REMEDIAL PROJECT MANAGERS' MEETING

NASA/JET PROPULSION LABORATORY

4 MAY 1999

ATTENDEES:

Richard Atwater, Bookman-Edmonston Eng.
Charles L. Buril, JPL
Alex Carlos, RWQCB-LA
Mark Cutler, Foster Wheeler
Phoebe Davol, TechLaw
Richard Gebert, DTSC
Vitthal Hosangadi, Foster Wheeler
Mark Losi, Foster Wheeler
Judith A. Novelly, JPL
Stephen Niou, URS
Craig O'Rourke, Foster Wheeler
B. G. Randolph, Foster Wheeler
Mark Ripperda, USA EPA
Peter Robles, Jr., NASA

Reported by: Louise K. Mizota, CSR 2818

Pasadena, California

May 4, 1999

9:00 A.M.

BURIL: Why don't we go ahead and start up. Let's, if we could, go around the table for some introductions. I know there are some new faces here. I want everyone to know who they're talking to, since we didn't bring our signs, I don't think. I'll start off.

Chuck Buril with JPL.

NOVELLY: Judy Novelly, JPL.

NIOU: Stephen Niou, URS.

DAVOL: Phoebe Davol, TechLaw.

RIPPERDA: Mark Ripperda from EPA.

Actually, Phoebe is taking over for Stephen as EPA's technical contractor.

GEBERT: Richard Gebert of DTSC.

RANDOLPH: B.G. Randolph, Foster Wheeler.

ATWATER: Rich Atwater, representing Raymond Basin Management Board.

ROBLES: Peter Robles, NASA.

O'ROURKE: Craig O'Rourke, Foster Wheeler.

CUTLER: Mark Cutler, Foster Wheeler.

CARLOS: Alex Carlos, Regional Board.

HOSANGADI: Vitthal Hosangadi, Foster Wheeler.

LOSI: Mark Losi, Foster Wheeler.

BURIL: Okay. Great.

I've got a variety of things that we need to talk about today, and I'm just going to go ahead and kind of trip down the schedule here.

We've got some really strong policy issues I think we need to discuss at some point during the day. We're in the process, as you know, of doing the FS for OU-s 1 and 3, and we are running into a lot of questions as to what requirements we'll actually be forced to meet. And in dealing with that, we've got a lot of things that deal with ARARs. I've gotten comments back, I think, from you, Alex, on the ARARs. Is that --

CARLOS: I think you did.

BURIL: You said basically no changes.

We had comments back from you as well, and you had some good insights on things, I think one or two. Be sure we understood.

Richard, have we seen anything from you yet?

GEBERT: Not yet, no. It should be this week. In fact, all the comments from us should be this week.

BURIL: Oh, they should.

GEBERT: On the ARARs and the OU-2, RI and risk assessment.

BURIL: Okay. Good. I was going to mention that both State agencies had requested an extension for the review of the OU-2, but each of you identified a different date for submission of your comments. I just wanted to clarify what date you wanted to use. You had the 19th and you had the 14th. It makes no difference to me. But if you're going to get it in by the end of the week it's going to be moot anyway.

GEBERT: Right.

CARLOS: We submitted our comments already.

BURIL: Yes. It's a non-issue now.

Let me start off, then, with the OU-2 comments from EPA. I don't have copies of these for everybody, unfortunately. I neglected to do that. Hopefully you folks brought your copies with you.

I just wanted to try and get a feel for where we were at as far as understanding the comments. I will be very candid in saying I have only read them once and I did not see anything that really struck me as being difficult to deal with. But I wanted to be sure that we got a good

understanding of where you were coming from on things so when we answer it, we're sure we've answered your questions and your concerns.

B.G., help me out on this as we go through.

On section 3 you're asking for the geological cross-sections. I thought that we had geological cross-sections in the report. Did we not have it in there?

RANDOLPH: They're schematics.

BURIL: They're schematics as opposed to cross-sections.

RANDOLPH: Right.

BURIL: Okay. We do have cross-sections in the OU-1/3 report, I know. Would it be useful just to repeat those in this report? Would that be sufficient?

RIPPERDA: I think so. It was just lacking some detail in this report.

BURIL: Okay. All right.

RANDOLPH: The difference there between OU-1 and OU-2 is that OU-1 is on a much broader scale.

RIPPERDA: OU-1 goes much shallower -- I mean OU-2 goes much shallower.

RANDOLPH: Yes. Much shallower. And the

diversification and stratification and lenticularity of the materials are just very, very intense.

RIPPERDA: Similar almost.

RANDOLPH: Yes. That was the reason. And we just tried to get away from -- we felt that it probably would just be misleading more than anything else.

RIPPERDA: Yeah. We don't want a forced issue of having, you know, lens (UNINTELLIGIBLE) but --

Anything more, Stephen?

NIOU: That's the answer.

DAVOL: Would you want to have like wherever the soil vapor probes, cross-sections that way, rather than -- that's the whole point. Use the soil vapor wells for the cross-sections?

NIOU: Actually, I know it's pretty coarse. Like you see boulders, you see gravels. Therefore, probably pretty hard to find layers. But just let us know what's going on. Focus on the -- at the depth above water table so that we generally know what's going on.

BURIL: And the schematics weren't sufficient for that particular use?

RIPPERDA: That was actually Stephen's comment, so I'll let him --

NIOU: Really, like Mark mentioned, like to see a little bit more detail, especially -- for instance, I think eventually we'll have to get back to SVE, the effectiveness of SVE if the soil cross-section, meaning that's almost like a conceptual site model, can address the concerns by SVE alone, the issue, hey, we're done.

BURIL: I like his optimism. Okay.

Let us take a look at that and see just how hard or how useful that may be.

RIPPERDA: Maybe at the break or immediately afterwards, if you've got a copy we can just like sit down with B.G. for a couple minutes and look at it.

BURIL: I didn't bring the OU-2. Did you?

RANDOLPH: No.

CARLOS: I have a copy.

BURIL: Do you? Okay. That would be fine. Good job, Alex. That would be fine. We can take a look and see just what we're talking about and what level of effort would be necessary.

Okay. Why don't we just set that one aside for the time being, then, and we'll take a look at it.

"Sampling event 1: Soil vapor probes."

I'm just trying to remember what your concern here was.

The dry well number 31, B.G., we didn't install a vapor probe nearby that location. I'm struggling to remember --

RANDOLPH: Me too.

BURIL: -- why.

RANDOLPH: I'm struggling to remember where 31 is.

BURIL: Do we have a map today that will produce that?

It's out in the northeast portion, I'm pretty sure.

RANDOLPH: Yeah. There was a soil boring there during the pre-RI investigation.

BURIL: So the data from that was sufficient for us to be able to characterize that particular site? Is that --

RANDOLPH: Yeah. We did pick up some vapors in there.

BURIL: We do have a -- don't we have a vapor well, several of them, in that immediate area?

RANDOLPH: Right there at the northeast end.

BURIL: Do you want to get up and point to it for us, please?

RANDOLPH: There's one in here, one in here, one over here. And then --

BURIL: There's a cluster of them right there.

RANDOLPH: There's several of them down here, four of them, in that particular area.

BURIL: I think we could probably best characterize why we didn't put a specific location well for number 31 is that we've got a fair amount of wells right there in the area and we should be able to understand the characteristics of the area just based on those without going to each individual one with a soil vapor well.

RANDOLPH: And we had decided not to go back and redrill at the areas where we put in those other five holes during the pre-RI.

