BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

VOLUME II

IN THE MATTER OF:	)	
	)	
TIERED APPROACH TO CORRECTIVE	)	R97-012
ACTION OBJECTIVES,	)	(Rulemaking)
35 ILL. ADM. CODE 742	)	
(Pursuant to P.A. 89-431)	)	

The following is a transcript of a rulemaking hearing held in the above-entitled matter, taken stenographically by LISA H. BREITER, CSR, RPR, CRR, a notary public within and for the County of DuPage and State of Illinois, before CHUCK FEINEN, Hearing Officer, at the Thompson Center, 100 West Randolph Street, Room 9-040, Chicago, Cook County, Illinois, on the 3rd day of December 1996 commencing at 9:00 o'clock a.m.

A P P E A R A N C E S:

HEARING TAKEN BEFORE:

ILLINOIS POLLUTION CONTROL BOARD
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601
(312) 814-4925
BY: MR. CHUCK FEININ,
HEARING OFFICER.

ILLINOIS POLLUTION CONTROL BOARD MEMBERS PRESENT:

Mr. Chuck Feinen
Ms. Marili McFawn
Mr. Joseph Yi
Mr. Hiten Soni

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY MEMBERS PRESENT:

Mr. Gary P. King
Ms. Kimberly A. Robinson
Mr. John Sherril
Dr. Thomas Hornshaw
Ms. Tracey E. Virgin
Mr. James Patrick O'Brien
Mr. H. Mark Wight
Mr. Douglas Clay
Mr. Ken Liss
Mr. Larry Eastep
Ms. Vicky L. VonLanken

OTHER AUDIENCE MEMBERS WERE PRESENT AT THE HEARING BUT NOT LISTED ON THIS APPEARANCE PAGE.

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E X H I B I T S:

(None marked by reporter.)

HEARING OFFICER FEINEN: Let's go back on the record. Good morning. My name is Chuck Feinen. I'll be filling in for Kevin Desharnais today. This is R97-12, the Tiered Approach to Collective Action Objectives, 35 Ill. App. Code 742. This is the second day of hearings. We're in the middle of questioning the agency as a panel group.

A few things I want to point out is that the last exhibit entered in was Exhibit 8 so if there's any more exhibits entered by the agency, you can start off with Exhibit No. 9. With the multitude of questions and timing, we're going to be trying to move a little bit quicker today. I'll not be giving 10-minute breaks. We'll cut the breaks down. We'll also try to cut down the lunchtime so we can get through as much as possible.

Even with those constraints today, I think the agency wanted to go back to the questions from, I don't know if it was Mr. Watson's questions, but it was the remediation advisor's questions concerning 742.305, if the agency is prepared to start out with their

responses, and we'll skip over to I believe section 742.400 is where we left off.

Also, remember that we're going to be doing the prefiled questions first, and then if there's follow-up, please state your name and the follow-up question, and at the end of the day, if time permitting, we'll allow questions from people who didn't prefile. With that, I'll turn it over to Kim Robinson.

MS. MC FAWN: Before you turn it over, let me just mention so that the audience knows that the two attending board members, that is, Dr. Flemal and Kathleen Hennessey are down in Springfield today for their confirmation hearings. That's why they're not with us today. And Anand Rao is ill so Mr. Soni has joined us here. He has been here throughout. He will serve as our technical advisor during this hearing. Thank you.

I apologize. Mr. Feinen just told me that Kathleen Hennessey is not an assigned board member. I know she's been tracking it very closely so I had coupled her with Ron Flemal and Joe Yi and myself. So I'm sure she won't mind

that we've given her added responsibilities in her first two months here at the board.

MS. ROBINSON: Good morning. This is Kimberly Robinson, and we would like to go through some follow-up this morning based on carry-over issues yesterday, and I think Mr. King is going to go ahead and proceed with those.

MR. KING: Okay, we had -- as I counted matters at the end of yesterday, we really had four issues left over to really talk about at the start of today. The first issue was an item raised by Pat Sharkey as part of follow-up questions. A couple of times we deferred those. I'd like to respond to that. Then the other three issues came up right at the end of the day so I'd kind of like to go back to those.

The first issue -- and I kind of would like make sure we have direct questions as far as prefiled questions -- was a follow-up issue, but I think this is probably good paraphrase, Pat -- you can correct me, if you think I'm wrong -- but I think the issue you were driving at was whether you can have an NFR letter that encompasses groundwater for a contaminant of

concern without sampling the groundwater.

MS. SHARKEY: Right.

MR. KING: And the answer to that question is yes, that is possible, and it's possible if you've addressed the groundwater with the methodology that did not require groundwater sampling.

For example, you could under Tier 3 there would be a potential way of doing that there depending on the methodology it shows. The second issue that came up was --

MS. SHARKEY: Excuse me, should we wait to ask any further questions on that then?

HEARING OFFICER FEINEN: If it's particular to that response, why don't you ask him now so we know?

MS. SHARKEY: Gary, are you saying that one would need to go to a Tier 3 level of evaluation in order to be able to avoid groundwater sampling, that the only way you can avoid groundwater sampling is by going through a Tier 3 evaluation?

MR. KING: I'm not sure that's necessarily true. That to me was the clearest

example of the situation.

MS. SHARKEY: Could you elaborate a little bit on what one would be looking at under Tier 3, how that evaluation would go forward?

MR. KING: It really is an issue of excluding that groundwater pathway using, for instance, in subpart C, there's a very specific way of excluding groundwater pathway, but that, however, is not the only methodology used to exclude the pathway, and we have seen that done in other ways and have approved that in other ways.

MS. SHARKEY: If a Tier 3 evaluation were otherwise not involved, in other words, if somebody were able to demonstrate their soil values were Tier 1, fell under the Tier 1 tables, could they look to the Tier 3 factors that are considered under Tier 3 that might pertain to eliminating -- or excuse me -- excluding the groundwater routes and provide an analysis without going through a full Tier 3 analysis or evaluation?

MR. KING: That's a way to do it, that's correct.

MS. SHARKEY: Thank you.

MR. KING: The second issue --

MR. RIESER: Let me just follow up, if I may.

Isn't it true that based on the scope of the investigation to document through the investigation that you had no impact of groundwater based on site features, for example, surface spill that you can document that you have reached the bottom of groundwater is not impacted or other site investigatory means of documenting the groundwater has not been impacted.

In that situation, you would not be -- you would still get an NFR letter that would have the same -- it would be the same statutory NFR letter, and it would have the same impact according to 742.105(a), but you would not have specifically excluded a groundwater pathway through the use of either the pathway exclusion or the tiered process. You would have documented that that was not of concern by virtue of your investigation, isn't that also possible?

MR. KING: I guess I was using the reference to Tier 3. I think that's true, what you're saying. However, I think we would probably

kind of -- if we were going to pigeonhole it into something, we would call that a Tier 3 type of situation.

MR. RIESER: Tier 3 in the sense that it's a decision not to be made by the project manager which involves other features, but not necessarily in the sense of a full-blown risk assessment or specific pathway exclusions, those things are provided for in subpart I?

MR. KING: I think that's correct, yes.

MS. SHARKEY: Maybe it would be helpful if you would point us to the provisions under the Tier 3 evaluation that might be relevant for doing an equivalent type of demonstration without doing a full Tier 3.

HEARING OFFICER FEINEN: Well, Gary, please remember that you have to speak up for the court reporter to hear. Again if you're asking follow-up questions, please state your name beforehand so the court reporter can make sure she gets the name.

MR. KING: There's a section, section 742.925, which discusses exposure routes.

MS. SHARKEY: So what one would do is

look at under 925, exposure routes, and the factors that one would need to address then to make this demonstration would be those in (a) through (f)?

MR. KING: That's correct.

MS. SHARKEY: Thank you. I have no more questions.

MR. RIESER: I'm sorry to get back to this, but isn't it true that if your investigation documented by virtue of site conditions that you had no groundwater impact, you would not be looking at your three factors, you would just be documenting that through your investigation, and then it's the same NFR letter -- it's the same NFR letter no matter what the site is?

MR. KING: I think that's true. What we try to provide in (a) through (f) is really a description of a set of factors which I think would be the kind of things you would be looking at as part of the site investigation.

MS. SHARKEY: If I could -- this is Pat Sharkey . If I could make one more clarifying point, my question I think in part went to the question of whether one could basically get a

clean bill of health for a piece of property where there had been some sport of spill and the spill was remediated, and in terms of soil, soil removal, soil documentation of the soil meeting Tier 1, for example, and not be required to go to a groundwater monitoring in order to also get an NFR that said, and furthermore, you've achieved Tier 1 standards for groundwater.

MR. HORNSHAW: I guess I'm a little confused because in the scenario you two are painting, you would never even be issued groundwater cleanup objectives if you documented that it never got there. The project manager wouldn't even be giving groundwater objectives.

MS. SHARKEY: Yeah, I understand that an objective is designed to say, you've got a problem here and you need to remediate to this objective. As I understand it, with Tier 1, we also have established a table of groundwater objectives, do we not?

MR. HORNSHAW: Correct, but they're not always given in every project either.

MS. SHARKEY: I guess I'm wondering if one could elect to request that you could actually

get a full NFR letter that covered both soil and groundwater in that sort of scenario so that any cloud that might exist over the property or any questions about whether or not there had been groundwater impact would be resolved with that letter.

MR. KING: I thought that I answered that first. That was the first question that was asked, and I answered that.

MS. SHARKEY: So the impact, that is the impact. Thank you.

MR. KING: Okay, the second issue. The second issue related to a discussion with regards to Section 305, subsection (c) through (e) and how that fit into the context of the board's RCRA regulations as they appear in part 721.

It's pretty clear that we used part 721 as source material to develop (c) through (e), but we're not trying to say in any way that just because you are beyond the limits of (c) through (e) that that makes those materials a RCRA hazardous waste as it's defined in part 721. Whether materials are a hazardous waste will be determined in accordance with the definitions in

part 721.

The third issue again was discussing section 305, subsection (c) through (e), and the issue there was how do you determine if 305(c) through (3) have been met. Clearly if there's sampling done that shows that sampling is done in an acceptable way, that's going to resolve the matter, but whether you have to sample is going to depend on the specifics of what's being addressed relative to the site and the contamination at hand.

I'll give you just a couple of examples. For instance, if you were addressing a recent release of a No. 6 fuel oil and you didn't have any other information with regards to the site relative to any of these other factors, then there would be really no reason to sample for (c) through (e) because those just wouldn't be factors and simply be enough to indicate what was being addressed.

On the other hand, if you were looking at an acid spill and addressing that as the contaminants of concern, then you would have to look at, for instance, pH, and you may have to

look at some of the other items there because that could be affecting mobility of other contaminants. The fourth issue --

MR. WATSON: I've got a follow-up on that. For the record, my name is John Watson from Gardner, Carton & Douglas.

Does that mean with respect to doing the sampling in sub (e) that only unless you have identified the applicable metals that are subject to that standard in your site characterization that you would have to go through and do that analysis?

MR. KING: I wasn't really speaking to that as an example. What I was trying to say is that you really have to look at the specific site conditions and contaminants you would be looking at and then make a decision based on that. I was just giving out a couple of examples without speaking to other types of examples.

MR. WATSON: Would that be a fair conclusion based on what you said as it relates to sub (e)?

MR. KING: I guess we would have to sit down and go through and look at it. I can't

answer that right as I sit here.

MR. WATSON: I guess it seems to be a fundamental question as it relates to your response and specifically this provision in that if we're testing samples for contaminants of concern and determining risks based on the identification of contaminants of concern, the question is must there be a connection between those in order to impose an obligation to do the RCRA sampling that is being proposed here?

And I guess it seemed that your first answer was, yeah, you had to have that connection, and then as it relates to (e), though, I'm not so sure that that's the requirement.

MR. KING: Well, you have to, as I said initially, if you sample, that certainly should resolve things, but whether you have to sample is going to depend on the specifics of what's being addressed. We gave some examples yesterday about in certain situations, you could address those in a narrative fashion depending on the context that you're dealing with.

MS. SHARKEY: I guess I'm still -- I understand what Mr. King is saying, I believe,

with regard to (c) through (e), and I appreciate the clarification, but I continue to think the language is not clear on this, and so someone's going to have to go back and read this transcript in order to, you know, understand this, and I think particularly there's a problem with (c) and (d) which may not exist in (e).

(E) reads, "Any soil which contains contaminants concerning the following list." So one is at least directed to specific contaminants of concern, and you know, if you have those contaminants of concern, this is telling you you need to test for toxicity. With regard to (c) and (d), however, it appears that any time you have soil which contains any contaminant of concern, you have a duty to determine whether or not it exhibits a characteristic of reactivity under (c) and a duty to determine the pH under (d), and it seems to me the language there simply is not clear and does not state what the agency has told us they believe it means, and we would be happy to propose some language in our testimony and bring it to the agency's attention to discuss at the next hearing on this.

MR. KING: I guess that's a comment for us to consider.

HEARING OFFICER FEINEN: That really wasn't a question. Is there any more follow-up from the previous day? Does that conclude the questions then on 305? Can we move to 400?

MR. KING: The fourth issue that carried over from yesterday was really discussing whether there was a conflict between section -- I believe the reference was to section 310, and 225(d) would also apply to whether there was a conflict between 315 and 225(d), in particular (d)(1).

Our statement yesterday was that there was not a conflict, and that continues to be what we believe the case to be. We had intended the sampling alternative in 225(d)(1) as a method to provide some useful guidance as to -- an alternate approach to achieving compliance where you were averaging concentrations as opposed to requiring every single discrete sample to meet the compliance number.

What I want to try to do is articulate the difference or why there's this three foot and this one foot and, you know,

hopefully, if we can make some sense out of that and make it understandable, then I think we should continue with having (d)(1) in there. If we can't do it to have it make sense, then our inclination would be just to delete all of (d)(1) and then move the numbers up in the section.

What we're talking about -- I tried to just illustrate on the easel at the other side of the room what we're talking about. If you look at section 315 -- I have to jump back and forth here a little bit -- but 315(c)(1) is saying that in essence you can have contaminants of concern at levels in excess of the Tier 1 numbers below that three-foot level, and that would be acceptable as long as the Tier 1 objectives for that route are met above that number, okay.

Now, what we're saying in (d)(1), 225 (d)(1) is that -- in contrast is that within that top foot, there's an additional element of flexibility. Between one foot and three foot, each discrete sample would have to meet those Tier 1 numbers for that pathway. In that top one foot, you could average the discrete samples in a way that the average met the Tier 1 number for that

pathway.

So that the combination of the two would assure that within that top three feet, you were meeting the Tier 1 numbers within the first foot based on an averaging concept, within the next two feet, based on the discrete samples. So that's the way that was intended to work, and we may suggest a little bit of clarifying language to make that a little more clear, but we continue to think there's not a conflict between the two.

HEARING OFFICER FEINEN: Just so the record is a little clearer, when Mr. King was referring to top foot, he is referring between the land surface and a foot down and the same way when he's referring to three feet down, land surface, three feet down.

MR. KING: That's correct.

MR. WATSON: I've got a couple of questions. What's the justification for not allowing compositing or averaging below the first foot of soil?

MR. KING: We came up with that one-foot number or this alternative using a USEPA study which used averaging within that one foot. They

did not extend the averaging below one foot because there was a concern relative to you could have a diluting impact lower than one foot which would tend to dilute the impact in that upper one foot, and that would be the most critical exposure area. If anybody wants to say any additional items.

MR. WATSON: What was the specific study that you relied on? Is that incorporated in any of your testimony?

MR. HORNSHAW: I believe it's in the USEPA's soil screening guidance, either the user guide or the technical background document, both of which are incorporated by reference.

MR. WATSON: The second question that I would have relating to this in Section 225, there is no limitation in (d) in terms of how deep that sampling has to go in the soil to determine compliance with remediation objectives for inhalation, ingestion and exposure routes, and my question is shouldn't there be a limitation in terms of the sampling depth?

MR. KING: Well, (d)(1) was intended to be an example methodology. Otherwise, we would be

in a situation where there wouldn't be anything really very specific within (d) to indicate what would be an acceptable methodology.

We could eliminate (d)(1), and somebody could come back and propose that as an alternative, and we would probably accept it, but we wanted to have something, a fairly explicit example in the regulations to give guidance as to what would be at least one acceptable approach.

MR. WATSON: I guess my concern is that I think the testimony perhaps from Mr. Sherril yesterday was that you would have to meet the remediation objective at any location in the soil, whether it was down one foot, three feet or fifteen feet, and certainly at some point as you get to depth, issues of inhalation and ingestion are eliminated in terms of exposure pathways, and I guess I'm looking for some guidance as to what would be the depth at which you would be required to sample to determine compliance with your remediation objective for these exposure pathways?

MR. SHERRIL: One thing, we've added a little clarification. Everyone should have a copy

of the errata sheet. Under 742.225(d)(4), and it's on page 2 of the errata, we do have, which kind of further clarifies (d).

MR. WATSON: What does that tell me, that my limit is one foot?

MR. SHERRIL: Yes, you're still within that contamination within the top foot.

MR. WATSON: So whether I'm -- does (d)(4) say that so whether I'm averaging or compositing or just comparing discrete samples for inhalation and soil ingestion, all I need to do is sample to a depth of one foot?

MR. SHERRIL: It's not saying that. It's saying we're only looking at that contamination within the top foot. There again it's a separate issue for contaminants located below one foot.

MR. KING: It seems to me that you're really trying to inject another pathway exclusion option. I mean, if the contaminants are at 10 feet, you know, they would have to meet the numbers relative to ingestion, inhalation, migration of groundwater.

They have to be concerned with all

those numbers under Tier 1, but that was why the pathway exclusion number of three foot was put into subpart C as a way so that you could get away from that where the case was appropriate.

MR. WATSON: I'm just saying in terms of a situation where you could exclude your groundwater and then all you'd have to worry about was soil ingestion, inhalation, and I'm going ahead and doing my sampling, what you're saying is that if I have contamination at 20 feet that exceeds the soil and inhalation number whether or not -- I mean, obviously there's no chance that that's going to be a legitimate exposure pathway, but under Tier 1, what you're saying is I could not get out of the requirement to move beyond the Tier 1 numbers and do a Tier 2 or a Tier 3 analysis, is that right?

MR. KING: No, I don't think that's what we were saying. You still could go into a different analysis. It's just you would not have complied with the Tier 1 numbers. So you'd have to use a different methodology. Again, for example, that's why subpart C is there and has that number in there to provide a real expressway

out of that kind of situation.

MS. SHARKEY: Could I ask some clarifying questions?

MR. WATSON: Sure.

MS. SHARKEY: The three feet that we're talking about comes out of subpart C and the exclusion of an exposure route?

MR. KING: That's correct.

MS. SHARKEY: If one is not interested in excluding an exposure route but is simply attempting to determine whether or not you meet the Tier 1 values for inhalation and soil ingestion, does one need to go beyond the one foot?

MR. SHERRIL: Yes.

MR. KING: Yes.

MS. SHARKEY: And what in here tells me I need to go beyond the one foot?

MR. KING: Well, I guess we're really jumping ahead to the discussion of Tier 1, and I think we'll get to that later on when we talk about how Tier 1 functions.

MS. SHARKEY: We're kind of in --

MR. KING: The notion of Tier 1 is

you've got a set of criteria, you've got a set of contaminants of concern, and that if you meet the most conservative number out of those three pathways, then you've met the Tier 1 objectives. If you don't meet it for one of those pathways, then you go on to use a different methodology.

MS. SHARKEY: So you're telling me later when we get to Tier 1, there's language in there that tells you how far you need to go for the soil inhalation and ingestion pathway, or do you look to the individual program requirement for the depth of sampling which is what we talked about yesterday in response to some of my questions?

MR. KING: There's no discussion of depth. You have to meet it across the site.

MS. SHARKEY: Right. So what Mr. Watson said then, in other words, if soil ingestion -- what's odd to me, is that frankly, it's counter-intuitive, it seems to me, to say that one can composite for inhalation and ingestion in the first foot where one expects the greatest exposure, in fact, but you can't composite for these apparently at a greater depth.

MR. SHERRIL: Let me interject there.

If you would look at (f), 742.225(f), a person may propose an alternative method for determining compliance with the mediation objectives. So it is not accurate to say that you cannot composite and average below one foot.

MS. SHARKEY: You could propose that?

MR. SHERRIL: You could propose it. Under (d)(1), we have put in a methodology for doing that for just within the top one foot.

MS. SHARKEY: Again what was the justification for only allowing compositing within the top foot?

MR. SHERRIL: I just said you did not.

MS. SHARKEY: The rule specifically says that. I know you can propose an alternative, but the rule is saying within one foot.

MR. SHERRIL: As Tom Hornshaw mentioned, incorporation by reference the SSL document.

MS. MC FAWN: Why don't you explain that theory to her. One of you said it fairly succinctly a few minutes ago.

MR. HORNSHAW: The reason USEPA considers averaging and compositing appropriate because the soil screening guidance is designed to

protect somebody living on a site for 30 years, and you don't expect a person to be in the same position over that whole 30 years. They're going to be more or less around the whole site. So they consider averaging to be an appropriate way of predicting the risk to that person over the 30 years that they're assumed to be there, and so in that case, they want to look at what's the average amount of contamination a person's going to be exposed to, and they say that averaging and compositing is appropriate for that upper surface layer, and they specify depth of no more than one foot so that you don't get a dilution effect at some sites where all the contamination is at the surface.

If you sample at one, two and three feet, you would be diluting out the true risk by averaging in basically non-detects at two and three feet. It's kind of a compromise that USEPA came to in order to make sure that a person is protected adequately over that 30-year period. The reason that we think that the cleanup objectives should be met at all points below that is because there's no guarantee that contamination

at depth is going to remain at depth over those 30 years. It could be brought up to the surface, and with subsequent earth moving activities, construction, whatever, and present risks that weren't really accommodated by having the averaging done in the original setting of the cleanup numbers.

