base. And then, you know, in doing these Proposed Remedial Action Plans, having public comment periods. You know, those notices in the paper, and then holding this public meeting to make sure everyone is informed about what's going on.

So specifically, for Site 89 PRAP, we put public notice into the Jacksonville Daily, the Globe, and the RotoVue on those dates in May. Officially, the public comment period started Tuesday. It's going to run through June 25th, so it gives it a little over a month for the public to review the PRAP, and the alternatives, and submit their questions. Part of the CERCLA program is to have our public meeting, which we are doing tonight. There is, you

know, hard copies here that also can be obtained electronically from the admin record, administrative record, that has all of the CERCLA -- CERCLA documentation leading up to this remedy. All the investigations, all the treatability studies, other removal actions are here on the admin record and you can also obtain a copy there. We also put a copy in the Onslow County Library. There is a certain section back where the computer room is. If you go in there, there is a young woman sitting there who can direct you to where all those documents are for Camp Lejeune or admin record, a copy of the PRAP. Even if you don't have a computer, you can use their computer to access the website.

All right. So, let's talk Site 89. I think those have been here for a while; this is a little camp geiger on base. This figure depicts where it is within the greater Camp Lejeune area.

Some of the history. It was the location of the base motor pool until 1988 and where they reportedly used some chlorinated solvents as part of their operation as part of the motor pool. There was a 550-gallon underground storage tank that was in use from 1983 until it was removed in 1993. And, during its removal, is really what triggered us finding this site and the chlorinated solvent contamination within the soil and groundwater as well. You know, some of the historical operations, as you can see here, that, as part of

the motor pool, typical motor pool-type operations; wash racks, et cetera. It was also utilized by DRMO from '88 to 2000 for a lot of their storage of metals, electronics, vehicles. You know, everyone has probably seen a DRMO and all of the metal and items that are placed and used within a DRMO facility. So it was used by them until 2000. And 2000 is a critical day because that's when a lot of our investigations, as you'll see, really kicked in as far as what was being found.

So what this slide shows is a time line going back to, you know, I said 1993 is when that UST was removed that led to the contamination being discovered at the site. So, as you can see, really from '96, really kicked in more remedial investigation looking at soil, groundwater, surface water sediment site-wide. This is just a close up of the site showing the initial investigations, moving through, you know, starting long-term monitoring of groundwater. And then, you know, with this site, the -- the motive of the investigation was to delineate the nature and extent of how far this contamination went out laterally and vertically, more would be found. And we were able to, you know, conduct these investigations, you know, a good 12 years to really get the nature and extent bound for this site both laterally and vertically and -- in all the different media, and then assess the risk to human health and ecological receptors at the

site. So that kind of presents our investigations.

If you'll also recall, we have done a lot of pilot studies and removal actions out here as well. You know, I said that 2000 was a critical date. 2000 is when we moved DRMO off the site, and a low temperature thermal desorption of soil was conducted. Basically, they scraped off a lot of surface soil that was contaminated, cooked it to remove the contamination. So that was a critical component, moving the DRMO, so we wouldn't have any potential recurring source contaminating the soil, because, as you can see, we really needed to get into the groundwater and look at the groundwater as far as the contamination and remediation treatment studies to, you know, help clean up this site. So a lot of different things have been done. As you recall, we cooked it; we cooked the groundwater with ERH, the electrical resistive heating pilot study. Which, basically, was, you know, electrical rods, you know, stuck into the ground and heated up to cook the -- cook the contamination from the groundwater, which is very successful. And we also did a treatability study looking at several different technologies to help us write our feasibility study, which is the -- the, you know, official document before we get to this PRAP where we really look at all the different alternatives. So we had good -- to get good information in our feasibility study, you know, we did these treatability studies looking at enhanced

