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RESTORATION ADVISORY BOARD MEETING

Proposed Remedial Action Plan

Operable Unit No.12 (Site 3)
Operable Unit No.13 (Site 63)

November 6, 1996.
Onslow Public Library,
Jacksonville, North Carolina

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WEDNESDAY EVENING SESSION

November 6, 1996

The Slide Presentation of the Proposed Remedial Action Plan for Operable Units 12 and 13 by Baker Environmental, Inc. during the Restoration Advisory Board Meeting, convened at 8:00 o'clock p.m. in the Conference Room of Onslow Public Library, 58 Doris Avenue East, Jacksonville, North Carolina.

MR.THOMAS TREBILCOCK: We'll go ahead with the slide presentation.

Some of these figures that are going to be in here are in the Proposed Remedial Action Plan that we have there.

We apologize for getting that out so late, but I guess this has been on sort of a particular track.

But, anyway, my name is Tom Trebilcock with Baker Environmental to speak to you tonight about Operable Unit No.13, Site 63.

During the presentation, I would welcome any questions that you have and if you don't mind, if you don't object, just state your name before your question so our Court Reporter can just get a record of where the

questions are from and that will help us when we go to address these questions with a response summary that will be provided later.

As Matt talked about earlier, as he went through each of the operable units, there are 18 operable units. Some of those operable units are comprised of more than one site.

It just so happens that Operable Unit 13 is comprised of only one site and that's Site 63, the Verona Loop Dump.

A sense of where the site is located, it's in the western part of the facility over here, about two miles south of the Marine Corps Air Station.

The next slide has a little bit better regional location of it.

It's about a mile east of Highway 17 for Verona and it's about a mile-and-a-half west of the New River.

MR.CARRAWAY: That's the one we did not see on our field trip.

MR.MORRIS: We went there, but there were trees down across the entrance.

MR.TREBILCOCK: Yes.

Yeah, it got some storm damage in both hurricanes.

Site 63 is approximately a five acre site which is comprised of mixed hardwood and pine forest. It's located on sort of a topographic high or saddle between two drainages.

So it's sort of on top of a hill.

It's reported to have received what's called "bivouac" waste and I have a picture following this that shows some of what that might include, although the "bivouac" was never really described or defined in any historical documents.

There were no known hazardous waste disposed of at Site 63 also.

Same picture.

Okay, this is a photograph of Site 63 showing the site from an access road that comes off of Verona Loop Road which is what the site is named for.

Looking into the site looking north right here, you can see it's sort of a fairly wooded area. Actually, it's pretty thickly wooded.

Okay, the area is primarily used now as a

training area.

This is one that the personnel trenched out, a sort of foxhole that they've dug out there.

This area and the site are also used for hunting and recreational hunting, but primarily for exercises, training exercises, things like that.

Let me get this in a little better focus.

But, this shows some of the things that were observed out at the site and this is what--there are a few mounds of the same type of - it looks like construction material, but it's concrete, some metal, scrap metal and in some of the other piles, there have been derelict vehicles, vehicle parts, tires, wheel covers and things like that.

So, you know, although we don't have a definition of "bivouac" waste, from these piles out there we could see the concrete and other - looks like construction material.

There's a small tributary to Mill Run on this side of the Base and it runs right--abuts sort of the site itself.

This creek tends to dry up in the summer but

it's about two to three feet across right here.

And, that's the way most of it is all along beside Site 63.

This is - in case you're wondering - is a statement, just shows where a sample was taken, in this case the surface water and sediment sample.

The investigation at that particular site, the site was originally identified in an initial assessment study in 1983 as a potential dump area.

In 1991, the first samples were collected at Site 63 and that's part of the site investigation.

The findings from that site investigation prompted the next step, the remedial investigation.

Part of the site investigation was recommending further study of the site because only a limited amount of soil samples and groundwater samples were collected.

As part of the remedial investigation that we conducted in 1995, a total of 96 soil samples were collected and 11 shallow groundwater samples were collected from eight temporary wells and three existing shallow wells.

And, also, five surface water and five sediment

samples were collected.