MS. SHARKEY: It's not clear to me why if the rationale for compositing at the surface exists why it doesn't exist for compositing at lower levels, albeit at the same depth of your composites possibly. The risk, it seems to me, to somebody is if you hit a hot spot in a grab sample, a composite in fact dilutes your sample, no?

MR. O'BRIEN: You could propose an alternative sampling for sub-sampling. It becomes very difficult to subscribe to a particular sampling strategy in rulemaking that would fit every site.

So we have provided as an example a prescriptive methodology for compositing at the surface, and it would be more appropriate for people to propose a specific compositing strategy

to the agency for sampling at greater depth.

MS. SHARKEY: Going back to the exclusion pathway then, the exclusion of three feet -- and I think Mr. King or somebody yesterday said there was an assumption of gardening and other type of work, one could be digging down to a depth of approximately three feet. If you can exclude it three feet on that basis, why would you need to go deeper than three feet in any instance for demonstrating your compliance with these exposure pathways?

MR. SHERRIL: The exclusions under subpart C required institutional control and possibly an engineered barrier. What we're looking under 742.225 does not address at that point institutional controls.

We run into many instances, as Tom said, where subsurface soils 10, 15 feet below the surface end up being on the surface of the site, and unless we have an institutional control to control that, that would pose an unacceptable risk.

MS. SHARKEY: What kind of institutional control would that be or engineered barrier? Are

we talking, for example, paving, asphalt?

MR. SHERRIL: It depends on the site. I've seen some that says that the soil are to remain in place as approved under the NFR determination. Sometimes it is paving. It depends on what's being proposed.

MS. SHARKEY: We talked about, for example, that there may be geology and reasons that one can say we're comfortable that this contamination is not going to reach groundwater when we've got a spill situation, surface spill. We're comfortable it's not going to reach groundwater.

Now we're saying that you can't use that same sort of information -- maybe I should ask this question. Could you use that same sort of information to demonstrate that this pathway is never going to be -- this risk exposure pathway is never going to be realistic and avoid this notion of having to put in a -- either test very down to an extraordinary depth or put in an engineered barrier? Do you understand?

MR. SHERRIL: You sounded like you made a statement.

MS. SHARKEY: No, it was a question.

MR. SHERRIL: What's the question? You had about -- I didn't understand it.

MS. SHARKEY: I was trying to make an analogy to our discussion earlier about the groundwater, and I'm asking why doesn't that reasoning apply here as well, that one may be able to in fact make a demonstration that these exposure pathways are just not realistic at a depth of 10 feet or 20 feet?

MR. KING: I guess I keep coming back to I thought we did -- that's what subpart C is. It's laying out a set of procedures for how you're making that demonstration. I don't know what else we can say on the point, to tell you the truth.

MR. WATSON: Are you saying that under Tier 3 then, you could also make that -- if you don't satisfy subpart C, that you could also make that showing under a Tier 3 analysis at 740.925?

MR. KING: Right.

MS. SHARKEY: Thank you. That's what I was asking.

MR. WATSON: I've got one more follow-up question, and that is, why is not compositing and

averaging appropriate for subpart C?

MR. KING: Well, I think we just said you could. In the top foot you could use that.

MR. WATSON: So in looking at excluding pathways --

MS. MC FAWN: You're talking about subpart C of 325, right?

MR. WATSON: I'm talking about subpart C, exposure route evaluations in general. This does not have a provision in here that talks about whether or not you can average and composite your samples, and in fact, the language, especially when you get into the RCRA test, is any soil which contains contaminants of concern shall not exhibit the specific characteristics.

The question is can you use compositing and averaging to do the testing that is required to exclude a pathway under subpart C?

MR. KING: You're kind of going across the board here, and you're not focusing this on a specific section so I don't know if you're talking about 305 or 310 or 315 or 320 or what.

MR. WATSON: With respect to section 305.

MR. KING: Cannot average or composite relative to those.

MR. WATSON: Why not?

MR. KING: Because, I mean, the rules don't provide for it. Are you asking theoretically what's our philosophy behind that?

MR. WATSON: Right, right.

MR. KING: Why don't you answer that, John.

MR. O'BRIEN: The reason why is that this is -- the contaminant source of free product determination in 305 is intended to screen out conditions which would violate the models upon which the Tier 1 and Tier 2 objectives are based, and those need to apply everywhere in order for the models to work everywhere.

So it wouldn't be appropriate to average or composite. In addition pH is a logarithmic function, and it's not -- it would be inappropriate to average, to do an arithmatic average on pH.

MR. WATSON: What about (c) and (e)?

MR. SHERRIL: Also, this gets back to why -- this was asked a couple of times yesterday

-- why we have this contaminant source and free product determination, and there again it's to ensure there's no migration of mobile free product, ensure there's no potential unacceptable health risks remain when there is a violation to either an engineered barrier, institutional control by unintentional or accidental exposure to the contamination left in place.

In my testimony, I go on to say that T.A.C.O. does not address acute hazards and you could have potential acute hazards by violating some of these assumptions here, and we also want to provide sealing controls to limit the level of exposure from high contaminant concentrations from multiple organics. Those provide some of the reasoning for that.

HEARING OFFICER FEINEN: More follow-up? Are we done with 305? Move to 400. I think the first question under 742.400, go to the Site Remediation Advisory Committee, Mr. Rieser.

MR. RIESER: Thank you. This is question 1, what are the bases for appendix A, table F? I think it's still table F even after the new, revised table. Yes, continues to be

appendix A, table F. Are these derived from Exhibit B of Dr. Hornshaw's testimony?

MR. HORNSHAW: Yes.

MR. RIESER: Are there other bases besides what you've attached as Exhibit B to your testimony, Dr. Hornshaw?

MR. HORNSHAW: No.

MR. RIESER: Are there other agency compilations of background levels for organics or PNAs in soil or for any substances in groundwater?

MR. HORNSHAW: No, there are not.

MR. RIESER: Is there any compilation that the agency is aware of or is willing to accept, say, regarding PNAs in the soil in the Chicago area representing disposal areas from the Chicago Fire?

MR. HORNSHAW: There is a report. We have it back in my office, and I can't remember the name of it. We could look at that, I guess.

MR. RIESER: You haven't ruled that out as a possible additional source for --

MR. HORNSHAW: That's something we would have to talk about. It hasn't been part of our

discussions up to this point.

MR. RIESER: Thank you.

HEARING OFFICER FEINEN: Any follow-up questions? Moving on to section 742.405, Mayer, Brown, Ms. Sharkey.

MS. SHARKEY: My first question was how many samples are required for volatile organics? I think we've answered this in another context. Is the answer the same, that you looked to the program?

MR. HORNSHAW: Basically you look to the distribution of the data set, and then you choose a statistically valid method which is most appropriate for that data set, propose it to the agency for review, and then we will accept or deny.

MS. SHARKEY: Is that stated in here somewhere?

MR. HORNSHAW: Yes, 405(b)(2), statistically valid approach for determining area background concentrations appropriate for the characteristics of the data set and approved by the agency. The same language applies for groundwater as well.

MS. SHARKEY: Is that provision (b)(2) applicable only to volatile organics or is that applicable to volatile organics, other organics?

MR. HORNSHAW: It's for all chemicals other than pH.

MS. SHARKEY: In that provision, is there a standard? The term "appropriate" for the characteristics of the data set, how would one determine that?

MR. HORNSHAW: A good statistics textbook.

MS. SHARKEY: Are any such methods included in the documents that are incorporated by reference?

MR. HORNSHAW: I've cited two in my testimony.

MS. SHARKEY: But they're not included in the incorporation by reference?

MR. HORNSHAW: No.

MS. SHARKEY: Could you just tell us for the record which those two were from your previous testimony or your pre-submitted testimony.

MR. HORNSHAW: The first one is Statistical Analysis of Groundwater Monitoring

Data at RCRA Facilities, Interim Final Guidance, USEPA Office of Solid Waste, and the publication number is EPA/530-SW-89-026, April 1989. That's on page 5 of my testimony.

And the second one is Statistical Training Course for Groundwater Monitoring Data Analysis, USEPA Office of Solid Waste and Emergency Response, publication No. EPA/530-R-93-003, 1992. I might add for the record that a book that we rely on fairly routinely in our office which is pretty much a standard statistical textbook is called Statistical Methods for Environmental Pollution Monitoring. The principal author is Richard O. -- O as in middle name, not O as in Irish name -- O. Gilbert, G-I-L-B-E-R-T, published by VanNostrand Reinhold Company of New York published in 1987.

MS. SHARKEY: Thank you. My second question is does historical contamination that is ubiquitous on a particular site qualify as area background? I think we talked about this the other day, and I don't know that we need to go over it again at this point unless you have anything to add in response to that.

MR. HORNSHAW: No.

MR. WATSON: Would you consider lead contamination found adjacent to highways to be area background?

MR. HORNSHAW: For the most part, yes. It has to be considered in the context of the whole site that needs remediation. If the site that needs remediation is mainly in a residential neighborhood, that probably would not be the best background sample to take. Site specific, but generally, yes.

MS. SHARKEY: The third one is maybe something of a nit, but does the agency object to modifying the term "releases" in subsection (a)(4) with the words "known or suspected" as in the subsection above?

MR. KING: We had not put that -- actually it's just a glitch here. The definition of area background doesn't use the term known or suspected in there so we really should have not had known or suspected in (a)(3).

HEARING OFFICER FEINEN: Is that something maybe in the errata sheet, too, that should be taken care of or changes?

MR. KING: Right.

MS. SHARKEY: What would the meaning be then in areas of releases if we're not dealing with known or suspected releases?

MR. KING: Well, I guess I'm not totally sure on that. As I was pointing out before, I think we just -- (4) was intended to be consistent with the language that was taken from the statute.

MS. SHARKEY: I'm sorry, and where was that taken from the statute?

MR. KING: Definition of area background, just used -- in that definition just uses the term releases and doesn't say known or suspected.

MS. SHARKEY: And are you of the view that that language is required, that you parallel that language here?

MR. KING: I don't know that it's mandated in this context, but we try to parallel the language whenever we can, and so that's what we did here.

MS. SHARKEY: I guess what I'm wondering is if this isn't an instance where some amplification of the language wouldn't help

everybody understand what it means, and I guess I'd like to ask my question again.

If you take out known or suspected, if we don't mean known or suspected releases, what do we mean? How is one to know what areas one is to be sampling? Are you saying is that implied anyway, or is something else meant?

MR. KING: It certainly would include known or suspected. Whether it includes other things, I guess that's kind of a statutory term. We're going to keep coming back to that.

MS. SHARKEY: You're saying you can't tell me what else it means other than known or suspected, though?

HEARING OFFICER FEINEN: Mr. Rieser, you have a follow-up?

MR. RIESER: Yeah, if I can. The statute, when it talks about releases with respect to area background, it talks about it has to be something not primarily, not solely the release -- not solely from releases at the site, but these sections 3 and 4, don't they refer to samples that you have to take in areas around the site to document what's background and what is and what is

not, isn't that correct?

MR. HORNSHAW: That is correct.

MR. RIESER: Wouldn't you have to start out from an idea of what was known or suspected release in order to identify a background to show that it was not part of the known or suspected release?

MR. HORNSHAW: Yes.

MR. RIESER: So you really do need to talk about known or suspected releases in the context of the sampling because that's what you're looking for, that's what you're looking to distinguish, isn't that correct?

MR. HORNSHAW: That's correct.

MS. SHARKEY: Thank you. I think my question No. 4, there's a typo in it, but I also think we've already answered it. It was, are area background objectives only available for inorganics, or may such objectives also be established for organics. And I think what I meant there volatile inorganics, particularly using a statistically valid approach?

MR. HORNSHAW: Volatile inorganics?

MS. SHARKEY: Volatile organics. I

think we've already answered that, haven't we?

MR. HORNSHAW: Correct, we have.

MS. SHARKEY: Thank you very much.

MS. MC FAWN: I have a follow-up question. Based on Mr. Rieser's question to you, does that mean that the agency will or will not be changing the use of known or suspected releases in its 742.405?

MR. KING: We committed to deal with this in the errata sheet. We have to go back and look at this a little further and address it at that point.

MS. MC FAWN: Basically you're going to consider his question and comment, but you're not necessarily going to add this to an errata sheet?

MR. KING: Right. We haven't made a decision on that at this point.

HEARING OFFICER FEINEN: Any other follow-up questions on 405? Moving on to section 742.410, Site Remediation Advisory Committee, Mr. Rieser.

MR. RIESER: What will be the basis for approving alternate approaches for determining area background concentrations as allowed under

subsection (b)(2)?

MR. HORNSHAW: As I answered Ms. Sharkey's question, that's specific to the distribution and specific to the site.

MR. RIESER: To do that, one would use the standard statistical text, some of which you referenced in your testimony?

MR. HORNSHAW: Correct.

MR. RIESER: And the presentation based on the site information and the standard statistical methodology?

MR. HORNSHAW: That's correct.

HEARING OFFICER FEINEN: It appears we might have to speak up a little louder now. There's applauding, it's hard to hear up here even. Yeah, I heard it.

MR. RIESER: Thank you.

HEARING OFFICER FEINEN: Any follow-up, Mr. Watson?

MR. WATSON: I believe my question 5 has been addressed in an errata sheet already.

HEARING OFFICER FEINEN: Does that also mean that the question 6 and 7 following aren't directed towards section 410?

MR. WATSON: I'm sorry?

MR. HORNSHAW: Don't the questions pertain to --

MR. WATSON: Question 7 relates to the Tier 1 section.

HEARING OFFICER FEINEN: I guess we're moving on to 415. Section 415, Site Remediation Advisory Committee, Mr. Rieser.

MR. RIESER: What information is the agency requesting under subsections (a)(1) and (2) of 415?

MR. HORNSHAW: In subsection (a)(1) what we're interested in is if a party alleges contamination from off site, the party should indicate where the contamination comes from, and in (2) again if there's an allegation that contamination is coming from off site, that should be substantiated by the physical chemical properties which would give an indication of why the chemicals migrated from the off-site source.

MR. RIESER: So the answer to the first part of my question 2, which is, does the request for information under subsections (a)(1) and (2) assume that the substance proposed for evaluation

occurs on site as a result of off-site contamination is yes?

MR. HORNSHAW: Yes.

MR. RIESER: Which makes the second part of my question, which is what if the material is naturally occurring?

MR. HORNSHAW: That can be demonstrated with a proper sampling or the use of the agency background document for inorganics.

MR. RIESER: Would the agency consider some language changes to (a) to add in some consideration for naturally occurring so that it allows for that -- these references for those circumstances when it is suspected that the material is from an off-site contamination source that you address 1 and 2, and if it's suspected that the site is -- that the material evaluating is a natural background, that you do what you've just suggested?

MR. KING: Were you going to propose some language?

MR. RIESER: I can. I can.

MR. KING: That would be helpful for us.

MR. RIESER: Okay, thank you. With

respect to my question 3, it says, with respect to the reference on page 8 of Dr. Hornshaw's testimony to section 58.5(b)(2) of the act, would the establishment of remedial objectives based on area background require an institutional control if the value exceeds the Tier 1 residential value?

MR. HORNSHAW: Yes.

MR. RIESER: Would that still be true if it was demonstrated that the substance is naturally occurring?

MR. HORNSHAW: Yes.

MR. RIESER: Would that still be true if the property already has residential uses?

MR. HORNSHAW: I think we're not clear on how that works. I think the language in the act itself is a little ambiguous. I'm not sure.

MR. RIESER: And you have taken the language from that act and proposed to add it as part of your errata at 742.415(d)?

MR. HORNSHAW: Yes.

MR. RIESER: Doesn't the language of the act, which says that there has to be -- which prohibits the property may not be converted to

residential use unless such remediation objective -- unless essentially a residential remediation objective is achieved, doesn't that imply that no such restriction would be necessary if it's already residential use property?

MR. HORNSHAW: I think it could be read that way.

MR. RIESER: Is that the agency's position?

MR. KING: It is our position it could be read that way.

(Laughter.)

MR. RIESER: Is it the agency's position that that's how the board should interpret it if a case should come before it concerning this issue?

MR. KING: It's just not real clear. I mean, that's why we've really struggled with it. It clearly says what's supposed to happen when there is a conversion. One can draw implications as to what happens if there's not a conversion, but it doesn't really say anything, and I guess we'd kind of like to reserve the opportunity to judge that on a case-by-case basis, you know, depending on what the context of the situation

is. You may very well be right, but there may be other extenuating site circumstances that could compel a different result.

MR. RIESER: So even if it was naturally occurring background levels above the Tier 1 values, the property is already being used as residential property, there are circumstances in which the agency would say that there have to be restrictions on the use -- further restrictions on the use of that property?

MR. KING: Again you have to really consider what the factual context might be relative to what's physically happening at the property. You might have a continuing residential use, but for instance, you might be going from an apartment type use to single family homes.

The construction activities might end up bringing a lot of that naturally occurring contamination to the surface now in a way that there's more direct exposure and end up having a problem relative to that.

MR. RIESER: Of course, in that instance it wouldn't be naturally occurring contamination, it would just be naturally occurring soil,

correct?

MR. HORNSHAW: Correct.

MR. RIESER: Thank you.

HEARING OFFICER FEINEN: Was that a "correct" answer to that, Mr. Rieser's last question?

MR. HORNSHAW: Correct.

MR. RIESER: Thank you. Follow-up?

MS. SHARKEY: Yeah, I guess I'd like to follow up on Mr. Rieser's second question. I believe he was asking whether or not the section appears to assume that the background is a result of off-site contamination reaching the property and what if it was naturally occurring, and I think the answer was it may seem to assume that, and maybe some language will be put together to make it clear, that it's intended to be broader than that.

I'd like to ask a slightly different question. What about contamination that has not reached the property from off site and is not naturally occurring but is of a nature that is widespread in an area and may be the result of very long ago operations on a broader area? This

is similar to the situation I was describing yesterday with the old coal gasification sites, and I guess I'm trying to determine, you know, how that scenario would or would not fit in here on the same rationale that we're using.

MS. ROBINSON: I think we discussed this at length yesterday, and I feel that it's been asked and answered. If the board would like us to continue on this line again, we can.

MS. SHARKEY: We've talked about a rationale. I guess what we're getting at here is the rationale for area background being used is that it may have been generated on a neighboring site and let's say blown over or somehow been placed on this property. In that instance you could apparently identify it as background and not have to remediate it on the site. So that risk level would remain on that site.

However, if you had a broader area that is now subdivided into a number of parcels and that contamination exists throughout that area, was not caused by the remediation applicant, the material could not be left on site. What is the difference in the risk that's remaining on

site? I think that's how the agency addressed it yesterday, and I'm trying to figure out in this context what is the difference in the risk that remains on site?

MS. MC FAWN: If I can just interject here. We did discuss this at length yesterday. I'm not sure that we ever --

MS. SHARKEY: We didn't resolve it.

MS. MC FAWN: I was going to say I don't know that we resolved it. It seems to me you are talking about liability and risk and questions of if you're not liable, should you really have to address the risk and possibly clean it up if there is a risk and that kind of thing, and I don't know. Unless the agency is prepared since yesterday to maybe give us a resolution on this issue, I think we should defer it until the January hearings.

MR. KING: I don't believe we have anything additional to add on this issue from what we said yesterday.

MS. MC FAWN: Your question is on the record. I think the agency has an understanding of where you're going with this, as do maybe the

other participants on the board, and it probably needs some more thought, and certainly we would welcome your comments on it as well as your questions, on resolution of this quandary.

MS. SHARKEY: I just wanted to be clear. I really have a question. I'm not just trying to make this point again, but I'm trying to see if there is some real thinking behind the difference in the risk because I think that's what Mr. King said yesterday is, you know, there's a residual risk, there's a remaining risk, and I thought that was the answer that we got, and I'm asking what is the difference in the risk in the scenarios that seem to be acceptable as area background from the one I'm describing?

And maybe we can get some further comment on that from the agency at some point, but that's what I don't understand, and I'd like to be able to make that distinction.

MR. KING: I don't think we have anything to add based on what we said yesterday. It's the same comments as yesterday.

HEARING OFFICER FEINEN: Is there any other follow-up on 415? Let's start up with

subpart E, Tier 1 evaluation, 742.500. I guess we want to take a break for five minutes. Be back here at 10:30.

(Recess taken.)

HEARING OFFICER FEINEN: I think we will get back on the record. I think we left off on the subpart E, Tier 1 evaluation, 742.500. Start out with the Site Remediation Advisory Committee, Mr. Rieser.

MR. RIESER: On page 11 of Mr. Sherril's testimony, he states that, for those sites where the contaminants exceed Tier 1 values, one can either establish institutional controls or land use restrictions.

Is it not more accurate to say that Tier 1 values can be used as screening conditions or tools and that if contaminants at a site exceed Tier 1, then one can either perform further evaluation regarding site conditions through Tier 2 or Tier 3, achieve remedial objectives by the use of institutional controls and/or engineered barriers or remediate the contaminants?

MR. SHERRIL: Generally, yes, residential Tier 1.

MR. RIESER: Excuse me?

MR. SHERRIL: Residential Tier 1 are remediation objectives, but Tier 1 can also be used as a screening value. Generally when contaminants are left behind that exceed the Tier 1 values, some type of institutional control or land use restriction or engineered barrier may be warranted, but generally yes to your question.

MR. RIESER: Thank you. On page 11, Mr. Sherril discussed a determination as to whether there are sensitive ecological receptors at the site. How is this determination made? When will the agency require review of ecological risk factors?

MR. HORNSHAW: We can think of four situations when ecological concerns might need to be addressed first or threatened or endangered species are known to be at a site. Second, if it's designated as conservation property by the state or local government or federal government. Third, if it's wetlands, that probably would have to be concerned about surface water impacts as well as groundwater and soil, and fourth is when the site owner operator actually designates the

post remedial use to be conservation property.