BURIL: Right.

RIPPERDA: Just include the data from the pre-RI.

RANDOLPH: It's there.

RIPPERDA: Okay.

BURIL: Maybe just point it out a little bit better so it's pointed out.

NIOU: The point is not to ask you to redrill. I don't think that make any sense right now. It's just provide the rationale. Because, like you said,

it's not a high, or that we feel we already got enough nearby wells so that this location, we feel, is not --

BURIL: That's fine. That's not a problem. If we can just --

NIOU: Just the rationale.

BURIL: -- include something on the rationale for that particular situation, then that will address the comment.

RANDOLPH: Sure.

RIPPERDA: This would be true for any potential site. Every single dry well, every single seepage pit viewed as a potential source.

BURIL: Right.

RIPPERDA: And it's amazing how many FOIAs I get from people, like seemingly random people, including real estate agents now, asking things like seepage pits and dry wells. So you should include a little rationale for every distinct potential source.

BURIL: Okay. I think that's doable. We have, certainly, gone through that exercise over the course of the development of this thing. So if we regurgitate that to some degree in the RI, we should be fine. Should be very -- it may be a little laborious in terms of the volume, but it's not work

that we haven't done.

RANDOLPH: There is a table that correlates the very --

BURIL: That's what I was thinking of.

RANDOLPH: There's that table that correlates the various investigations that we've done in particular areas where there was a particular seepage pit.

BURIL: We might point to that. We also have a table, I think it was in the workplan, that talked about the various rationale for the various things that we did.

RANDOLPH: Right.

BURIL: So maybe those two in conjunction might help address it.

RIPPERDA: Yeah. Some of those could be in a tabular format, like have all the dry wells, all the seepage pits and the nearby bore holes.

BURIL: In fact, I think the one that we did had a column in there that said it was addressed with boring or soil vapor well number da-da, da-da da-da, and so forth.

RANDOLPH: Correct.

BURIL: Maybe that table alone may be something that would be very helpful. So we can do something

in the text, and maybe something in tabular format and we'll address it that way.

CARLOS: That's in Table 1-11. Because I had the same comment as Mark.

BURIL: Okay. Then you had a concern here regarding the SVOC analyses summarized in Table 4-2. You say it was unclear how the soil sampling data was summarized in the table. I guess I didn't follow your confusion. So if you could kind of explain it to us.

NIOU: The next sentence says I don't know how you summarize it? Do you screen by PRGs or screen by MDL, or whatever?

BURIL: I don't know that we screened it at all. I think we just presented what we found.

RANDOLPH: That's right.

NIOU: Well, then just say PBL.

RIPPERDA: That would be MDL.

NIOU: Method.

BURIL: Okay. You're talking about just identify what the criteria was for establishing what we reported?

NIOU: Yeah.

BURIL: Oh. All right.

RIPPERDA: All compounds detected above

detection limits, like.

BURIL: Okay. So you're just saying make a note that it's the MDL we used as opposed to anything that's above a PRG or anything else. Okay. We can do that. That was easy.

JPL should discuss the data summarization process and include soil sampling data with deeper samples.

NIOU: Actually, the following sentences were already addressed because once you say MGL, then the next following --

BURIL: Everything else is addressed? Okay.

NIOU: Addressed.

BURIL: I think I see your logic.

NIOU: Because if I see some detection and I don't see anything below that, I would say what's that? If you use, say, PRGs, maybe in some detections underneath that position, but it's already MDL (UNINTELLIGIBLE) then I feel real, very comfortable.

BURIL: Okay. That sounds fine.

RIPPERDA: I don't remember that table, but then maybe it has NDs in the table, but --

BURIL: NDs as opposed to what? Yeah.

RIPPERDA: As opposed to nothing.

BURIL: Okay. We can work that out.

Section 4-4-1, data quality objectives.

I don't have any problem with that. I don't see that we have anything that would require any additional work, per se, other than to identify that yes, we do have near surface soil that is an issue and we're addressing that through our data collection. I think that's the essence of the comment, I think, isn't it?

RIPPERDA: Yeah. This is a data quality objective. So explain what it is you have, what you're doing about it. Like if it is a risk, if it's not a risk.

BURIL: Okay. That should be doable. I don't see that as being a problem.

Separate the investigation results for surface and subsurface soils.

The first question I have is can you define for me what you consider surface? I mean, to what depth is surface?

GEBERT: We usually have six inches.

BURIL: Zero to six inches?

GEBERT: The top six inches.

BURIL: I don't think I have anything that granular, per se. I don't think we have knocked it

down to that level of detail.

When were the first soil samples we took, B.G.? It was like three to five feet below grade, wasn't it?

RANDOLPH: Right.

RIPPERDA: Almost all of your sampling was associated with borings.

RANDOLPH: Right.

RIPPERDA: So then all your samples are subsurface.

BURIL: That's why the comment was a little confusing to me. That's why I wanted to understand what you meant by "surface soils."

RANDOLPH: Everything within JPL is at a depth of at least a foot, even in the areas that are virgin. They've all been disturbed. It's either material has been removed or replaced.

NIOU: How about those trenches, some earlier --

BURIL: Are you talking about the ones out in the Arroyo?

NIOU: Arroyo. Those would be considered to be surface. Right?

BURIL: We sampled those starting, what, about three feet below?

RANDOLPH: About a foot. Because that's all

been graded, too, because they're all in the equestrian trail.

BURIL: We could identify those as surface soil samples if that would address your comment.

NIOU: Sure.

BURIL: I don't see that as a big problem.

NIOU: The only reason I say that is when you do your risk assessment, surface soil will be categorizing the different --

DAVOL: Right. And it can go down I think the order of two feet, isn't it?

NIOU: Yeah. Just so that somebody --

BURIL: If we want to establish zero to two as surface soil, we can look and see what we have.

RANDOLPH: That was pretty much what was established.

RIPPERDA: Everything above two feet.

BURIL: Is surface.

RIPPERDA: And you evaluate it differently in the risk assessment, so it just needs to be kind of --

BURIL: Separated.

RIPPERDA: -- reported in its own little table.

BURIL: Okay. All right.

RANDOLPH: That's how it's addressed in the risk

assessment.

BURIL: Let's just separate it out, then, as they ask, now that I understand what they're asking for. Okay. That sounds fine.

Let's see. Concentrations of total VOCs at depth event. Is that event 7, Mark? I got a fax copy and I've just got a squiggly line there. I'm just wondering what --

RIPPERDA: That's what I wrote.

GEBERT: It's event 7.

BURIL: Well 33, we didn't have anything north of -- B.G., where is well 33? I never remember those things.

RANDOLPH: 33 is right up there on the north side of Building 79.

BURIL: Can you point to it for us?

RANDOLPH: Sure. Right here.

BURIL: Oh. Okay.

To the north of that, if I remember our logic and, B.G., correct me, obviously, if I misstate this, but because of the proximity of the fault --

NIOU: Exactly.

BURIL: -- we really didn't feel like there was a need for another well further to the north even if

that became positive.

RIPPERDA: Explain that.

BURIL: So you're asking us to explain that?

NIOU: Yeah.

BURIL: Okay. That's easy. Okay.

Number 5-3, this one poses a little concern for me in so much as making long-term predictions to deal with impacting groundwater. I haven't seen one yet that's worth its salt. Have you folks seen anything that's useful for us to be dealing with in this regard?