reductive dechlorination, zero valent iron injections, a horizontal air sparge, and then, also, a permeable reactive barrier at the site to see how the site conditions change. Because, you know, we work on Camp Lejeune the whole, but every site's a little different; you know, they're not homogeneous across the site. So all of our technologies that we look at and evaluate are very site specific. So this pilot study really gave us good information because we found out that, you know, ERD was okay, the zero valent iron injections we really couldn't get it out to the formation, but the air sparge and the reactive barrier wall worked pretty good for what the purpose of the site for clean up was to do. If you -- next we did -- we had very -- three distinct areas on the site. This may be a little hard for everyone to see, but there is a figure coming up that shows it -- depicts it better. Where we did the soil mixing, and for some of those who have been around, we did the soil mixing out at Site 88. And, basically, it was that big auger that we, you know, mixed the soil with zero valent iron with a clay material to -- to clean up very contaminated areas. We did this at this site as well back in 2000 -- 2009 to treat very high areas of contamination and had great success with not only treating it, but also creating, by us mixing it in this clay material, containing it and making groundwater flow around it so it wasn't a continuing source; which was

very beneficial to clean up further downgradient areas as well. And then, also to address some ecological concerns and risks at the site, a non-time critical renewal action was conducted in 2010. We had some sediment that was contaminated that we did a removal action. It was very -- two small areas, but they still posed a risk to ecological receptors. So we did that removal action as well. So, as you can see, leading up to, you know, where we are now, a lot of investigation, a lot of action already to help clean up this site. So in taking all this information and pulling it together, you know, remedial investigation report, a feasibility study, it boils down to looking at the site.

Right now we're at the groundwater, and the way we look at it, we look at it from this official VOC, volatile organic compound exceedances, which is this lighter green area. And then the upper -- upper Castle Hayne VOC Exceedances, which is this darker green area looking at the lateral and vertical extent. And, you know, these little symbols are monitoring wells, and we have a lot more out there. So there is some downgradient because we really need to evaluate and delineate the site. So there is wells all around making sure that we have a good handle laterally and vertically at the site. And now you can see our main drivers here and, I guess, the key features to point out is, you know, this is our area that we're calling the source area

where we still have some higher concentrations to address. And these three areas is where we did the soil mixing. We have a horizontal well running through here from one of the treatability studies. This is the -- the surface water feature that feeds out to Edwards Creek. So this is some of the factors we have to take into account. So in looking at the site in its totality, you have surface water. These are our three main contaminants of concern, the 1, 1, 2, 2-tetrachloroethane, trichloroethane, and vinyl chloride at some pretty high levels. You know, these are high levels within surface water that's been tested throughout all of our investigations. And then the groundwater, you can see our -- our suite here of contaminants of concern that pose a risk in groundwater, and we have some -- some high concentrations well above the -- the Federal and State standards that need to be addressed. So this -- these are the compounds and -- that we're focusing on to focus on risk from the groundwater and the surface water out at the site.

So when we talk about risk, we talk about human health risk and we talk about ecological risk. As I indicated earlier, we did a removal action to remove the ecological risks. So, from that standpoint, we're okay. But, from a human health standpoint, as the site exists right now, if it's not being used, there are no current risks. However, in evaluating risks, you know, who knows what the

property is going to be used for in 20 years. We have to evaluate future scenarios, whether it be construction workers, they put a building out there. We have to look at all these different scenarios to evaluate risk. So, as you can see, you know, our risk assessors look at all the data and they evaluate the different impacts and effects of groundwater and all the media at the site. And the real risk to human health out there is future groundwater use to industrial workers, construction workers who may have to put a utility line through there. But also, the potential if they were to put a, you know, a shack out there, from a vapor intrusion standpoint, because groundwater is so shallow, we have to evaluate that pathway if they were ever to put some type of structure out at that site or within 100 feet of our groundwater contamination at the site. So -- so this is what we really need to focus in on from a risk perspective. I showed you the concentrations in the surface water and the groundwater, and risk is the other component that we have to really address.

So pulling it all together, you know, for this site, and this is a conceptual site model that kind of is tilted at an angle. It's trying to show the -- the subsurface, you know, geology in addition with what -- a lot of the features as far as the soil mixing areas, our areas of contamination both from a high VOC concentration, but also diffuse plume

across the site. This -- the creek here. You know, our horizontal well, and then our biowall. Trying to pull together everything we have done at the site and looking at it from a risk standpoint, and how we're going to move forward addressing the groundwater risk.