MR. RIESER: Okay. How would these issues become known to the agency? Would this be part of the investigation under the specific program?

MR. HORNSHAW: I guess the best way I can answer that is when these are issues, they're readily apparent to everybody. There aren't very many sites where we would go in and say, well, is this really a concern here or not? They're usually obvious at the site.

MR. RIESER: Would it be the agency's intent that if the ecological risk is not specifically addressed to always require it for every site?

MR. HORNSHAW: That is not the intent.

MR. RIESER: We can bring this up later under Tier 3. I'll reserve my question till then. Thank you.

And my next question is on page 12, Mr. Sherril states that, Tier 1 residential values are based on a one-time 10 to the minus 6th target risk for carcinogens. Is this always true? Are not many of the MCL's based on a lesser -- my

question says greater, but it should be lesser -- target risk?

MR. HORNSHAW: To answer the first question, no, this is not always true, and as you say, many -- or a few of the maximum contaminant levels are based on a different target risk usually based on detection limits for the chemical or on a risk benefit analysis done by USEPA.

MR. RIESER: Thank you.

HEARING OFFICER FEINEN: Any follow-up? Moving on to section 742.505, Site Remediation Advisory Committee, Mr. Rieser.

MR. RIESER: 505, question No. 1, with respect to subsection (a)(3)(c), which has to do with migration of groundwater -- portion of groundwater ingestion route, what happens if the soil pH is greater than 8.0?

MR. SHERRIL: For Tier 1, a soil pH range of 4.5 to 8 is provided, I believe, for 23 chemicals as a method to determine the migration to groundwater soil remediation objectives. If the soil pH exceeds 8, you may propose a Tier 3 evaluation.

MR. RIESER: But that would only apply

to certain types of contaminants, i.e. the ionizable organics or inorganics?

MR. SHERRIL: That's true.

MR. RIESER: Thank you. On page -- isn't there a footnote in the table that references only -- with respect to the range that you provided, the 4.6 to 8.0, is there a footnote that limits that only to ionizable organics?

MR. HORNSHAW: Yes. That's appropriately footnote (i).

MR. SHERRIL: But it's only for ionizable organics.

MR. RIESER: So that for organics, to take one, is this an issue at all if the soil pH varies from 8.0.

MR. HORNSHAW: Could you repeat that?

MR. RIESER: For an organic if the --

MR. HORNSHAW: Nonionizable organic?

MR. RIESER: Nonionizable organic, the soil pH varies from 8.0, can you still use the Tier 1 table?

MR. HORNSHAW: Yes.

MR. RIESER: Ionizable organic, if the soil varies from 8.0, you can use the additional

table you've provided, is that correct?

MR. HORNSHAW: Up to pH 8.0.

MR. RIESER: And at that point you would have to go to Tier 3 to establish a, quote, "Tier 1 remediation objective"?

MR. HORNSHAW: Correct.

MR. RIESER: And then for metals, how would that work?

MR. HORNSHAW: Again if it's above pH 8.0, you would have to probably search the literature and find out how the chemical behaves at the much higher or much lower pH than what we've got in the table.

MS. ROBINSON: Can we clarify for the record which table we're referring to.

MR. SHERRIL: The footnote (i) is in appendix B, table A and table B.

MR. RIESER: If the material that you were dealing with was not soil but some other substrate, would the same issues regarding pH apply?

MR. HORNSHAW: Do you want to clarify? Are you talking about fill?

MR. RIESER: For example, if the

substrate was fill, slag, something like that.

MR. HORNSHAW: I think the tables are for native soils. They were constructed from experiments done in native soils.

MR. RIESER: So if you had a non-native soil, how would you deal with this issue?

MR. HORNSHAW: My guess is it would probably have to be resolved as a Tier 3 issue.

MR. RIESER: Going to my question 2, on page 18 of Mr. Sherril's testimony, where are the test methodologies for inorganics described?

MR. HORNSHAW: Incorporated by reference SW-846, the USEPA's documents.

MR. RIESER: Is this how tables A and B of appendix B are derived?

MR. HORNSHAW: I'm not sure what you mean by derived. Are you talking about detection limits?

MR. RIESER: Well, I think if you go to my next question, it's a little clearer, which is No. 3, are the inorganic values in appendix B, tables A and B, for migration to groundwater portion of the groundwater ingestion pathway for Tier 1 derived from the Toxicity Characteristic

Leaching Procedure (TCLP) test or the pH test?

MR. HORNSHAW: TCLP.

MR. SHERRIL: I'd like to add to that. The actual numeric values in those two tables we referenced before are TCLP. However, when you get into the Tier 1, under the rule itself, that it does provide a different method which is the pH totals method.

MR. HORNSHAW: And the numbers themselves are derived from the state's groundwater standards for the inorganics?

MR. RIESER: The numbers themselves for each pathway?

MR. HORNSHAW: For the migration to groundwater pathway for inorganics.

MR. RIESER: They are derived from the --

MR. HORNSHAW: The numbers that need to be achieved in the TCLP test are the state's groundwater standards for those inorganics.

MR. RIESER: You've provided -- and I'm not sure if this is the point to get into it -- but you've provided an additional appendix that you discussed in the errata that talked about how

certain of the migration to groundwater pathway values for soils were derived using other values other than the state 620, part 620 standards.

MR. HORNSHAW: That's correct. For organics some of the values that were used to create the Tier 1 values for the migration to groundwater pathway used USEPA's what they called a health-based level which is either the one in a million cancer risk for carcinogens or a hazard quotient equal to one for noncarcinogens which may or may not be -- probably are not -- the same as the state's values for some of those chemicals, the state's groundwater standards which I discussed in my testimony.

And we added that appendix table because those values are not readily apparent in the rule at this point, and if somebody were to try and recreate the Tier 1 tables, they wouldn't have all the information they would need in the rules. So we added that table listing the values that were actually used as the groundwater term to calculate the Tier 1 numbers.

MR. RIESER: I think I've got some other questions on those under some of the later

sections so we'll get to those.

Looking at subsection (b), my first question, how would a person classify groundwater if no groundwater is found at the site?

MR. SHERRIL: You may need to -- I'm going to have a little statement here and then ask you to clarify it, also, because it's the agency experience that groundwater is at every site in Illinois. Whether it's contaminated or not is a different issue, and whether you need to classify groundwater, T.A.C.O. is a rule to develop remediation objectives for soil and groundwater, and we've kind of had this previous discussion on whether it needs to be sampled and so forth.

MR. RIESER: Well, under a for example, under focus site investigation when you have situations as we've discussed where the scope of your investigation allowed you to conclude that you did not have impacted groundwater, wouldn't that occur?

MR. SHERRIL: Correct.

MR. RIESER: So in those instances -- I'm sorry, looking at B, in order to meet -- to do your Tier 1 documentation, even though you had

documented that you didn't have to -- that you had not impacted groundwater, would you still have to find the nearest -- the aquifer that was closer to the surface and do the work that would be necessary to classify it according to the agency's -- well, the appendix that they proposed for classifying groundwater under part 620 in every instance?

MR. SHERRIL: Are you asking then in lieu of appendix D, how would you classify groundwater as Class 1 or Class 2?

MR. RIESER: No. I'm asking in lieu of actually sampling the groundwater when those sites did not have to be sampled, how would you meet this requirement under appendix B?

MR. SHERRIL: The agency assumes Class 1 groundwater unless other information is provided demonstrating otherwise.

MR. RIESER: Is that assumption included in any regulation including the appendix that's been proposed here or part 620?

MR. KING: We did have that. As you recall, we had that in a prior draft, and you guys asked that it be taken out so we took it out.

MR. RIESER: That's correct. So what's the answer to my question?

MR. KING: It's not here.

MR. RIESER: And it's not in 620 either. So by saying that, that you assume, does that mean for a person using (d)(1) would have to say -- under the agency's formulation, they would have to say, well, it's a Class 1. We're going to use these Class 1 values, what has been assigned in Class 1 values tables unless we can document it's a Class 2 groundwater even though there's no groundwater present in the site in the context of the site investigation?

MR. KING: If you're going to use Tier 1, what we've laid out, are you talking about (b) or (a) here?

MR. RIESER: (B)?

MR. KING: 500(b).

MS. ROBINSON: 505(b).

MR. SHERRIL: 505(b).

MR. KING: You have to look at that provision in the context -- I think in the context of the other sections and the way the appendices are set up. If you don't know what class of

groundwater you have, then it's meaningless to look in Tier 1 for a groundwater remediation objective because you have to know that. You have to make that distinction.

If you're in a situation where you're positing that groundwater is not an issue because it's not -- there's really no mechanism for a migration of contaminants to groundwater, then I guess I would see that as not being a Tier 1 issue. If you're going to use the Tier 1 tables, you've got to know what the groundwater classification is. If you are excluding the groundwater pathway for some reason under subpart C or under Tier 3, then this wouldn't be an issue.

MS. ROBINSON: May I ask a follow-up here? What would be the significance of the agency assuming Class 1 rather than something else?

Why would the agency assume a Class 1 rather than a Class 2 groundwater if it's unknown what the groundwater class type is at that site?

MR. KING: We want to make sure that we're taking an approach that's protective of

human health, and with no other information relative to a site, we want to take an approach that was most environmentally protective.

MS. ROBINSON: Thank you.

MS. MC FAWN: All right, I have to ask the follow-up question now. How come you were requested to take it out?

MR. KING: Why were we requested to take it out?

MS. MC FAWN: What was the rationale given to the agency that motivated it to take it out of the rule?

MR. KING: Well, I think their motivation -- and I guess I'm speaking for them, which may be not the best thing to do, but I will anyways.

MS. MC FAWN: Mr. Rieser is here. He can tell me.

MR. KING: They were concerned about that presumption being written into the rules at this point when it hasn't appeared in the rules anyplace else. I mean, that's the presumption we've always operated under from an administrative standpoint and will continue to be the procedure

we follow unless, for instance, there was directive that said you presume it's Class 2.

MS. MC FAWN: Do you think that this type of presumption should be written into the rules maybe perhaps not in T.A.C.O. but elsewhere?

MR. KING: I don't know that it's something that has to be anyplace. I mean, we've been functioning with it, and it's been pretty well accepted with the people we've been dealing with.

I think if you were going to put that kind of presumption, I think you would put it here as opposed to I don't think you'd want to go back into 620 and put that kind of presumption in, and I think this would be the place to do it if you were going to do it.

HEARING OFFICER FEINEN: I guess you have one more question, Mr. Rieser, under 505.

MR. RIESER: No, that question I asked, I think.

HEARING OFFICER FEINEN: I believe Mayer, Brown & Platt, Ms. Sharkey.

MR. RIESER: I'm sorry?

HEARING OFFICER FEINEN: Mayer, Brown & Platt, I think.

MR. RIESER: Do they have --

MS. MC FAWN: Did you conclude your questions concerning subsection (b)?

MR. RIESER: No I have not.

On page 17 of Mr. Sherril's testimony, he seems to indicate that the Tier 2 model assumptions are threatened based on the presence of what he calls more permeable units.

Is this accurate? Does this mean that a person will not be allowed to use Tier 2 if there are permeable units on the site?

MR. SHERRIL: What I was trying to get at in my testimony there is the values derived from the Tier 2 models can be inaccurate if the assumptions by which the models are based are violated, and I gave an example of a -- let's say if groundwater was contaminated within a narrow sand seam, one of our groundwater model equations assumes that the contamination is pluming out from a source area, and groundwater in a narrow sand seam, let's say, for example, it had a confining unit above and below it, would not be dispersing

out, diluting out as the model would be predicting.

MR. RIESER: I would like to get back to this, but we should probably do it in the context of Tier 2. This question was probably misplaced so I defer at this point.

HEARING OFFICER FEINEN: I think there's some questions from Mayer, Brown & Platt from Ms. Sharkey from Mayer, Brown & Platt.

MS. SHARKEY: Thank you. I think I understand this better now than when I wrote my initial question. I'm going to ask it anyway just to make sure I understand it.

Please explain in laymen's terms the two components of the groundwater ingestion route, i.e. migration to groundwater and direct ingestion, what each is designed to protect and how each is to be used.

MR. KING: The challenge here, I think, is to try to put it in laymen's terms because it is, as with all of these things, fairly complex. There really is a need to look at -- first of all, to recognize that it is -- that groundwater ingestion route, that's what we're concerned

about. Is there actual or potential human health impact through consumption of contaminated groundwater?

Then the question is, well, how is that pathway effectuated, and we really saw that as having two elements to how a pathway would be completed. The first element is the movement of contamination from soil basically downward into groundwater through various mechanisms that impact how contamination moves in soil, and then once it reached the groundwater, the second component would be relative to how does contamination move once it is in groundwater, and that would be the second component.

The combination of the two is really designed to protect that potential or actual end user of groundwater that is being consumed for drinking water purposes.

MS. SHARKEY: Is the migration to groundwater is actually a soil standard? Am I correct on that? The way it's laid out here, it's under (a)(3), 505(a)(3), and then it appears in the table, appendix B, table B as a soil remediation objective.

MR. SHERRIL: That's correct.

MS. SHARKEY: Is the idea that what we're attempting to do is ensure -- is protect the groundwater from becoming contaminated with this breaking down this into two parts, both ingestion of the groundwater and then migration to groundwater, the latter being protecting the groundwater so that it does not become contaminated. Have I got that right?

MR. KING: I think that's basically accurate. We're not trying to protect the ground. We're focused on whether the contamination is going to move from the ground to the groundwater.

MS. SHARKEY: So it's really one exposure route, and that's consumption of the groundwater?

MR. KING: That's correct.

MS. SHARKEY: And the soil component is designed to ensure protection of that exposure route?

MR. KING: You have to remember it's important to focus on both aspects because you could have a situation where the groundwater is

already contaminated, and now there's a risk of additional contamination moving from the soil to the groundwater, or you could be in a situation where there is no contamination of the groundwater, and yet, there's a potential for contamination to move from soil to the groundwater. So you really have to think about both aspects of that pathway.

MR. HORNSHAW: I guess the easiest way to put it in laymen's terms is that one portion of this pathway is to protect current users and the other portion is to protect future users of the groundwater.

MS. SHARKEY: Just to make sure I've got it clear, it's possible to have the ingestion -- direct ingestion pathway exceeding, for example, a Tier 1 standard and the migration to groundwater not exceeding that standard? Am I --

MR. SHERRIL: That scenario could happen. That's possible.

MR. HORNSHAW: That could happen, yeah.

MS. SHARKEY: In other words, if, for example, there was a plume from off site moving in the groundwater, not moving down through the soil

but moving laterally into another site.

MR. SHERRIL: It's common for less sites to have their release in the groundwater.

MS. SHARKEY: In that instance you would still look to your Tier 1 table and the migration to groundwater pathway? You would still, in doing your evaluation, look to that table, look to that column on migration to groundwater. You would need to do the evaluation, but you're not going to -- in that instance, you probably wouldn't exceed, in other words, because while you might exceed on the direct ingestion on the groundwater objective itself. The direct ingestion, then you look in the groundwater objective?

MR. HORNSHAW: That's correct.

MS. SHARKEY: I think I understand it better unless you want to clarify it some more.

I think my second question has already been answered. Maybe I'll ask it. Maybe it's slightly different. If no one is ingesting groundwater in the area of the site, is groundwater sampling necessary for a Tier 1 analysis?

MR. KING: I don't know if this is

really a direct answer to the question, but it's important to recognize that you cannot just ignore groundwater because there is no actual consumption because there may be a potential for future consumption.

MR. SHERRIL: We also have program specific -- getting back again to LUST, where they have program specific guidelines or requirements.

MS. SHARKEY: Is an institutional control, that is, a local ordinance necessary to ensure no one is drinking the groundwater in localities where a public water supply is universally available?

And the second level question is, has the agency considered whether there are other satisfactory methods of demonstrating groundwater is not and will not be used for drinking water in the vicinity of a Tier 1 site?

MR. KING: We have specified that, you know, unless you clean it up to the Tier 1 objectives, that you would need to have some kind of institutional control in place. That institutional control could be a local ordinance that meets the criteria under subpart J, or it

could be one of the other institutional controls that are listed in subpart J.

MS. SHARKEY: So a local ordinance is not the only way to be able to demonstrate that no one is drinking the groundwater?

MR. KING: Just be careful there because the purpose of the local ordinance is to restrict future use of the groundwater, and so with an institutional control, you're looking at -- you're really looking at focusing on that future use, and it may encompass a present use as well.

MS. SHARKEY: Maybe we can talk about this under subpart J. What you're saying is that it is one avenue. There are other avenues the agency might consider?

MR. KING: Right, I think that's correct, and I think it would be better to discuss that under subpart J.

MS. SHARKEY: Okay.

MR. FEINEN: Any follow-up questions? Moving on to section 742.510, Tier 1 tables, Site Remediation Advisory Committee.

MR. RIESER: Actually looking at Mr. Watson's questions, they are kind of more

generic, and it might be a good place to start.

MR. WATSON: Question 6?

MR. RIESER: Yeah, 6 and 7.

MR. WATSON: Question 6 is why did the agency choose the USEPA soil screening guidance as a basis for its Tier 1 objectives?

MR. HORNSHAW: USEPA soil screening levels are a procedure which can be used to develop site specific cleanup objectives. The SSL's were developed from a nationwide database, nationwide scientific personnel input and nationwide peer review. Literature was provided that discusses the key elements required to development risk-based cleanup objectives.

It describes how background values may be used and directs the reader step-by-step through the risk-based approach. In the interest of public safety and well-being, the economy of public and private resources and this risk-based approach allows remediation efforts to be focused on those situations which pose a threat to human health and the environment. Please keep in mind in T.A.C.O., both the American Society for Testing and Materials, ASTM, standard ES38-94, emergency

standard guide for risk-based corrective action applied at petroleum release sites, and USEPA's guidance for soil screening levels were used as models. Structure part 742 is similar to that of both ASTM and USEPA. The specific processes presented here are unique to Illinois.

MR. WATSON: With respect to Tier 1, are you saying that the Tier 1 objectives also incorporate some level of the ASTM standard as well?

MR. HORNSHAW: We selected USEPA's soil screening guidance as the primary model for the Tier 1 tables.

MR. WATSON: Was there an evaluation done of which model would be more appropriate for the Tier 1?

MR. HORNSHAW: Yes.

MR. WATSON: Was there ever any thought about developing Tier 1 tables using both models?

MR. HORNSHAW: No.

MR. WATSON: Why not, given that you allowed that flexibility in Tier 2?

MR. HORNSHAW: It's available in Tier 2. Dueling Tier 1 tables probably would have been

more confusing than helpful, and also, ASTM's procedure is designed to -- is designed for petroleum products primarily, whereas USEPA's soil screening guidance covers a much wider range of contaminant types.

MR. WATSON: So the concept of broader applicability is the primary basis for choosing the soil screening guidance over ASTM?

MR. HORNSHAW: Primarily.

MR. WATSON: I'll proceed with my question 7, if that's okay. The Tier 1 objectives under subpart E of proposed part 742 and associated appendices and tables specify Tier 1 objectives for chloride and lead. Question (a), what is the agency's basis for the Tier 1 level for chloride set forth in appendix B, Table A?

MR. HORNSHAW: That's the state groundwater standard for chloride. It was developed from the 95th percentile occurrence in all public water supply monitoring data reported to the agency, and I guess that answers your question B.

MR. WATSON: Question B, is the agency's Tier 1 level for chloride based on a toxicity

analysis?

MR. HORNSHAW: No. It's a percent occurrence.

MR. WATSON: Are there other parameters in the Tier 1 tables that are also not based on a toxicity analysis?

MR. SHERRIL: You mean other chemicals, not contaminants?

MR. WATSON: Right.

MR. HORNSHAW: Sulfate would be the other one.

MR. WATSON: Those two are the only ones that are not based on the toxicity analysis?

MR. HORNSHAW: Yes, that's correct.

MR. WATSON: Question C, does the Tier 1 lead level set forth in appendix B, table A, apply to sites where the naturally occurring background concentrations of lead in soils are greater than the Tier 1 lead limit?

MR. O'BRIEN: Well, the agency isn't aware of any naturally occurring background concentrations greater than the Tier 1 lead limit. Our soil background study of 267 lead samples from background areas around the state

showed only one result greater than the 400 milligram per kilogram level which is the Tier 1 lead level, and that sample was taken between an expressway and a landfill during an investigation of a lead-based paint removal complaint, and we don't believe it represents natural background.

Samples from areas in the state which we would expect to exhibit high natural backgrounds such as JoDaviess County showed levels only as high as 211 milligrams per kilograms. In the mean of all samples for lead statewide was 49.2 milligrams per kilogram.

MR. WATSON: Is it the agency's experience that sites next to highways would not have area background concentrations routinely above the 400 part per million limit?

MR. O'BRIEN: Within a few feet of highways, up to 10 feet, you may find some. I don't know that we've done an exhaustive study of that, and of course, that would not be naturally occurring, as your pre-submitted questions state.

MR. WATSON: But it would be considered area background nonetheless?

MR. O'BRIEN: Right.

MS. MC FAWN: Is your question maybe what would happen if you asked your question and it said would the level apply to sites where the natural -- where the area background concentration of lead was greater? Is that really your question as opposed to naturally occurring?

MR. WATSON: Yes. I mean, yeah, that would be a follow-up question, sure.

MR. SHERRIL: Greater than what, greater than the 400 milligrams per kilogram?

MR. WATSON: Correct.

MS. MC FAWN: Yes.

MR. SHERRIL: I think what Jim O'Brien said is we haven't seen any sites where the naturally occurring background is above 400.

MR. HORNSHAW: But in cases where somebody has done the correct statistical approach to determine what area background is, that could be used as the Tier 1 -- or substituted for the Tier 1 value, if that's what your question is.

MS. MC FAWN: Thank you.

