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MEETING MINUTES
Restoration Advisory Board
April 18, 2002
South Memphis Senior Citizens Center
1620 Marjorie Street
Memphis, TN

The Restoration Advisory Board (RAB) meeting was held at 6:00 p.m. on April 18, 2002 at the South Memphis Senior Citizens Center located at 1620 Marjorie Street, Memphis, Tennessee.

The attendance list is attached.

MR. DEBACK: I really wanted to wait until we got a quorum on the RAB for the citizen members, but these presentations are going to take some time tonight So, with the RAB's permission, from the members that are here, we'll start the meeting. Can I have a motion to start the meeting?

MS. PETERS. Mr. Chairman, I move that we start the meeting.

MS. YOUNG: Second it.

MR. DEBACK: Thank you.

REVIEW AND APPROVE APRIL AGENDA

REVIEW AND APPROVE FEBRUARY MEETING MINUTES

MR. BALLARD: Mr. Chairman, I move that we hold off approval of the meeting minutes in discussion I move we hold off the approval of the meeting minutes for discussion of them perhaps until after the presentations to give people time to come and get a quorum here for voting.

MR. DEBACK: Do we have a second?

MS. YOUNG: Second.

MR. DEBACK. Okay, we'll make that change to the agenda, and we'll review the meeting minutes and press on with tonight's agenda.

OLD BUSINESS -

COMMUNITY RAB HOUSEKEEPING ISSUES

MR. DEBACK: Housecleaning issues: We would like to encourage all the RAB members to contact Mr. Tyler or Mr Eskridge regarding the current activity under the TAPP (Technical Assistance and Public Participation) contract. I don't have anymore information. That is a RAB function. If you would contact one of those two people if you are interested in what's going on under the TAPP contract.

The TAPP contract, for those of you who don't recall, is the contractor -- third-party contractor who was hired to review whatever documents the RAB wanted to have reviewed.

WELCOME AND INTRODUCTIONS

MR. DEBACK. We also want to encourage not only the RAB members but also our attendance from the community here tonight, which we're glad that you came. We welcome you to these meetings, to take the information from tonight's presentation to your neighbors, friends and people that might be interested in this information. Also, as just a form of housecleaning, we encourage everybody to pick up his or her trash and put it in the trash can at the end of the evening. And if you would, if you are sitting at the table here, if you would just push your chairs up to the table, we would appreciate it.

NEW BUSINESS -

DUNN FIELD REMEDIAL INVESTIGATION - PART II

MR DEBACK. Hopefully everybody has a copy of the slides for our main presentation tonight I apologize for the poor quality of those copies You can't hear? Oh, I'm sorry. Mr. Brayon

MR BRAYON. If a part of this is the CD that you sent us -- is that what you're talking about?

MR. DEBACK Yes, sir.

MR BRAYON. On the Dunn Field reports?

MR. DEBACK Yes, sir.

MR BRAYON. I have a one-year-old PC (personal computer) and an 8100 series of the Dell computer, which is fairly up to date, but it gave me that the Dunn Field Final Report Section on 1 through 18 PDF is not a valid Windows NT application That included appendices too I could not get into the program

MR DEBACK Do you not have Adobe on your computer, the Adobe Acrobat Reader?

MR BALLARD: Adobe Reader?

MR DEBACK Okay, Steve?

MR. OFFNER There are instructions on the inside of the sleeve.

MR BRAYON I read it.

MR OFFNER And then go to the Adobe Website and download the reader

MR BRAYON That's what I've got, Windows NT.

MR DEBACK No There is a -- I think what we can do in the future -- I can assist you with that outside of the meeting and get you a copy of the reader.

MR BRAYON Did everybody get a CD?

MR DEBACK Everybody on the RAB got the CD as far as I know.

MR BRAYON But everybody does not have a computer

MS PETERS If I wanted to look on the computer, I could.

MR BRAYON That's you. What about others?

MS. PETERS. I don't own one

MR. DEBACK: The agreement was that we would furnish the RAB an advance copy of the document in CD format That's how all of the -- that's the only format we have

MR. BRAYON: Okay, I didn't hear "CD format." I heard "document."

MR DEBACK: Well, in a CD-ROM. I cannot furnish the printed -- this is still a draft document, and even amongst the Base Cleanup Team members, we are not using paper copies of this document. For those of you that have the CD-ROM and do not have a computer, we have a computer available in our reading room. There are computers available at the library to read the document. I will -- based on your input tonight, I will ask that my contractors in the future include the Adobe Acrobat on the CD-ROM. It's a small file, and it could then be downloaded directly from the CD-ROM. I do understand it's a valid -- that some people may have computers and not have access to the Internet to download this Acrobat file. So we will make that available. Yes, sir?

MR. OFFNER: John if I can add, on the Record of Decision that was handed out, on that CD, there's a copy of the Reader on that CD I believe

MR. DEBACK: Okay.

MR OFFNER: So you can download that onto your hard drive and use that Adobe there.

MR. DEBACK: We have provided to the RAB one of our earlier CD ROMs - that file, and if you need assistance, by all means, you can call me or call Clyde, and we can work with you to make that available on your own personal computer.

MR. MORRISON: This is Jim Morrison. Steve, correct me if I'm wrong The version of Acrobat Reader that you would need would it be computer specific, whether it was either a MAC or an IBM clone? Is that correct?

MR. OFFNER: I don't know. If you go to -- if you go to WWW Adobe -- we use an Adobe format with our documents right now -- WWW.Adobe.com. It prompts you as to which particular computer type you have, Windows type you have, and I believe it gives you a prompt on which computer you have.

MR. DEBACK: If you have difficulty with your home computer in reading these or loading these up, I would be more than happy to assist anybody on the RAB with any questions they might have from a technical standpoint.

MR. BRAYON. It's just too late for this particular session.

MR. DEBACK: I apologize for that. And, again, we did, in fact, include the Reader on an earlier CD-ROM that was given to the RAB. Okay, if you'll get with me after the meeting or some time next week, Mr. Brayon, I will be more than happy to assist you with that.

For those of you who are -- as I said before, we do have copies of tonight's presentation. For those of you who would like a copy of Dr. Simon's presentation -- we're going to have two presentations tonight -- please let us know at the end of the meeting, and we will mail a copy of Dr. Simon's presentation to you.

We will not have a RAB meeting in May. Our next scheduled RAB meeting is June 20th at this location. We plan on having -- asking Dr. Crellin from ATSDR (Agency for Toxic Substances and Disease Registry) to present his findings on the soil samples that they did off site at that meeting.

MR DEBACK: And, just as a reminder, all the RAB members should have received this CD ROM, and it's Revision I of the Dunn Field Remedial Investigation report. We gave you a presentation in February on the technical data from that report, and tonight we're going to give you a presentation on the Risk Assessment portion.

With that, I'll move right into the presentations. Tonight we're going to have two presentations. The first one is by Dr. Ted Simon. He's been a toxicologist for the EPA (Environmental Protection Agency) for the last nine years and a diplomat of the American Board of Toxicology. He serves as a scientific resource for the Department of Defense and the Department of Energy throughout the Southeastern United States. Dr. Simon is going to give us an overview of the Risk Assessment process.

He provided a similar presentation to this RAB on the Risk Assessment for the Main Installation last year -- excuse me -- in 2000. Again, if anyone would like a copy of Dr. Simon's presentation, let us know at the end of the meeting, and we will be more than happy to mail it to you.

After Dr Simon explains the Risk Assessment process, we'll have Dr Vijaya Mylavarapu -- is that correct? Thank you -- from CH2M Hill. She will discuss the results of the Dunn Field Risk Assessment.
With that, Ted.