So what we have to do, as part of our feasibility study, is we have to come up with remedial action objectives. You know, what are our objectives here? What are our risks? What do we have to treat? What do we have to do to clean up this site? And, basically, it boils down to -- to three main objectives for Site 89. It's basically we need to clean up and restore the groundwater to the Federal and State levels. We need to minimize the degradation of Edwards Creek from the contaminants of concern that are discharging groundwater into the surface water in that creek. So we need to make sure we're not contaminating the creek -- Edwards Creek, further downgrading it. And then we need to focus on not -- making sure that groundwater isn't causing a potential vapor intrusion concern to anyone who may be using the site in the future, but from a structure vapor intrusion standpoint. So these are -- it boils down to these three objectives of what we need to -- to do. And these are our media. Groundwater with our contaminants of concern, VOCs. And then surface water contaminants of concern. And these are the State or Federal standards that we have to clean up to until we can

say that we are done at this site. We have to meet these standards to make -- to ensure that we are cleaning up the site in accordance with the guidance and regulation.

So the way we looked at these areas to address them at Site 89, we broke it up, as I said earlier, to a source groundwater area. Which we saw as source, meaning it gives you the highest concentrations that we're still seeing at the site. And we've done these treatability studies, we've done the soil mixing, and we still have concentrations out there that are high and need to be addressed. So we looked at four different alternatives to treat the source area. We looked at no action. We have to do that as a baseline in doing our evaluation. If we did nothing, what's the cost, what's the risk to do nothing? And then we looked at enhanced reductive dechlorination, in-situ chemical oxidation, and then an air sparge via horizontal well which was from the treatability study. We also -- we have the downgradient groundwater plume that we have to deal with. And we have to look at no action, like I said. We looked at monitored natural attenuation. And, basically, that is, because we are dealing with chlorinated solvents, volatile organic compounds, they're going -- naturally going to degrade if the conditions are right to allow that to happen. We do have that out at this site. So we looked at that. If we weren't to do any type of, you know, action meaning, you know, clean up some type of

injection and what have you, if we just let it go and just sample the groundwater for the next, you know 10 to 15 years, would it eventually get to clean up standards. So we evaluated that. And then also looked at the permeable reactive barrier, or a mulch wall, that we did during our treatability studies that we had good success with in addition to monitoring natural attenuation to treat this area. Because, as you can see, these blue lines with the arrow heads, that's groundwater flow. And you can see how there is a eastern component of groundwater flow from this more highly contaminated area to the more downgradient area leading to Edwards Creek. So that's our second area to look at. And then the third component to meet our remedial action objectives is, once again, no action to evaluate that. Looking at a permeable reactive barrier along the creek so if things were to -- if the groundwater contaminated were to discharge the creek, it would be cleaned up by the reactive mulch wall before hitting the creek, or looking at aerators within the creek to aerate the surface water. Which, the aeration causes the volatile organic compounds to volatilize off. And, just for point of reference, we do already have an aerator out there approximately located right there in the creek doing a really good job of cleaning of the groundwater discharge to surface water.

So evaluating the alternatives for the source area.

You know, I've kind of talked through the alternatives. You know, basically no action. We had to do that as a baseline. ERD, it would just be injecting a substrate into the ground and hoping that it would get out into the formation, come into contact -- Chris Bazzini who likes to say, you know, this is a contact sport -- we had to get the solution out to the chemicals to make it happen to react to degrade. And this ERD is one of them. We have to get it out there, so we evaluated that. You know, the same thing goes with the persulfate and Sodium Hydroxide injections. You have to get it out into the formation for it to cause the degradation of the VOC contamination. And then horizontal well, which we have done and had great success at multiple sites on base, is basically putting a horizontal well within the subsurface, purging -- or pumping air through a compressor through a slotted screen to cause the air to volatilize the VOCs and create an aerobic biodegradation of the contamination at the site. So we evaluated those -- those four a little more.

Specifically looking at the different comparison analysis of the criteria. These are the criteria under the regulations that we have to meet for evaluating each of these alternatives. You know, we have to make sure that it's going to protect human health and the environment. And what these little circles are, it's kind of like a Consumer Report diagram. You know, open circle is low, bullseye is moderate,