RIPPERDA: But it's -- no matter how much -- how accurately you can do it in kind of a data quality objective sense, it's still important to try using all your bore holes, your SVE data, like kind of just what's your estimate of mass in place.

BURIL: Well, mass in place as opposed to how long will it impact the groundwater. Mass in place, I can see that as something we might be able to try and quantify. But it could be kind of tough.

But at the same time, how long that given mass would actually impose an impact to the groundwater has got built into it how much the groundwater is going to fluctuate and all the other things that you --

RIPPERDA: Right. How much rain there's going to be, how much --

BURIL: Exactly. We have absolutely no way to know that.

NIOU: Oh. There's an easy way that you can do that.

BURIL: How is that?

NIOU: Simply just -- there's a certain concentration limitation, if you assume a certain type of soil with a KOC value, porosity value, that simply VOCs cannot move at all. If you below that level, you just say won't in the future. Justified by your KOC value, by porosity, by your relative permeability.

BURIL: That makes the assumption, of course, that that would be the case. I don't know that it is or isn't. But let's say that we actually do have that partition coefficient that says, yeah, it could get through there. To try and quantify how long this is going to be an impact is something I guess -- maybe the term "how long" is something that is the only thing that's really troublesome to me. Like if we know how much there is that might impact it might be better.

RIPPERDA: There's several ways to approach

this. This is just kind of scoping, like how important is it to do the SVE, how important is it to do pump and treat in that part of the plume. So I'm not looking for an answer, but I'm looking just for --

BURIL: I see what you're saying.

RIPPERDA: -- some mental exercises now to help --

BURIL: So something that may even be almost qualitative, but not quite, in terms of there's a lot of stuff there.

RIPPERDA: Right. That's why I said more into this data quality objective or the State conceptual model sense than in a modeling sense. So like first, your best estimate of mass in place. You know, that is still an estimate, but it's something you can make a reasonable attempt at with what you know. And then think about a little -- and you can either say, well, an average amount of rainfall moving through that much mass in any given year, just like a one-year time frame, how much is going to be brought to the groundwater, just an estimate, and does that impact the groundwater significantly, like within that year, or not.

And if you remove that mass, how much, or

some of that, how much -- if you decrease that by a certain amount, you know what your concentration is in the groundwater now, and assuming you remove the source from the soils, how long is just natural dilution going to take for that to move away. Like do you really need to drill, pump and treat wells in your aquifer, or not.

So just some quantitative ways of posing the question even though they're just rough estimates.

BURIL: I guess we'll have to talk about that one. I'm not sure exactly how we would do that. But I see your point. I know what you're going for.

RIPPERDA: Maybe they'll put all that into the RI, although I would probably want an estimate of mass -- no, not probably. I would want an estimate of mass in place in the RI. If the other stuff seems too conjectural to you. Still you're thinking about it in whatever ways you want, maybe two or three different ways, and that could be, you know, some kind of just a technical memo or in the FS or something like that.

BURIL: Maybe we could address it once we determine our estimate of mass, as you've asked for it, if the quantity that we identify is viewed as

significant and we can attach whatever numbers we want to significant them as we get into this. But we might be able to say something to the effect that the mass is of sufficient quantity that we would want to eliminate it as a potential source to groundwater and so forth, you know, something of that nature. Maybe not going into extensive calculation to estimate, but rather something a little more qualitative on the basis of the quantity of the mass.

RIPPERDA: Right. But I still want that exercise done. Like now that leads into remedial design, but before that it leads into the remedial decision are you going to put pump and treat wells on site or not.

BURIL: I see where you're going.

RIPPERDA: And how can you make that decision unless you -- first you have to say, well, I think that we're going to have an ongoing source on site to the groundwater through the groundwater and it's valid and we need to remove it. So -- and you need to have a basis for that decision.

BURIL: I see where you're going.

RIPPERDA: This is one of the tools to get there.

BURIL: Sure. We'll have to talk about how to do that. But I think that what he's asking for is reasonable.

RIPPERDA: I always want this stuff done starting with the RI, moving into the FS rather than waiting too long when we're arguing about remedies and then arguing about how to decide on the remedy.

BURIL: Okay.

ROBLES: Mark, have you ever come across an exercise like this where you had a difference of opinion about the mass that was surmised?

Because my concern is that putting this in a document the regulators say, "Your assumptions are too low." Then the public thinks the assumptions are too low.

So I'm really concerned about quantifying this. I'm trying to get a handle on it because I don't want it to be just an assumption and people start arguing.

RIPPERDA: I don't want to spend all of our time arguing about assumptions and about one number. But I don't see how you can make a remedial decision if you haven't done this in the first place.

ROBLES: Right. I agree. I just want rules of

engagement to say, you know, what are we going to work on and accept. Because, you know, this site has been here a long time. We don't know all the operations that may have been here.

And so the key question is if we do some assumptions and we all accept the assumptions, we come out with it. I don't want to come back later, it's too low or too high. That's what my concern is, because then it skews everything else after that with the public.

RANDOLPH: I might be out in left field, but I was under the assumption that this was all what the treatability study was for and that's where this information would come out.

BURIL: It could be part of the feasibility study --

RANDOLPH: No. Treatability study.

RIPPERDA: It's true that some of his soil vapor treatability stuff is looking at declining concentrations versus time and, you know -- so his study is providing a good part of the data that would go into this, along with your soil concentration from the bore holes and all that. But maybe if you don't have enough data yet that you still need to run the treatability study longer and

at some point in the future, after the RI has already gone final, you could do a much better job of it, then maybe it goes as part of the conclusions in the treatability study.

HOSANGADI: The treatability study merely gives an idea of what's coming out. It's not exactly geared for finding out what's in place,, in the sense we measure the flow rate and the concentration of what's coming out and based on that we can estimate how much is coming out in terms of pounds of kilograms. But it kind of stops at that (UNINTELLIGIBLE) try to figure out what was there on day 1 and what's left behind on day 100 or day 200.

RIPPERDA: Well, maybe it's not designed to do that now, but you can still use that data to do an estimate, you know. Because otherwise, like you're going to run your treatability study and you're going to say, "Oh, this is how much we got out." Then what are you going to use that for?

HOSANGADI: It's not intended to say how much came out. It's -- you know, we are basically using what I would call a surrogate pattern. We look at what's in the soil in terms of soil vapor and then, you know, we track the drops in concentration and test it in quarters, and demonstrate

effectiveness/feasibility by that mechanism as opposed to saying that we had, you know, 100 pounds on day 1 and then we have one pound today. And as B.G. pointed out, it's sometimes difficult to do.

In fact, I have been in situations where we estimated X thousand gallons of petroleum hydrocarbons in the soil on day 1 and it was agreed and accepted. But at the end of the remediation we actually pulled out twice that much because there was stuff in there that we hadn't estimated on day 1.

RIPPERDA: Right.

HOSANGADI: But then by the same token, if we were to estimate, say, 1,000 pounds and if something pulls out only 100 pounds, that does not necessarily mean that there is 900 pounds remaining. All that means is that you took out 100 pounds because the thousand pounds may or may not have been gutted.

RIPPERDA: I totally accept that in terms of the treatability study. But I still -- it seemed like to make the decision you're going to -- are you going to drill another 20 bore holes and do a more extensive soil vapor extraction, or not? Are you going to drill one production well or three production wells, spend millions of dollars,

negotiate the adjudicated basin? Like these are like huge decisions and you need whatever data, even if it's an estimate that you have, rather than just sitting down and saying this is what I want to do.