DR. SIMON: I think the one message from Mr. DeBack's kind introduction is that my name is more simple. I want to thank you for having me back here. It's nice to see all of you again. I remember -- memory being what it is, I remember some of you from 2000, and others are new to me.
Can everybody hear me? Anybody who can't hear me?
(Brief pause.)

DR. SIMON: I'm going to provide for you tonight some of the same material I talked to you about in 2000. As I said, I think a refresher of this is good. So this is really going to be an introduction to the Risk Assessment.

And, so, the question -- first question we ask -- we want to answer: What is risk? It's really: the likelihood that injury, disease or death, some harmful affect that happens -- how? What's the probability of that happening? And the one thing that we're concerned about is environmental risk, and that's the likelihood of a harmful affect resulting from exposure to an environmental hazard or a potential environmental hazard.

Next one, please. I don't know what possessed me when I wrote this thing to animate it, but the animation on these things always confused me. So, if you will bear with me on this. Probably a great concept is there is no such thing as zero risk. Everything we do bears some risk, and we're

always trying to make judgments in our lives about this risk. I came here this morning on an airplane. Okay, I think enough said about risk. Moving on. Okay, for risk to occur -- and this is an environmental risk -- a hazard must exist. The environmental Risk Assessment has chemicals and exposure must take place. In other words, we've got to have both products. You can see a sort of industrial cartoon to represent a hazard, and these people next to it represent exposure. We're talking about human exposure, and without exposure, a hazard can't pose a risk.

DR. SIMON: Following along from that, different degrees of exposure produce different levels of risk, and you're going to hear later tonight about various land use scenarios. We're going to talk about residential land use scenarios, also called unrestricted land use scenarios. The reason we say that it's unrestricted is because that is the most protected exposure scenario that produces the highest degree of exposure, the most intense degree of exposure that we think of in a Risk Assessment. Then there's an industrial scenario. An industrial worker might have a lower degree of contact. That's a lower level of exposure than residential.

Now, because we assess this risk, we have to come up with some idea of what risk is acceptable, and EPA has done that. We have some target risks that we have chosen as a policy issue, and because of that, there are detectable levels of chemicals that we can leave in the environment without concern for health.

Moving along. So, what is Risk Assessment? Next one. It's a science-based decision tool. It's a method to evaluate these potential harmful affects of chemicals that we find in the environment. It's a systematic approach to develop acceptable cleanup levels. In other words, if we think that there's a chemical present that poses a risk that is above acceptable levels, in other words, an unacceptable risk, how low do those

concentrations or levels of chemicals have to be for the risk to become acceptable? It's a prediction.

This is an important point. It's a prediction of current and potential future conditions. Mr. DeBack said that next RAB meeting you will be hearing from John Crellin of ATSDR. Now, my understanding of the type of assessments that ATSDR does is that these are -- tend to be backwards looking. In other words, they look to see what exposures may have already occurred and how -- and any potential affects from those exposures. And that's not quite the same thing as Risk Assessment, where we look at -- it's really a prediction rather than -- a forward looking piece rather than a backward looking one.

DR. SIMON. So, here's the model that we use for the type of Risk Assessment we do in Superfund. The first step is *hazard identification*. Now, this is where we go out and we collect environmental samples, and we try to find what chemicals, in other words, the hazards that might be present in the environment. And from these, we pass these through a screening step, and we say what chemicals are there that might have potentially adverse effects on people and the environment. That's known as selection of chemicals of potential concern. We say "potential" at this point because we haven't taken these chemicals through Risk Assessment. So we don't know if they are truly of concern or only ones that we should be investigated further.

The second part of the Risk Assessment is the *exposure assessment.* There we try to think of ways in which people could come in contact with these chemicals, ways of thinking about how intense, as I said before, that exposure might be.

The third part is the *toxicity assessment* where we think about what the potential affects of these chemicals are. In other words, if someone comes in contact with some of these chemicals, how much of this chemical does it take for an adverse affect to possibly occur? So we take how people are in contact with chemicals, how much contact is needed for an adverse affect, and we put these together in a risk characterization. This ends up being a number, a numerical quantity, that we can look at our threshold levels, the levels -- the policy choices that EPA has made about acceptable risk, and decide whether or not a cleanup is warranted.

DR. SIMON: Go ahead. This is a slide on *exposure assessment*, and these are generic pathways that apply to any site. They're not necessarily specific to Dunn Field or the Main Installation, but I have this little schematic cartoon type drawing up here just to illustrate some of the ways in which people might contact chemicals.

If we have chemicals in the soil, we may have direct contact, get it on your skin, get a little bit in your mouth or happen to swallow it by accident. We may have rain coming down and carrying this chemical down into the groundwater. We may have wind coming along and causing the chemical to turn into vapor and going off in the air or the wind coming along and blowing away some dust, soil particles, which contain the chemical.

Now, once it's in groundwater, it can be carried along, and it may contact a well point where someone in this little house (Indicating) is using the water for domestic uses, drinking and taking showers with it. The other path that we considered in this Risk Assessment is this vapor entry via into the house. The way we think of that is that the chemical will turn into a vapor down here just right at the water table, percolate up through the soil, and move up through the soil, and then enter the house through cracks and

accumulate in poorly vented spaces so that someone living in this house may get exposure by inhalation, by breathing vapors of this chemical.

I'm done with that. Okay, that was the *exposure assessment*. Now moving along with *toxicity assessment*. We think about two types of chemicals, and these are big words, unfortunately. Carcinogens, these are chemicals that produce cancer, and we talk about the risk as a probability. What was the probability in that lottery that we just had? Who bought tickets?

MS. PETERS: One million dollars.

DR. SIMON: One out of 76 million. Okay, I think everybody has no problem thinking about those sorts of probabilities. This is exactly the same way, the same kind of number we think of as the risk of cancer. For example, we think of that lottery as one in 76 million. The level that EPA has deemed acceptable, there's a range, one end of the range, this number, (Indicating) one in a million. We're concerned about long-term exposure, and you may contact a chemical at one point in your life and then it has affects later on.

Now, the other kind of chemicals we think about are the so-called noncarcinogens that -- chemicals that have adverse affects other than cancer, and these may act over the short term or the long term. We treat these a little bit differently. We believe that for carcinogens there is no threshold. In other words, this is a very health protective procedure. We -- EPA makes the assumption that as little as one molecule of some of these chemicals is sufficient to cause cancer, and we express that as a probability, with one molecule of the chemical, albeit a very small probability, probably even smaller than the chance of winning that lottery.

But for noncarcinogens it's a little bit different. We think that there's a threshold. In other words, there's a level of chemicals to which you can be exposed which will have no harmful affects at all. Then once you get over that level, you will see harmful affects, and we express this kind of risk as a thing called a *hazard index*, whether or not the exposure exceeds this safe level. We think of both kinds of chemicals. We considered -- EPA considers both kinds of chemicals in Risk Assessment, and if someone does a Risk Assessment and we are asked to review it, we make sure that both kinds of chemicals are assessed.

DR. SIMON: So, how do we do the *risk characterization*? This is the last part of the Risk Assessment. Remember, it's a tool designed to estimate the potential risks, not actual risks. So, when we think about those, who might be exposed, say the industrial worker, we call them receptors. And it's important to remember that they are not -- they have qualities that represent some of the qualities of real people, but they are not real people. They are hypothetical people, and we use them -- we assume that they are exposed to a large degree so that we can feel that we are protective if we choose a residential receptor in a risk assessment. We assume that this residential receptor and this hypothetical or imaginary receptor, this receptor that we use for prediction, is exposed to a greater extent than actual people so that we could be sure we're protective.