The findings from the soil investigation indicated that among the 96 soil samples that were collected, 20 of those samples had - let me get this in focus - 20 of those samples had detectable levels of pesticides.

Now it's sliding away. This slide projector is living up to its name - sliding.

Twenty of those samples had pesticides, detectable levels of pesticides in them.

Nineteen of the samples had detectable levels of semi-volatile organic compounds in them.

And, then two of the ninety some samples had polychlorinated biphenyls or what's commonly referred to as PCBs.

And, then, finally, one sample had detectable levels of volatile organic compounds.

Now, the concentrations of these compounds with the exception of the semi-volatile organic compounds were below one hundred parts per billion.

Now, only a few, actually one semi-volatile organic compound was detected above that and it was

detected more than once.

This slide shows exactly where these soil samples were collected throughout the site.

This shows what was thought to be, or still remains to be what we think is the approximate site boundary and this is the gravel road that we saw the picture before.

Now, a lot of the sampling would basically extend out beyond the boundary of the site just in case, you know, this area wasn't well, and it hasn't been well defined in the records.

Okay, the findings from the groundwater investigation indicated that no organic compound was detected among the 11 groundwater samples that were collected.

Iron, manganese and zinc were however detected at concentrations which exceeded the North Carolina Groundwater Quality Standard.

But, those concentrations were detected at concentrations that are typical of natural site conditions in the Coastal Plain in North Carolina.

Next slide.

If there are any questions--[laughter]--I'm kind of rolling through this.

MS.ELEANOR WOOD: I have one in looking at this chart and it talks about chlordane and it compares some criteria of stream sediment and there is no chlordane and I was curious about that.

MR.TREBILCOCK: That's right, for soil.

MS.WOOD: For soil.

MR.TREBILCOCK: Yes, that's right.

For some of the pesticides there are standards and they're related to how and what concentration in soil would a contaminant potentially impact groundwater.

And, for chlordane, for example, does not--

MS.WOOD: You don't have to deal with soil.

MR.TREBILCOCK: Well, it doesn't have a standard.

I'm sure there probably is a concentration of it that would impact groundwater, but I guess it hasn't been established.

I don't know.

Are there any other questions?

[No response]

This figure here shows the location of each of the samples, the groundwater sample locations. There are five within the known site boundary, or six within the known site boundary and five that extend outward from there.

There were, as I mentiond before, five surface water and five sediment samples collected.

There were also no organic compounds detected in the surface water samples and there were only two of the five samples that had detectable levels of pesticides in them.

MR.JAMES SWARTZENBERG: Excuse me, Jim Swartzenberg.

Is there a pattern to where these particular samples were taken from?

MR.TREBILCOCK: Where they were taken?

MR.SWARTZENBERG: Yes.

MR.TREBILCOCK: Yeah, actually--

MR.SWARTZENBERG: Found.

MR.TREBILCOCK: Oh, found.

MR.SWARTZENBERG: Where you found some pesticide and stuff.

MR.TREBILCOCK: It pretty much follows what we've seen in other sites, you know. It gets back I think not too long ago, actually '57 or sixties or fifties, pesticides were fairly commonly used around the Base.

And, when we do find them, they're pretty scattered throughout the Base.

MR.SWARTZENBERG: The same is true for the heavy metals and PCB's and all that.

MR.TREBILCOCK: Yeah, there were no particular--

MR.SWARTZENBERG: Next to where the concrete was?

MR.TREBILCOCK: Well, yeah, there were higher metals detected where we had--where we did observe some in the main part of the site there.

Visually, you could see metals in the sample like rusted iron so in those samples we have a higher concentration of iron.

But, that's where we had buried material mostly. There were only a few places.

But, it usually did correlate.

Pesticides in sedment at least, they tend to adhere to particles so where the surface water flows

across soil, it may pick up the particles in the sediment.

So, we see a lot of water pollution in sediments because they sort of adhere to particles and they collect in these drainage basins.

Yes!

MR.CARAWAY: Eric Caraway!

I was noticing on the map itself of the samples, was there any particular reasoning why they were going more towards 17 and none of them were taken across the creek, or the little small branch?