ROBLES: I don't disagree that we have to do this. I think we need to do this. It's just I want to make sure, if we come up with an assumption of how much is there and all of a sudden we pull twice as much out, then somebody says, "What the heck went wrong? You guys don't know what the heck you're doing." And then standing up before the public, the regulator saying it's JPL's calculations.

By the same token, if we assume 100 pounds and we only pull 50, where is the other 50 pounds? We've got to go find it. We've got to dig more wells. We've got to search the universe to find the missing amounts.

I've been there. I've done that. I don't want to go through that again.

RIPPERDA: If you can think about what format and what kind of caveats you want to tie to it, because I can't promise a prior that I'm going to like, oh, yeah, your assumption, I know you're going to do a good job on your assumptions, so whatever you assume I'll agree with you.

ROBLES: I don't expect that, that's ivory tower. No. I don't expect that.

BURIL: Let us do this. Let us go back, look at our data that we have, both from the work that's identified in the RI, in the treatability study, and let us see what we can make a determination of. It may very easily be caveated to plus or minus 100 percent. In that situation we would just make sure that you understood that this is a guess.

RIPPERDA: Right. But even order of magnitude guess is better than no guess at all. You know, it's still like is there 10 pounds there, or is there a million pounds there. It's like --

BURIL: I understand where you're coming from, because no one wants to make the decision to install a $10 million SVE if we find out in doing this exercise that there's only five pounds of stuff down there. That kind of a decisionmaking is --

RIPPERDA: And it's like we already reasonably know that there is stuff there and that your SVE system is getting a fair amount out and that expanding that somewhat would probably be a good idea. That we already know. But I kind of want it as quantified as you can, and even more importantly, use whatever information you can put together to

decide whether or not water wells --

BURIL: Okay.

RIPPERDA: Maybe you don't want to do too much of this in the RI. Maybe you want to do this as a separate technical report. I can accept that.

BURIL: Okay. That's a good alternative in case the RI or something --

ROBLES: Mark, what you're basically saying is you don't want a wild guess, you want a scientific wild guess.

RIPPERDA: Exactly.

BURIL: We'll get out our swags and have a whack at it, see what we can come up with. I understand where you're coming from. We'll see what we can do on it.

The minor comments, I don't see those as being anything too particularly onerous. You want us to include the concentrations specified next to the wells for better understanding.

The only thing that I would be concerned with there is that it may get just a little bit crowded on some of these, because we do have a lot of constituents that come in very small quantities. So we'll take a look at how we can do that.

RIPPERDA: You may want to screen some of them

out. Right now you're showing everything at detection limits. For a figure like this, maybe you want to put, you know, PRGs or some other screen on there.

BURIL: Some other screen on it. Okay.

RIPPERDA: But I would rather look at a crowded figure where it's spatially shown that's a little hard to figure out, but it's still there, I can figure it out, than to have to figure it out in my head.

BURIL: Okay. We'll take a look at it and see how we can do that. I mean, we did something similar to that with groundwater, as I recall, or we tried to do something like that. Somewhere we did that, I know, where we got the data and the contours on the same map.

CUTLER: Yeah. We've done that.

BURIL: So we'll take a look and see how we can do that and still make it legible.

On the risk assessment, you want us to use thallium oxide as opposed to thallium sulfate? Is that basically what you're identifying in that first paragraph?

RIPPERDA: Yeah, just use the --

BURIL: The more conservative value?

RIPPERDA: The more conservative value.

BURIL: Okay. I don't see that as being a problem.

And is that a typo there, Mark? I don't know exactly what that first word is.

RIPPERDA: Ibid. Like above reference. Section 6 (UNINTELLIGIBLE).

BURIL: Oh. Okay. I was looking at this and it looked like "ibld" on mine. I'm looking, hum. Okay.

And you want the original literature referenced for the OCDD. Okay.

RIPPERDA: If possible.

BURIL: All right. We'll try to hunt that up as best we can.

Toxicity factors for dermatological exposure. I think what you're saying there is that we've actually made this more conservative than is necessary. Am I correct in that?

RIPPERDA: This is from Dan, so I would have to ask him. Or your risk assessor can talk to him directly.

BURIL: Why don't we take that as an action to get hold of Dan and find out exactly what his concern there is.

RIPPERDA: I think he means you're actually being --

BURIL: We're being harder on ourselves than we need to be?

RIPPERDA: If I understand this correctly, you're not being as hard, even though he doesn't think it really makes much difference. But he's saying that those items are nearly 100 percent absorbed, but you used a 20 percent absorption and a 50 percent absorption. So I don't quite understand why he then said this makes it two times more health protected than is warranted.

BURIL: Yeah. I don't know either. We'll call him and find out.

RIPPERDA: Yeah.

BURIL: I'm not sure I follow these comments, though. Okay.

Then the rest of that document is on the ARARs, which I'm going to hold off on for the time being because we've definitely got to spend some time on those. So I'm going to hold off on that.

Let me turn to Alex's comments, if I could, for OU-2 and we'll see if we have captured the essence of what you're looking for as well here so we can get to work on these as rapidly as

possible.

Table 1-1 -- 1-11, rather, this is following the same vein as Mark's comment --

CARLOS: Correct.

BURIL: -- that you identified earlier. So I think there's really no problem with that.

CARLOS: If you can elaborate, you know, the rationale for not having additional deep vapor probes in that area.

BURIL: Okay. And then comparison of pit numbers used in various documents. We have that table that's here. You're saying that we need to revise and resubmit the table based on this?

CARLOS: Some of the numbers were switched around.

BURIL: Were they switched?

RANDOLPH: They got switched around?

CARLOS: Yeah.

RANDOLPH: I'll be darned.

BURIL: I'm glad you caught it. Thank you.

RANDOLPH: It could have been the word processing. It went from one system to another between the two times that that table was submitted. So there could have been something there.

BURIL: I'm glad that you caught that, Alex.

We'll check that and make sure that it's revised appropriately.

Seepage pit 13, section 5-1-4 --

RANDOLPH: That was supposed to have been edited out and it wasn't.

Same as in the next paragraph.

BURIL: So those two sections were not supposed to have been presented and these things should have been edited out. Is that it?

RANDOLPH: Yeah. That should have been changed.

BURIL: So we will correct that mistake.

Under section 4 you're asking for an additional map that shows the soil vapor probes that were used in sampling event 1? Is that basically what you're asking for?

CARLOS: Right. The Figure 4-5, you showed the shallow soil vapor probes and highlighted the ones that you had some detections above the MDL. But it's hard to -- you can't see on the map what the distribution -- following Figure 4-6 maybe you can do the same thing for Figure 4-5 where you have not necessarily iso concentration mass, but at least show the areal distribution of the different compounds in event 1, if you can do that.

ROBLES: You're shaking your head yes, or you're

just in bewilderment?

RANDOLPH: I'm trying to think. Those probes vary from just -- they were basically at refusal or depth of 20 feet.

CARLOS: Right. It varies from about 6 feet to 20 feet.

RANDOLPH: Yeah. Three feet, I think, maybe, in one of them.

CARLOS: I'm not looking for anything cross-section or --

RANDOLPH: Vertical.

CARLOS: -- vertical.

RANDOLPH: That can be done.

BURIL: Okay. All right. Let's go ahead and plan on that.

CARLOS: It's very similar to 4-6.

RANDOLPH: Yes. Uh-huh.

BURIL: Okay. Then on -- let's see. That's your comment number 1 and comment number 2.