We use these Risk Assessments to provide information for decision-makers. So, as a Risk Assessor, I work on the Risk Assessment. I hand over the results to the decision-makers, and then they go ahead and I'm out of the process. Why do we do this? So that I -- whatever my wishes are for the outcome of the process do not affect the way I present the risk. So, you want to separate the science from the policy. You want to separate the information from the decision.

Now, as I said before our Risk Assessments are biased towards over estimates at risk. So they tend to be protective. Go ahead.

And as such, EPA has a very high level of confidence that the risks are not under estimated, that if anything, the risks will be over estimated.

DR. SIMON: So, now, where does Risk Assessment fall within the decision process? We call that decision process *risk management*. So here's our little scheme of Risk Assessment, and I have been through all of this part of it. Part of that *risk characterization*, the information that I will give the decision-makers, goes into this process of *risk management*. You end up here with a regulatory decision, but there are control options. In other words, do we have the technology to even get to the problem? There are issues such as technical feasibility, engineering controls, and then there are non-risk analyses, and these are, of course, economic, sociopolitical and legal.

So, all of these different types of information, as well as the science-based *risk characterization*, are brought into the regulatory decision.

Now, I talked about EPA policy in terms of acceptable risk, and you remember my first -- that early slide where there is no such thing as zero risk? Well, so we have to have a policy. If nothing is zero, what's acceptable? EPA says that the lifetime -- excess lifetime cancer risks for a Superfund site has an acceptable range of within one to one hundred in a million. In other words, a range from one in a million to one hundred in a million, and that range is what is considered acceptable. The preference, though, is for the lower end of the range, approaching down towards one in a million.

Now, the *hazard index*, the type of *risk characterization* we would get for chemicals that cause harmful affects other than cancer, and that's within a range of within point one to one. And the way we set up our *hazard index* calculation is that the number one represents meeting the threshold. We have a threshold for harmful affects if the exposure -- if you divide the exposure by the toxicity value, you will end up with a number of one, means you're right at the threshold. So if you're less than one, that means the risk is acceptable from these chemical -- these noncarcinogens. Is that clear to everybody?

DR. SIMON: Okay, moving along. So: Dunn Field versus the Main Installation. We looked at an additional exposure pathway at Dunn Field because there were volatile organic chemicals, VOCs, in groundwater, and we used this vapor entry model. This was that pathway I talked about in one of those earlier slides with the picture, the vapor entry where it percolates up through the soil, and gets into the house and accumulates in poorly vented spaces. Well, that's what this model does. Next slide. So, let's think about -- I've got probably about five or six more slides. We're going to look at the conceptual model of vapor entry. We're going to look at how EPA implemented the model, and we're going to look at once we get the model, how do we think about it.

No, I'm not going to give you the results. That's going to be Dr. Mylavarapu. But I'm going to try to provide you an introduction so that you are better able to think about the results that she gives you.

So, here is our conceptual model of vapor entry. Here is a house, and here is the dissolved chemical in the groundwater (Indicating) or we may even have chemical in the soil, what we call free product. That's not -- that's a chemical at high enough concentrations that it's not -- it's no longer soluble in water. There is soil between -- at a certain depth that that

chemical is in the groundwater just at a certain depth, and there's soil -- various soil piles, and all of these affect how much chemical will move up in the soil.

Then there is entry into the building. Well, how tight is the building? How -- if you have slab construction or basement construction, how tight are those joints? And then you also have the size of the building. You know if you have a larger space, you're going to end up with lower concentrations. And you have the air exchange rate. Leaky buildings tend to vent this stuff to the outside. Tighter buildings -- when I say "tighter," I mean in terms of air, air exchange -- will tend to hold these vapors inside.

DR. SIMON: The next one. So, the vapor entry model is the screening level and advanced, and they're available at this web site. They are constructed with Excel or Lotus spreadsheets, and we set them up as a format. So anyone can download these and use them, and it allows for transparency

Go ahead. In the screening level model we assume there is only one type of soil between the groundwater that has VOCs in it and the hypothetical dwelling. The input values here are generic. In other words, we don't need site-specific data. We make some assumptions about the nature of the soil in that particular region or state, and some of the characteristics of the house, and try get a very protective level with this screening model. We also assume that there are no chemical changes through natural processes. A lot of these chemicals, once they get in the groundwater or under the ground, tend to degrade, and that's not taken into account in this model.

Now, the advanced model, we try to collect site-specific data. One of the parameters is called *soil bulk density*. It allows for up to three different types of soil between the building floor and the top of the contamination.

So you can have -- you can set it up to have a clay -- some clay here, some sand here and some silt here so that you -- the soil has different properties for the way the vapors move up through them. In fact, if you're clever with Excel, you can tweak the spreadsheet to put any number -- you know, you can put in a hundred different soil types. It's unlikely you would find that in a site, but it's -- the spreadsheet is very open. You can do whatever you want with it. And, again, with this model there is no chemical change through natural processes.

DR. SIMON: Go ahead. So, we can get two kinds of output for this model. We can get estimates of risk -- again, risk is a probability -- based on the entry of vapor into the basement and someone coming down. Again, this hypothetical receptor -- breathing this vapor in this poorly ventilated space, and we can also choose a target risk, let's say one in a million, which is the one EPA chose, and estimate the groundwater concentration that corresponded to this target risk.

So I guess where I want to leave you with this is that we can have either groundwater concentrations or estimated risk. If we choose risk, we can get the groundwater concentration. And if we put in let's say a measured groundwater concentration, we can get a risk estimate, and we can do that with the same set of spreadsheets, the same model.

Next one. Okay, for noncarcinogens, again, the same thing. It goes up through the soil, accumulates in the basement, and we can do the same thing. We can get a *hazard quotient* -- if we have a concentration, we can get a *hazard quotient*. If we give it a target *hazard quotient*, the one we would normally choose is one, representing our threshold for a safe level. We can get from that a groundwater concentration that corresponds with that safe level.

I'm going to take just a short break and have a sip of my water. Next one.

MR. TYLER: Point of information. This document that you're outlining, is it in our packet? I'm trying to follow you.

DR. SIMON: It's not in your packet.

MR. TYLER: Okay that's fine.

DR SIMON: How to think about the model: This model will give you a protective estimate of indoor air concentrations from soil and groundwater concentrations, and the way the model was set up is it's likely to overestimate indoor air concentrations.

Now, how would you go about thinking, well, you know, is it right? There is great difficulty in trying to sort of ground truth this. Because indoor air measurements are often confounded by background sources. If you have hobbies -- if you use air fresheners -- we were over at the base today in a meeting, and all the sudden I smelled this chemical smell, and sure enough, what is it? It's the air freshener in the bathroom, and that will, a lot of times, confound these indoor air measurements.

In addition, if you have higher than normal air exchange in a building from a lot of foot traffic, people going in and out of the building, you will dilute the measurement.

The other thing that's really important is adequate soil characterization. You need to go in underneath the building, take a core sample and make sure that you have the soil underneath that structure characterized. Because otherwise, you really don't know those soil characteristics. It would be very difficult to understand how that -- how those vapors might move up through the soil.

The next one and I'm done I think the plan is to hold off questions until Dr. Mylavarapu has finished, and I will turn the pointer over to her and hope the battery doesn't run down while she's talking.