and then completely filled in is high. High meaning that it's -- it ranks high, obviously. Compliance with ARARs, those are regulations. Does the alternative meet the rules, laws, and regulations to do the clean up at the site. And then looking at different long-term effectiveness, short-term effectiveness, how easy is it to implement, and then looking at the cost. What's the cost at looking at all of these alternatives. So the benefits of all the work that's been done out there over the years is that we've been able to evaluate cost from actually doing it. Implementing these treatability knowing on a smaller scale how much the cost will be, how effective it will be. So we have a really good handle on the cost and what's -- you know, what's the best bang for the buck here. I mean, you know, we're all tax payers. We want to make sure that we're being prudent and to, you know, do the right alternative for the cost. So, as you can see, looking at the Consumer Report here, looking across, air sparge, number 4 here, basically that's the horizontal well that pumps the air through the groundwater to volatilize off the VOC contamination. That was the preferred alternative selected by the partnering -- partnering team as the option that's been demonstrated at the site before because we've done a treatability study out there. We've seen the degradation of VOCs. It's -- you know, our cost, looking at it compared to the other alternatives, it's --

it's a lower cost, and we know we can implement it at the site. So the partner team selected that as the preferred alternative for the source area.

I kind of ran through the rationale and the concept. So, basically, rationale just explains lower cost. It's proven treat -- proven out at the site. What's not on this figure is our existing horizontal well goes this way. We plan to use that one as well, but the plan is to put it -- two additional horizontal wells, these orange dashed lines, solid lines. Basically, to put these horizontal wells in to go underneath the higher areas of contamination. To, you know, pump air to volatilize the VOCs over time. And, basically, we're thinking three years is the time that we think it will take to volatilize off these VOCs until we can meet 95 percent reduction is achieved out at the site. So that's what we're working -- so that's the proposed alternative for the source area out at the site. And still remember, we do have these soil mixing areas here, roughly here, and over here that are still working out at the site where we have those clay with iron -- zero valent iron within it is still working at the site. So we still have that helping and also creating a groundwater barrier for leeching off any contamination from those areas.

So then next, looking at that downgradient area; that, you know, swath, plume, if you will, moving away from

the source zone area. You know, we talked about, you know, monitored natural attenuation. Just over time watching groundwater. Will it meet -- on its own, if we leave it out there, will it get there to the Federal/State regulations. Just monitoring that over time. And then putting on some -- putting in some land use controls on the site to prevent people from using the groundwater or even being exposed to the groundwater from a construction/industrial worker standpoint. And then also the -- looking at the last alternative, the reactive barrier with MNA. And, basically, that would be putting in a mulch wall out at the site, downgradient from the source area -- I thought I had a picture of it, maybe it's next -- to help that degradation process to clean up the VOCs downgradient. And then monitoring that over time to make sure it's working, and then also implement the land use controls to prevent groundwater use.

So looking at the CERCLA criteria, and evaluating them for each alternative, you can see that, you know, obviously -- no, actually it doesn't. But MNA doesn't really meet the overall objectives in the comparison of the analysis compared to the PRB as far as being effective. Because, basically, you're just, you know, saying, "Okay. We're just going to watch it." Whereas the PRB is more active implementation of an alternative. So the partner team chose

the preferred alternative to be the permeable -- permeable reactive barrier with monitored natural attenuation for this downgradient component as well.

And there's my figure. So, basically, you know, we've proven at the site this -- this alternative works as well. We did the treatability study, it had really good success. So this is -- the concept is to install roughly a 525-foot wall. It kind of got cut off here, but the source area with the horizontal wells is right over here. So we're going to be just downgradient. So if anything is not cleaned up from the source area, we'll catch it moving downgrade. If we follow the groundwater contours, it has the overall groundwater moving towards Edwards Creek and the tributary there at Edwards Creek. So we'll put in this mulch wall, and we will -- we'll reduce the time to clean up this area as contamination moves through it. And there is -- you know, where we put the wall in, we also have, like, a flex tube that we can put in a carbon substrate to inject into the wall every three to five years. So it's not a one-time shot and walk away. We have a chance to, you know, go in and put some substrate when we find we just need a little boost to help the activity to reduce concentrations. We have that -- that chance to do that by having that flexy pipe as part of the wall.

And, like I said earlier, part of the overall site-

wide, since groundwater is our main risk to future resident, future industrial worker, future construction worker, there is going to be land use controls for the whole site prohibiting groundwater use. This pink line is our aquifer control, so -- to prevent people from using the drinking water until all the clean up standards are met.