On section 4-2-2 you're asking us to develop what looks like cross-sections which identify not only the depth that the samples were taken at, but also identify the area of contamination in that cross-section. Is that correct?

CARLOS: Correct. I realize when you do the cross-section, typically you do -- instead of elevation you use the depth. But here it may be difficult to do that because of the elevation -- because of the topography.

BURIL: Well, that's exactly right.

CARLOS: But maybe if you can just indicate in some -- especially the key vapor wells, the samples -- where those samples were taken.

BURIL: Okay. That we can do.

As far as a cross-section to show the vertical extent of VOCs, we'll have to look and see how difficult that is to do. I think that follows a little bit toward Mark's comment as well on cross-sections.

RIPPERDA: Like you want to show the surface, and so just reporting elevations doesn't help as much as maybe showing that it's kind of like in there, or whatever.

BURIL: Let me show that to B.G. real quick. This kind of an approach.

RANDOLPH: We tried. We worked very, very hard at that and it was very difficult to make anything meaningful.

BURIL: I don't remember that.

RANDOLPH: That's the reason we ended up going to more or less a schematic cross-section and highlighting everything in green where they were.

BURIL: I recognize the usefulness of this.

RIPPERDA: I don't think Alex is talking about geology.

CARLOS: No.

RIPPERDA: He's talking about where the --

RANDOLPH: Depth.

CARLOS: I'm not even putting any geologic information or geologic structures.

BURIL: This is like the overhead contour maps, but rather than plan view it's a cross-sectional view, what's it look like if you took a slice across. But let's take a look and see whether we can generate something like that.

ROBLES: Is it difficult, B.G., because we have so many different aquifers and layers to explain the information?

RANDOLPH: Yes.

ROBLES: So it's not just a nice little picture that you can show. It has to be --

CARLOS: This is within the area of saturation.

RANDOLPH: Right. Right.

BURIL: We'll have to look and see. Part of the

problem I think that we have here is that when you look at the elevations, we have elevations all over the place, and trying to draw something that's meaningful and taking into account all those elevations at the various locations is kind of difficult. But we'll take a look and see if we can manage something that will give you the indication that -- my guess is that you're trying to get something that says that below this depth you're either at water or you don't have a problem and above this depth you don't have a problem, and in between is where your problem is. That's the kind of thing you're looking for.

CARLOS: Right. The main difficulty I have looking at that figure, you have a profile from west to east.

RIPPERDA: Do you want to get the figure out, maybe?

BURIL: Yes. Why don't we take a look at it.

CARLOS: You're going from west to east and you're looking at different elevations. From low it becomes high and then low. Very difficult to visualize for someone who doesn't know the site.

So what I thought may help the reader would be if you do a cross-section, say, going

east-west towards the northern part of the site.

BURIL: In other words, take, say, the wells that are -- say the ones that fall in this band here.

CARLOS: Right.

BURIL: Let's just say.

CARLOS: They would have more or less the same elevation.

BURIL: Project those across into a cross-section and draw out your contaminant contour that way.

CARLOS: And then maybe another one towards the south or northeast, southwest.

BURIL: There's one here that's right across here, looks kind of obvious because they're all right there in those elevations.

All right. We'll take a look at that, see what we can do.

B.G., do you kind of follow that? Okay. See what we can do on that. All right.

Then we're up to under section 4, comment number 3. Okay. Just indicate the position of the wells. All right.

We probably might want to have a figure in there that just shows, kind of like this is, which

shows all the monitoring and all the soil vapor well locations so if anyone wants to look at the correlation between the location of the vapor wells to the groundwater monitoring wells they can see it.

RANDOLPH: I thought there were figures in there that did show Monitoring Wells 13 and 16.

BURIL: We can doublecheck that. If there's not one in there --

CARLOS: I didn't see any. It would be helpful if you could just indicate on that figure.

BURIL: Okay. Then if I understand your comment on number 4 for page 424, section 446, you're really asking us just to qualify the data in the table and indicate that we have these particular concerns as a result of having it higher than calibration standard.

CARLOS: Correct.

BURIL: That's fine.

CARLOS: Just point that out on your preliminary table.

BURIL: That's fine.

CARLOS: Then if you can show, also, which one of those vapor wells are included in your quarterly soil vapor monitoring.

BURIL: Yes. We can do that. Okay.

As to number 5, the vertical extent of VOCs, you're also asking us to indicate the approximate depth of first groundwater of perched water at each soil vapor location.

Not all of these touched groundwater, and some of them may actually be substantially under water now, depending upon where the water table is.

Is there a particular time frame that you want us to project on this or --

CARLOS: Not really. I don't have a time frame.

BURIL: B.G., what kind of data do we have that would allow us to indicate this kind of thing on, say, a cross-section?

RANDOLPH: I'm trying to remember these figures.

BURIL: I think these are the ones like we just saw here that Alex showed us.

CARLOS: It would be this.

BURIL: Ones like this.

RANDOLPH: I'm trying to think of the time frame for these figures. Some would be easily done and others would be just virtually difficult because they didn't all extend down to groundwater.

BURIL: Right. That's my concern.

RIPPERDA: But whatever the time frame is, you can look at your groundwater elevation maps across

that same band and know about what your water elevations are across that band and just draw that as a dashed blue line like on the bottom of that where it would line up and say estimated groundwater table at whatever time corresponds to those --

BURIL: We could just pick the time that we did a sampling and then say based on the groundwater data, here is where the approximate elevation was and let it go at that. I don't know what else we could do beyond that.

ROBLES: Would you rather use a wet season or a dry season?

CARLOS: Maybe use the highest.

ROBLES: Highest. Okay.

BURIL: Show historic high during the course of time that we were doing the work. That's doable. We can find that data.

RIPPERDA: I haven't looked at that. If these were all sampled at about the same time --

BURIL: Within a week or two of each other, yes.

RIPPERDA: -- it would probably make sense to try to find your groundwater elevations that correspond most closely in time to that. And then maybe as another dashed line show the highest over like some three- or five-year, like within the scope

of the investigation.

RANDOLPH: One problem with that, some of those went down to groundwater at a depth of 200 feet and quite a few others at a depth to groundwater might still be 200 feet below the bottoms of those holes.

BURIL: I think we probably all recognize that because of the topography of the area we've got some pretty wild fluctuations in terms of that. And because of the wild fluctuations of the groundwater table that we have here, when we went to drill some of these, the groundwater table may have been very high and when we went to drill some others at a lower topography the groundwater table may have been very low, which is when we have some of these.

We'll do what we can to try and just show that kind of range. I don't think we're in need of showing anything specific per se. But I think Mark's suggestion of trying to show approximately when these things were sampled approximately where the water table was, I think that's a good start, and then the high, overall high water table elevation on Lab and just indicate that. That should be doable.

CARLOS: I think that would be your closest best estimate.

BURIL: Okay. All right. Let us take a look at that. I think that I understand what you're looking for. We have more groundwater level data than we know what to do with, so hopefully we'll be able to figure out how best to depict that.

RIPPERDA: I think the 100 pounds of reports in my office could be used for something. If I have 100 pounds, you must have 500 pounds.

BURIL: Oh, shoot, that's what I throw away on a daily basis, it seems.

Okay. VOC distribution. This is your comment number 6. It sounds like you're just asking us to talk about how the various soil types might impact --

CARLOS: How it might control migration of VOCs to the groundwater.

BURIL: This ties a little bit with your comment about how much of it could actually get to the groundwater, and so forth.