MR. WATSON: That would be subject to institutional controls at that point?

MR. HORNSHAW: Yes.

MR. WATSON: Question (d), does the agency believe that the Tier 1 lead levels were reliable or appropriate given the fact that in many sites in Illinois, naturally occurring or area background levels of lead in the soil may be greater than the Tier 1 TCLP lead level?

MR. O'BRIEN: Well, we're not of the opinion that the naturally occurring sites are above the 400 milligrams per kilogram of lead.

MR. SHERRIL: On that question (d) it says, the fact that at many sites in Illinois naturally occurring levels of lead in the soil may be greater than the Tier 1 TCLP lead levels.

We have not provided a TCLP background level, and so it would be possible through the background determination to determine what a background TCLP is, but we have not done that.

MR. WATSON: I guess the question is -- the concern is that you've got lead levels in the state that are within the background range set forth in the tables that would fail the .0075 Tier 1 limit for lead.

MR. SHERRIL: Is that a statement?

MR. WATSON: Yes, that is a statement.

MR. KING: All three of these questions, (c), (d) and (e) as part of section 7 of the questions, really presuppose a factual situation that we don't believe the record demonstrates is true. So really from our standpoint, it's kind of fruitless to proceed along answering -- trying to answer a question when kind of the whole basis of the question is just not correct.

I mean, if these questions need to be reformulated, then I think they should be reformulated and resubmitted rather than us kind of proceeding along with a faulty basis in mind here.

MR. WATSON: I think the record is clear with respect to your position or your view on the presence of background lead contamination at sites in Illinois. So that's all I have with respect to question 7.

HEARING OFFICER FEINEN: Mr. Rieser, do you have some questions you want to ask starting with 742.510? I do notice a question 13 from Mr. Watson seems to be also on 5. I don't know if you want to split it up that way or however you

want to do it, it doesn't matter to me.

MR. RIESER: Actually I had some of the same questions he's got in 13, either way.

MR. WATSON: I'll let you go ahead.

MR. RIESER: This is under 742.510, subsection (a)(3), is it accurate that the values for inorganics in appendix B, tables A and B, are the TCLP test and that the values in tables C and C are from the pH test?

MR. SHERRIL: Yes.

MR. O'BRIEN: I'd like to clarify that a little bit. By the pH test, what we mean is the test for total metals for the total, and then the objective would depend, also, on a test of pH of the soil to determine what the correct objective is. The pH test itself does not test for the chemicals in the table.

MR. RIESER: Are these alternate options?

MR. SHERRIL: Yes, these are alternate options and either may be used.

MR. RIESER: And then the footnote (i) in appendix B, Table A -- which we talked about -- says that for ionizable organics, one must use

table C and D if the soil pH does not equal 6.8?

MR. SHERRIL: Yes.

MR. RIESER: So for ionizable organics, these are options, but it's mandatory that under those circumstances, you must use tables C and D?

MR. SHERRIL: Or Tier 3.

MR. RIESER: Were there metals that did not have -- back it up again.

Were there metals that did not have MCL values that were used in formulating the -- I should say inorganics. Were there inorganics that didn't have MCL values used in formulating these tables?

MR. HORNSHAW: That's correct. Chloride and sulfate are two examples already noted, and I believe vanadium is a third.

MR. RIESER: In arriving at the values, did you use 620, subpart F standards?

MR. HORNSHAW: The groundwater values?

MR. RIESER: Yes, the procedure -- I should say the procedures under subpart F for arriving at remediation for groundwater values and then translate those into remediation objectives.

MR. HORNSHAW: Yes, with the exception

of vanadium. We used USEPA's health-based level for vanadium.

MR. RIESER: What was the basis for using 620, subpart F for those metals instead of the SSL values?

MR. HORNSHAW: Subpart F, we used 410 and 420 from part 620, not subpart F.

MR. RIESER: I thought earlier you said that subpart F was used for deriving some values, groundwater objectives for some of the inorganics.

MR. HORNSHAW: If I said that, I was mistaken. All those values with the exception of vanadium came from 410 and 420 --

MR. RIESER: Thank you.

MR. HORNSHAW: -- of part 620.

MR. RIESER: We've answered one. With respect to (a)(6), are there any values in appendix B, tables A and B, expressed which are lower than the acceptable detection limit or ADL?

MR. HORNSHAW: Yes, and these have the ADL listed in that table or those tables.

MR. RIESER: Those tables. Will the agency confirm that the ADL for those substances is always as listed in the appendices and cannot

be changed without board action?

MR. HORNSHAW: Yes.

MR. RIESER: On page 19 of Mr. Sherril's testimony, he indicates that the value for pentachlorophenol was adjusted by a factor of .5 for dermal exposure. Was this multiplied by .5 as an adjustment?

MR. HORNSHAW: Yes.

MR. RIESER: What was the basis for this adjustment?

MR. HORNSHAW: This was to account for the fact that pentachlorophenol has been shown to be significantly absorbed across the skin so that the value was adjusted downward to account for the additional dose from soil through the skin as well as for ingestion.

MR. RIESER: I noticed in some of the tables -- unfortunately, I don't have them at hand -- that were modified by the errata, some of the appendices there were changes for pentachlorophenol or there was an addition of a column for pentachlorophenol.

MR. HORNSHAW: Do you know which table?

MR. RIESER: I'll find it, and maybe we

can come back to this later.

With respect to subsection (c), why is 35 Ill. Admin. Code 620 referenced in describing the development of a remedial objective for a substance not listed in the current appendix B?

MR. HORNSHAW: 35 IAC 620 is referenced as one method of developing the groundwater value for chemicals that aren't already in the T.A.C.O. tiered tables.

MR. RIESER: So it's correct that this rule allows a person opposing such an objective to use either the 35 Ill. Admin. Code 620, subpart F factors or factors under subpart I?

MR. HORNSHAW: That's correct.

MR. RIESER: If this determination is made under subpart I of the part 742 proposal, which factors will be considered instead of those in 35 Ill. Admin. Code 620, subpart F?

MR. HORNSHAW: That would be all the factors that are discussed in Ms. Virgin's testimony about subpart I.

MR. RIESER: And those are?

MS. MC FAWN: Can this question be

deferred until we get it?

MR. RIESER: We can do that.

MS. MC FAWN: Why don't we do that.

MR. HORNSHAW: Okay.

MR. RIESER: Just one more question, I'm sorry.

It's true that for compounds without MCL migration to groundwater portion of the groundwater ingestion exposure route for Class 1 was based on the USEPA health-based limits from the SSL, correct?

MR. HORNSHAW: Correct.

MR. RIESER: And those compounds were identified in your additional table F that was added to the appendices?

MR. HORNSHAW: Correct.

MR. RIESER: And the Class 2 values for those substances were five times that value?

MR. HORNSHAW: Not necessarily. It depended on their physical chemical constants. We compared the chemical's ability to be removed by activated carbon, and we used ethylbenzene as the cutoff chemical and also their ability to be removed by air stripping, and we used methylene

chloride as the chemical for the cutoff point, and if the chemical was not able to be removed by either type of treatment technique, then it did not get five times increase over the Class 1 value.

MR. RIESER: In those instances would they always be the same as the Class 1 value?

MR. HORNSHAW: That's correct.

MR. RIESER: Are there instances of which you're aware where there were chemicals that were on this additional appendix B, table F, where the ratio between the Class 1 and Class 2 values is neither 5 nor 1 but some other value?

MR. HORNSHAW: That's correct, and most chemicals, the treatment efficiency was determined by USEPA when they promulgated the final MCL for that chemical.

MR. RIESER: Do you discuss that method -- did you discuss that methodology in your testimony?

MR. HORNSHAW: I think in my testimony I have a statement in parentheses, something to the effect that ethylbenzene is one example but doesn't work or the treatment efficiency was only

43 percent, but I don't go through all of them.

MR. RIESER: Thank you.

HEARING OFFICER FEINEN: Mr. Watson, I think you had some questions.

MR. WATSON: Right. We've got to jump back to my question 13. Question (a), can the agency discuss why it did not follow the USEPA SSL procedures for determining metals concentrations for Tier 1?

MR. SHERRIL: Could you clarify your question.

MR. WATSON: Sure, yes, sorry. As I understand it with respect to inorganics, the Tier 1 tables for the migration to groundwater pathway is based on TCLP values, correct?

MR. SHERRIL: We have TCLP values, and then for many of the inorganics, we have a pH.

MR. WATSON: PH option?

MR. SHERRIL: Option.

MR. WATSON: Why did you choose to use the TCLP values?

MR. HORNSHAW: Partly because the TCLP values could be plugged in for each contaminant. If we were going to list the pH dependent value,

there would have been a lot of holes in the Tier 1 table. Where the data is available to predict movement based on pH, that's what chemicals got put into the tables C and D.

MR. WATSON: And the pH, that's the USEPA SSL approach?

MR. HORNSHAW: Correct, for pH 6.8, and I guess that would be another reason is because we have a lot of different pH's around Illinois so it would be more easily handled in a table where you have specific value for each pH or each pH range as we've done it.

MR. WATSON: Question B -- this really gets to the heart of my concerns about the TCLP test being used here.

Why did the agency not consider a dilution attenuation factor for establishing the TCLP concentrations in Tier 1?

MR. SHERRIL: Could you clarify that?

MR. WATSON: As I understand it, in looking at the migration to groundwater pathway, what you have done is identified TCLP levels but not have allowed a dilution factor for attenuation dilution as consistent with the USEPA model, is

that true?

MR. O'BRIEN: Actually there is a 20-fold dilution attenuation factor. The way the TCLP test is normally run is that a weighted sample of the soil to be extracted is added to 20 times that weight of extracted solution, and the TCLP test procedure normally requires that the result be reported out as the concentration in the extracted solution.

In other analytical tests that are fairly done, the calculation is back calculated to what was in the original sample irrespective of how much extractant they use, but because TCLP is a widely used test, we didn't want to change the test parameters. So we're just using that, and therefore, we didn't need to add a 20-fold dilution since it was already part and parcel of the procedure, and the way the test is normally reported out, it includes that 20-fold dilution.

MR. WATSON: I'm not going to promise to understand all this stuff, but I just want to make the point that it's your testimony that the current TCLP numbers in the Tier 1 table for inorganics include a factor of 20 dilution?

MR. SHERRIL: That's correct.

MR. WATSON: With respect to the pH tables -- and I don't know if we asked this question or not -- why did the agency stop at pH of 8?

MR. HORNSHAW: That data was -- that was done because the tables that USEPA provides in the technical background document for soil screening guidance only go to pH 8. The graphs don't go beyond there, and we didn't want to try and extrapolate beyond them.

MR. WATSON: So if you have a pH of 8.5 in your soil, you have to do a Tier 3 analysis?

MR. HORNSHAW: For the most part, yes. In a few cases those graphs are totally flat up at the upper pH, and you can probably extrapolate beyond that, and we would accept that readily, but on other cases, the graphs are very different with even a small change of pH, and extrapolating beyond that would be risky.

MR. WATSON: Question C, does the agency have data on the correlations between TCLP concentrations and background concentrations of lead, silver, cobalt or vanadium?

MR. SHERRIL: We have data, but we have no what you would call compiled data as such that it shows any correlation between -- any correlation.

MR. O'BRIEN: When we have tried to look at that, we have not found any correlation.

MR. WATSON: You have looked at it?

MR. O'BRIEN: When we have looked at it, we have not found any correlation.

MR. WATSON: So it's your view that background concentrations of these metals would not exceed the TCLP standards?

MR. SHERRIL: Could you clarify that? Well, I think from what he's just saying, we don't have a correlation so we couldn't.

MR. HORNSHAW: We don't know.

MR. SHERRIL: We don't know.

MR. WATSON: My question 8 also relates to 510, but that has been addressed in the errata sheet.

HEARING OFFICER FEINEN: There's a question from Mayer, Brown & Platt for 742.510.

MS. SHARKEY: That question has been answered.

HEARING OFFICER FEINEN: Go off the record for a second.

(Discussion off the record.)

(Lunch recess taken.)

(Discussion off the record.)

HEARING OFFICER FEINEN: Back on the record in the afternoon after lunch. Mr. Reott is going to begin asking some questions, and we'll go from there in the normal course. Then we can proceed.

MR. REOTT: Let me start with the errata sheet 742.415(d) which is the errata that comes out of the statute. Let me just direct your attention to that. In the Tier 1 tables, the board would set objectives for risk to groundwater, the same for residential and commercial industrial properties, in other words, risk to groundwater is the same numbers in the tables.

Is the agency going to interpret the risk to groundwater pathway number that the board adopts in Tier 1 tables as a quote, "remediation objective adopted by the board," end quote, within the language of the statute in

415(d)? And the reason I ask obviously is the risk to groundwater pathway, it's not really tied to residential or commercial, it's just the same for everyone, and the statute talks about residential objectives so I'm not sure how you would interpret that value in Tier 1.

MR. KING: I don't understand what difference it makes because of the way the statutory language is set up.

MR. REOTT: Let me try to clarify, Gary. The statutory language which you put in the errata sheet 415(d) kicks in for remediation objectives adopted by the board for residential land use, and obviously the ingestion and inhalation numbers for residential are based upon explicit residential scenarios where someone is using the property as a residence.

I assume the agency would regard those two numbers as being residential land use remediation objectives adopted by the board. I mean, is that part of it at least something we can agree on?

MR. KING: That's true.

MR. REOTT: For the groundwater window,

it's a little different because it's not clear that it's merely based upon residential land use because you have the same risk to groundwater number for commercial and residential land use.

So my question is how are you going to interpret that?

MR. KING: It doesn't make a difference because if it's converted to residential use, it's still the same objective so I don't know that it really -- it doesn't make a difference.

MR. SHERRIL: The groundwater at a site, whether it be residential or industrial commercial, can be either dependent on the groundwater classification.

MR. REOTT: So in other words, what you're saying is that you will regard the Tier 1 residential risk to groundwater number as being a, quote, remediation objective adopted by the board for residential land use within the meaning of the statute?

MR. KING: Yeah, I would certainly.

MR. REOTT: I'm going to turn to the prefiled written questions, and what I did over lunch, Gary, and the rest of you, is I tried to

pick out the ones we just covered. So I'm going to not do these necessarily in exactly the order they're there. I'm going to skip around so I don't jump ahead to other topics.

Let me start with number one, which I actually think relates to Tier 1, although I phrased it in terms of Tiers 2 and 3. Does the agency believe that the ASTM model which it proposes to use for Tier 2 and 3 produces results which are sufficiently protective of human health and the environment?

MR. KING: Yes, that's correct, as long as the model is used correctly in accordance with the limits that the model describes.

MR. REOTT: Does it accurately predict the amount of contamination that can remain in place without undue risk from all of the exposure pathways?

MR. KING: I think it can do that accurately. Again it's going to be predicted within the limits of its use and within the limits of the data that have been put into the model.

MR. REOTT: In other words, if you run the model correctly, you'll get a protective

number, protective result?

MR. KING: If you have accurate data as well.

MR. REOTT: Question No. 2, in its September 1994 order in the R94-2(B) proceedings -- actually I guess at that point I'm not sure if it was labeled 2B, it may have been just 94-2 -- the board ran tables of soil cleanup objectives calibrated for different distances to the point of compliance in the UST program (the closer of 200 feet or the property line). The distance to the point of compliance affects risk to groundwater in Tier 1 tables. It doesn't affect ingestion or inhalation.

Would the agency be willing to modify it's proposed Tier 1 table to add a point-of-compliance-based table for the risk of migration to groundwater pathway so that you could have a Tier 1 table that had different calibrated distances?

MR. KING: No. The first point is you make an assumption there that I don't think is correct. When you said the distance to the point of compliance is affecting the risk, it's not the

point of compliance, it's the point of human exposure that affects the risk.

MR. REOTT: But from a regulatory standpoint, particularly in the UST program, it's explicit that you have to meet the applicable standards of the 200 foot or property line boundary, you're not proposing to change that, are you?

MR. KING: No, that's designated in the statute and the regulations for the tank program.

MR. REOTT: But you're not willing to try to construct a Tier 1 table that incorporates different distances like the board did in its 1994 order?

MR. KING: No. That would just make for -- this regulatory proposal is complex enough as it is, and it's difficult enough to understand, and to try to incorporate within part 742 all the potential points of compliance that exist under the various programs that would be using this would make it too unwieldy.

In essence you would have to have a set of Tier 1 tables for every separate compliance point distance, and we've included the equation

methodologies to deal with those gap situations.

MR. REOTT: In the subsequent tiers?

MR. KING: Right.

MR. REOTT: Which version of the SSL model has the agency endorsed in this rulemaking? And I think I understand the answer to this question to be the one that came out last year, not the original version.

MR. KING: I quibble with the word "endorse." I'm not sure that we really endorse it. We've incorporated by reference the final version.

MR. REOTT: Dr. Hornshaw, you testified yesterday about various changes to that model that were made in developing the agency's proposal.

Were the list of changes that you gave yesterday in your testimony the only changes that the agency made to the SSL model or were there others?

MR. HORNSHAW: They were the ones that were important. The changes that we made we made because of language in the original legislation, for instance, TRC or group C carcinogens. We also had to add chemicals that had existing state

groundwater standards, and we deleted a couple of chemicals due to lack of appropriate toxicity criteria for the class C carcinogens. Everything else that was incorporated by USEPA in their basic model we included into the program, into the Tier 1 tables.

MR. REOTT: So if I looked at the transcript of your testimony from yesterday and also your written testimony, whatever changes you made or laid out there?

MR. HORNSHAW: Correct.

MR. REOTT: In one of those two places?

MR. HORNSHAW: That's correct.

MR. REOTT: Earlier today you referenced the 1994 version of the ASTM model, and there was an updated standard issued in 1995, and I don't know if its changes in any way affected the agency's proposal here, but which version of the ASTM model is the agency using for purposes of this proposal?

MR. HORNSHAW: The final standard, not the emergency standard.

MR. REOTT: The 1995 version?

MR. HORNSHAW: Correct. I believe we've

incorporated that by reference, also.

MR. REOTT: What changes did you make to the 1995 version of the ASTM model from the form in which it was originally drafted by ASTM?

MR. HORNSHAW: We dropped out the migration to indoor air pathway calculations from that model.

MR. REOTT: Why was that?

MR. HORNSHAW: In USEPA's view and in our view, the science behind the calculations to predict what could be in an indoor air situation from subsurface contamination were not scientifically correct enough or rigid enough -- not rigid.

MR. REOTT: Reliable?

MR. HORNSHAW: Rigorous enough. So in the interest of basically allowing that science to develop some more, we deleted that from the -- that pathway from the ASTM model that's used in Tier 2.

MR. REOTT: Did you make any other changes to the originally drafted ASTM model, the 1995 version?

MR. HORNSHAW: The final guidance?

MR. REOTT: Did you do anything else? In developing the rule proposal that's on the table here for the board, did you make any other changes to the 1995 version of the ASTM model?

MR. HORNSHAW: No.

MR. REOTT: What would you need to do to calculate a Tier 1 risk of migration to groundwater table using ASTM?

MR. HORNSHAW: Before you go on, there is one minor thing I just recalled. I think the ASTM model specifies some physical chemical constants or recommends or suggests some physical chemical constants.

I don't know for sure, but they may be different than the ones that we have in our table of physical chemical constants so that may be another minor change from ASTM's model.

MR. REOTT: When we reconvene in January, do you think it would be possible for you to identify any of those changes that were made?

MR. HORNSHAW: Physical constant chemical changes?

MR. REOTT: Yeah.

MR. HORNSHAW: I could do that.

MR. REOTT: No. 7, what would you need to do to calculate a Tier 1 risk of migration to groundwater table using the ASTM model? What default values would need to be established in order to prepare such a table?

MR. SHERRIL: We would need more work, and what we mean by that, we would need, as Gary explained earlier, a specific chemical by compliance point distance kind of criteria set up, and then it would be unwieldy because we would be trying to fit it to all the different bureau of land programs. We would have to pre -- we would have to assume all these compliance points distances which would become unwieldy, we believe.

MR. REOTT: Wouldn't the particular program just look up in the table whatever the compliance point was that was applicable to that program?

MR. SHERRIL: Compliance points can change. I think we have gone over this yesterday, but compliance points can change the distance depending on whether you're the end of your institutional control is. You could have them in increments really.

MR. KING: Even under the tank program, it's 200 feet of the property line, and the property line varies all over the place as far as the compliance point.

MR. REOTT: Let's assume for a minute no one was going to go to the trouble of doing it in one-inch increments. The board did it, I believe, in either five or ten-foot increments in 1994. Wouldn't that be generally sufficient for people to figure out what number they really need to meet?

MR. SHERRIL: In five-foot increments?

MR. REOTT: Yeah, if you gave them a table.

MR. KING: It means you would have to have an entire set of Tier 1 tables for every five-foot increment.

MR. REOTT: If you were to choose five-foot increments, that's right.

MR. KING: It just seems like that really kind of defeats the whole purpose of having a fairly unified set of tables.

MR. SHERRIL: It would probably need to go out to 2500 feet, maybe even further. That

would be an awful lot of tables.

MR. O'BRIEN: Since Tier 2 provides the calculation, at some point it's going to be easier just to do the calculation than to try to thumb through hundreds of tables to figure out which one to use.

MR. REOTT: There isn't anything theoretically that would stop you from constructing such a set of tables, though, to different distances, is there?

MR. O'BRIEN: No, there wouldn't be.

MR. REOTT: It's just a question of how much paper the board wants to make this rulemaking. If they want it to be an extra 50 pages thick, they can have an extra 50 pages?

MR. O'BRIEN: That's true.

MR. KING: If you're willing to run all the numbers, maybe you can present them to the board.

MR. REOTT: That may be what's done, Gary. I want to make sure there's nothing from the agency's perspective that that would be a futile effort. If it's run and the board is interested in adopting it, it can.