And last component, you know, surface water. We showed the creek there leading to Edwards Creek and needing to insure that, you know, groundwater discharging from Site 89 into that creek is not impacting and degrading the, you know, habitat of that creek. Which, we're doing something there to clean it up. So we looked at the -- the barrier wall running along the creek again, and then also the aerators installed in the creek.

So you can see from our -- our chart here doing the comparative analysis of the three alternatives. Looking at, you know, no action as a base line. The reactive barrier would cost a lot more. The long-term effectiveness is a moderate. Short-term effectiveness is moderate. And implementability is moderate as well because it's pretty wet down there, so getting equipment in there is going to be more intensive, it's going to kind of tear up more vegetation and natural habitat by doing that than just letting it exist as it is opposed to just coming in with aerators -- putting aerators within the creek. We have had great success with

the current aerator out at the site. Cleaning up the VOCs discharging to the creek. So the concept is to put in aerators downgradient of the plume areas. I have a figure showing that next. So that was the preferred alternative by the partnering team to address the remedial action objective for the surface water.

So, basically, the concept is to put five -- this is our existing aerator right here, and to put in five additional. This one got cut off here, but one, two, three, four, five -- five additional aerators within the creek. So as groundwater that's not, you know, cleaned up by the horizontal wells and zero valent iron that still exists, the mulch wall concept. As -- spacing them out so as groundwater discharges to the creek, the aerators will take care of it because ultimate discharge to the new river.

So this kind of lays out the schematic site-wide. So for the source area, implementing the horizontal well with our existing horizontal well. The PRB concept for anything that's coming off will be, you know, further degradated, you know, cleaned up moving into the monitored natural attenuation to meet the regulation standards. And then the aerators out at the site within Edwards Creek to -- to clean up to insure there is no discharge of contaminants above the State surface water levels.

All right. So that kind of wraps up, you know, the

history of the site, all our investigations, the remedial actions that we've taken out at the site to date, all of the, you know, nature and extent, looking at the alternatives to clean up groundwater both laterally and horizontally through horizontal well, and mulch wall, and aerators. So that leads us to, you know, the public meeting tonight and then the public comment period for the next month. So if you have questions, we'll take questions tonight. If you leave here, and you're thinking about it at 3:00 in the morning you have a question, you can write it down. There is a -- there's an insert sheet into the PRAP that has a mailer in it that you can mail it to. And that one goes to Dave Cleland at the Navy. But you also can, you know, mail it to Charity at the base, EPO -- Gina with EPA, and then Randy with the State, any questions that you may have. And what happens is we take all those questions in, review the questions, prepare responses to the questions, and take that into consideration to the preferred alternatives that were selected by the partnering team which were the horizontal well, the mulch wall, and the aerators with land use controls and monitored natural attenuation of groundwater until the State and Federal clean up standards are met.

So -- so if you have questions, you can go ahead and -- see if I have any more slides. So the path forward, kind of what I explained. After the public comment period is

over, and if we don't receive any questions during the public comment period, the next document, which is the official document that records the decision moving forward, is the ROD with the selected remedy. And -- and then that moves forward for a signature by the Navy, EPA in concurrence with the State. So that's kind of the path forward. So any questions you may have about the site, our investigations, our alternatives? Sure.

MR. MICHAEL CURTIS: Earlier, I -- at least at the very beginning, but you mentioned that a three-year window is an anticipated clean up. Is that for Site 89?

MR. MATT LOUTH: That's for the -- if you recall that source area -- let me go back to that figure real fast. That was -- the three-year window was specifically to this source area using air sparge.

MR. MICHAEL CURTIS: Okay.

MR. MATT LOUTH: Based on our treatability study that was done on this upper leg of the plume, you know, we think that within three years we can meet -- meet 95 percent clean up of the VOCs within that area. If we don't meet it, that doesn't mean we turn it off. We still have to keep going until that 95 percent clean up level is met. So that's one of the performance metrics, if you will, for how we'll evaluate when we turn this air sparge system off and then let monitored natural attenuation go as groundwater goes to

Edwards Creek and in through the mulch wall. So -- so that three-year window really applies to this -- this one area.

MR. MICHAEL CURTIS: How about the rest of the plume?

MR. MATT LOUTH: As far as time to clean up?

MR. MICHAEL CURTIS: Yeah.