MR. DEBACK: Just a brief introduction. Dr. Vijaya Mylavarapu has a Ph.D. in toxicology She's been a Risk Assessor with CH2M Hill for the last nine years. She also performed the Risk Assessment for the Main Installation in 2000, as many of you will recall. She did a similar briefing for the Main Installation.

DR. MYLAVARAPU: Hi everyone. I was here about the same time Dr. Simon was talking about the Main Installation Risk Assessment the last time. We talked about Risk Assessment. Again, going over the introduction part, Dr. Simon did a very good job. So I will not be going too much into details about the Risk Assessment process itself. However, if you have any questions about the presentation so far, we can talk about it at the end.

Briefly, my presentation overview is going to be a little bit about defining the Risk Assessment process and then general conclusions of the Risk Assessment, summary of the sampling data. This sampling data was presented to you in February of this year by Steve Offner for Dunn Field.

Dunn Field Risk Assessment process itself: I will be briefly touching on that and important points I would like to just point out. Then there are going to be conclusions by each study area, the four study areas that include the Northeast Open Area, Stockpile Area, Disposal Area and Groundwater

And then there is a slide on recommendations that came out of the risk evaluations we have conducted for Dunn Field, and then the next steps at Dunn Field.

Now, I don't need to go into much depth here. This is -- essentially, Risk Assessment is a science-based tool provided to Risk Assessment guidance. It was developed -- in 1989 it came into publication. It had been in practice for a couple of years before that, and then there have been certain developments in the guidance. But the primary process has been in place and is pretty consistently used across different NPL (National Priorities List) sites and other sites as well, and it provides a systematic approach for decision making. It evaluates the human health risk and puts in perspective what is acceptable risk versus unacceptable risk.

DR. MYLAVARAPU: It also identifies areas that require cleanup based on intended future land use for the site. It's also required by EPA for us to evaluate if it's possible for us to achieve unrestricted land use, which we sometimes refer to as residential land use.

I am going to give you all the findings of this risk evaluation we did at Dunn Field first, and then we will go into details. All our findings are: Dunn Field is safe for workers with a few exceptions Exceptions include what we call the Disposal Area, and, you know, as you may all recall, the last presentation already presented to you the different study areas. The Disposal Area is this area here (Indicating). That's the Northeast Open Area, and that's the Stockpile Area. And all three of them together are Dunn Field, and all the groundwater underneath Dunn Field is one unit.

So, in that, the exceptions include in the Disposal Area where there are certain buried drums and buried waste that may cause a physical hazard, and this will be further addressed later on in the Feasibility Study.
And the second exception is the former pistol range area that has some locations with lead concentrations that need to be addressed in order for it to be safe for human health.

I also would like to point out that all the areas of Dunn Field are safe for workers to be working in, because these are specially trained people who will be involved with this work. And the other point I would like to just bring to your attention is buried waste. Because they are within the property boundaries of Dunn Field, they do not pose any concerns to off-site residents.

DR. MYLAVARAPU. The groundwater overall conclusions are there are volatile organic compounds from (unintelligible) presented to you in the past. We refer to them as VOCs. There are VOCs present underneath Dunn Field in groundwater and to the west of Dunn Field in groundwater.

VOCs are the volatile organic compounds detected in the off-site groundwater. We evaluate them as they are moving up through the soil to the surface, and the risk from such a scenario is within the acceptable limits. In other words, it does not present unacceptable risk.

Now, that was the general conclusions of the findings of the investigations we have conducted and the Risk Assessment that was carried out.

Now here is a brief summary of what was presented at the last BCT. We use this data for Risk Assessment evaluations, and there are more than 660 samples collected of soils, sediments, surface water and groundwater, and these samples were analyzed for a list of 300 chemicals. These chemicals include volatile organic compounds, semivolatile organic compounds, pesticides, PCBs (polychlorinated biphenyl) and metals.

Of the samples we have collected, we have done at least 40 percent of the samples for the complete list of those 300 chemicals we were talking about earlier, and that's over and beyond the 20 percent requirement that

EPA has. It just so happened that that's what was needed in order for us to fully characterize Dunn Field.

All of the samples collected from subsurface soils and groundwater were analyzed for volatile organic compounds. So that was the summary of data collected and included for Risk Assessment.

DR. MYLAVARAPU The Risk Assessment process: these are the four steps that Dr. Simon covered, you know, with the circles, and he was explaining all the steps. So I will not belabor on that, except to briefly touch *hazard identification* is a way we come up with a list of chemicals. *Exposure assessment* is where we evaluate different receptors. What we call receptors are the hypothetical people and the scenarios that we come up with. And the *toxicity assessment* is where we identify the potential levels, which affects these chemical exposures, and *risk characterization* puts together the information gathered above. And that's where we come up with risk numbers.

Now, going back to the Dunn Field, there are three study areas. That's the map, and I think I have this on the next slide (Indicating). Groundwater was divided into on-site areas and off-site areas, two study areas. And you probably heard about the exposure unit concept before. Essentially, this is the physical area in which a person or receptor, a hypothetical person, is assumed to move about and come in contact with soils or sediments or the media we are talking about.

And these are the three study areas that we just talked about. Essentially, the areas in this blue line are Dunn Field. This is the Northeast Open Area, and this is the Disposal Area, and this is the Stockpile Area (Indicating). This stockpile no longer exists there, and you all probably know this site better than I do.

This is the groundwater map I think you all have seen. I just wanted to point out the data that was included for my risk evaluation here. These are the wells within this blue line we considered as on site. When I was referring to as on-site groundwater, those are the wells that are within this blue line that you see. So all of these wells are on-site wells, and all these wells are off-site wells (Indicating).

DR. MYLAVARAPU: Another distinction I would like to bring to your attention is for these on-site wells, following the EPA guidance, we have evaluated the center of the plume, the groundwater plume. That's the area that the groundwater contamination detected. We have identified the individual plumes within the on-site, and we took a sample of each plume and did the risk evaluation.

Whereas, for the off-site, we took the individual wells, and each well we calculated a risk number for that. So, in the CD ROM report that you all received it is listed like that. Today, because the list is so long, I will be going to the highest risk well or highest concentrations we found. That well risk I am going to present, but all of the other wells are in that report.

In the Dunn Field Risk Assessment process -- I briefly touched on this in the *hazard identification* portion. We identified that chemicals of potential concern -- this is the one Dr. Simon was talking about. They are called "potential" because these are chemicals that are detected, and we don't know how important they are for human health risk. So that's why we identify them as potentially important. And using that, we calculate a cancer and non-cancer risk, and the exposure evaluation basically it depends on the land use for the particular study area. For Dunn Field most of it is identified by the Memphis Depot Redevelopment Plan as future industrial commercial reuse, except for an area in the Northeast Open Area

identified for open public use. It could be a park. So we called it a recreational scenario. You will see that And that was evaluated here, and all these study areas are evaluated for future on-site residential or the unrestricted land use. This is just for a comparison purpose that it's required by EPA I mentioned that earlier.

DR MYLAVARAPU: Now, continuing with the principles of exposure evaluation, one of the things I would like to point out is that when we did an exposure scenario, when we have multiple receptors or hypothetical persons being exposed, we took the highest possible exposure person to represent other less exposed people.

So if we take a worker that might be doing some outside work all the time, whereas office workers will be outside only occasionally, we included the outside worker as the congregation scenario because we will be protective of the less exposed office worker by that evaluation.

For each exposure scenario we included soil, surface water and sediment risks and hazards in this as we totaled them. The exposure pathways -- sometimes they are referred to as exposure routes -- evaluated for each scenario includes ingestion, inhalation and skin absorption.