Let me go back to question No. 7, what would you need to do to the ASTM model to be able to run a Tier 1 table? In other words, were all the values you need already there, or do you need to make any assumptions?

MR. O'BRIEN: Distance is the only variable that we wouldn't immediately have available, and so we'd have to make a decision on what distances to include in such a table.

MR. REOTT: I'm going to skip No. 8 because I think it really relates to a different kind of problem.

No. 9, what was the risk level used for the construction of the Tier 1 tables?

MR. HORNSHAW: We were still having a sidebar conversation.

MR. REOTT: Sorry. What was the risk level used for the construction of the Tier 1 tables?

MR. HORNSHAW: Generally, one in a million. As I stated earlier, for some of the chemicals whose MCLs are either based on detection limits for risk benefit analysis, that one in a million risk level may be different or it may be

different from the one in a million risk level. I might add that for all the noncarcinogens, they aren't specified as a risk level at all.

MR. REOTT: It's target quotient of one?

MR. HORNSHAW: That's correct.

MR. WATSON: I've got a follow-up on that question, and that is what's the significance in appendix B, table B of footnote (e) which states that calculated values correspond to a cancer risk level of one in one million. Site specific conditions may warrant use of a greater risk level but not to exceed 1 in 10,000.

MR. SHERRIL: Could you repeat again the table and the --

MR. WATSON: Appendix B, table B, this is Tier 1 numbers for soil for industrial commercial property footnote (e).

MR. SHERRIL: E as in elephant?

MR. WATSON: Right.

MS. ROBINSON: That's page 106 of the board's version, and the people have that.

MR. HORNSHAW: I think that may be left over from an earlier draft and we didn't strike

that.

MR. WATSON: So the site specific risks evaluated at 10 to the minus 4 are not available under Tier 1 analysis?

MR. HORNSHAW: That's correct.

MR. WATSON: Were they in prior drafts? Was that possibility available in prior drafts?

MR. HORNSHAW: I don't think for Tier 1.

MR. WATSON: With respect to Tier 1 numbers, has the agency ever considered a risk level less than 10 to the minus 6?

MR. KING: You mean greater than 10 to the minus 6?

MR. WATSON: I'm sorry, greater.

MR. KING: Generally, that's true. Of course, you have to remember that some of the drinking water standards are not necessarily based on the 10 to the minus 6 risk.

MR. WATSON: But in evaluating and developing these proposed regulations, did the agency ever consider the appropriateness of 10 to the minus 5 number, for instance, as part of the Tier 1 default tables?

MR. KING: We considered it and we rejected it.

MR. WATSON: What was the basis for rejecting it?

MR. KING: We really are looking at -- the focus of our analysis was where was the point of human exposure, and if you have a point of human exposure, whether that's a person who lives at a site or as a child playing at a site or as a worker working at a site, we felt that that person should have the same -- the equivalent level of protection and that it should be focused in that way.

Obviously with different types of persons who can be exposed and the conditions under which they are exposed, you would adjust the numbers based on that, but still, the goal is that you protect any person who be might be potentially exposed, that they are exposed only at a 10 to the minus 6 level.

MR. WATSON: Are you familiar with other states that have developed Tier 1 numbers at 10 to the minus 5th risk level?

MR. KING: Yeah. I am familiar that

there are other states that are doing that, yes.

MR. WATSON: Do you know what the rationale is for the appropriateness of a 10 to the minus 5th number?

MR. KING: I think they have confused the concepts in doing that, and I think what we try to do is be very careful in how we use numbers like 10 to the minus 6th, 10 to the minus 5th, 10 to the minus 4th because if you just start throwing those numbers out without being extremely careful in the way you're using them, your logic ends up being flawed as to who and why you are providing the level of protection.

MR. WATSON: The states that have developed these numbers, what's the problem? Where is the flaw in their logic in terms of the appropriateness of 10 to the minus 5th?

MR. KING: As we were saying before, if you have a person that's working at a site as opposed to another person residing at a site, they're both deserving of that equivalent level of protection.

Why should a person who is working at a site be subjected to a greater risk of cancer

than a person who is residing at a site?

HEARING OFFICER FEINEN: Mr. Reott.

MR. REOTT: Let me follow up in response to that question while we're on this topic. The ASTM 1995 standard and the discussion about how do you select particular risk levels, I think, is that right, Dr. Hornshaw?

MR. HORNSHAW: That's correct.

MR. REOTT: And I admit that I'm somewhat summarizing this, but they go through a list of states that have set risk levels that were greater than one in a million, as my colleague had said, and they characterize the use of the one and a million as being done for when large, very, very large populations are exposed to things such as systemic, City of Chicago drinking water context, but they seem to indicate that the greater risk levels, 1 in a 100,000, are more typical when you're looking at a small exposed populations. Is that a fair characterization of where ASTM comes out on this question?

MR. HORNSHAW: I think that's a fair characterization. I'm not sure I want to delve into why states chose a particular risk level.

I'm not familiar enough with why each individual state has done that to touch into that very much.

MR. REOTT: Let me go back to my prefiled questions. No. 10, by volume, how much contaminated soil is assumed to be ingested each day in the residential Tier 1 scenario, the industrial Tier 1 scenario and in the construction worker scenario -- inhalation portion of the construction worker scenario?

MR. SHERRIL: The inhalation?

MR. REOTT: I'm sorry, ingestion portion.

MR. HORNSHAW: For the residential scenario, 200 milligrams per day by a child. For the industrial scenario, 50 milligrams per day by an adult, and for the construction worker scenario, 480 milligrams per day, also by an adult.

MR. REOTT: Any idea what that would translate in volume terms? It would probably depend upon compaction and so forth.

MR. HORNSHAW: I wouldn't even want to try and guess at it.

MR. REOTT: We'll save that for another

day. By volume how much contaminated water would you assume an exposed individual would drink in Tier 1? Is that two liters?

MR. HORNSHAW: Yes, it's not specifically stated. It's one of the assumptions that go into the drinking water MCL's at the federal level, or that was used by USEPA to develop the health-based levels. It's not specifically stated in there as a rule.

MR. REOTT: Skipping ahead to No. 16, which is the next one that relates to Tier 1, for metals the agency's Tier 1 numbers are based upon the amount of metals in -- it should be the leachate test run on the soil at the site using the Federal Hazardous Waste Leaching Procedure, TCLP. The TCLP procedure is designed to mimic the highly acidic conditions inside municipal waste landfills.

Does the agency contend that the physical conditions present at typical Illinois contaminated sites are comparable to the physical conditions within a municipal landfill?

MR. SHERRIL: Under Tier 1, we provide the option of not only the TCLP method, but for

many of the inorganics we also provide the pH method. So the way your question is phrased there, it's not a complete question because we do provide more than one method under Tier 1.

MR. REOTT: Do you contend that the physical conditions present in typical Illinois contaminated sites are comparable to the physical conditions present in municipal landfill?

MR. O'BRIEN: They can be. We've had locations where compost, mulching on the ground ate into an underlying petroleum product pipeline and caused it to rupture so that typical conditions that can occur such as compost can result in low pH conditions that would be similar to what could be found in the TCLP test, and this test is used in Tier 1, which is the screening tool. So we think it's appropriate there as a screen for conditions that can easily occur at typical sites.

MR. REOTT: Do you think that conditions like those in a municipal landfill easily occur at Illinois contaminated sites?

MR. KING: I think at this point you're really putting into the record some information

which I don't think is there. I mean, you're making an assumption about the physical conditions at a typical Illinois landfill, and I don't know that there's anything here that talks about what that is.

MR. REOTT: I think, Gary, that's really already been established by the TCLP test itself. That's what that's designed to mimic, and I think even Dr. Hornshaw testified to that in his testimony, that that's what that test is designed to mimic.

MR. KING: I don't think that's the question you were asking.

MR. REOTT: If you do not have the very acidic pH conditions that are typical of a municipal landfill that TCLP is designed to mimic --

MR. KING: It's going to be impossible for us to answer a question when you keep assuming that that's the condition of Illinois landfills, that they're highly acidic conditions. You're assuming that.

MS. MC FAWN: How about if we go on to question 17? Is this where you might be leading

with your question?

MR. REOTT: That's fine. I think 17 is more of a Tier 2 question. I was going to hold that one. I was going to skip to 20. For lead, the agency has set the risk of ingestion values using USEPA criteria that were developed in one particular federal program , you know, where you get the 400 parts per million number. There are other federal criteria that are approximately 10 times as high as the one endorsed by this proposal for the board.

In addition other federal programs have substantially different values for residential and industrial settings while the IEPA proposal used the same lead ingestion value for both residential and industrial settings.

Would the agency be willing to look at adjustments to the lead ingestion criteria in Tier 1 for industrial facilities based upon information from other federal programs?

MR. KING: I think that would only be true if those federal programs were identified and it was demonstrated that the procedures they used have been equivalent to what's gone on as far as

the SSL process.

Mr. Hornshaw described the extensive peer review that was done in developing those. Those were clearly designed to deal with remediation objectives at sites that were being evaluated for cleanup. We really have no idea what you're talking about when you say other federal programs in this context.

MR. REOTT: But if they were well supported, you would be willing to at least consider them?

MR. KING: I mean, when you say well supported, you really have to bring forward the specifics of what you're talking about before we really could even say we would address them.

MR. REOTT: As the agency has mentioned before for certain metals -- not all of them -- you have an option to use a total metals content in the soil as adjusted by the pH in the soil within the range of up to 8 and down into 4. The typical pH test measures the pH of a liquid. How does the agency propose to set soil for pH using the SW-846 methods, for example?

MR. O'BRIEN: The answer to that is the

SW-846 methods.

MR. REOTT: For testing soils?

MR. O'BRIEN: Yes, they have methods for taking the pH of soil.

MS. MC FAWN: I would note for the record that you have posed question 21, and this is what was answered.

MR. REOTT: Jim, help me here because I'm not sure I completely understand how SW-846 does this, and I want to try to get it on the record.

Would they be tested by mixing them with neutral pH water and then testing the pH of the resulting solution? Is that what happens in laymen's terms?

MR. O'BRIEN: I haven't looked at the test methodology lately so I don't remember precisely, but that's my general recollection is that you're correct.

MR. REOTT: And then the next question, if you feel like you have to postpone this one, go ahead. Should the soils be left in their natural state during testing, i.e. not ground mixed or significantly disturbed, to replicate actual site

conditions?

MR. O'BRIEN: I'm not sure about that. A lot of SW-846 test methods do prescribe that the soils have to be sieved through a 200 sieve. I don't remember whether that's specified for this test method or not.

MR. REOTT: Would this be something that maybe we could resolve again in January when we reconvene?

MR. O'BRIEN: Right.

MR. REOTT: If you could look at that before then.

The next two questions or the next two questions you're going to be more familiar, I think, because they've come up before back in 1994. No. 22, during development of the part 620 groundwater standards, the agency testified that groundwater should be tested for metals contamination using filtered samples that measure the dissolved metals in the groundwater rather than the total metals in the groundwater and particulates that are captured by the sampling technique.

During the hearings in the R-94, 2B

rulemaking, agency personnel also endorsed filtering groundwater used for metal sampling. For compliance with the groundwater cleanup criteria in this rulemaking, how does the agency propose that samples be taken for determining compliance with the metals criteria, filtered or unfiltered?

MR. KING: Were you going to answer that? Before you answer that, can you give us a citation there because we've been hunting through the hearing record, and we have not located that statement. You made an assumption about what was said by agency personnel in the context of 94-2, and there's no citation in the record.

MR. REOTT: I would be happy to supply that. I have a vague recollection it was not one of the principal agency witnesses. It may have been Todd Gross. He was in Springfield. Now I have to look up the transcript Doug Clay.

MR. CLAY: Todd Gross works in the program.

MR. REOTT: I may have the person wrong. There's someone in the back who wasn't in the front row with all of the agency people, and

we got to the issue, and it was someone who joined in.

MS. MC FAWN: Which program did you say he's with?

MR. CLAY: He's with the regal project section and would not have even attended the LUST hearings.

MR. O'BRIEN: The agency's feeling at this point is that because very few residential wells are routinely filtered, it's not a criteria of the well installation, licensing that the Department of Public Health has is that the sample should be unfiltered. However, under Tier 3, we would consider proposals for filtered depending upon sufficient justification.

MR. REOTT: Gary, did you guys look for -- I had previously cited in the '94 hearings the testimony from several years earlier in the part 620 rulemaking when the agency did endorse filtered. Were you also having trouble finding that?

MS. ROBINSON: Yes.

MR. KING: We were just focusing on what your statement was.

MR. REOTT: I just want to clarify what I need to supply for you, that's all.

MR. KING: Any citations you have relative to this issue, I think, would be helpful as far as discussing the matter further.

MR. REOTT: Because I think even if you now believe that filtering is inappropriate, when the 620 rules were written to develop those standards which in turn formed the basis for much of this, the agency said filtering was appropriate.

MR. O'BRIEN: That's why we'd like to see what was said because we would like to see the context

MR. REOTT: In the 620 rules what was said is quoted in my testimony from R-94. So if you look at my testimony, either of the two rounds of testimony, I think it's in both of them.

MS. MC FAWN: Why don't you provide him those cites, if you can, even before the January hearings.

MR. REOTT: I will. The next one --

MR. RIESER: Is there anything in this rule that specifies filtering or non-filtered

methodology?

MR. SHERRIL: No.

MR. RIESER: Is there anything in any other rule that specifies with respect to groundwater sampling using filtered or non-filtered?

MR. LISS: My name is Kenneth Liss. In the municipal solid waste landfill rules, they are federal rules, subtitle D, it's required for totals analysis.

MS. ROBINSON: What's required?

MR. LISS: The groundwater sampling is based on unfiltered.

MR. RIESER: For total metals, is that correct?

MR. LISS: Totals, that's correct

MR. RIESER: Assuming -- and I think this is a big assumption -- the question of filtered or unfiltered samples would be a subject of a Tier 3 evaluation under sufficient justification, what would that justification include?

MR. O'BRIEN: The bottom line is we're looking at the risk to potentially exposed

individuals. So I think for the most part, we would prefer the unfiltered samples. If it was clear the sample would be undrinkable by a person unless it were filtered, that might be an issue where that would be a sufficient justification.

MR. SHERRIL: I would include the geology itself that is a factor.

MR. RIESER: Excuse me just a second. What would the differences in the samples be between filtered and unfiltered sample?

MR. O'BRIEN: Sometimes particulates that would be filtered out in the filtering process, sometimes they can capture certain contaminants on their surfaces, and so therefore, filtered samples may show less contamination than unfiltered.

MR. RIESER: What they would show is they would show the particles of contamination adhered to the -- I'm sorry, molecules of the substance that you're evaluating is contamination adhered to the particles but not the materials that are actually dissolved in the groundwater?

MR. O'BRIEN: That's right, but it would be pulling out small particles that would probably

normally be ingested by someone, and therefore, contribute to risk unless that sample had so much sediments or particulates in it that it would be unpalatable.

MR. LISS: Yeah, I'll add that there's just the methodology that you sample, the device that you're using for sampling is going to put some bias, if it's not done properly, in your sample results. Another way to preserve your sample --

MR. RIESER: Thank you.

MR. REOTT: Can I follow up two of those things. When you mentioned geology as a reason you might want to prefer filtered versus unfiltered, I'm going to take a crack at this, are you referring to like a Karst geology where an unfiltered sample might be more appropriate?

MR. LISS: No, more so what we have here in our glacial sediments in the state here. Some of the particulates are more mobile due to their size and the effective porosity, the size of the pores of the hydro-geologic unit that you're measuring these samples in. Some units have the capability of filtering these out or not allowing

those particulates to move while others would.

MR. REOTT: To follow up on another point -- I think this was Jim's point back there . You had indicated, Jim, that one of the reasons the agency might allow you to use a filtered sample would be without filtering the water was unpalatable. There is a standard for drinking water that measures turbidity and essentially captures how much turbidity -- how much particulates is in the water, and I can't remember what the abbreviation stands for, but it's five NTU's. I never quite had the unit spelled out to me.

Would water that exceeded five NTU's, which is the drinking water turbidity standard, be, quote, "unpalatable" so that you could start to use a filtered number as opposed to an unfiltered number?

MR. O'BRIEN: I don't know if I can answer that right now. I mean, that would be the type of thing that we would consider. It's not very practical, though, to run the turbidity sample in the field to decide whether you are going to filter the samples or not because the

filtering is done as you obtain the sample at the wellhead.

MR. REOTT: The same topic, next question No. 23, in Dr. Hornshaw's testimony, page 22, he indicated that the Tier 1 table for Class 2 groundwater relies on, quote, "the removal of the chemical from groundwater by routine drinking water treatment techniques for organic chemicals."

And my question was should the agency rely upon the same potential for removal of metals in their particulate form from groundwater by routine drinking water treatment techniques which are designed to achieve low turbidity, i.e. less than five NTU's, quality groundwater with virtually no particulates?

MR. HORNSHAW: No. Actually in the 620 rulemaking, the basis for developing the Class 2 standards for the inorganics for the most part was based on protection of crops or livestock rather than any kind of a treatment technique. That's already locked into the standards already decided in 620 so that wouldn't be appropriate for this rulemaking.

MR. REOTT: And I have one last Tier 1

question which is No. 43, which was for noncarcinogens, how does Tier 1 consider cumulative effects?

MR. HORNSHAW: Cumulative effects of noncarcinogens aren't considered in Tier 1. That's only considered in Tier 2 or 3.

MR. REOTT: I think that catches us up, and then they can resume with Tier 2.

HEARING OFFICER FEINEN: We'll start out with subpart F, Tier 2, general evaluation from the Site Remediation Advisory Committee, 742.600, Mr. Rieser.

MR. RIESER: Yes, thank you, Mr. Feinen.

Will the agency confirm per Dr. Hornshaw's testimony that the USEPA prefers users of its SSL guidance to calculate risk-based results using site specific physical and chemical values and that the EPA will also prefer users to calculate site specific values through Tier 2 formulas?

MR. HORNSHAW: We're allowing people to use the Tier 2 methodology. We aren't actually showing any preference for any of the three

tiers.

My testimony specifically talked about USEPA wanting their personnel to use it. It should be implied that the IEPA has taken that same position.

MR. RIESER: Would it be useful to have people develop the objectives based on the actual site conditions?

MR. HORNSHAW: Yes.

MR. RIESER: On page 33, when discussing the Tier 2 soil screening level, SSL soil equations, Mr. Sherril states that the, quote, "Tier 2 equations to model leaching into groundwater have been developed to give the agency assurance that the part 620, Class 1 or 2 groundwater quality standards and health advisory concentrations will not be exceeded," end quote.

Would the agency agree that it is more accurate to say that the purpose of the Tier 2 model is to achieve Tier 1 groundwater values at the point of human exposure?

MR. SHERRIL: The agency agrees that it is accurate to say that the Tier 2 model to achieve Tier 1 groundwater objectives at the point

of human exposure.

MR. RIESER: And would it also be more accurate to say that the remediation objectives to be achieved are based on the Tier 1 levels and not part 620 groundwater quality standards?

MR. SHERRIL: It is accurate to say that the remediation objectives to be achieved are based on Tier 1 levels and not part 620 groundwater quality standards even though several of the Tier 1 objectives are equal to the groundwater quality standards.

MR. RIESER: Dr. Hornshaw's testimony indicates that the industrial SSL scenario might not be appropriate for sites where contamination is larger than one acre. Is this limitation in the proposal?

MR. HORNSHAW: No.

MR. RIESER: Will the agency limit the use of Tier 2 for models when the contamination is larger than one acre?

MR. SHERRIL: A distinction on this question -- a distinction needs to be made between -- we've kind of discussed this before -- the site size versus the source size.

For example, we may have a 10-acre site that may only have a half acre of contamination source, and that shouldn't provide any limitation just because the site is 10 acres and the source is a half acre.

MR. RIESER: If the source is larger than one acre, would the agency include the use of the Tier 2 model?

MR. HORNSHAW: Let me preface my answer by saying in our experience, very few sites are greater than one acre of contamination, but usually these probably deserve a closer look in Tier 2 or 3, and that would include having a project manager make a determination whether a different volatilization factor might be appropriate or dilution factor for migration to groundwater, for instance.

MR. SHERRIL: And again we're looking at the source really being an acre, you know, fairly large it would be.

MR. RIESER: Is this discussion equally true of groundwater contamination and soil contamination?

MR. HORNSHAW: Yes.

MR. RIESER: So if you had a plume that was larger than one acre, the Tier 2 models would not be available?

MR. HORNSHAW: Not necessarily, but again when you get a big plume like that, you've lost some of your dilution factor that's inherent in the half acre assumption that goes into Tier 1 and Tier 2.

MR. SHERRIL: The Tier 1 and Tier 2 soil remediation -- most of the Tier 2 soil remediation objectives are based on an infinite source assumption, and so these calculate -- like the Tier 1 pre-calculated remediation objectives are protective of larger source areas as well so we do have the safety factor built in.

MR. RIESER: And then I think you've answered the final question, which was how will such larger sites be handled?

MR. HORNSHAW: Usually as a Tier 3 issue.

MS. ROBINSON: But potentially, they could be used in a Tier 2 scenario?

MR. SHERRIL: Yes.

MR. RIESER: That would be a call --

MR. HORNSHAW: Well, that could be done, for instance, by developing a site specific dilution factor. We have an equation in Tier 2 that will do that. If you have a very large source, you can develop the dilution factor appropriately.

MS. SHARKEY: Could I follow up on that, David?

MR. RIESER: Sure.

MS. SHARKEY: What are the factors that you might look at in allowing someone to use a Tier 2 for a larger site?

MR. HORNSHAW: How closely the site still approximates the assumptions that go into the calculation of the Tier 1 tables, the basic underlying assumptions. If they're not violated or violated that badly, you would probably still be appropriate to use the Tier 2 equations.