MR. MATT LOUTH: You know, it's hard to give an exact year. But, you know, based on modeling, based on, you know, evaluating these different technologies, you know, monitoring natural attenuation, monitoring is the plan for the next 25 to 30 years out there to make sure we do meet the clean up -- clean up levels. Because, if you'll recall -- it might be easier just to -- I wanted to show you the clean up levels that have to be met are pretty low. Let's see here -- yeah. So this is -- I don't know how well you can see it. These are our maximum concentrations. So, for example, in groundwater, TCE is 69,000 parts per billion. And what we have to meet is TCE in groundwater, we have to meet 3.

MR. MICHAEL CURTIS: You have a long way to go.

MR. MATT LOUTH: We have a long way to go. So -- so we're doing the active treatment with the air sparge, and the mulch wall, and the aerators. But, as you can see, it's going to take time to -- to get it to 3. And as far as some of the other compounds like perchloroethylene, it's, you know, .7. So it's pretty low standards that we have to meet. So we'll continue to, you know, implement the alternatives

and keep land use controls so people won't use the groundwater for any type of residential or industrial activities. At the same time, monitoring, you know, vapor intrusion as a big component for any type of structures that may be in and around that area. So, yeah, so we have quite a long ways to go. Any other questions? Mr. Mattison.

MR. THOMAS MATTISON: Tom Mattison, by the way. And I'm real, real interested in those aerators and there are dozens of different kinds of aerators. What type of technology there? Are you using -- blowing air in --

MR. MATT LOUTH: Yes, sir.

MR. THOMAS MATTISON: -- with -- with diffusers?

MR. MATT LOUTH: Yes, sir. Basically, it would be blowing air in through these aerators to create -- you know, pretty much what we're trying to do with the air sparge system, through our horizontal wells. Blowing air in to create enough of a cone of influence within that creek to cover and volatilize any of the VOCs that may be within that creek as it passes through the aerators. So the specific type and model I don't know. We're still evaluating that as part of our remedial design component that comes after the Record of Decision. We have to look at the design specs, and we have to look at the types and models.

MR. THOMAS MATTISON: Yeah.

MR. MATT LOUTH: We're looking at, you know,

electricity opposed to solar. Other ways to look at the unsustainable doing the remediation as well. So --

MR. THOMAS MATTISON: Yeah.

MR. MATT LOUTH: -- it will be pumped air.

MR. THOMAS MATTISON: You know, the finer the air bubbles, the more the water will absorb them.

MR. MATT LOUTH: Correct.

MR. THOMAS MATTISON: In Wilson Bay, we put those aerator circulators in there. They were rotary putting air from the immediate vicinity in.

MR. MATT LOUTH: Okay.

MR. THOMAS MATTISON: And they worked great.

MR. MATT LOUTH: Did they?

MR. THOMAS MATTISON: We done in one year in Wilson Bay what it would have taken nature 60 years to do.

MR. MATT LOUTH: Wow. Okay. That's good to know. That is good to know. We'll definitely take that in consideration as we're evaluating our aerators. Yes, sir. Great. That would be -- that would be very helpful. Any other questions or comments? All right. I think we're done with the public meeting part, so we'll take a quick break and allow the court reporter to finish up what she needs to do, and then we'll get started with the other presentations.

* * * * * THE PUBLIC MEETING CONCLUDED AT 6:42 P.M. * * * * *

STATE OF NORTH CAROLINA)

) C-E-R-T-I-F-I-C-A-T-I-O-N

COUNTY OF PITT)

I, AIMEE C. RIGSBY, A COURT REPORTER AND NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING PAGES ARE AN ACCURATE TRANSCRIPT OF THE PUBLIC MEETING OF THE SITE 89, OPERABLE UNIT 16 PROPOSED REMEDIAL ACTION PLAN, WHICH WAS TAKEN BY ME BY STENOMASK, AND TRANSCRIBED BY ME.

I FURTHER CERTIFY THAT I AM NOT FINANCIALLY INTERESTED IN THE OUTCOME OF THIS ACTION, A RELATIVE, EMPLOYEE, ATTORNEY OR COUNSEL OF ANY OF THE PARTIES, NOR A RELATIVE OR EMPLOYEE OF SUCH ATTORNEY OR COUNSEL.

THIS THE 11TH DAY OF JUNE, 2012.

NOTARY PUBLIC NUMBER 200525000114.

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