On the groundwater, the off-site monitoring wells were evaluated to determine potential off-site risk to hypothetical residents. Now, whenever we have valid data, we assume that somebody is -- you know, a resident is being exposed to that. So that's an (unintelligible). Therefore, it's a hypothetical scenario. However, I'm going to point out that the groundwater is -- shallow aquifer is not being used for drinking.

Exposure pathways evaluated for these off-site residents include the same as the on-site: ingestion, dermal and inhalation pathways. Dr. Simon was

presenting the vapor model for the indoor air assessment. We have done that. It's an EPA model called the Johnson-Ettinger model for the vapor inclusion. We looked at the groundwater as well as the subsurface soils and VOC concentrations as the import to assess the indoor air concentrations.

DR. MYLAVARAPU: And here is another way of looking at the same conceptual type model Dr. Simon presented earlier. It just shows you the different steps involved in assessing the indoor air concentrations. So if you have a soil -- groundwater contamination here, it's called dissolved contamination. It moves through this zone right above the groundwater, which is by soil, and then it goes through the regular soil and enters.

For our risk evaluation, wherever we have groundwater contamination we assume there is a building. So this is a hypothetical risk evaluation in that sense. If a building is present right there and somebody is living in it - what is the possible exposure and risk? We have evaluated by using this model.

Now, that's the general aspects of Risk Assessment as it is applied to Dunn Field. Now I'm going to go into the results by each study area.
Northeast Open Area: We talked about what COPCs are. In soil we have metals and we have dieldrin -- this is a historically used pesticide -- and volatile organic compounds. And in surface water we have the same: dieldrin and polycyclic aromatic hydrocarbons. You have heard a term SVOCs (semivolatile organic compounds) before. This is a group of chemicals that fall under the SVOCs group, and these chemicals are typically present in asphalt that we use for paving the roads, vehicle exhaust emissions. These are very commonly occurring chemicals in the general urban environment.

All the findings from the Northeast Open Area are metals, and dieldrin. These are found bound to the surface soil particles and they are not moving downwards. We know this for a fact because wherever we have surface soils and we collected a subsurface soil sample, we did not find these chemicals in the subsurface soil. Considering the historical nature of the operations that went on, if these chemicals are moving, we would have found them in the subsurface

DR. MYLAVARAPU: Volatile organic compounds detected in soils are at low concentrations in isolated areas within the Northeast Open Area. Those are the general conclusions of the RI.

Now, going on to the risk calculations, you heard Dr. Simon present about exposure scenarios and the acceptable risk range, which is one to one hundred in a million, and acceptable hazard index, anything one or below. So, this is a summary compared to this value, and we have drawn a conclusion based on the acceptable risk criteria.

So, essentially, the Northeast Open Area is safe for workers and recreational receptors. Off-site residents getting any dust blown from the on-site area has a less future on-site resident (sic). So, if the Northeast Open Area is to be used for residential or unrestricted land use, we found it to be safe on the based criteria.

Now, moving on to the Disposal Area, the Remedial Investigation conclusions, also called the COPCs identified, soils have several metals similar to all others. By the way, these metals also are found naturally in all soils: dieldrin, PAHs, those polycyclic aromatic hydrocarbons we were talking about, SVOCs, something other than PAHs, and VOCs. In sediments we have arsenic, PAHs, and dieldrin. In surface water we have PAHs and other metals.

Now, looking at the risk -- yes, I'm sorry. I skipped over that. The Remedial Investigation conclusions include: VOCs are present in the Disposal Area. I think at the last RAB it was covered at length by Mr. Offner there They found potentially buried waste in this area. This is the Disposal Area we are talking about (Indicating), and they found them to be in isolated areas. It's not like the entire area, but isolated locations. Those disposal actions that occurred in the past have contributed to groundwater contamination by migration of this buried waste to the shallow groundwater.

DR MYLAVARAPU: Deep ground aquifer is the Memphis Sand Aquifer. We have not found any contamination. It is clean and safe.

Buried containers with the VOCs and waste material may continue to present a hazard of reaching concerns. I will be talking about this again.

Now, the Disposal Area: Considering the acceptable risk criteria, (unintelligible) that, but it shows that the indoor air exposure for the on-site areas where they found high soil contamination and high groundwater contamination presents an acceptable risk for workers, as well as on-site residents. You can't build an office or a house on top of where we found these high concentrations.

Stockpile Area: Again, COPCs and soils have metals, PAHs, and dieldrin. If you notice, these are all pretty common all across because these are base wide, and they are nonspecific operations for the study area.

All the Remedial Investigation conclusions are, what I just said, PAHs might be associated with asphalt, railroad tracks, vehicle exhaust emissions, and the dieldrin might be associated with auto maintenance,

activity like occasional pesticide applications to keep the weeds down or, you know, pests down.

There are a lot of suspicions in -- this is a Stockpile Area that carried aluminum containing ore that was stored here. We suspected metals to be associated with the ore. However, the levels that we found, they are very similar to background levels we found everywhere else. In other words, we did not see any noticeable increase in concentration due to the stockpiling.

DR. MYLAVARAPU: Now, the risk evaluation based on the samples we collected, and the results we have, they are all safe for all the scenarios we evaluated, including the risk if they are residential receptors or the hypothetical people.

Moving on to groundwater: Now, I'm going to say the obvious. Groundwater underneath the shallow aquifer of Dunn Field is affected. However, it's not used for drinking. I also would like to bring to everybody's attention that the off-site residential areas surrounding Dunn Field, they are supplied with the water from the city water, public water supply system. So they are not drinking this water.

Metals and VOCs are detected in the groundwater from past disposal activities. We found really occasional detections of really low level concentrations of dieldrin and heptachlor epoxide. These are chemicals that are not very soluble in water, and the levels that are found will have estimated concentrations, which make us, believe it's from soil particles that are pulled into the groundwater sample.

These are the COPCs. They're a pretty long list, and we have several VOCs and metals in groundwater.

Now, for the on-site area: When we looked at the risk in all the plumes we took the risk from the highest concentration and risk plume, and these are the general conclusions from that risk. We are not using the groundwater for drinking. Nobody is using that groundwater. But in the Risk Assessment, we assume this is a hypothetical scenario. Under that, it's not safe to drink the water, stating the obvious.

DR. MYLAVARAPU: Whereas, the indoor air evaluation, based on the groundwater concentrations we found underneath Dunn Field, when we project and do the indoor air risk evaluation using the Johnson-Ettinger model from EPA, risks are acceptable, within the acceptable limits, for workers as well as residents.

Now, groundwater west of Dunn Field: This is just to bring to everybody's attention and alleviate any concerns you all may have. Drinking water is safe because it's not coming from the local aquifer. It's supplied from off site, and the shallow aquifer is not used for drinking, not within the base, not west of Dunn Field.

Affected groundwater is limited to the shallow aquifer only, and VOCs in shallow groundwater have moved beyond the boundary, and the COPCs are as small or less but similar to what we found on site.

Now, looking at the -- I was mentioning earlier we have several off-site wells monitored. But I have taken the risk conclusions to shorten my presentation from the worst case scenario; we call it, the highest concentration locations. Based on that, the water is not usable for drinking purposes. However, looking at the indoor air for these volatiles moving through the soil into the indoor air, that scenario does not present

unacceptable risk. In other words, it's safe. The same for adults as well as children.

So, based on the risk evaluation that was conducted for Dunn Field, both on site and off site, here are the general recommendations that are given to the site management team to consider: The soil and groundwater presenting unacceptable risk will be addressed as part of the Feasibility Study. That will be the next step. And we have been talking about chemicals of potential concern. These are the chemicals we detected, and we included them for risk evaluation.