MR.TREBILCOCK: Well, because it's in a sort of a topographic high, the thinking was that if there were sites and we weren't so sure where that site was, if the only thing we had to indicate where the site was, was that gravel road and also some of these debris piles, but the thinking was that if there were a disposal area, it would be on that kind of flat area at the top.

The site actually slopes pretty steeply down to that creek that's to the east.

Maybe if I can flash that, flip forward and show you the surface water sample locations--

MR.CARAWAY: My experience with landfills, you

fill in a low area.

MR.TREBILCOCK: Well, it's not a landfill.

MR.CARAWAY: Well, I know, but it was a dump site.

MR.TREBILCOCK: A dump site.

MR.CARAWAY: Yeah, okay, dump site, landfill, there's a definition now. Back then there wasn't.

If you have a low area you want to fill it in, you start in the lowest part of the area and work your way up.

So my question is not being able to see the area--

MR.TREBILCOCK: Right.

MR.CARAWAY: --Was the ridge part of the waste area, or was there a ridge and it was put on top and the things filtered down?

MR.TREBILCOCK: It looks like that just this area within the site boundary had the evidence of, you know, that construction debris.

And, I think those are what originally indicated where the site might be, the location of those debris piles.

Now, you know, we dug down in the ground over 46 spots and only two of those spots did we find any evidence of something buried and that was within this area here, within this same--

MR.CARAWAY: Well, that was part of my question was--

MR.TREBILCOCK: Yeah.

MR.CARAWAY: --That if we start by the creek and work our way towards and the further we got towards and then we worked towards 17 we're getting more samples, we're getting our information toward the 17 side versus the creek side.

MR.TREBILCOCK: Yeah.

MR.CARAWAY: Okay.

MR.TREBILCOCK: Yeah, I follow you.

And, actually, this out here had no evidence of much of anything. In fact, it looks like they're following the scenario that you described.

They were beginning to fill in or dump things down towards the creek from the top, you know, down.

MR.CARAWAY: Yeah.

MR.TREBILCOCK: You know, like pull up a truck

and dump it down towards in the direction of the creek.

But, it's sort of like that, but I don't think they buried much and if they did, it was just in--because we had the place pretty well peppered--

MR.CARAWAY: Right.

MR.TREBILCOCK: --With the soil locations.

MR.CARAWAY: Thank you.

MR.TREBILCOCK: Sure.

Okay, which brings us to I guess the goal of the Remedial Investigation is to provide some indication of these sites, do they pose a human health hazard?

A human health risk assessment was performed and for these different potential receptors:

Current military personnel.

A current trespasser.

An adult trespasser.

A child trespasser.

A future construction worker.

A future adult resident.

A future child resident.

Now, the Environmental Protection Agency has established guidelines to determine at what level do

carcinogenic or cancer risks, at what level and at what number do they pose a threat.

And, that number is below this number up here.

And, for non-carcinogenic or non-cancerous risk, the number is less than one.

Well, after going through exposure scenarios for the various potential receptors we had, we came up with a potential non-carcinogenic risk to future adult residents and future child residents.

And, those numbers are based on the ingestion of groundwater from the site.

Now, if you remember, we didn't see any indication of organic contaminants in groundwater, but we saw indications of metals, high metal concentrations in the groundwater samples.

So, these two scenarios assume that for the future adult resident and future child resident that groundwater that we collected would be their primary source of potable water, or drinking water.

So, that's how those are and so it's a very conservative number that represents based on what we are doing.

Based on the next slide, which we can come back to this one, but based on the no further remedial action which is the proposed remedy for Site 63, based on this criteria the site will remain in its current state, with no further environmental investigation.

And, also, there will be an aquifer for use restriction placed on the site.

The potential for residents to ingest the groundwater will be eliminated because that will be prohibited from future development.

Are there any other questions about any of the slides or about anything?

MR.SWARTZENBERG: Jim Swartzenberg!

So, you're not proposing that they even go in and clean up--

MR.TREBILCOCK: The surface debris?

MR.SWARTZENBERG: --The surface debris and stuff like that?

MR.TREBILCOCK: No, that's right.

Just leave it there.

MR.SWARTZENBERG: Is it your opinion that that wouldn't do any good?