MR. SHERRIL: Generally on these larger sites as well, even if it's a 10-acre site, the actual sources, you may have a quarter acre source over here and a quarter acre source over here so the models are still protective. It's rare that you have a really huge source.

MR. HORNSHAW: And in most of these cases, they're already in the Super Fund program.

MS. SHARKEY: Does the shape of the, for example, spill area make a difference apart from its size? If you've got, for example, an L-shaped spill area, does that affect some of the dilution and other assumptions underlying the --

MR. HORNSHAW: It could.

MS. SHARKEY: Thank you.

MS. MC FAWN: Could I ask a clarification. You had said to develop sites, specific dilution factors is available under Tier 2. Whereabouts in the regulations?

MR. HORNSHAW: That's equation S-22. I don't have the page numbers on my copies

MS. ROBINSON: What appendix and what table?

MR. HORNSHAW: Appendix C, table A, equation S-22.

MS. ROBINSON: That's on page 122 of the board's copy.

MR. SHERRIL: We're still looking up our answer.

MS. MC FAWN: If you find any others,

you might want to just submit them to the board.

MR. HORNSHAW: Also, we have a table, an appendix C, table H, which gives Q over C values which are needed to calculate the volatilization factor per different acreage sources, source area by acre.

MS. ROBINSON: And that's page 161 of the board's copy.

MS. MC FAWN: Thank you.

HEARING OFFICER FEINEN: Are we done with follow-up?

MR. RIESER: No, I was going to go on -- actually, I'm sorry, earlier we had a discussion about -- a statement in Mr. Sherril's testimony where it talked about models might not be applicable to areas of higher permeability. Do you recall that, Mr. Sherril?

MR. SHERRIL: Yes.

MR. RIESER: Is this another factor where -- another type of factor that would be considered in evaluating whether the use of the Tier 2 model would be appropriate?

MR. SHERRIL: Yes. For example, if you had a Karst geology, it would not be appropriate.

MR. RIESER: Is there any language in the regulation itself which references this limitation on the use of the Tier 2 model?

MR. HORNSHAW: I don't think in the rule itself. In the incorporations by reference, we have the original USEPA soil screening guidance, and they talk about that in there, but it's not in the rule itself.

MR. RIESER: If there are restrictions placed on the use of the Tier 2 model based on accuracy, which is what I'm hearing with respect to these measures, how this model measures up with this specific type of site condition and their ability to predict actual physical behavior.

If it can be shown in a specific case that these Tier 2 model equations are not necessarily accurate in that sense but are conservative, in other words, overprotective with respect to actual exposure and risk, would the use of these Tier 2 equations still be acceptable for deriving remediation objectives?

MR. SHERRIL: Most likely.

HEARING OFFICER FEINEN: Just to clarify the record, the basis of the original questions

was from the prefiled questions of section 742.505, subsection (b), question 2, I think, is where you wanted to get back to, just so the record reflects that.

MR. RIESER: That's right. Thank you very much, Mr. Feinen.

I'm going to go on to question 4. On page 20 of Mr. Sherril's testimony, he states that exposure is a function of concentration. Is it not more accurate that there cannot be risk without exposure and that concentration is one of many factors in exposure along with transport and the presence of barriers?

MR. SHERRIL: In regards to page 20 of my testimony, the agency agrees that concentration is just one of the factors along with exposure, transport and the presence of barriers when evaluating risk.

MR. RIESER: On page 21 of Mr. Sherril's testimony, he states that, quote, "Tier 2 are designed to protect against chronic health impacts. Tier 2 is not designed to protect against acute hazards which are addressed by OSHA," unquote.

Is it correct that the derived Tier 2 remediation objectives would be as protective as any other objective derived under any other tier?

MR. SHERRIL: The Tier 2 equations are designed to protect against long term chronic health impacts. Remediation objectives developed under Tier 1 and Tier 2 are also protective of acute health hazards as well.

MR. RIESER: Let's get to the first question which is that the Tier 2 remediation objectives properly performed, et cetera, would be as protective as any objective derived under the other two tiers.

MR. SHERRIL: Yes.

MR. RIESER: And that it is more accurate to say that if a site needs Tier 2 remedial objectives based on chronic risk, then there are no acute threats?

MR. HORNSHAW: I would say yes with just a few exceptions. There are a couple of chemicals in the Tier 1 tables in which the inhalation value for construction workers is actually more restrictive than the inhalation value for residential scenario, and in those few instances,

it's a stretch, but the Tier 1 residential values might not be protective of a worker -- of a construction worker, sorry.

MR. RIESER: These are based on the assumptions of the construction worker actually being present in the soil and thereby inhaling more of the contaminant concerned?

MR. HORNSHAW: That's correct.

MR. RIESER: And then are not the Tier 2 objectives more conservative, and therefore, protective of acute threats? I think we've answered that already.

MR. HORNSHAW: Yes.

MR. RIESER: On page 23, Mr. Sherril uses the term "intended future use." Would the agency agree that this is the same as the term post remediation use as stated in the regulation and that both refer to the use intended after the remedial process is completed?

MR. SHERRIL: I had intended that future use refers to post remedial use, yes.

MR. RIESER: May Tiers 2 or 3 be used to determine a remediation objective in situations where the post remediation use will be

residential?

MR. SHERRIL: The Tier 2 and/or 3 may be used to make determinations when post remedial land use is residential.

MR. RIESER: If so, would the issued NFR letter contain use restrictions with respect to residential land use or nonresidential land use?

MR. SHERRIL: If Tier 2 or Tier 3 is used, the NFR may have conditions upon which the NFR determination was made, NFR referring to no further remediation.

For example, a residential -- and this is an example, not across the board -- property use in Chicago may not exceed, let's say, the remediation objectives except for let's say the migration to groundwater, but under a Tier 3 demonstration, for example, that that groundwater route is excluded, there may be no use restrictions on the property.

MR. RIESER: Thank you.

On page 23 of his testimony, Mr. Sherril describes the factors for residential land use. Does this term always include apartments?

MR. SHERRIL: Yes.

MR. RIESER: Under Tier 3 and with appropriate use restrictions, would the agency allow nonresidential remediation objectives for an apartment building with no soil exposure?

MR. SHERRIL: Under Tier 3, apartments may be considered as something different.

MR. RIESER: Something different than residential?

MR. KING: They would still be a residential use. What's confusing to us is when you use the term, with appropriate use restrictions. Are you meaning like a land use? Are you talking about a use between residential and industrial and commercial, or are you talking about conditions relative to the property?

MR. RIESER: I had intended to use something like barrier, the presence of barriers or the prohibition against drinking water, something of that nature.

MR. KING: Okay. Then that is something that's feasible, to end up with a nonresidential remediation objective for an apartment building if the soil exposures have been -- there's been a

barrier applied.

MR. RIESER: On page 25 of Mr. Sherril's testimony, he indicates there are chemicals to which Tier 2 would not apply. Can these chemicals be identified?

MR. SHERRIL: No. Let me give you an example. There's tens of thousands of hazardous substances, and if certain specific chemical properties are not available -- say, Henry's Law Constant is a parameter that's used in many of the Tier 2 equations -- then you can't use those Tier 2 equations.

There's not a Henry's Law Constant for nitrate so there's not an organic carbon prohibition coefficient available for that either so it becomes the equations don't accurately -- can't use the equations.

MR. RIESER: Are all of the -- can you use the Tier 2 for all of the substances listed in appendix B, tables A and B?

MR. HORNSHAW: I can think of two that you wouldn't be able to do a Tier 2 evaluation on, PCB's and lead. PCB's are regulated, or we've intended them to be regulated by federal

regulations pertaining to PCB spill cleanups. So it's either Tier 1 or Tier 3 for PCB's, and for lead, the physical -- I'm sorry, the transport equations are not available.

USEPA hasn't developed a database to -- or a graph of movement of lead with different changes in pH so we weren't able to include that in the table, for instance, so you couldn't do that as a Tier 2 issue either.

MR. RIESER: Is there any language in the regulation which identifies this limitation on the use of the Tier 2 table -- Tier 2 models, excuse me?

MR. HORNSHAW: No.

MR. SHERRIL: No, but I guess we provided -- within the part 742 in appendix C -- excuse me, appendix C, table E is a table called default physical and chemical parameters, and some of the -- along some of the chemicals there like, for example, atrazin, you go there and look for the first order degradation constant, and in the column it says no data, which means there's no data available for that.

MS. ROBINSON: Just for clarification,

that starts on page 148 of the board's copy.

MR. RIESER: Didn't you add a footnote, at least on the first order of degradation constant, if it's not readily available, then you use zero as a value?

MR. SHERRIL: That's correct.

MR. RIESER: And that footnote was added to appendix C, table C. This business about the inapplicability of models, is that true of both the ASTM and the RBCA models?

MR. HORNSHAW: I believe for PCB's, that's true because PCB's is a mixture of many individual components so you wouldn't have a single physical chemical constant to plug into either model.

MR. WATSON: I've got a follow-up. I'm confused. If there is a reference in the tables to the absence of data, then we are to assume that for that contaminant, you cannot use the Tier 2 equations, or was the answer that if there is no data, you use zero, and you can still use the Tier 2 equations?

MR. HORNSHAW: For first order of degradation constant, that's true.

MR. WATSON: I'm sorry, what? My question was a bad one. Your answer relates to what, that you can't use the data or you use zero?

MR. HORNSHAW: You use zero for first order degradation constant if the value isn't provided in --

MR. WATSON: That's table C?

MR. HORNSHAW: Appendix C, table E.

MR. SHERRIL: Also like in that appendix C, table E, like the chemical nitrate is a nutrient, I guess. It's not even listed in there, and we just know from experience that many of those -- some of those values are not available.

MR. WATSON: So if your chemical doesn't show up on the list, you can't use the Tier 2 analysis?

MR. SHERRIL: No, not necessarily. What you would need to do is obtain the --

MR. HORNSHAW: Not immediately because you would have to either develop or obtain from the literature the appropriate physical chemical constants and then submit them to the agency for review which is by definition a Tier 3 issue.

Once the agency accepts the values proposed, then they could be used in Tier 2.

MR. WATSON: Okay.

MR. FEINEN: No more follow-up. I think Mayer, Brown & Platt, Ms. Sharkey, I think you had some questions on 742.600, at least one.

MS. SHARKEY: My question as written here is, please explain the applicability of Tier 1 or Tier 2 objectives under subsections (f) and (g). What I mean by that is in taking a look at those two subsections, I really had trouble making out where I could use a Tier 2 objective and where I would be using a Tier 1 objective.

MR. SHERRIL: Are you specifically 742.600 (f) and (g)?

MS. SHARKEY: Yeah. I'll read it in the record just so everybody is thinking about it. "If the calculated Tier 2 soil remediation objective for an exposure route is more stringent than the Tier 1 soil remediation objectives for the other exposure routes, then the Tier 2 calculated soil remediation objective applies and Tier 2 soil remediation objectives for the other exposure routes are not required."

MR. SHERRIL: We wanted to clarify what that is saying (f) there, is that if you calculate a Tier 2 objective that is more stringent than a Tier 1 pre-calculated objective, then the Tier 1 objective would still apply.

This is expected to occur very infrequently, and we do not think it would be of significance in regards to impacts to human health and the environment and in fact would probably only incur -- if one were to change, probably only one variable in a Tier 2 equation, and you're not really changing the other variables in the Tier 2 equations, and the model would probably be incorrectly modeling what was actually occurring.

MS. SHARKEY: John, I'm looking at (e), and I think (e) talks about if the Tier 2 objective is more stringent than the corresponding Tier 1, then Tier 1 applies.

MR. SHERRIL: Correct, that's (e).

MS. SHARKEY: (F) is the one that I'm finding confusing. (F) appears to say that if Tier 2 is more stringent than Tier 1 for a particular exposure route, then the Tier 2 remediation objective applies and the other -- for

that route. I'm not sure. That's why I'm asking the question.

MR. SHERRIL: When you go through the different tiers -- and let's say for an example for soil, you were looking at ingestion, inhalation and migration of groundwater, and when we use the term conservative, we intend that to mean the most health protective, and you pick the most -- unless a route is excluded, as we've discussed earlier, you pick the most restrictive remediation objective of those three.

Then what (f) is saying is if you were to go on then and calculate a Tier 2 soil objective for an exposure route that is more stringent than the Tier 1 soil objectives for the other exposure routes, then the Tier 2 objective applies. What we're trying to -- what we're trying to do is -- we're trying to make it clear is when you drop out, in other words, if you calculated the Tier 2 for a particular exposure route, then that Tier 1 number would not apply then.

So then you would go to the Tier 2 number, but you've got to keep in mind which

exposure routes are we looking at and are all three exposure routes still applicable. It's almost like you had six different -- for soil, you have the six -- you have inhalation, ingestion, migration to groundwater. Let's say you had those three under Tier 1, and then you had three for Tier 2 so you're up to six remediation objectives. Well, the most restrictive value would apply if all three routes are still in consideration.

MS. SHARKEY: Under (e), the Tier 1, if the Tier 2 is more restrictive than the Tier 1, the Tier 1 is going to apply?

MR. SHERRIL: Correct.

MS. SHARKEY: Now, under (f), if the Tier 2 is more restrictive than the Tier 1 for other -- now, the other, are we talking about those other than the one looked at under (e)? What does "other" refer to, other exposure routes?

MR. KING: Let me try. If you take a chemical, you know, under Tier 1, you're going to find three pathways so you're going to come up with three different numbers, okay. If you go

then into Tier 2 and you do your calculation under Tier 2, and if you come up -- let's just say for the inhalation route, you go through and you do your Tier 2 number, if that Tier 2 number is more conservative than the Tier 1 number for the other two pathways for ingestion and migration of groundwater, you don't have to do the Tier 2 calculations for those other two pathways, okay, that Tier 2 number.

MS. SHARKEY: Because you're just going with the most stringent?

MR. KING: The most stringent. So you would only do one Tier 2 calculation in that instance.

MS. SHARKEY: If my Tier 2 had been more stringent than the Tier 1 for an exposure pathway, and under (e) I'm using Tier 1, now I go to look at my other two pathways, and now I compare those to the Tier 1 or the Tier 2? I'm trying to put (e) and (f) together.

MR. SHERRIL: (E) and (f) should be looked at separate. We put (e) in there because we had a few people giving us remediation objectives that were more restrictive than what

we've given them as our Tier 1, and so we said, oh, we better put something in here to let them know that they don't have to use this more restrictive number if they calculate it, and so (e) kind of stands alone on -- stands on its own. Don't try to combine (e) and (f).

MS. SHARKEY: So all (f) is saying is the most restrictive of your three numbers is going to be your restriction, is going to be the one that applies?

MR. SHERRIL: Yes.

MS. SHARKEY: Could you help me on (g) again as well?

MR. SHERRIL: On (g) there again we're saying that the most stringent -- or I like to use the word health protective -- Tier 2 objective applies of the applicable exposure routes.

MS. SHARKEY: So if it's --

MR. SHERRIL: An example there, what we see a lot of times is people, their most restrictive route in a lot of instances is the migration to groundwater route. So they go and calculate a Tier 2 migration to groundwater route, and they like that number because it's less

restrictive, but then they think, well, heck, I'm going to go ahead and then let's say you calculate a Tier 2 on migration to groundwater, then you go back and say, well, my most health protective number now is inhalation for -- let's say, inhalation.

Then they go, I'm going to calculate a Tier 2 for that, also, and if that number ends up being the most restrictive, then you would use that number. So it's up to the party on which one -- if they want to calculate Tier 2 or not. I mean, it's to your favor to calculate Tier 2 numbers and compare them with the Tier 1s and see which one is the less restrictive.

MS. SHARKEY: With regard to any of these options, if the Tier 1 is less restrictive, you can use the Tier 1 for that exposure pathway?

MR. SHERRIL: If the Tier 1 is the -- correct. Then the next level from that would be the Tier 2 number. Like I said, it's rare, but it is possible that you can calculate a Tier 2. It becomes more restrictive than the Tier 1. So that (e) --

MS. ROBINSON: And in the instance where

they calculate a Tier 2 number that ends up being more restrictive, they still have the option to go back to the Tier 1 number, is that correct?

MR. SHERRIL: Correct.

MR. KING: Let me just add something because this (e) becomes an important point in the context of the underground storage tank program. We do not want people doing calculations coming up with more restrictive numbers and then cleaning up to those more restrictive numbers.

We want to stop any kind of remediation in the tank program because it's going to be paid for out of the tank fund. We want to stop it at Tier 1. We don't want to go past that.

MS. SHARKEY: In (g) in the second line, there's a term soil remediation objectives, and it reads, if the calculated Tier 2 soil remediation objective is less stringent than one or more of the soil remediation objectives for the remaining exposure routes. Does that mean Tier 1 soil remediation objectives, or that -- in that second line, what --

MR. SHERRIL: Tier 2.

MS. SHARKEY: In order to figure out if

it was less stringent, you would have had to have calculated all three of them anyway, wouldn't you?

MR. SHERRIL: Correct.

MS. SHARKEY: You just simply take the most restrictive of those three once again?

MR. SHERRIL: Correct.

MS. SHARKEY: Thank you. I don't know if I was the only person that was confused by this, but it was difficult for me to unpack these.

MS. MC FAWN: On that line I think I grasp it, but I wonder if the agency could outline some examples, not at this time, but maybe showing us how this works knowing that they're just examples.

MR. SHERRIL: I provided two examples in my testimony.

MS. MC FAWN: Okay, I guess I lost sight of that. How these three work together.

MR. KING: We can do that. We'll come up with some examples to show that.

MS. MC FAWN: Trying for the other board to members follow that.

MR. KING: It points out the difficulty

of trying to take what is in essence an equation and table-based system and write narrative words explaining that. It becomes something that is easier to see visually in a table or equation format, and that becomes more difficult to write and have it understood in a narrative fashion.

HEARING OFFICER FEINEN: Is there any more follow-up on that question? I think we'll take another five-minute break here.

MS. ROBINSON: Is there any indication of like if we're going to break today and resume in January because I have a feeling we're not going to get close enough to being finished to quit at 6:00, and you know, we have several hours of driving ahead, too.

HEARING OFFICER FEINEN: I think we can go off the record.

(Discussion off the record.)

(Recess taken.)

HEARING OFFICER FEINEN: Go back on the record. I got a couple of things to say. First of all, I think it has been decided that we're going to continue this matter on December 10th in Springfield at 10:00 a.m. at the Stratton

Building, Room A-1.

Hopefully, tomorrow we'll have an Hearing Officer order addressed in this issue going out, and that should be circulated and going on the Web and so forth and so on. The other issue was how far we're going to go today.

MS. MC FAWN: The reason we're going to have this hearing is we believe that it's very important that we get through the prefiled questions now so that when we find any glitches, they can be corrected in January, and we're really bumping up against our second notice in January, preparing for the second notice.

So we anticipate that the hearing on Tuesday, that we're continuing until next Tuesday is for the purpose of getting through the prefiled questions. Today I think that it's advisable that we get at least to the questions up to subpart I, that is, Tier 3, leaving Tier 3 for next Tuesday.

I don't want to end up in such a time crunch next Tuesday that the board doesn't have before it and the participants don't have before them the information they need for the

January hearings. So today I want to go as long as necessary to get to Tier 3, okay.

HEARING OFFICER FEINEN: So with that, I think we'll start out with the Site Remediation Advisory Committee.

MS. MC FAWN: Before we go on to the questions again, is there any other comments that you want to make on the record about the continuation of the hearing? I know for the most part, you have during the break committed to coming. I know that Ms. Sharkey has informed us that's not a good day for her but maybe someone else from her firm could come.

MR. RIESER: Did you say a time?

MS. MC FAWN: 10:00 a.m. I would also note on the record that there is a hearing scheduled in that very room. The board has scheduled an underground storage tank hearing. We have checked with the hearing officer in that matter, and she, along with some of the critical participants in the agency in that hearing, believe that they will only need the Monday before to wrap up the public testimony on the underground storage tank rule before the board.

So if any of you have that day reserved on your calendar for underground storage tanks, you can come and hear more about T.A.C.O., at least that's how we anticipate it going. Any comments from anyone? Any questions?

HEARING OFFICER FEINEN: Mr. Reott.

MR. REOTT: No, it got answered.

HEARING OFFICER FEINEN: Can we start out then with Site Remediation Advisory Committee, 742.610.

MR. RIESER: Yes. Will the agency -- and I think this has been asked and answered -- will the agency confirm that this section applies only to Tier 2 and Tier 3 remedial objectives and not to Tier 1 objectives?

MR. HORNSHAW: Yes.

HEARING OFFICER FEINEN: Any follow-up questions? 742.615, Site Remediation.

MR. RIESER: Must an applicant use appendix C, table E, for these parameters?

MR. HORNSHAW: Yes.

MR. RIESER: Can other values be substituted under Tier 3?

MR. HORNSHAW: Yes.

MR. RIESER: With respect to subsection (b)(2), will the agency clarify that a person does not need an evaluation for each stratigraphic unit?

MR. SHERRIL: I want to make a distinction on under Tier 2 here, we're using this to determine site specific soil parameters for input into the Tier 2 equations. These site specific parameters can accurately or more accurately reflect a site's conditions, and while we're not requiring sampling from each stratigraphic unit, the agency would tend to look on the more conservative unit.

If you had a sand unit and a clay unit, we wouldn't just say, well, the sand unit's indicative of the whole site, and I also wanted to refer part of this question to Doug Clay.

MR. CLAY: I think the term stratographic unit is at issue in the 732 LUST hearings, and that's still being worked out and defined, and the use of stratigraphic unit in this context and in LUST is a little bit different where in the LUST hearings, you're looking at stratigraphic unit to compare it to the Berg

Circular.

MS. MC FAWN: B-E-R-G.

MR. CLAY: And in this context, you're looking at doing physical soil sampling on the soil of the unit below the contamination, between the contamination and groundwater.