I think maybe by answering your comment we'll have to address your comment as well. So okay. I think I understand that one. We'll see what we can do on that one.

And no specific comments on the RA portion. "We defer to DTSC." Okay.

A selection of ecological constituents of potential concern. I think the problem that we have here, when you start looking at events 1 through 3 and then the data that we used for the upper 15 feet, the difference in time between those was fairly substantial, wasn't it, B.G.?

RANDOLPH: Yes.

BURIL: Like years?

RANDOLPH: Yes.

BURIL: And when we selected this 15-foot interval, we were using the latest data, as my memory serves. And the latest data indicated that everything at 15 feet and above was essentially devoid of contaminants, which was our rationale for selecting that level.

CARLOS: You're basing that on which sampling event?

BURIL: The latest ones that we had in the RI. I would have to go back and look.

RANDOLPH: I'd have to go back and look at section 6 myself, but it's explained in there. And also, the letter agreement between the EPA and DTSC and JPL is in Appendix H.

BURIL: Let me suggest to you that you take a look at that letter to help clarify that. We'll

look at the rationale on that as well.

CARLOS: Or maybe indicate something in this section, you know, refer to that appendix.

(Mr. Atwater departed.)

BURIL: Just as a point of interest, did Richard leave? Is he planning to come back?

ROBLES: He's got another meeting.

BURIL: Okay. I'm sorry, Alex.

CARLOS: Yeah. Because that's the first thing that struck me when I read this section. There's some --

BURIL: Let me encourage you to take a look at that letter in the appendix, because I thought that we had worked this through. And so if that doesn't resolve the issue, then by all means, get back with us and let us know. And we'll do the same thing as far as checking on which of these we actually base that on. We can talk about that and we'll share some --

CARLOS: Which appendix is that?

RANDOLPH: I believe it's H.

BURIL: H or A?

RANDOLPH: H. I believe it's H.

BURIL: On section 7, your comment number 1, yeah, we agree. It does look like the SVE looks

like a pretty good approach to this. And certainly the treatability study on that will hopefully delineate that for us to a better degree.

Let's see. Please submit the data generated in the initial three-point calibration for the GC instrument from soil vapor events 1, 3, 4, 5 and 6. That was not on the CD-ROM.

We have that, I assume. Don't we? Let's make sure that we can go back and doublecheck. What we may end up doing -- I don't know if we'll modify the CD-ROM or if we'll include this in a separate appendix with a notation saying here is the additional data. But in some fashion, if we have it, we'll present it. That's not a problem.

CARLOS: You can resubmit the CD-ROM or just hard copies.

BURIL: Yes. One way or the other.

CARLOS: Either way.

RANDOLPH: Shouldn't that include 2 as well?

BURIL: Yeah. You've got everything but 2 on there.

CARLOS: Yeah.

BURIL: The last one here looks like it deals with unidentified peaks. I guess I'm not sure what you're looking for here. So if you can maybe just

give us a little explanation. When you're talking about updating to include identified peaks, I guess I can understand that. But then information on compound confirmation, what exactly are you looking for?

CARLOS: Compound confirmation, when you do a soil gas survey you're quantifying any compound detected. Generally you want to send a sample to an off-site lab to do qualitative confirmation that the compounds you see on site are really the compounds that -- that those are the same compounds.

BURIL: I don't recall that being part of what was approved in the FSAP.

RANDOLPH: I have a more basic question. What chromatograms were you looking at?

CARLOS: I didn't look at --

RANDOLPH: We didn't submit any.

CARLOS: No. You didn't submit any. Actually, this was also pointed out in the validation study done by Foster Wheeler, so you really can't evaluate because there is no data on that. Or was it done?

RANDOLPH: Anything above --

CARLOS: I mean, if it wasn't done, just indicate that in the report.

RANDOLPH: That is a question that I have yet to

have answered, what peaks were being looked at. Because anything that was over a certain value, 1 microgram per liter vapor is usually reported. So I'm not sure. I've got to doublecheck on that and make sure.

BURIL: Why don't we doublecheck, then.

RANDOLPH: I have not had an answer on that myself yet.

BURIL: Let's doublecheck that, and if we have the data that you're looking for, we'll give it to you. I don't recall that we had that requirement to test on an outside lab, though. My recollection of our proposal was that we would use a State-certified lab here as a mobile laboratory and that that would be deemed sufficient. This was from your predecessor.

So perhaps maybe there's confusion there as to what was agreed back then as to what's expected now. But we'll go back and we'll look at the FSAP and the sampling plan and make sure that we haven't forgotten something inadvertently, but I seriously doubt it.

Okay. That was the last one you had on OU-2. I don't see anything there that's particularly horrible. As far as the

cross-sectional developments, we'll take a look and see just how hard that's going to be. I don't think that's going to pose as much problem as what I'm going to talk about now.

CARLOS: I think the cross-sections, my comments and Mark's comments are very similar.

BURIL: They're very close. They tend to mesh. I think we definitely want to try to capture both of yours. Of course, we still have to get Richard's, so hopefully nothing conflicts with that.

RIPPERDA: Richard disagrees with everything we say.

BURIL: Okay. Richard, just before I go into a discussion that I just learned of yesterday regarding some problems with the data, can you give us any heads up regarding anything that you might consider major in terms of comments on OU-2?

GEBERT: No. The comments on both the RI and the risk assessment, there are no major comments. There's nothing there that's going to rise up --

BURIL: A big bell stop and --

GEBERT: No.

BURIL: Let me pass along to you, then, that we do have a problem that was identified yesterday to me by Foster Wheeler with some of the soil sampling

data.

In the course of our data quality evaluation, we will first of all tell you that the complete data evaluation was not completed until just recently for the last few samples that we took. And we did not anticipate a problem based on literally thousands of other analyses. But what we did find was that for the samples that were taken from pits just off Lab --

ROBLES: Show on the map where?

BURIL: Yes. B.G., could you show the locations. These are the ones that we actually went in and dug a hole with a backhoe.

RANDOLPH: Test pit 1, 2, and 3 is just opposite there.

BURIL: Those locations where we had six soil samples collected overall, the analyses were completed by a laboratory which has since gone out of business and basically disappeared from the face of the earth. We have recognized through our data evaluation that the holding times for several of the constituents analyzed were exceeded. They were exceeded by a fairly considerable amount, as much as a month in some cases.

We are disturbed by this personally

because it does draw into question the data that we used to make decisions regarding what's going to be happening out there in the Arroyo as far as additional concerns, additional work, and so forth. There's no way we can recover from this particular thing in trying to evaluate, well, gee, is there any real concern based on the type of constituents, and so forth.

The constituents that appear to be of greatest concern were dioxin/furan samples, potentially, PCBs --

RANDOLPH: PCBs were all right.

BURIL: -- tributyl tin and PAHs.

So we're in a position now of having to try and come up with, well, what do we do next.

It was my thought that resampling is probably something that is going to be necessary simply because the samples are so far out of holding times now as to be useless to us. And I would suggest that we would be doing this resampling in the interim between today and when we would actually submit the final draft -- or the draft-final report.

The thought that I have in doing this work is that we would do it with one of three scenarios in mind. And depending upon the numbers that come

back from the resampling, we would then be able to justify the utilization of any one of these scenarios.

The first scenario deals with if the samples that we take anew come in lower than what we had before, basically it would be nondetect, in all likelihood. Because we were hovering right on the detection limit for these things anyway, in this case, it would be my suggestion that we would note in the report that we did resample and that the results were different but lower, and that to maintain the most conservative evaluation of risk and so forth, that we would let the evaluation based on the other data stand, but recognizing that that is the worst possible case because we simply don't have any data that would indicate that there is anything higher than that. In fact, we have data that contradicts that to the other direction.