MR.TREBILCOCK: Well, I think maybe Neal might have a better handle on that.

I think in the past we've sort of just said instead of suggesting, you know, if you say, well, we're going to clean up the site from the aesthetic point of view, you might indicate that, well, you think there might be something there that could cause future contamination.

Right now, we don't think that, you know, concrete or the scrap metal or whatever else is going to cause anything.

But, that's pretty much just a housecleaning thing that I don't know whether Camp Lejeune--

MR.SWARTZENBERG: That's not the problem in other words.

MR.TREBILCOCK: No.

MR.NEAL PAUL: No, that's not the problem.

MS.KATHERINE LANDMAN: It's not a problem of contaminated site.

You might consider it an eyesore--

MR.TREBILCOCK: Yeah.

MS.LANDMAN: --But, you know, at such time as

the Marine Corps wants to do that is something else. They might decide not to remove it.

MR.PAUL: It's a pretty remote area which we don't have any plans to use, or any planned use or any way to go in there.

On the other hand, you take lot 2 or 3, you know, I think you guys got to see that site and all the debris that was at that site. That's a site where we have a lot of debris that's not contributing to contamination of the site, but we are going to remove it because we want to turn it over to a future industrial land use.

So, if there's a land use plan, then yeah we would go in to remove the debris.

But, here, we don't have any planned land use.

MR.MORRIS: This site can be used or can be pointed out to the Marine Corps for their Operation Clean Sweep, which every spring they go through and pick up debris.

We can identify this as one of the sites that they could go ahead and clean up.

MR.PAUL: That's a good point, Tom.

MR.TREBILCOCK: Were there any other questions

about the site itself?

MR.SWARTZENBERG: If they did do the Clean Sweep thing - I don't want to run his over--

MR.TREBILCOCK: Oh, no, no.

MR.SWARTZENBERG: If you did do the Clean Sweep though, from what you said it wouldn't change your figures at all?

MR.TREBILCOCK: No, no.

MR.SWARTZENBERG: It would just make it look a little better.

MR.PAUL: It would make it look a little better.

MR.CARAWAY: Wouldn't it change the figures ten years down the road if that metal continues to deteriorate?

Is the metal above the ground?

MR.TREBILCOCK: Well, it could, but, you know, once again, it would be iron and things that really wouldn't be hazardous to people or to the environment.

I mean, it could become more unsightly, you know, if you have iron oxidizing and you're going to have a stain or whatever on your ground, but not from a hazard standpoint.

MS.TRACEY DeBOW: So, actually what we have at this site was a couple of examples which had semi-volatile organics so that somewhere between 43 and 80 micrograms per millimeter of water or per liter.

And, that would really be, what, parts per million or parts per billion?

MR.TREBILCOCK: Parts per billion.

MS.DeBOW: Parts per billion ratio, so it's more than likely by the time we did anything to remove those organics, they of themselves would dissociate--

MR.TREBILCOCK: Right.

MS.DeBOW: --And, not be worth the price--

MR.TREBILCOCK: Well, it would be very difficult to remediate or to remove it.

MS.DeBOW: Since it's such a small amount.

MR.TREBILCOCK: Yeah.

MS.DeBOW: And, we don't have any real risk of it getting in the creek?

MR.TREBILCOCK: No.

MS.DeBOW: Because I don't see any--

MR.TREBILCOCK: There is a chance for the pesticide, for example. In my opinion, the pesticides are

probably migrating from the site into the sediment in the form of particulates or, you know, tiny pieces absorbed have washed into the creek and are now at the bottom of the creek so when you collect a sediment sample, well, you're going to see pesticides on that particle absorbed.

MS.DeBOW: Yes.

MR.TREBILCOCK: Now it has become a piece of sediment, but it had been just a piece of regular surface water.

MS.DeBOW: But, from what I saw, the pesticides were below State minimum acceptable limits.

MR.TREBILCOCK: Yes.

MS.DeBOW: Yeah, okay.

MR.TREBILCOCK: In fact, this is one of the-- this site is probably at lower levels of pesticides than what we typically see.

And, fewer in number too.

MS.WOOD: And, the same would apply to the naphtha?