DR. MYLAVARAPU: At the end of the risk evaluation, based on those chemicals that are presenting risks above the acceptable criteria, we come up with a list of chemicals, which are now called chemicals of concern. In other words, they are no longer called potential. They are chemicals of concern. That's the term we use. They are referred to as COCs. And COCs for soil is lead in the Northeast Open Area, the former pistol range, and buried waste in the Disposal Area and in this area here (Indicating), and VOCs in groundwater and soil.

Again, soil is in the Disposal Area only for the VOCs, and groundwater also is in this general area -- you have seen the map -- and a little west of Dunn Field.

Now, the next steps for Dunn Field: Complete the draft Dunn Field RI. That will be Revision I. I guess that's the one that went out as a CD. And complete a Feasibility Study that we were talking about, and prepare a final Proposed Plan for public -- and there will be a public comment period associated with that.

And these are approximate dates, proposed dates for now. The final Dunn Field Record of Decision is expected to be signed by TDEC and EPA, and the Remedial Design schedule begins. Projected dates in the presentation are based on current information available and may be subject to change.

That's the end of my presentation, and thank you very much.

MR. DEBACK: Do we have any questions for the presenters? Ms. Mills.

MS. BATES: Betty Mills Bates. I'm wondering why they use so many hypothetical purposes, reasoning, technically. You've got people who live there that they could have tested. You've got -- she said that they did over 300 chemicals, and they only did 40 percent of those, and they only needed half of those. I don't understand that. Why did you only need to do 40 percent of the studies on that? You only needed 20 percent. But you are giving everything out hypothetically. You have got people that live there that you could have asked them -- did soil samples on their ground, in their homes, studied their health. So the Risk Assessment here is hypothetically wrong.

I guess I want to vent, and then I do have that question. Why was everything done hypothetically? This is 2002. That base was closed in 1992. That's ten years. They started assessing the property in 1988, maybe even before. So they didn't even have to do this hypothetical. This is a lot of money wasted on scenarios and animations. Thank you.

MR. DEBACK: Dr. Simon.

DR. SIMON: A Risk Assessment is not a measure of whether or not people's health has been affected. It is a decision tool in order to determine whether an environmental cleanup is needed. It is not in the purview of EPA to assess the health of actual people. That is not what we do in the Superfund. What we are doing is trying to find a very protective case so that we can design cleanups that will be protective of real people. Our job is not to

assess the health of real people. It is to make a decision in terms of cleanup, and that's why we use hypothetical cases.

MS. BATES: Okay, Betty Bates. I'm still trying to understand. You're trying to determine whether or not you need to clean up; right? Am I right?

DR. SIMON: Correct.

MS. BATES: Okay, the base was closed because you do need to clean up. It was placed on the National Priority List because you do need to clean up. So that's -- we have gone beyond do you or do you not. Am I correct?

MR. DEBACK: Excuse me, but base closure was a different type of decision. It was not closed ---

MS. BATES: EPA closed it.

MR. DEBACK: EPA did not close the base.

MS. BATES: Yes, it did. It was closed by EPA, and we were put on the National Priority List and based as a Superfund site.

MR. DEBACK: Okay, the facts are that the base was closed by a commission as part of the base realignment and closure, and the -- this is a decision to determine what we need to do to clean it up properly.

MS. BATES: We need to get beyond scenarios.

MR. DEBACK: And that's the next step.

MS. BATES: To go to real time and real people.

MR. BALLARD. Turpin Ballard. I just want to add that I think, you know, John's correct with respect that EPA did not close the base when it placed it on the National Priority List. In fact, there are any number of active ongoing military facilities that are on the NPL that are not closed and are also undergoing the same process.

MS. BATES: Betty Bates. I worked there for 24 years. We do have official papers that show, as employees, former employees, why that base was closed. That's why I'm not just speaking hypothetically or off the top of my head. I do have technical data to prove that. Thank you.

DR. SIMON: There was a second part of that -- about 40 percent.

MS. BATES: Yes.

DR. SIMON: This 40 percent represents the chemicals for which we did a complete analysis. We have a potential to analyze over 300 different chemicals. When we take the sample of soil out of the ground, we can send that to the laboratory, and we can ask the laboratory to analyze for anywhere from one or none up to those 300 chemicals.

Now, of those 600 plus samples, environmental samples we took, 40 percent of those samples received the full analysis. In other words, we looked for all 300 chemicals, 40 percent of those samples. Normally the agency, my agency, only requires people to do a full scan analysis, in other words, look for those 300 chemicals, in 20 percent of the samples. So, really that 40 percent is over and above.

MS. BATES: Mr. Simon, if that base is so safe, why is the government -- why are they still paying people like you and everybody that's involved with this procedure all the way up until now to prove that it's safe? If it's safe, it was safe back in '88, '89, '90, and '92. Why? I'm trying to understand. If it's so safe, why are we here now with all our presentations? What are we trying to determine or prove at this point? This is a waste of money, right?

DR. SIMON: Well, I wouldn't characterize it as a waste of money, and the level of information that hadn't developed in 1980 is nowhere near the level of information that we have today. Now, you may ---

MS. BATES: Either it's safe or not.

DR. SIMON. You may have been content with making a judgment that the base was safe based on -- with the level -- with the information you had back in 1980, but EPA was not comfortable with that. We felt -- the agency felt it needed more information to make that decision.

MR. BALLARD: Turpin Ballard. Also, I don't think we're characterizing Dunn Field as safe. There are a number of areas, particularly focused on the Disposal Area, which are demonstrated and were presented tonight as not being safe, where risks would be for some future use scenario would be unacceptable. That's the purpose of the Remedial Investigation and Risk Assessment: to

identify what kind of contamination is on the property and migrating from the property and where it's located. Then based on those data, conduct the Risk Assessment to determine what parts of the facility need to be cleaned up and which parts don't need to be cleaned up. Which parts need an active remedy and which parts can be subject to a less strenuous remedy to ensure a protective cleanup?

So I'm not characterizing the Depot as safe, but I certainly am saying that a large portion of it doesn't present unacceptable risks.

MS. BATES: Those are the chemicals of concern. I got that.

MR. DEBACK: And, of course, the purpose of the whole program is to make it safe. Mr. Tyler.

MR. TYLER: Stanley Tyler. Sorry about being late. I had to work. I do actually have a job. My number one concern is we have a lot of information that's been given out here. We've got a lot of material. Why is there not going to be a public meeting on this situation instead of a public comment period? Why don't we have a public meeting, invite the public and present some of this information? Because you're asking the public to comment on documents that the RAB members don't get in a timely manner. And the community needs to know that -- your concerns. So, the only way to do that is to have a public meeting announced and put in the paper to have people come and see and show your concern. Because comment periods are fine for those who are concerned and those that have the time. But sometimes people just want to just walk in and see what's going on, and the public has a right to know what you are doing, when you're doing it and why.

And you're changing names from chemicals of potential to chemicals of concern. Now, that may be a semantic type thing, but potential and concerns are two different things, like being broke and maybe broke. So, you know, the public needs a meeting so we can come together. This is a

whole lot of information that's been given out here tonight, in my small amount of opinion. Thank you.

MR. DEBACK: Your comment is well founded, and, as we have in the past, those documents where we hold a public comment period, we will have a comment meeting It will be in conjunction with the RAB meeting, as we have done in the past. Yes, sir.