MR. RIESER: Thank you, Mr. Clay, because what you're doing is confirming that these are really separate issues and under this program, the focus on evaluating each stratigraphic unit is not as driven by the statutory framework but is instead a function of trying to provide a total site evaluation.

MR. CLAY: That's correct.

MR. RIESER: Are all of the Tier 1 residential values in appendix B, table A calculated from Tier 2 SSL equations using default values identified in the appendices? And if not, how are they different?

MR. HORNSHAW: In three cases the Tier 1 value could not be derived from Tier 2 equations. That's the case for PCB's, lead and pentachlorophenol. We've discussed the reasons for all three of those previously.

MR. RIESER: Thank you.

MS. SHARKEY: Could I do one? Are you saying then that the default values are the Tier 1 values for every other chemical besides those that you've mentioned?

MR. HORNSHAW: Yes.

MR. SONI: Before we go to 615, 742.610, the equation calculate the weighted average. It seems to be missing left side of the equation. It says weighted average equals.

MR. HORNSHAW: You're correct.

MS. ROBINSON: We'll take a look at those for correcting in errata No. 2. While we're on this topic, since we're now going to meet next Tuesday, it's going to be a little more difficult for us to commit to getting you an errata sheet next Tuesday rather than in January. So is it still okay to do those follow-up issues we committed to in January in January?

MS. MC FAWN: Yes. That's what I was anticipating.

MS. ROBINSON: Okay.

HEARING OFFICER FEINEN: Any more follow-up? 742.615, Mayer, Brown & Platt,

Ms. Sharkey.

MS. SHARKEY: My question has been answered. Thank you.

HEARING OFFICER FEINEN: Should we move on to 742.700, subpart G, Tier 2 soil evaluation, Site Remediation Advisory Committee.

MR. RIESER: This section --

MR. WATSON: Excuse me, I have one other follow-up question -- and forgive me if I'm missing the boat here.

On 615(b)(2), the Site Remediation group's question 2, are all of the Tier 1 residential values in appendix B, table A calculated from Tier 2 SSL equation using default values identified in the appendices. Just for my purposes, not all of the values in that table are calculated from the SSL equations, correct? There are some of those that are calculated using TCLP values, right?

MR. HORNSHAW: That's correct, also. It's not calculated. It's just the result of the TCLP test.

MR. WATSON: And two of those values are calculated using the sulfates, and the chlorides

are calculated based on something else, is that right?

MR. HORNSHAW: Those values were in the 620 rulemaking and established the standards for Class 2 and 1. In the case of sulfate and chloride, the standard was based on 95th percentile occurrence in monitoring data rather than any toxicological criteria.

MR. WATSON: Could you just explain that standard, that 95th percentile standard.

MR. HORNSHAW: Public water supplies are required to monitor for chloride and sulfate and report the results to the agency, and the agency maintains all this information in a database and pulled out the 95th percentile occurrence of all the monitoring results that had been reported at the time of that rulemaking.

MR. WATSON: Thank you.

HEARING OFFICER FEINEN: Any more follow-up? Mr. Rieser, section 742.700.

MR. RIESER: Thank you. This is with respect to subsection (d), which should be subsection (f) under this section. This section indicates that a person must calculate

construction worker objectives and be bound by those objectives if more stringent than for other pathways.

For a construction worker scenario, is it possible to use an institutional control which identifies the area of contaminated media and requires compliance with OSHA for workers performing invasive construction work in that area?

MR. SHERRIL: Let me say generally yes and kind of break that up into three parts. It identifies the area of the contaminated media. This word compliance with OSHA for workers, let's say, performing in basic construction work in that area, maybe a better term would be like place a duty upon an employer.

I may have used the word compliance in my testimony, I'm not sure, but it's more like placing a duty on the employer for safe working conditions, and then also some kind of notification, which would include some kind of notification for construction and emergency workers prior to work in these contaminated areas.

MR. RIESER: So the basic point being

that you can address levels that are in excess of the construction worker scenario by the use of institutional controls such as the types you described rather than remediating a level -- remediating the contaminants to those levels?

MR. SHERRIL: Yes.

MR. HORNSHAW: While we're on the subject of construction worker, could I correct a minor problem in my earlier testimony? In response to Mr. Reott's question about what the agency changed from the ASTM model, I neglected to include that we have included the use of subchronic reference doses and reference concentrations for the construction worker, whereas ASTM's approach only uses the chronic reference doses and reference concentrations. Thanks.

MR. RIESER: Going to page 2 -- I'm sorry, item 2. On page 29 of Mr. Sherril's testimony, he indicates that the default values for physical soil properties are, quote, "health protective," unquote.

Does this mean that they are values which will produce a low remedial objective when

used in the Tier 2 formulas or values that represent typical Illinois soil conditions?

MR. SHERRIL: Let me answer that by saying for a low remedial objective, I assume you mean the more health protective remedial objective.

MR. RIESER: I guess a mean a more conservative or valued number.

MR. SHERRIL: We've thrown this word out "default" several times, and there's been some confusion. We've heard what that means. Many of the, quote, default values were primarily provided for USEPA documents which are incorporated by reference and ASTM, and a default value is not to be interpreted as if the agency like no other value could be obtained so we just thought up some number.

It is not to be interpreted as that, and the Tier 1 objectives were calculated, though, using these default, let's say, values which we have provided in the appendices, and they do present values which are conservative and health protective, and we have a little trouble, though, with like typical Illinois soil

conditions.

It represents values that are protective of, for example, soils that would tend to migrate -- lets contaminants migrate freely, and since we have such a wide variety of soils in Illinois, we really don't have typical Illinois soil conditions.

There's some soil parameters in the -- and I kind of went through some of them like soil particle density is a value that generally almost all the textbooks give one value for it, and there's no use really even obtaining another value for it and the equations aren't sensitive to it anyway.

MR. RIESER: But where there were potential range of physical chemical values, you could assign -- the default values that were selected were based on a soil scenario that would be, let's say, identified more permeability, more transport opportunities.

MR. SHERRIL: That would be fair to characterize that, yes.

MR. RIESER: And yet the purpose of Tier 2, of course, is that an applicant can evaluate

the in-site specific soil for certain parameters which you've identified and put into the equations those values that are representative of site conditions?

MR. SHERRIL: Yes.

MR. RIESER: On page 33 of Mr. Sherril's testimony, he states that, the purpose of Tier 2 soil objectives is to ensure that the 35 Illinois Administrative Code standards are not exceeded. Is not it more accurate to say that the purpose of Tier 2 soil equations is to ensure that the appropriate groundwater remediation objectives are met at the point of human exposure?

MR. SHERRIL: Yes.

MS. MC FAWN: I would note for the record that you're referring to the standards, that's part 620. I think you skipped that.

MR. RIESER: The 620 standards are identified, and then the appropriate groundwater remediation objectives which I have in the question are really the groundwater remediation objectives identified in this, the Tier 1 groundwater remediation objectives which are identified in this proposal.

Mr. Sherril, is that how you understood that?

MR. SHERRIL: Yes.

HEARING OFFICER FEINEN: Any follow-up questions? Move on to 742.805, subpart H, Tier 2 groundwater evaluations, Site Remediation.

MR. REOTT: You know, I've actually got questions I think fit more into the prior section.

MR. RIESER: I think that's correct.

MR. REOTT: I want to do these. Turn to question 18. For both metals and other contaminants regulated by part 742, may the site use leachate data obtained from actual site leaching tests to replace the calculated target soil leachate values -- which was the form of the terms -- used in formula S18 for the SSL model and formula R14 for the ASTM model. And then I go on, actual site leaching tests eliminate the uncertainty of estimating leachability based on laboratory analysis and literature values and already have been approved by the agency in some contexts such as landfill modeling?

MR. SHERRIL: The part that you have on the question, we would say yes. Under Tier 3, we

would think this is quite a more extensive and rigorous approach, more samples would be needed and so forth, and then on the second part, I guess which is a statement, I don't have any response one way or the other on that.

MR. REOTT: You see what I'm trying to say. Instead of trying to guess at -- based on the science, to guess at leachability, why not do actual leaching testing and then plug that into the formula?

MR. O'BRIEN: That would be a Tier 3 issue. We could consider that, yeah.

MR. REOTT: Then skip ahead to No. 40, may you meet cleanup criteria by demonstrating the site does not exceed background for one pathway or contaminant and then use one of the models for the other pathways?

MR. SHERRIL: Yes.

MR. REOTT: And then in 41, in the Tier 2 calculations, do the formulas assume Class 1 groundwater?

MR. SHERRIL: No.

MR. REOTT: So if you had a site with Class 2 groundwater, if that was the actual

groundwater beneath the site, you could use Class 2 groundwater, plug them into the formulas and then rerun the Tier 2 numbers?

MR. SHERRIL: Yes.

MR. REOTT: I skipped one, No. 15. I just realized I skipped one.

MS. ROBINSON: Was that 15?

MR. REOTT: 15. The use of the Tier 2 equations for metals is unclear. How do sites with metals contamination problems use the equations in Tiers 2 -- and I said in 3, but you just focus on 2 -- to determine more realistic site specific cleanup objectives?

MR. SHERRIL: Appendix C, table J, has 12 inorganic values in these pH specific ranges that can be used to determine a more realistic migration of groundwater objective.

MR. REOTT: But that doesn't use the SSL model or the ASTM model?

MR. SHERRIL: It's an SSL model.

MR. REOTT: The pH table comes from SSL?

MR. HORNSHAW: Correct.

MR. REOTT: From their fact sheet or

whatever it's called?

MR. HORNSHAW: Well, yes, and it also derives from equation.

MS. ROBINSON: Just for clarification for the record, it's on page 164 of the board's copy.

MR. SHERRIL: This is a different pH table than what we were talking about before. This one is a pH table that you obtain these values from this table depending on your pH and then plug them right into the Tier 2 equations versus the other pH table you look at the pH and it gives you the remediation objective just right out of the table.

MR. HORNSHAW: And for inorganics, the KD value, which is defined in equation S19 as KOC times FOC, the KOC times FOC part is irrelevant for inorganics. So you just use the KD that's in the table and use it in equation S17.

MR. REOTT: Appendix C, table J, has the substitution values for, I think, 12 inorganics. For the other inorganics that don't have the values, are you not able to do Tier 2 analysis?

MR. HORNSHAW: That's correct. That

would have to be handled as a Tier 3 issue. For instance, you could derive a site specific KD using I think it's USEPA's Minteq, M-I-N-T-E-Q, model and then plug that KD value again into that equation that I just mentioned.

You could also do a literature search and propose a KD value based on studies that have been reported in the literature for the agency to review. These would be ways that somebody could do the inorganics that aren't included in the tables we've already provided.

MR. REOTT: One of the things that's hard to evaluate from your proposal is it's very difficult to figure out all the gaps when you can't use the formulas for particular contaminants, and we went through this before where, you know, it isn't until you go through the list you realize that you just skipped the contaminant and it wasn't listed so you don't have any values and you can't use the formulas.

Would you mind putting together a list of the instances where the use of the formulas is unavailable for particular contaminants because we don't have values listed

in the back.

MR. SHERRIL: I don't think we have the time to do that because there again there's tens of thousands of hazardous substances, and to go through each one and make a determination --

MR. REOTT: John, let me make it simple --

MR. SHERRIL: -- it would be unwieldy.

MR. REOTT: Let me make it simple. Just start with the list that's in Tier 1 and look at that list because what happens, I think, is -- and some of these were discovered this morning, at least I haven't focused on them before.

When you go back into the tables, if you don't actually have values for certain contaminants, you can't run the formulas. You're stuck then with Tier 3 or Tier 1, and you don't have any Tier 2 options

MR. SHERRIL: I would be hesitant to agree to that because some of the chemicals you can use in some of the equations. It's not a blanket like you can use them and you can't use them because that first order of degradation constant, when we ran into that problem, we said,

okay, we'll use a substitution of zero.

Well, that applies for certain of the chemicals, but I would be hesitant to do it for time constraints, but also, you know, we could easily miss something on that.

MR. REOTT: I think it's hard for us to evaluate the proposal fully without being able to figure out exactly which of the contaminants are listed in Tier 1 we can even do a Tier 2 analysis for, and if we can do it, can we only do it with SSL or do we have to use ASTM or are both options available?

You end up having to search through the real fine detail here to find what's sometimes very important issues. I'm not saying you need to have it by Tuesday, but I don't think it's unreasonable to ask for it by January. If you tell me you're not going to do it, I can't make you do it.

MR. KING: That's a comment we have to evaluate. If we don't have the time and resources to do it, we won't be able to do it.

MR. REOTT: That's all at this point.

HEARING OFFICER FEINEN: Next we switch

back to the Site Remediation Advisory Committee, 742.805.

MR. RIESER: I had a couple of questions that probably come up under 700 that really come out of the provisions that the agency made to their appendices which we got yesterday, and if I can ask those real quick and if you want to answer them at a later time, that's fine. I think this is pretty much where they happen.

The primary one I wanted to ask about is that the target risk that is described in appendix C, table B, originally had different values between the commercial and residential and construction worker or at least allowed the range for the commercial and residential and construction worker and not for the residential, and there's also other points in the regulation itself, 710(b)(3), 710(c)(2)(a), 710(3)(b)(c) and 715(d), that talk about a shifting target risk of more than 1 million, and the question is how do these all work together now with the change in the appendix?

MR. KING: I don't think we can give an organized answer to that question as we sit here.

We'll have to do that later.

MR. RIESER: Okay, thank you. One of the other values that was changed again in the same table was the Q over C, used the VF equations, and one was added, a Q over C used in the PEF equations, and the parameter values between the two -- well, at least the parameter values for residential appear to be different.

Am I understanding that these are values that are derived from USEP -- I'm sorry, the SSL tables per a five-acre site and that the 68.81 value is for a site in Los Angeles. A residential site in Chicago would be a larger value. And amy question is why not use -- why do we have two different Q over Cs, and why not use the Chicago value from the SSL?

MR. HORNSHAW: We continue to use USEPA's Q over C value for the residential scenario so that our table would be consistent with their table. We didn't want to do a complete recalculation of the residential table. Since USEPA doesn't have an industrial commercial table, we felt we could use the Chicago Q over C value in constructing that table.

MR. RIESER: But isn't the Chicago value higher than the value you are using here?

MR. HORNSHAW: Yes, it is.

MR. RIESER: So the Chicago value was used or was not used?

MR. HORNSHAW: Was used for the industrial tables, was not used for the residential tables.

MR. RIESER: Is there any thought about recalculating based on the Chicago -- using the Chicago value?

MR. HORNSHAW: I think we would prefer to maintain consistency with the federal program as much as possible, which is, for instance, the reason we continued to use their health base levels instead of the 620, subpart F values where the chemical doesn't have MCL

MR. RIESER: Wouldn't using the Chicago values be more consistent with the federal program?

MR. HORNSHAW: Consistent in what way?

MR. RIESER: Consistent with using the values they identified as being appropriate for the climate conditions in Chicago.

MR. HORNSHAW: Possibly, but if we're going to be consistent with Illinois, then we would probably want to go to the Illinois groundwater values, too.

MR. RIESER: And in most instances where you would have them, that's what you did, is that correct?

MR. HORNSHAW: For groundwater?

MR. RIESER: Yeah.

MR. HORNSHAW: No. As I stated in my testimony, we decided to use the health-based levels so that the values in our look-up table would be consistent with the values in the USEPA's look up table, even though the use of groundwater values for subpart F of 620 would have been probably five times more stringent than the health-based values that the USEPA used.

MR. RIESER: I'm sorry, I cut you off. What did you say?

MR. HORNSHAW: If we used 620, subpart F to calculate groundwater values for chemicals that don't have MCL's, those values would have probably in most cases been five times more stringent than the USEPA's health-based levels which we decided

to use in the interest of being consistent as much as possible.

MR. RIESER: But when you had values from 620 that were adopted and didn't require calculations through subpart F, you used those values, isn't that correct?

MR. HORNSHAW: I'm not sure I'm following your question.

MR. RIESER: I'm just going to leave this.

Also, in the same table with respect to infiltration rates, you've got an infiltration rate and then an infiltration rate to be used for the mass loading equation.

MS. ROBINSON: Is that in the errata sheet?

MR. RIESER: Yes, it is.

MS. ROBINSON: You're looking at the appendices, I believe.

MR. RIESER: This is the revised appendices.

MS. ROBINSON: Right, and some of those, as we stated yesterday, have not gotten into the errata yet. They're going to go into errata 2.

They may be shaded there but not referenced here. I want to see if the reference here we're looking at the same place.

MR. RIESER: I am looking at the appendices that were passed out that were provided yesterday with shading, and obviously we haven't had time to cross reference these to the errata sheet.

MS. ROBINSON: Is that appendix C, table B?

MR. RIESER: Yes, it is.

MS. ROBINSON: Can we defer this question until we get errata No. 2 done?

MR. RIESER: That's fine.

MR. HORNSHAW: If you're referring to I, sub M-L --

MR. RIESER: Yes.

MR. HORNSHAW: -- the value that's in there is the one that's specified in USEPA's document, if that answers your question.

MR. RIESER: How is that different from I?

MR. HORNSHAW: Numerically or -- both of the values are specified by USEPA, and I'm not

sure how either of them were derived.

MR. RIESER: Thank you.

MS. ROBINSON: I'd like to clarify here, too, if we are referring to I, sub M-L, that that is in the first errata sheet on page 8.

MR. RIESER: Okay, thanks very much, and I'm ready to go on to 805 prefile.

HEARING OFFICER FEINEN: We have a follow-up question in the back.

MR. JAMES: Ken James, Carlson Environmental. I have a follow-up to Mr. Rieser's question about the table in appendix C, that you spoke to the SSL parameters and the RBCA parameters in regards to TR cancer risk. I know you mentioned it briefly in his question about this table, but I would like a little clarification, in that the TR's that were allowed originally were 10 to the minus 4 and ranged up to 10 to the minus 6 down to 10 minus 6, and now in your new errata sheet and in this new appendix that was handed out, they have been limited to 10 to the minus 4 at the point of exposure, and I would just like to hear the agency's --

MR. REOTT: 10 to the minus 6.

MR. JAMES: 10 to the minus 6 at the point of exposure, and I would like to hear the agency's reason for that change and how would that, in the agency's opinion, affect the calculation of objectives at the Tier 2 level and how that would affect the use or nonuse of an engineered barriers?

MR. KING: I thought we -- at least the first part of that, I thought we answered that already.

MS. MC FAWN: You know, I don't believe Mr. James was here when we had that discussion, could you summarize it? Is that possible?

MR. KING: I really hate to try to do that because I'm going to end up with a different statement than what I had on the record earlier, and then the record is going to be confused on that point. So perhaps, Mr. James, I could have a conversation at some point in the future on that off the record. If need be, we can go over it.

MS. MC FAWN: I would just note for your information, Mr. James, we did discuss the change from 10 to the minus 4 to 10 to the minus 6, I believe, this morning before lunch, but I'm not

even sure of the time.

MR. JAMES: And how it ties into the use and nonuse of engineered barriers?

MS. MC FAWN: And how it -- pardon me?

MR. JAMES: Ties into the use and nonuse of engineered barriers.

MR. KING: I don't think we directly discussed that. The engineered barrier, when it's coupled with an institutional control, is a mechanism to shift the point of human exposure away from the source.

MR. JAMES: So then the use of an engineered barrier would eliminate the need to calculate an objective?

MR. KING: No, I wouldn't agree with that. It depends on the context that you're using it in. That would not be true in all cases.

MS. ROBINSON: Mr. King, isn't it true that any time you use an engineered barrier, you also have to have an institutional control?

MR. KING: Right, that's correct.

MR. JAMES: Yeah, so?

HEARING OFFICER FEINEN: More follow-up?

MR. JAMES: No, no thank you.

MR. FEINEN: I guess we're ready to begin I think for the third time 742.805.

MR. RIESER: Thank you very much. Subsection (a)(1) requires that the horizontal and vertical extent of the contamination be identified. Can this be done through a combination of modeling and sampling?

MR. SHERRIL: Yes. The extended groundwater contamination can be determined through a combination of modeling and sampling.

MR. RIESER: Will the agency allow direct push technology for identifying the extent of the contamination?

MR. SHERRIL: The agency allows direct push technology such as a geoprobe, if you're familiar with that. We've recently purchased a geoprobe for use. The term direct push technology incorporates other sampling techniques and methods other than just a geoprobe. If it was a technique we're not familiar with, I can't really state on the record whether we would approve of that.

MR. RIESER: Are there direct push technologies that you determined to rule out at

this point that you're familiar with?

MR. SHERRIL: I don't think we've necessarily ruled any out. The technology is still somewhat new, and the techniques, for example, to collect groundwater samples, collect soil samples is still an emerging technology on their proper use.

MR. RIESER: Okay, thank you. Subsection (a)(2) requires that corrective action be taken to the maximum extent practicable to remove free product. If the default values in section 742.215 (determination of soil attenuation capacity) and 742.220 (determination of soil saturation limit) are not exceeded, does the agency consider free product present in the soils?

MR. SHERRIL: It may not necessarily be in the soils. It may be in groundwater.

MR. RIESER: I think we had a discussion yesterday that there was an addition to the -- an addition to the evaluation of groundwater where -- there was an addition in the errata where it was in 320(b), to the maximum extent practicable, corrective action has been taken to remove any

free product where there was this discussion, that these particular sections, Section 215 and 220, would not be applied to the valuation of groundwater, is that correct?

MR. SHERRIL: Correct.

MR. RIESER: So this is sort of an extension of that same thought?

MR. SHERRIL: Correct.

MR. RIESER: What are the standards for determining the practicability of removing free product?