MR.TREBILCOCK: Yeah, it had two detections in the soil and they were both under one hundred parts per billion, so, yeah, the same thing would apply to those

also.

MR.PAUL: And, Tom, correct me if I'm wrong, but as a general rule, pesticides are pretty much in the soil, they're not going to be a mobile contaminant.

MR.TREBILCOCK: No, no. They're going to adhere to the soil.

The bottom line really at this site it's going to be controlled through time by the Marine Corps, but right now there's no further remedial action indicated.

MR.BARTMAN: If you look at the regulations, the regulations that are involved here, you know, federal and state governments set of qualitative regulations and then you go through them and we do qualitative assessment and we determine we may have levels in the media that are above our regulatory levels, but we determine that the concentration and the specifics of the contaminant were not posing a human health risk, it won't go anywhere.

MS.DeBOW: We won't go anywhere.

MR.BARTMAN: We won't go in there, exactly.

No exposures, no receptors.

MR.TREBILCOCK: Well, if there aren't any more questions, of if you'd like I'll be around after the

meeting if you want to talk to me about any specifics about the site, but I'll turn it over to Matt.

We're sort of going in backwards order. I talked about Operable Unit 13 and Matt Bartman's going to talk about Operable Unit 12.

MR.BARTMAN: The discussion that I'll be dealing with is Operable Unit 12, Site 3, which is also referred to as the old Creosote Plant.

I know these pictures are difficult to see.

But, the old creosote plant, I'm going to pass around this photo.

This is an aerial photo from 1949.

The old creosote plant is also referred to, like I said, to Operable Unit 12, Site 3, and it's located on Holcomb Boulevard, about a half-mile off of Holcomb Boulevard, the main side of the Base.

It's also referred to as Lot 204 and that's the big chimney, if anyone's going to the site you'll be able to see this site.

This is from the entrance coming from Holcomb Boulevard to the site.

And, this is what we refer to as the northern

area during our investigation.

This area will be referred to as the treatment area, but then there's also the southern portion of the site.

This is the side of the chimney for those of you who were on the site may be familiar with the area.

Just to get everyone in here - see the reason I passed around the aerial photo from 1949, this plant was in operation from 1951 to 1952 and basically the operation of the plant was to treat lumber for the construction of the Base railroad.

And, as you can see in that aerial photo, the Base railroad has not been constructed yet.

There's no indication of subsurface creosote disposal however until we did our investigation.

However, like Site 63, there was a site inspection completed here where subsurface contamination in the form of creosote or PAH, polyaromatic hydrocarbon contamination was indicated, therefore turning it into the remedial investigation site.

Currently, the area is currently used to construct a staging area for the removal of downed trees.

That's all taken place in the northern area of the site from the hurricane that's taken place.

Now you can see the north area is the staging area for all the downed trees.

This is a very quick slide of the layout of the site.

Again we have the northern area where the downed trees are now staged.

This is what we refer to as the treatment area and then the railroad spike or the southern portion of the site.

Mainly all the creosote treating operations were conducted in this area. Again, the reason the chimney is located here.

A dirt track and the railroad spike area which not only comes to about here, but you can see remanants of it where they used the pumps where they appeared to derive water.

Field Investigation Summary.

What Baker Environmental did here, we had a multi-phase field program which was conducted from September 1994 to September 1996.

And, I say multi-phase because unlike Tom's investigation, we found contamination and had to keep delineating our contamination both in groundwater and in soil.

In September of 1994, we came out here and collected approximately 84 surface soil samples and those surface soil samples were analyzed in the field using a kit that's a immunoassay kit, bacterial testing kit, to determine where PAHs - again polyaromatic hydrocarbons which we knew are our known contaminants given our source which was the creosote.

So, we came out here and we had to delineate the site using surface soil samples.

We had to kind of focus our investigation in the area where we think creosote contamination was going to be a problem.

We came out in November of 1994 using the information that we collected in September and were able to focus our surface and subsurface soil investigation in a specific area where we knew we had contamination.

As a follow-up, we had to come back out in June of '95 to take additional samples because we were able to

locate through subsurface soil contamination in '94 that we had additional problems.