MR. TYLER: Point of order. The meeting is supposed to conclude at 7:30 p.m., and I always want to try to do things by the book. I would like to make a motion to extend the meeting at least 18 minutes, because I do have a TAPP Committee presentation, and I want to make sure I get that process in. Also, the public is entitled to their 15 minutes because they came out, and we owe that to them. So I'm going to make a motion to extend the meeting another 15 minutes because I think it's -- what's the exact time? It's 7:27 p.m. So, I would like to extend the meeting another 18 minutes.

MR. DEBACK: Do we have a second to the motion?

MS. BROOKS: Yes. Peggy Brooks. I do second that motion, please.

MR. DEBACK. Mr. Brayon.

MR. BRAYON: This is Brayon. It's just one observation to Mr. DeBack. This should have been sent to the members before the meeting, too. This is the information that -- this includes printed ---

MR. DEBACK: I will apologize up front, and I will also tell you that it's almost -- the ink is almost dripping off the paper. These presentations have been worked on for several weeks. But they also -- today presenters worked with the Base Cleanup Team to make sure that they were giving a presentation that could be understood by the community.

MR. BRAYON: We also received through the mail that you were postponing it one month to do that. Thank you, sir.

MR. DEBACK: That's correct. Yes, ma'am.

MS BROOKS: Thank you. Peggy Brooks And this is just a thought, not necessarily to be answered tonight, but possibly. I did hear, and I do understand that Superfund is not designated for health concerns, personal risk of the

physical bodies of the actual residents living near Dunn Field. But what avenues would be available for making provisions for remedial -- for remediating -- I'm sorry -- for remediating residents' health concerns and in particular children? Because in that neighborhood you'll notice there is Dunn Avenue School, and there are high levels of lead. Lead does affect the learning of children, their ability to learn. But is there an avenue or are there avenues that we could use or strategize to get us some help for the residents?

And then possibly next time I just want a simple statement, just a basic layman's statement, to follow up on the statement -- on the presentation on Page 2. It says, "Buried waste does not affect off-site residents." I appreciate that. I do appreciate it, but just for me, "Buried waste does not affect off-site residents because" . . . and then just finish the sentence for me, sentence or sentences, you know, in laymen's terms but yet with content, layman's content, something that I can understand.

MR. DEBACK: Just very briefly, by its nature, remember that the risk is based on exposure, and by virtue of the fact that it's buried, there is no exposure to the off-site residents of these particular contaminants. The reason that – if you will recall in the slides that we showed that there was some possible risk for workers out there, it depends on the type of work that they're doing. If they're out there digging in that, they need to be following whatever precautions are necessary to protect them from those particular contaminants while they're working with that.

As far as your first question about the health concerns of people in the neighborhood, I would – I would refer you to either the health department or, once again, the ATSDR if it involves a study.

MS BROOKS: Thank you.

MR. DEBACK: Mr Tyler.

MR. TYLER: Before we get to the public comment period, I would like to let the public have their right to speak, and also I would like to make a report of the TAPP Subcommittee so that I can make a recommendation as to what documents we need to review so that I can get that on the record and I can charge Ms. Hess with some duties. She's been very patient with me, and I thank her for that.

PUBLIC COMMENT PERIOD

MR. DEBACK. Okay, this is the public comment period. Okay, do we have any comments from the public? Yes ma'am.

DR. SIMPSON: I don't have a comment. I do have a question, and this would be either for Dr. Simon or Dr. Mylavarapu.

MR. DEBACK: Could you step up to the microphone, please?

DR. SIMPSON: Sure. I should say who I am. I'm Dr. Andrea Simpson. I'm both a resident of the community, or former resident. I teach at the University of Washington in Seattle, and my family still resides in the Depot neighborhood. And this question is for either Dr. Simon or Dr. Mylavarapu.

I want to know how many times your model failed to correctly assess risk or if you know of any times when you failed to specify the model in a way that adequately assessed risk? If I'm making sense: For example, you could make the wrong assumptions at a given site and you find out later that the model was inadequate. Have you ever known EPA or CH2M Hill to encounter that?

DR. SIMON: Sure Yeah, you're probably talking about the stuff that showed up from the Denver Post. Am I right?

DR. SIMPSON: No, I'm not. I have no idea what that is. I'm just asking because I do social science, and we also specify models, and sometimes they're terribly wrong.

DR. SIMON: There are – okay, so the model was ejected?

DR. SIMPSON: Yes.

DR. SIMON: Yeah, George Box, all models are wrong, some are useful?

DR. SIMPSON: Yes. So I'm just asking that. No, but I didn't know anything about the Denver Post. Maybe you can tell me about this.

DR. SIMON: Let's do that off line.

DR. SIMPSON: Okay.

DR. SIMON: This is – yes, this model – is this model correct? There is an effort right now by EPA to try to find situations in which this model can be validated or can be verified. Does the model predict, and predict at what level of accuracy actual concentrations in homes? So, how well can we specify these risks?

Now, because it is a risk model and used for risk decision-making, we are more concerned that it provides a protective estimate of risk, in other words, that it over predicts levels of chemicals in the home. Then it is accurate. I mean, we would like to have it accurate, but we are more – we are more concerned that if it is wrong that it be wrong in the direction of over prediction.

DR. SIMPSON: I understand that, and I understand you built that as the model.

DR. SIMON: No. It is very difficult to find a situation. There are three right now that I know of. And the way – I will cut to the chase right now. The way it's shaping up is that it looks like the model over predicts by a factor of two and a half to three.

DR. SIMPSON: Okay.

DR. SIMON: Now, why is it difficult? Indoor air sampling is fraught with difficulties. There are things that you can't see you get off gas. You know, you may get volatiles that tend to complicate the analysis from this wallboard or carpet, from air fresheners, from chemicals used in people's hobbies. So you have to have an old house that's relatively tight so you don't have much pollution, that no one is living in so they have no – there is no

introduction of chemicals into that house. And everything that would come out of the carpet, everything that would come out of the wall is already gone because the house is old. You understand the difficulty of problem?

DR. SIMPSON: I understand that. So, what you're telling me is that the three cases that you know about the model has really erred in favor of residents. So it's over predicted, but you know of no cases in which you have under predicted the risk?

DR. SIMON: The model has under predicted the risk in one case.

DR. SIMPSON: Okay that's all I want to know.

DR. SIMON. Now, in that case, the input to the model were incorrect.

DR. SIMPSON: Okay.

DR. SIMON: They used a statewide estimate of soil type, and instead of using a well that was underneath a structure that they were interested in measuring, they took a well – several wells some distance away and interpolated the concentration – what would be the concentration underneath that house, and there was no – remember how I talked about how important it was to characterize the soil?

DR. SIMPSON: Yes, yes.

DR. SIMON: There was no soil characterization in that study.

DR. SIMPSON: Okay, and can you tell me what case that was? I'm just curious.

DR. SIMON: Yeah that was the CDOT.

DR. SIMPSON: I'm sorry?

DR. SIMON: Colorado DOT (Department of Transportation).

DR. SIMPSON: Okay, thank you.

MR DEBACK: Any other questions? Does that answer you?

DR. SIMPSON: It does. Thank you so much.

MR. DEBACK: And, Ms. Brooks, I think earlier you alluded to a concern about lead.

MS. BROOKS: Yes.

MR DEBACK: The area that we have lead – high concentrations of lead, as you would expect, if you're familiar with the site, is the former firing range up there

in the Northeast Open Area. We have plans to do an early removal of that lead from that soil, and hopefully we will see some of that activity starting late this summer or early next fall. That is – we are concerned about the levels of lead in the soil.