Scenario 2 would be if we come back with data that would be essentially the same. I think we would have to have discussion with regard to whether it is actually the same or not. But my initial thought would be that it would be viewed as the same as if it were within the statistical bounds established by the individual methodologies.

In that case, I would say that any of the decisions and conclusions made on that data would stand simply as being verified by data which met the requirements for holding time, and so forth, and that the conclusions would basically stand as is.

The last scenario is the most troublesome but, in my own opinion, I believe the least likely to happen, and that is that we get results back on these constituents that are substantially higher than what we had initially.

Now, the reason I say that I find it difficult to believe that we would have something come in substantially higher is that at these locations these particular constituents have been exposed to the environment in one shape or another for anywhere from 30 to 50 years. The fact that we had samples sitting in a laboratory refrigerator for an additional 30 days seems very unlikely to have created any additional means to significantly degrade these things, particularly since these analyses are of chemicals which appear to have a pretty high resistance to break down overall.

So while this is one that I don't expect to happen, I would want to put on the table that in that scenario the contingency that we would have to

face is we'll have to decide then, because we really don't have any way of predicting what the impact would be to the decisions and conclusions that we've already made until after we get those numbers here in our hands.

CARLOS: How many sites are you --

BURIL: We're going to look at all three of those pits. We would basically resample exactly according to the plan that we had reviewed and submitted and approved before.

RIPPERDA: What was the lab?

BURIL: The lab was called ITS. They did literally hundreds of samples for us and they were fine. But it seems that in the last throes of their existence things began to fall apart. And these were the very last samples that we sent to them. And these were the ones that basically had the problem.

RIPPERDA: Were these all from within the pits or around the pits?

BURIL: These were all from within the pits, the ones that I'm proposing to resample.

Now, we're looking at some other ones that have hits from different locations that there appears to be some potential problems with

calibration, that some of these values are estimated. But again, we only got this whole thing thrown at us just yesterday. It was rather a shock.

The pit samples are ones that because of the potential access to the public and the fact that the holding times, which are absolutely something we must maintain in order to maintain data quality, were exceeded, not by a day or two but by several weeks in some cases, we just don't have any belief that that data is reliable at this particular point in time. So we want to resample those.

The others we still need to make some evaluation on. I'll share with you what's happened with those is that the calibration information was such that the concentrations that were identified in these samples were qualified as being estimated as opposed to a concrete number.

Now, they were for compounds that were fairly rare in terms of what we detected. In fact, I don't believe we detected any of these in any other sample that has a QA up to the level that we would otherwise expect. So there may be a thought here as to whether we really need to resample those particular ones, given the fact that we've found none of these particular constituents in any other

sample that we've taken here at JPL.

But I don't want to make that suggestion until after I've had opportunity to review the data, and then we'll develop something to you folks to evaluate with us. And if the need arises that we do believe resampling is necessary, then that will have an impact on schedule because these are ones that were taken with a drill rig. There are not a lot of them. I believe the total number is around 20 out of some 2,000. So it's a very small percentage, but nonetheless, it does create a problem because some of these are being used to make decisions.

So that's our situation right now as far as Operable Unit 2 data.

RIPPERDA: Will this all fit within the current time line for the draft-final or extension?

BURIL: We hope so. What we're looking for right now is that we are hopeful that we would be able to have all this done within the 60 days and maybe probably have to go to that 30-day extension in addition. So then we could address all of this, put that in the draft-final and hand it to you folks. That would allow us to stay within the confines of the FFA and not have to make any massive schedule changes. That's our desire right now.

Part of the problem that we have with that is really outside of our control, and that is that the procurement regulations demand that certain things happen. I'm sure you folks have dealt with government agencies long enough to know that procurement can be a real headache at times. And getting a lab on contract is probably the most difficult part of this because we don't have a laboratory currently on contract that will do soil samples. We have groundwater, we have soil vapor, and that's it.

So getting all that in place may be troublesome. We're trying to find the most expedient means of dealing with that. And I think in our next telecon we can give you the progress report as to how well we're doing.

BURIL: I wanted to be sure you folks were aware of that particular problem.

Is there any concern, suggestion or comment with regard to the approach that we're taking to deal with the samples from the pits?

GEBERT: The status of the pits after they were sampled, were they backfilled?

BURIL: They are basically back to their natural condition. These were sampled a year and a half

ago. So we will be relocating those to the best of our ability and sampling as close to the same location as we can physically manage. Things have been moved around and changed out there just through the natural processes in the Arroyo. So we may not be able to get right back to the exact spot, but we'll get as close as we can.

RIPPERDA: These were sampled -- I never saw the pits in their virgin state. So these were some kind of pit and you like went into the pit and got soil --

BURIL: We actually dug the pit ourselves with a backhoe and then we sampled from the wall sides.

RIPPERDA: So this wasn't like a constructed seepage pit? These were pits you just dug to sample?

BURIL: To sample the soil. Right. These were based on a concern that was raised by, I think it was EPA and DTSC, wasn't it, B.G.?

RANDOLPH: Yes.

BURIL: Where some correspondence back in the '40s and '50s that was provided to JPL by the City of Pasadena. There was a lot of talking going back and forth about things that would be discharged into the Arroyo. And some of the things that were

identified by City employees at the time were a black, oily material located just outside the fence line at this location. We tried to find that location and sample that to see whether or not we had anything there that was of concern. It's that kind of thing. You know, it was basically a surface discharge that over the years may have penetrated, seeped in. So we dug down, sampled to see what we could find. And those are the ones that basically had a problem with the holding time.

DAVOL: So you never really found the evidence of the black, oily --

BURIL: No.

DAVOL: Did you survey those locations so you could go back to approximate --

BURIL: B.G., did we?

RANDOLPH: Certainly.

BURIL: That's what I thought. Normally we survey virtually everything. We're hopeful that we can physically get to the sites because, like I say, the Arroyo is a very dynamic place and we've had a pretty good bunch of rain last year that went through there. So I'm not sure we're going to be able to find the exact site or not.

RANDOLPH: I was in charge of the excavation of

those test pits and I did the actual sampling myself, so I know pretty much where they are and hopefully how to get back into some natural materials that haven't been disturbed through the excavation process.

BURIL: Hopefully we won't need a sky crane to get in there.

RIPPERDA: The original location of your pits was just estimated based on --

BURIL: Based on photo surveys that EPA provided us. Wasn't it?

RANDOLPH: No. It was based upon the descriptions that were included in those field investigation reports by the City of Pasadena employees.

BURIL: We also used the photos with pits H and I and so forth, didn't we?

RANDOLPH: They didn't have anything to do with the test pits. Just the two borings.

BURIL: I thought we used that green book that Michelle gave us.

RANDOLPH: No.

BURIL: My mistake.

RANDOLPH: No. We used other historic photographs and maps of outfalls and locations of

buildings at the time that those reports came out and we compared the notes and then measured off and found out where those locations were.

BURIL: Judy reminded me it was the book that we used. That thing I mentioned was for a different set of borings.

DAVOL: A survey?

NOVELLY: An aerial survey.

BURIL: So collective agreement to that approach and resampling? No problem?

GEBERT: Yes.

BURIL: All right. Then we will pursue that post haste. As we go along we'll keep you informed of our progress, and hopefully we can resolve this thing before the draft-final comes out.