This is again the treatment area and this is just to give you an indication of how many samples we collected out here.

The pink being the ENSYS investigation.

The green being the different phases of the investigation we did in November of '94 and June of '95.

And, this does not even show the northern area where we had several soil samples taken and also the railroad spike area.

The multi-phase investigation also included groundwater investigation.

In December of 1994 we put in seven shallow and one intermediate monitoring well.

And, then due to the contamination we found there, we came back out and had to put in eight. We sampled the eight existing shallow monitoring wells.

We installed five new shallow monitoring wells.

One intermediate well and one deep well.

The shallow wells being roughly 25 to 30 feet.

Intermediate depth, 40 to 60 feet below ground

surface.

And, the deep well 140 feet below ground surface.

MS.WOOD: How many deep wells?

I'm sorry, I got confused reading this.

The deep wells were going in to Castle Hayne?

MR.BARTMAN: Yeah.

MS.WOOD: But not the intermediate?

MR.BARTMAN: No. The intermediate would be upper portion of Castle Hayne.

MS.WOOD: Right, okay.

MR.BARTMAN: And, the reason we had to do this intermediate and deep wells in multi-phase so we could go out there, we investigate the shallow for particle contamination.

We go down vertically to see if the intermediates are contaminated. If the intermediates are contaminated, we focus in and keep going deeper until we can find the particle extent of the contamination.

In order to confirm our findings from the June of 1995 investigation, we came back out in September and did another full round of sampling to confirm the presence

or absence of contamination.

That was again by September of 1995.

Through the findings of September of 1995, we kind of have suspected misleading information between July of '95 and September of '95 and wanted to confirm that and that was in the deep well.

We only put in one deep well.

So, we had contamination in '95. We did see the contamination in September of '95 and we came back out in January of '96 and sampled that water and confirmed that there was an absence of contamination deep.

Had we found contamination, we would've had to go deeper.

But, given the nature of the contaminants which again the majority of them are PAHs, again the contaminants don't travel or migrate very readily in soil.

Usually you don't see them in the groundwater because they don't have a high mobility, or high leachability into the groundwater.

But, unfortunately, given the levels of creosote in our soil, we saw them in groundwater.

This figure indicates the areas where our

groundwater monitoring wells were placed.

I apologize for the figures.

Again, the pink indicates the shallow monitoring wells.

The blue are the intermediate wells.

And, the purple is the deep well.

You see we have wells on the north area, the treatment area and the southern portions of the site.

Due to contamination we had here in this intermediate well, in the second phase, we decided to put in this intermediate well.

And, then go back and due to the contamination put in this deep well.

What we found in all these phases of investigations was that a majority of our contamination both in soil and in groundwater, as we suspected but had to confirm, was all of our contamination was in what we were thinking would be the treatment area.

The chimney area used to heat the creosote.

If you don't know what creosote is, I could explain it, but I think everybody knows what it is.

But, at first, it's a very tarry material that

needs to be cut using fuel related materials.

They heat it and then they treat the lumber.

So, we could tell that this was all where the treatment took place.

And, we found in the northern area and in the southern portion of the area we found isolated detections of creosote contamination, apart from the drippings but no known disposal.

So, we did have contamination in other portions of the site, but concentrated mainly again in this treatment area.

Like Tom's site, we had to go through the human health risks.

Fortunately, for us we had limited receptors.

We only had the future residential child, future residential adult.

The third, military personnel that could be exposed.

We think at that site in the future construction workers.

As you can see, the risks obviously to the future residential child and would be the residential

adult, both carcinogenic and non-carcinogenic risks.

And, this is from the ingestion of groundwater.

However, shallow groundwater in this area is not even used as a potable water supply.

However, we still have to consider it as a potential exposure to future adult, to future residents.

Given that we don't have a risk to subsurface soils, which the construction worker is the only exposed receptor to subsurface soil.

However, we knew that that was part of our readings and our findings or detections, we knew that subsurface soil was where our contamination was. However, there's no risk.

That puts us in a Catch-22 because we have contamination but it's not causing risk, so what do you do with it?

So, we knew that our sources was the soil. Our groundwater was causing our contamination and causing our risks.