MR. SHERRIL: The items that are used to determine the practicability of free product removal includes site specific criteria such as the concentration of contaminants, the toxicity of the contaminants, the amount of contaminants, the estimated migratory pathways, whether any free product, free faced contaminant is present, whether the soil attenuation capacity is exceeded, whether a sheen is visible either in the soil, groundwater or surface water, whether remaining contamination will be disturbed by construction workers or other human activities, whether remaining contamination will be disturbed by

natural or animal forces, high infiltration rates, highly permeable units such as a Karst geology, burrowing animals, whether the release point of the contamination can be located.

Such as in the LUST program, we know where the release point is at the tank versus many sites in the site remediation program where we do not know where the release points are, and the intended post remedial use of the property, if it's going to be residential, is it going to be a playground. Those are factors that we look at.

MR. RIESER: Could you list among those whether there were technologies available to remove the free product?

MR. SHERRIL: I didn't hear you.

MR. RIESER: Did you include among that list whether there were technologies available to remove the free product?

MR. SHERRIL: No.

MR. RIESER: Would you consider that as well?

MR. SHERRIL: Yes.

MR. RIESER: And so you would consider the technical and practicability, whether it was

technically possible to remove the free product as part of the consideration?

MR. SHERRIL: Yes. The list I gave was not intended to be an all-inclusive list. This is just things we looked at.

MR. WATSON: Let me ask you a follow-up on that question. That is, what kind of showing would have to be made to show that something wasn't technically practicable?

MR. SHERRIL: Really to the items that I just listed would be we look at those and then we look at, you know, with the state of engineering that it is today, whether it's feasible to remove free product.

MR. WATSON: If someone used the -- if someone went out and did a free product removal action out there with the recognized technical equipment available to do free product removal, would the agency consider that sufficient -- whatever the results of that removal activity yield, would the agency consider that sufficient to satisfy what was technically practicable?

MR. SHERRIL: I guess that's such a site specific question. Sometimes free product is just

a couple of feet below the surface and all you have to do is dig it out with an excavator and you remove it.

Sometimes free product is 40 feet below the surface and pumping technology becomes difficult, or under buildings, and it becomes difficult. But it's such a site specific question, I don't know if I could answer that.

MR. WATSON: I guess it's my understanding that removing free product is a difficult task, and regardless of the equipment you're using, you're still only going to be able to remove, you know, some consultants will say only as much as 30 percent of the free product in the soil, and I guess what I'm wondering is what kind of good faith effort has to be made before the agency will say enough is enough on free product removal?

MR. SHERRIL: We've stated to the maximum extent practicable -- and I wouldn't agree that -- I've had many sites where they removed all the free product 100 percent. So --

MR. WATSON: I guess I'm concerned about the factors you've articulated because really what

you've articulated are site specific factors where free product would create a problem if left in the soil as opposed to what the regulations really focus on and that is what is the level of technical capability available to remove free product from the soil?

MR. KING: That's not what the rule says.

MR. WATSON: It says that you have an obligation to take corrective action to the maximum extent practicable to remove any free product.

MR. KING: Right.

MR. WATSON: Doesn't that necessarily involve limitations on the technologies used to remove free product?

MR. KING: Among the other factors that Mr. Sherril talked about, I mean, if you're going to do it based on a technology base, then you would say, tear the building down, then you can get to it and then the technology could remove the material. That would not be an appropriate conclusion.

That would not be practical to look

at it that way. That's why we've tried to enumerate a series of factors that you need to consider the entirety of the site that you're dealing with and not just focus on one single factor as being the determinative issue.

HEARING OFFICER FEINEN: Any further follow-up?

MR. RIESER: Just real quickly, is it safe to take from Mr. King's last answer that among the things that would be considered is a comparison of the potential risk which is among a lot of the factors that Mr. Sherril listed in comparison to the risk and cost and technical practicality of dealing with a free product?

MR. KING: I think that's correct.

MR. RIESER: Will the agency approve corrective action plans in which free product is managed and controlled but not removed if it can be demonstrated that those conditions will not cause exceedences of Tier 1 groundwater objectives at the property boundaries? And I should add that appropriate institutional controls are placed on the property.

MR. KING: If you did that as part of a

Tier 3 evaluation, that would be correct.

MR. RIESER: With respect to subsection (a)(5), must a person show that a contaminant released will not exceed applicable surface water quality standards or that the affected surface water body will not exceed the water quality standard?

MR. KING: The way we have written that, the contaminant levels have to meet the surface water quality standards when the contaminant -- basically when it hits the surface water. There's no mixing zone compound.

MR. RIESER: Are there methods for determining the levels of contaminants when they hit a surface water body?

MR. SHERRIL: You could sample for it. You could model it.

MR. RIESER: Are there models that identify that along --

MR. HORNSHAW: That's what model or equation R26 does. You just back calculate from the surface water quality standard whatever distance there is to the nearest surface water body is what's plugged in to get that equation

run.

MR. RIESER: Okay, thank you.

MR. WATSON: I got one follow-up question. What you're saying on free product is that you can leave free product in place if you can show under a Tier 3 analysis that there's an appropriate risk attached to that?

MR. SHERRIL: On that particular issue, it encompasses many of those factors that I discussed before. Because it may be very easily obtained to remove free product from a practical viewpoint, I mean, it may be almost acidic sitting there on the surface, and there could maybe be relatively little risk associated with it, but we would want it removed so it encompasses many different criteria looking into removal.

HEARING OFFICER FEINEN: Mr. Rieser.

MR. RIESER: The discussion of free product removal that we've had, that applies to free product that's actually on the water table, not free product -- not necessarily I should say free product in the soil, is that correct, because free product in the soil is, so long as it doesn't exceed the values of 215 and 220, is not an

issue?

MR. SHERRIL: That's correct, and we wouldn't -- that's correct.

MR. RIESER: Okay.

MR. WATSON: But if it exceeds the values in 215 and 220, then would you have the ability to argue under a Tier 3 analysis that it may be appropriate to leave that free product in the ground?

MR. SHERRIL: Yes.

HEARING OFFICER FEINEN: Further follow-up on that? Mr. Watson, I think you have a question on 742.805. It's marked as No. 9, I believe. Has that been answered?

MR. WATSON: That has been answered.

HEARING OFFICER FEINEN: Mr. Reott, do you have any more questions?

MR. REOTT: I think everything else I've got really goes to Tier 3.

HEARING OFFICER FEINEN: Tier 3, okay. Off the record for a second.

(Discussion off the record.)

HEARING OFFICER FEINEN: Let's go back on the record. I believe Mr. Soni has one

question for the agency.

MR. SONI: In Tier 2 does your equations or any equations take into consideration life safety factors?

MR. HORNSHAW: How are you using the term safety factors, on the toxicity end or the model end?

MR. SONI: Model end.

MR. KING: That was a question -- that is one of Mr. Reott's questions as well. When we were discussing that, we were having a little bit of difficulty with it because when I think of safety factor, I really think of it in terms of when you do a design relative to a structure where you incorporate and you come up with a design level for what the structure could support and you multiply it by a safety factor, and so we struggled with that because it doesn't seem like the term safety factor really fits into the context of these models.

MR. SONI: In the context of safety factor, what I meant was there exist degree of uncertainty with all the model parameters, and the agency has suggested in the past that for every

uncertain parameter, we use a factor of 10 for amount, and in R94-2B, I believe agency had recommended that we use safety factor of 100. The board had to use the safety factor of 1,000, but there are similar equations in appendix C, equation R12 or R13 where a safety factor may be used to incorporate or account for any uncertainties in the models associated with it.

MR. KING: I don't think these models work that way.

MR. SONI: In R94-2?

MR. KING: Right. I recall that was done. I think with these models, because of the way the whole toxicity issues are structured and the way the modeling is done, I think the models incorporate what we call a safety factor into it without getting to a result and then multiplying it by some additional factor.

MR. SONI: Do you know if soil screening level, does it do that?

MR. HORNSHAW: The soil screening levels were developed by USEPA with a very large database, and they picked 95th percentile or 90th percentile values out of that database so as to be

protective of most sites around the country. So the safety factor approach is more or less built in, even though there isn't a single number that says what the safety factor is.

MR. SONI: What about in RBCA?

MR. HORNSHAW: I'm not as familiar with the RBCA equations as I am with the SSL equations, but I think you can probably assume that the same thing is true. However, with the RBCA system --

MR. SONI: At that time the agency has supported safety factor of 100 and never the same model that's being used now so is that something you could --

MR. KING: I think that's something we can look at.

HEARING OFFICER FEINEN: Mr. Reott, do you have some follow-up?

MR. REOTT: I do, two things. In the R94-2 rulemaking -- it's hard to believe that was even on a more abbreviated schedule than this one with regard to these issues. From the development of testimony to the development of the board's actual rule was very, very compressed, and I think the safety factor was partially a result of the

board's decision to take a divergent view from what the agency originally proposed and knowing that it was an interim rule and that it was going to be revisited again promptly.

As far as the way the models work, they all start with something based on MCL's, and MCL's have huge safety factors in them. So there's a safety factor at the very, very beginning of the process in the MCL's themselves if you go back.

MS. MC FAWN: Mr. Reott, I think you're trying to help explain, but you are testifying. Would you like to be sworn in?

MR. REOTT: All right.

HEARING OFFICER FEINEN: Mr. Reott, we have some questions.

MS. MC FAWN: Did you have something further to add?

MR. REOTT: No. I was the one who used the term safety factors, Gary said, and that's the source of it, and that's how I used it in my question which has now been answered.

HEARING OFFICER FEINEN: Mr. Reott, I want to make sure that we're covered with your

questions. You stated the questions haven't been answered or asked for Tier 3?

MR. REOTT: Either Tier 3 or the things that were already done previously that I'll pick up at the very end.

HEARING OFFICER FEINEN: And the very end, you mean like the end of the hearings on December 10th?

MR. REOTT: Well, hopefully.

MS. MC FAWN: Are those the questions you have concerning --

MR. REOTT: Halfway exclusions, the things I would have done at the end of today. A lot of those have been asked but there's a couple of them that haven't so I'll have to go through and pick them.

MS. MC FAWN: Do you think you could do that now?

MR. REOTT: Yeah.

MS. MC FAWN: I would very much just like to leave, break this afternoon looking forward to Tier 3.

MR. REOTT: That's fine.

MR. WATSON: Question 12, is that a Tier

2 question?

MR. REOTT: I think they've already answered that one, which the answer is no.

HEARING OFFICER FEINEN: Can we just go through the beginning and just --

MR. REOTT: No. 8 was the first one I skipped then, and this has to do with the point of compliance which in the UST program would sort of be the property line. If you're doing T.A.C.O. modeling for the site remediation program, what are you using as your point of compliance?

And if I've heard you right, I think what you're saying is the point of human exposure is your point of compliance.

MR. KING: Well, not necessarily. You could use the point of human exposure and then back calculate and establish a point of compliance at a place closer to the source which is then predictive of meeting the required number at the point of human exposure. In essence your point of monitoring might be different than the point of human exposure.

MR. REOTT: In other words, you might monitor at the edge of your property for access

reasons, but you're actually trying to predict what's another 100 feet down the road or something?

MR. KING: That's exactly right.

MR. REOTT: Does the agency have any proposal with regard to trying to pick a specific point of compliance for the site remediation program that we would use here?

MR. KING: No.

MR. REOTT: So that will just be a site specific determination?

MR. KING: That's correct.

MR. REOTT: I thought this was answered, but then somebody else thought maybe it wasn't so I'm going to ask No. 12.

At this point am I correct that there's no longer any ability to use different risk levels in Tiers 2 and 3?

MR. HORNSHAW: Not in Tier 2. That's still an option in Tier 3.

MR. REOTT: Oh, it's still an option in Tier 3 so the errata sheets don't change that option then?

MR. HORNSHAW: No.

MR. REOTT: What do you have to show then -- I guess this is really a Tier 3 question. We'll hold that one then.

Skip ahead to 24. This is the averaging and compositing section. The agency set this up so you could do it within the borehole, you know, vertically. At some sites, though, you might be more interested in going horizontally at given depths. Would the agency be willing to modify its proposal to be able to do that?

MR. KING: You're not very clear on what pathway you're talking about there. We would assume that you're talking about the migration to groundwater pathway.

MR. REOTT: Right.

MR. KING: And the answer would be no.

MR. REOTT: Why not?

MR. KING: I'll let you guys --

MR. SHERRIL: It would require extensive sampling of multiple boreholes. We would -- because we don't know where the center line of the plume is, what we try to be is consistent with USEPA policy in their SSL guidance, and you would be -- I don't want to say guessing. You would be

trying -- taking a chance on trying to figure out where the center line of the plume is versus doing it vertically within the borehole.

MR. REOTT: In 225(e) you have a provision that deals with what happens with non-detect results in the averaging process, and the way it's written if less than 50 percent of the results are non-detect, you included it one half of the reported analytical detection limit of the contaminant for purposes of averaging.

And then it says, if more than 50 percent of the sample results are non-detect, another procedure acceptable to the agency may be used to determine an average. Do you always have to go get agency approval at that point before you can do your averaging?

MR. HORNSHAW: You mean greater than 50 percent non-detects?

MR. REOTT: Right.

MR. HORNSHAW: Yes.

MR. REOTT: So you're not able to use the other options?

MR. HORNSHAW: That's correct.

MR. REOTT: Why don't we skip to 29. I

think the others have been dealt with. This is the pathway exclusion. In the House 300 reforms, you know, Illinois adopted the concept of excluding pathways based on geology. Essentially I think that's sort of shorthand for what House 300 did, you know, if you tried to convert it to more modern language.

And given favorable geology, many UST sites become no further action sites based largely on geology. How does your pathway exclusion proposal preserve this option for (a) UST sites and (b) other types of sites?

MR. KING: I don't want to get into a discussion as far as your statements how the Berg Circular works with 300 and the geology thing. I don't think your statement is quite correct the way you've got them, but nonetheless, the option of going through the no further action classification procedure that's in 732 is still available for UST sites, and that's preserved under part 732, and for other types of sites, it doesn't apply.

MR. REOTT: Let me stipulate ahead to a couple of these. We're going to get it when we

get to the barrier stuff at the end. Skip ahead to 34. 305(c), it's the one that deals with characteristics of reactivity.

How does the reactivity limit on being able to use pathway exclusion relate to the risk to groundwater pathway?

MR. SHERRIL: There's two different aspects here. It can relate to the risk of -- it can relate to the migration of the contaminant by changing the properties of the soil, but one of the reasons we put the reactivity limit on there is to protect from chronic and acute hazards. It also violates the models. We just don't want these excessive risks potentially out there. Did you want to add anything?

MR. O'BRIEN: That's fine.

MR. REOTT: I'm just trying to break those risks down into their components, John, and focusing just on the risk to groundwater pathway, how does this affect that particular pathway? I realize that it would obviously affect things like human contact. How does it affect risk to groundwater?

MR. O'BRIEN: Well, things that don't

pass this are source material that need to be removed so that we can address contamination, and that anything that doesn't pass these tests is pretty aggressive material reactivity-wise and toxic-wise, and the agency just feels that that needs to be addressed in a manner that is more forthright and doesn't rely on management criteria that we would otherwise feel more comfortable with.

MR. REOTT: Is there a specific link, though? I understand the policy decision you're articulating Jim. Is there a specific link between having soils that flunk for reactivity and whether that is in fact a risk to groundwater -- an increased risk to groundwater?

MR. O'BRIEN: No, it's a qualitative decision that the agency has made. I can't take an equation that show that failing these criteria violate -- you know, through some calculation, they're going to cause a problem.

MR. REOTT: When you say "these," you mean both (c), (d) and (e) then, all three of those? Are you lumping them together or breaking them out separately?

MR. O'BRIEN: I'm lumping them together.

MR. RIESER: Just something to follow up on Mr. O'Brien's statement. To a certain extent, you addressed it during his statement, but when we first started talking about the soils that failed the reactivity test, what he said was soils have to be removed, but then later he said they have to be addressed.

I just want to clarify that the subpart C which includes 305 is a voluntary activity that a remediation applicant can go through to include pathways and so that that's number one. Just because the soils are reactive doesn't mean they necessarily have to be removed, but they just have to be addressed in a more thorough way in the rest of the program.

MR. O'BRIEN: I misspoke. I meant addressed. It may be possible with a pH soil to change the pH without having to remove the material. Other techniques are available for the other hazards.

MR. RIESER: Thank you.

MR. WATSON: It may also be possible to, under a Tier 3 cleanup standard, not address those

conditions?

MR. SHERRIL: You would have to at least address it.

MR. WATSON: Right, but consistent with -- but if you went through a Tier 3 risk analysis and addressed those issues as part of the risk, there could be circumstances where the result would be that you would not have to take corrective action to remove that soil?

MR. O'BRIEN: That's possible and allowed under Tier 3, as you stated.

MR. RIESER: Thank you.

MR. REOTT: I think the other ones were done.

MR. WATSON: I've got one follow-up question on what Mr. Reott said or his questions, and I just wanted to confirm the answer to No. 12. At what point in Tier 2 is the regulated community able to use different risk levels? Is it true that your answer was that you cannot use anything other than 10 to the minus 6 risk level? Is that true in Tier 2?

MR. HORNSHAW: At the point of human exposure, yes.

MR. WATSON: So risk levels of 10 to the minus 5 and 10 to the minus 4 are not available under Tier 2?

MR. HORNSHAW: Correct.

HEARING OFFICER FEINEN: Mr. Rieser.

MR. RIESER: Isn't there language -- and I think I mentioned the sections earlier -- in 710 in particular where they talk about or the proposal talks about allowing target risk more than one in a million if applicable exposure routes have been managed through institutional controls, and how --

MR. HORNSHAW: My answer was at the point of human exposure.

MR. RIESER: Okay. So if you had an institutional control on the site, that the point of human exposure would be the edge of that institutional control?

MR. HORNSHAW: Correct.

MR. RIESER: And within that institutional control, the target risk varied wherever --

MR. KING: Let's not get too far. We promised that we would try to do an organized

statement with regards to that, and let's not get too far afield because if you're within the institutional control, then we don't want to talk about a higher risk level because there's not a risk level.

HEARING OFFICER FEINEN: Then I think if there's no more --

MR. RIESER: I'm really sorry, but I do have one more just to get that Tier 2 behind us, and we don't have to worry about it.

In Tier 2 is it correct that chemical specific default degradation rates, as listed in appendix C, table E, can be used in equation R26?

MR. SHERRIL: State that again, please.

MR. RIESER: In Tier 2 is it correct that chemical specific default degradation rates, as listed in appendix C, table E, can be used in R26?

MR. SHERRIL: Yes.

MR. RIESER: Is it also correct that in Tier 2, a degradation constant for measured groundwater can be used in R26?

MR. HORNSHAW: Are you talking about a

laboratory derived value instead of the default value? Is that what you're asking?

MR. RIESER: A laboratory or in situ derived value, yes.

MS. ROBINSON: Could you read back the question just to make it clear.

MR. RIESER: Maybe this would be a suggestion. Maybe I can write these down, get them to the agency and everybody else on the list, and this will be something that we could hit on Tuesday unless you have specific answers right now.

MR. LISS: I would prefer to have them written, and I think that's something we need to discuss. What we were discussing there's a big variation between field-derived values and laboratory values, not only due to the methods that's used for in situ but the laboratory methods themselves.

I'll give you one that's not related to your question by the parameters specifically, but say it's a good one that's well documented is the hydraulic conductivity measurements. They can vary in orders of degree

and magnitude. So I don't think that we would accept as a blanket proposal somebody to substitute for a laboratory derived value without us looking at it. Maybe under Tier 3 would be the more appropriate place to do that. We're talking about Tier 2, right?

MR. RIESER: I'm sorry, I think within the rule itself, 805 -- I'm sorry, 810 (a)(1)(h) talks about the first order of degradation constant can be obtained from appendix C, table E, or from measured groundwater data. Do you see where I am, the measuring?

How would the agency envision people measuring? That measured groundwater data, how would that be obtained?

MR. LISS: Let me find the exact, you said it was 810(a)? I got it. I can't answer that today. You want to know how specifically we expect somebody to measure that in the field?

MR. RIESER: Yes.

MR. LISS: That's your question. I can't answer that right now.

MS. ROBINSON: Mr. Rieser, would you put the specific questions in writing, please, and

we'll address them in January?

MR. RIESER: I'll do that.

MR. LISS: You had also mentioned when you made that statement, that earlier question, laboratory derived values.

MR. RIESER: I realize that. I'll put them in writing, and that would be something we can get on Tuesday.

HEARING OFFICER FEINEN: Any other questions? I guess then we'll stop here and continue on the record until December 10th at 10:00 o'clock at A-1, the Stratton Building. Please remember that even though we're having the hearing on December 10th, which is a Tuesday, the hearing officer order of October 28th established prefiled testimony for the hearings which have been set for January 15th through 17th in Springfield.

Those dates are the prefiled testimony must be in by December 23rd, 1996, and the prefiled questions from that testimony -- for that testimony, I should say, is January 6, 1997.

MS. MC FAWN: Those were the dates agreed to at the pre-hearing conference, also.

And just for the record, you're going to get that last series of questions dealing with Tier 2 to the agency in sufficient time for them to possibly address those on Tuesday?

MR. RIESER: I will get it out tomorrow. It's a simple set, and I'll send them to everybody here.

MS. ROBINSON: Okay.

HEARING OFFICER FEINEN: I guess that's it, and then we'll close -- or we'll continue on Tuesday.

MS. MC FAWN: Yes, we are continued until Tuesday morning. Thank you for your participation today.

(Whereupon, these proceedings were continued until December 10, 1996, at 10:00 o'clock a.m.)

STATE OF ILLINOIS)
) SS:
COUNTY OF COOK)

LISA H. BREITER, CSR, being first duly sworn, on oath says that she is a court reporter doing business in the City of Chicago; that she reported in shorthand the proceedings at the taking of said hearing and that the foregoing is a true and correct transcript of her shorthand notes so taken as aforesaid, and contains all of the proceedings had at said hearing.

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