Once again, though, that lead in the soil now does not present a risk because the field is restricted. We don't allow children out there to play in that area, and, as you know, we maintain a fence and keep it secure.

Any other questions from the public? (Brief pause)

BASE REALIGNMENT AND CLOSURE CLEANUP TEAM UPDATE

MR. DEBACK: With that, I think we've just – I think we overlooked our good friend from the Tennessee Department of Environment and Conservation. He will just give us a very brief overview of the BRAC (Base Realignment and Closure) Cleanup Team.

MR. MORRISON: This is going to be just an overview of what we – the items that we went over today at the BCT meeting. One of the items we were talking about were some of the findings that came out of the long-term operational areas. It was a fleet of wells that were put into – as part of what was called a Preremedial Design Work Plan, and a report is soon to be coming out on that. It's essentially what we're trying to do with (unintelligible) is to optimize how we're going to address the groundwork contamination, where to locate – what would be the best locations to put in the enhanced bioremediation treatments that we're working on for the groundwater.

We also discussed the PCP (Pentachlorophenol) dip vat. That was part of the LUCAP study that we were doing. We —as a matter of fact, we went out for a site visit today to see just exactly what was the size of this PCP dip vat. The PCP dip vat is located, essentially, almost in the very center

MR. DEBACK: No. That's not a RAB document.

MR. MORRISON: Okay. And, also, the Dunn Field Remedial Investigation Feasibility Study came out April 9th. So, that's even sooner. That was essentially it for the BCT.

RAB COMMENT PERIOD

MR DEBACK. Any RAB comments? Mr Tyler?

TAPP SUBCOMMITTEE REPORT

MR. TYLER: Sorry about extending the meeting, but I do have a TAPP Subcommittee final meeting to report. The TAPP Subcommittee met two weeks ago, and we met at the repository at the health department. We picked out certain documents that we would like Ms. Hess to review, and I would like to make those documents known so we can get the Board to approve them, and we can get them over to Ms. Hess.

The first document would be the Dunn Field Remedial Investigation. What I would like to know is always basic questions, and you might – we might have to get a copy of the historical record. And number one is what was dumped? How much was dumped? When was it dumped? What is the long-term/short-term affects of the citizens around there and why? Because we're sitting here talking about chemicals of concern, chemicals of potential concern. So you have to know what, why and how from the beginning to the historical record. I would like for her to establish all of those facts.

And number two: The remediation study -- we're sitting here dealing with a lot of technical information that John Q. Public doesn't want to pick up a big document and say – you want to know what are those particular issues,

and then you want to know whether this part is safe, this part is safe, this part is unsafe and this – then you've got to answer what was put on there in the beginning So we have to review.

MR. TYLER: I ran across another document. It had a CD. It started in '45, and then it – over a period of years it shows why they bury stuff, put stuff, left stuff that maybe they didn't want to tell you or didn't want you to know. I don't know. So I'm going to have her review this document, and it's a CD ROM, and I want her to answer those five questions about the CD ROM so we can pick this document up, and you can say in 1945 it was flat land. In 1950, somebody took soil up in the northwest corner, southwest corner, and why, what for or when. "You have a job. Do what you're told. If you don't like it, take it off the base." That was told to certain people back in the bad old days. So we want to be sure that the historical reflects that. Me and Clyde have had very, very - many talks about the historical record. So we definitely want that reviewed so we can find out is it as accurate as he and I have said.

And the last document we might want to look at: In 1994 they had a Focused Feasibility Study for Dunn Field. I guess what they said is they looked at it in '94 and found all this stuff. We're looking at it so she can review the what, why and how this document – then compare it to this document, then we will know how we got from here to there.

You know, I know it's a lot of documents to be reviewed. She only has $25,000 dollars. So I'm going to have to put them in one, two, three, four. Number one would be the Remediation Investigation. Number two would be the historical record so we can see where we come from and where we're going. And number three would be the (inaudible) record with the disk. Because this just determines methodology. They didn't just fly over and somebody used their naked eye and said, "Well, it looks good to me

because it's inside the minutes" (inaudible). You know, it could have been done that way. You just don't know.

MR. TYLER. So, you need to know who to use, what to use and why to use. The methodology is important, and that's why she needs to review this disk and the (inaudible). And the last document would be the 1994 Feasibility Study. Because in '94 there was a Feasibility Study to get to this point, and we want it said, "Well, we started in '94. Where are we in 2002?" What she's going to attempt to do is put these documents, I guess, in lay terms, where it's working eight to ten hours a days and you pick this big old book and say, "My God, what is this? Or what does this mean?" She will attempt with $25,000 dollars, to put these documents in easy-to-read form, hopefully.

Sorry it took so long. I would like to thank Mr. Eskridge, Ms. Bradshaw and anybody else who has input in it. We did meet, and we did go to the repository, and we did take our time to try to go over certain documents to review. So that's what took so long.

I'm aware that she has a July date to get this done. So I would hope --- since we don't have a chairman, I would like to make a motion that we allow her to review these documents with the chairman's blessing. Because the next meeting is two months away. If we don't do it tonight, we won't get it done.

MR. BRAYON: Second the motion.

MR. TYLER: Thank you sir.

MR. DEBACK: Any other comments? (Brief pause.) With that, we'll adjourn. Thank you.

(Whereupon, at approximately 7:45 p.m., the meeting was adjourned.)

NEXT MEETING: THURSDAY JUNE 20, 2002

6:00 P.M.

SOUTH MEMPHIS SENIOR CITIZENS CENTER

1620 MARJORIE STREET

MEMPHS, TENNESSEE

Attendance List

Restoration Advisory Board Members

Mr. John DeBack	Interim Facility Co-Chair
Mr. Clyde Hunt	Remedial Program Manager
Ms. Elizabeth Young	Citizen Representative
Mr Turpin Ballard	Environmental Protection Agency
Mr. Jim Morrison	Tennessee Department of Environment and Conservation
Ms. Johnnie Mae Peters	Citizen Representative
Mr. Eugene Brayon	Citizen Representative
Mr. Stanley Tyler	Citizen Representative
Mr. Jim Covington	Depot Redevelopment Corporation (DRC)
Ms. Peggy Brooks	Citizen Representative
Ms. Betty Bates	Citizen Representative
Mr. Torrence Myers	Memphis Light, Gas, and Water Company
Ms. Tanja Mitchell	Citizen Representative
Mr. Norm Lachapelle	Memphis/Shelby County Health Department
Mr. Reginald Eskridge	Citizen Representative
Mr. Turpin Ballard	Environmental Protection Agency (EPA)

Others in Attendance

Mr. Steve Offner	Program Manager -- CH2M Hill
Dr. Vijaya Mylavarapu	CH2M Hill
Dr. Ted Simon	CH2M Hill
Dr. Andrea Simpson	Citizen Representative
Mr. Virgil Jansen	Jacobs Engineering
Ms. S. Armstrong	Citizen Representative
Mr. Scott Bradley	USAESCH
Mr. Rick Bowlus	USACHPPM
Mr. Benjamin Moore	ATSDR
Ms. Peggy DuBray	U.S. Corps of Engineers – Arnold
Mr. John Rollyson	U. S. Corps of Engineers – Arnold
Mr. Greg Parker	MSCHD
Ms. Hattie Chism	Citizen Representative
Ms. Joy Farwell	Citizen Representative
Ms. Alma Black Moore	Frontline Communications
Mr. Trevor S. Diggins	Frontline Communications
Ms. Adrienne Hill	Frontline Communications

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