So, we had to remove the source and that's what we plan on doing as part of our proposed remedial action.

We went through five different alternatives.

The alternatives have been selected for treatability studies at this phase, Number 5, which was the source removal and biological treatment.

For those of you who did visit Lot 203, saw two water treatment plants, for the pump and treat plant, there's a biocell constructed there, we'll be doing a similar biological treatment.

This biological treatment will be for PAH contamination where that one at Lot 203 is for POL waste.

We'll be doing a treatability study hopefully beginning in March to test out whether this technology will be feasible to remediate this contamination.

We'll be excavating for subsurface soil contamination down to roughly nine feet, where we know we have known contamination.

Placing it into the biocell, mixing it with several different types of bugs, nutrients, having it aerated, water applied to it to see if the bugs, the nutrients are able to degrade or decompose this contamination.

As for groundwater, we know we have contamination in our groundwater.

We know it exceeds regulatory levels.

We know that it poses a potential risk.

However, we feel that the source is really the soil, so therefore we remove the soil.

All we want to do here is monitor the groundwater.

Apparently, it's not posing a risk.

So, what we want to do is, again, monitor the groundwater, see if once we remove the source what happens to the concentrations in the groundwater?

Do they remain the same?

Do they increase?

Is there another source out there?

So, this monitoring will be conducted over a 30 year period, probably on a semi-annual basis and will be up for a five year review by the regulators.

So, that's roughly what's going to be happening at Site 3.

MS.WOOD: It says here the clinical phase, this is because it is impractical to remediate the saturated soil, which earlier it states is detectable for PAH contamination because of water--[inaudible].

So, it is saturated soil below the water table.

MR.BARTMAN: Uh-huh.

MS.GOOD: Okay, and it is the PAHs are not going to migrate.

MR.BARTMAN: No, they don't migrate readily into the water.

Think of it this way, a piece of tar, take a beaker and put some sand in it, drop the piece of tar into that and that's what you have.

MS.GOOD: Okay.

And, they aren't going to break down into any other--

MR.BARTMAN: They don't biodegrade. They're not like chlorinated solvents.

MS.GOOD: All right.

MR.BARTMAN: No biodegradability. They don't migrate readily even in presoils or groundwater.

That's why we don't see--we had this known source inside this, I guess when I said take a beaker of sand or a fish tank. Throw a piece of asphalt in there and you have the water flowing back and forth, you don't see the migration.

And, that's exactly what's happened in this case.

MS.GOOD: Thank you.

MR.JOE BARNETT: You said the risk looks like is higher for children, or I didn't understand that statistic.

It looked like it was less for children.

MR.BARTMAN: Can't remember.

MS.DeBOW: It was ten to the minus three.

MR.BARTMAN: Ten to the minus three.

It's actually less for children, higher for an adult.

MR.BARNETT: Does that mean for the adult, because it started as a child and there's--

MR.BARTMAN: Basically--

MR.BARNETT: --A cumulative effect over your lifetime for carcinogenic effect?

MR.BARTMAN: Exactly.

MR.BARNETT: Okay.

MR.BARTMAN: Also, exposure, the amount ingested is higher for an adult. Exposure period's longer, so you're at a higher risk.

There's usually a flip-flop for non-carcinogenic. Usually the child is at higher risk, the adult is at lower risk.

MR.SWARTZENBERG: What's the land use plan for that area? Is there any?

MR.BARTMAN: Neal!

MR.PAUL: I don't think so. Tom!

MR.MORRIS: As a matter of fact, I was contacted this afternoon about that treatment site.

They want to build a storage area into that particular area.

MR.BARTMAN: Into the southern portion, or into the treatment area?

MR.MORRIS: Into the southern portion of the southern portion.

MR.BARTMAN: Okay.

MR.MORRIS: In other words, it's going to start down the road a bit and extend up into the southern portion of--

MS.WOOD: The railroad spur.

MR.MORRIS: --The railroad spur, right..

MR.BARTMAN: All right.

MR.PAUL: This is high performance storage facility is POLs?

MR.MORRIS: Yes, PLOs.

MR.BARTMAN: It probably wouldn't be a problem from our standpoint if it's that treatment area.

The southern portion, there's a monitoring well on WO6 which I believe is the most downgraded shallow well.

It's going to be one of the wells that we're going to need to monitor because, for some reason, we found contamination of subsurface soil and in that groundwater as well.

So, as far as, I mean, as long as they don't disturb any of the wells that we'll be using for longterm monitoring, we're probably in good shape.

MR.PAUL: Is that an old site or new site?

MR.MORRIS: For?

MR.PAUL: What you talked about.

MR.BARTMAN: That is not the existing site that we've been planning on--

MR.MORRIS: This is the one that NEPA is still doing documentation on.

MR.PAUL: The only problem I see with it, this facility is going to be only a hazardous waste storage facility to the south?

MR.MORRIS: Uh-huh.

MR.PAUL: And, if we have contamination already in the area, I don't know.

MS.LANDMAN: My response to that would be they would need to stay around the area and need to monitor.

MR.PAUL: Yeah, right.

I don't want it to get that the current use facility is contributing to the contamination and then builds into--[inaudible].

MR.MORRIS: I only brought that up because they are still looking in that area as far as doing additional development.

MR.BARTMAN: One of the things during the investigation, I talked about PAHs in the creosote contamination, this is not like water. We kind of knew going in what contaminants we were looking for.

Now, the regulators still require that we did full scan - I say full scan, that means we looked at all the organics, semi-volatile organics, pesticide PCBs and

metals, as well as on select samples of soil and groundwater, we ran full scan.

And, we did find trace levels of detections in fish which was the volatile contaminants and in groundwater and in soil.

So, that's when we go back to this multi-phase groundwater samples to find out where that contamination was coming from.

So, I just want to let everybody know that we didn't just blow off certain chemical parameters. We did examine other things.

The PAHs are driving our risks and our contamination problems, so that's what our remedial effort goes out to.

MR.PAUL: What units will be discussed after our meeting will be more than likely--

MR.BARTMAN: Will be eleven which is Site 7, Tarawa Terrace and also Site 80 which is the Paradise Point Golf Course.

If there's any questions on that now, what's going on with those sites, what's happened at those sites, I can answer those also.

MS.WOOD: I did have a question on 80.

When did the dumping and cleaning of the pesticides stop?

MR.BARTMAN: The time critical for--

MS.GOOD: No, no, when did they start cleaning up. I wasn't sure on that.

MR.BARTMAN: Okay.

MR.DUNN: There was no dumping.

MS.GOOD: Just washing it out, but--

MR.BARTMAN: It's a discharging unit.

MS.GOOD: Right, well, when did they start doing that?

When you all came in, were they doing it, or had it stopped fifteen years ago, or what was the length of time?

MR.BARTMAN: Well, it's still a pesticide mixing area.

MS.GOOD: Oh, they're still, but they're not washing it?

MR.BARTMAN: It's registered pesticides.

MS.GOOD: Okay.

MR.BARTMAN: It's not the DDDs, the DDEs.

Unregulated pesticides are not being used.

MS.GOOD: Yeah, okay.

MR.DUNN: The area is still a maintenance area for the golf course.

They still apply pesticides to the golf course, but they're not the hazardous pesticides that we used in the past.

MS.WOOD: Okay, so the hazardous pesticides were stopped around '78?

MR.DUNN: I believe that's right.

MS.GOOD: DDT?

MR.DUNN: The DDT earlier, but the chlordane I think was in '78.

MR.BARTMAN: Yeah, the Chlordane

MS.LANDMAN: The highest concentration area in that particular site was probably due to a single event spill rather than--I mean, there were other trace areas that may have been due to washout or overspill to poor mixing practices.

But, the one main area was most likely due to one single incident spill in time which, you know, we wouldn't know.

That's what the results appear to be.

MR.BARTMAN: If there's any questions regarding these sites as you read through the documents, the fact sheets of the Proposed Remedial Action Plan, feel free to give Peter or Neal a call, or Tom or I at Baker Environmental and we'll be able to answer questions relating to the site.

[Whereupon the proceedings concluded at 8:50 o'clock p.m.]