Okay. The groundwater sampling changes -- excuse me. We're now finally up to number 2, which is the schedule for OU-2.

As it stands right now, we don't have any proposed schedule changes simply because we don't know what impact this problem is going to pose to us. So we're going to leave the schedule as it stands right now. And if we find that for whatever reason we have sampling problems, analytical problems, or if we get everything done and the

analyses show that we've got a problem because of the data that's being provided to us, for whatever reason, then there may be scheduling impacts. But we have absolutely no idea what that would be. So without that information in our hands, I'm going to say basically we have no issue in terms of schedule at this particular time. And when we get to that point of understanding what we do have in our hands as far as the data, we'll assess the schedule at that time.

Okay. The groundwater sampling program changes that were proposed in the annual groundwater report.

We had a shopping list of things in there and, in all candor, I don't recall what they were. But we did get a letter I think from you, Alex, that indicated that that was okay. Have we got -- from some agency.

GEBERT: You got one from me.

BURIL: From you. Okay. I knew it was a State agency.

CARLOS: I haven't looked at it yet.

BURIL: You haven't looked at that yet. Okay.

I'm trying to remember. Mark, did we get one from you?

RIPPERDA: No. Just like Alex. Alex and I stick together.

CARLOS: What's your next groundwater sampling?

CUTLER: It starts Monday.

CARLOS: And then after that?

CUTLER: The next quarter.

BURIL: A quarter away.

BURIL: Did you folks receive the notice on the start of the groundwater?

RIPPERDA: Yeah.

GEBERT: Yes.

BURIL: Did you receive yours yet?

CARLOS: I'm sure I did. Somewhere.

CUTLER: One specific detail. NDMA has never been detected. Could we make a decision on just NDMA?

BURIL: I think we have already approval from Richard, so it would be Mark and Alex that we turn to.

CARLOS: How many sampling events?

CUTLER: We said we would do it twice. We've done it five times.

BURIL: We have not found any at all.

CUTLER: Kind of waiting for a decision.

CARLOS: What was the proposal before you

initiated the sampling?

BURIL: The proposal was that we would sample it twice in wells which carried the highest concentrations of the other constituents.

CARLOS: And then if you don't see --

BURIL: Then if we don't see it we would discontinue.

But my own inkling was, you know, with the changes that we were seeing in the aquifer as far as water levels and just wanting to have more data to be able to make that kind of decision, because we were in a position in the project of saying, well, we're at a feasibility study stage, we need to be doggone certain that we don't have this NDMA in the water. Because if we do, all of our feasibility studies are going to go right out the door. So we went ahead and we sampled it three more times in addition to the initial proposal. All five have shown nondetect.

CUTLER: Would you prefer to wait?

CARLOS: Seems to me you can drop it. At the same time, should we keep it at least annually?

BURIL: Well, let me share with you that at this particular time, just to focus on a different portion of the project, we are not dealing with NDMA

as a remedial issue at all. We are not examining treatment methods or anything else based on this data. The idea that we might keep it annually, I suppose that bears some thought. We would probably have that, then, in the same basket, if you will, as the lead and arsenic analyses. I believe that we're reducing those from quarterly to annually, if I remember correctly, Mark.

GEBERT: And also the 1,4-dioxane I think was --

BURIL: Yeah. 1,4-dioxane.

GEBERT: That had been detected, I think.

BURIL: I think it was two hits or three hits, something like that.

CUTLER: Yes.

BURIL: And I do think we did agree to sample that annually, didn't we?

CUTLER: Yes. Yes. That was a modification that was sent out later, after our last RPM meeting.

BURIL: Any thoughts on --

CARLOS: I'm kind of inclined to just keep it annually instead of quarterly.

BURIL: Okay. Mark, do you have any thoughts?

RIPPERDA: I'm happy to drop it. I don't know enough about NDMA to know if that's like something that you would expect to find at a place like JPL.

BURIL: Let me give you a little background on the constituent itself. NDMA is apparently either a constituent of or a byproduct of liquid rocket propellant. JPL didn't do very much, if anything, with liquid rocket propellant. Most of the work that we did here was very small batches of solid propellant, which is why we find the perchlorate here today, which is the work we were doing with the small batch of solid propellant. So I would strongly suspect that we would not see this particular contaminant simply because we weren't dealing with the type of thing that would generate it.

And the data thus far validate that particular theory.

CUTLER: The original proposal agreed we would do it twice and if there wasn't any detects it would be dropped. It was a screening.

BURIL: Is there any problem in keeping it annually?

CUTLER: If you want to do it. The only reason I bring it up, because we've done it so many extra times and it's always been nondetect. Really, the guys in the field, it's two liters. Just as easy to drop it.

CARLOS: Why don't you skip it for this quarter and in the next month I should be able to review this package you gave us about the changes and groundwater sampling. It's just as easy --

BURIL: Can we deal with an agreement at this juncture that if this quarter comes in negative, that that portion of the proposal would be satisfactory regarding NDMA? That would make six samples that have been nondetect.

CARLOS: Just drop NDMA for this quarter.

BURIL: I thought you meant keep it this quarter.

CARLOS: No. No. Drop it for this quarter and I'll look at this document and see if it's still required to keep it annually.

BURIL: That's fair. Let's go that route.

CUTLER: I understand.

BURIL: That's helpful. Thank you.

RIPPERDA: I'm totally happy to drop it this quarter. I would probably be inclined to say I think every five-year review you throw in a laundry list of potential or possible or --

BURIL: All the things that we've been -- okay. That seems reasonable to me. I don't see that as a problem. Okay.

Can I twist your arms a little bit to get that reviewed and comments back to us or approval back to us before we do our next quarterly sampling, then?

CARLOS: Yes.

BURIL: All right. Great.

Number 4, Policy Issues Regarding ARARs. I'd like to skip that one and come back to it, if I could, because I think this one is going to be potentially lengthy. And I'd like to get some of these others out of the way because I think we're looking at ones that are relatively short on 5, 6 and 7.

On number 5, the Perchlorate Update. I think at the last meeting I had already indicated that the Calgon testing was done. I just received yesterday their draft-final report with all of the data and so forth and, in all candor, I have not even cracked it open yet other than jumping through hoops with data quality. And when your comments came in, I wanted to give those attention as well. So unfortunately I can't tell you anything more about that report at this particular time.

I will share with you the data that was provided to me with regard to the cost of purchase

of the ISEP Plus system. Now, recall that the ISEP Plus system is the carousel of rotating beds, and then it also has an organics removal component to it. In our pilot test it was GAC. Then it also had the catalytic reduction system for the brine. They call it their PNDM, perchlorate-nitrate destruction module.

They took all the data that they generated from the construction of this pilot system and upscaled it to two sizes. One was a 500-gallon a minute unit, and one was a 4,000-gallon a minute unit. The rationale behind the sizes was that we may use a 500-gallon a minute size to deal with something here on site, a hot spot reduction possibility, let's say. We've done a little bit of the modeling that's necessary and we think that 500 gpm would probably take care of the site, in terms of the hot spot removal, fairly well.

The cost of that to purchase was in the $5 million range. And that's not out of the realm of reason, per se, if we're talking about some form of hot spot removal and dealing with it that way.

The cost of operation was up around the $450 per acre-foot level. That's very expensive. We were a little surprised by that, quite frankly,

because we had been getting numbers from Calgon all the way along which were significantly lower than that.

On the 4,000-gallon a minute system, this is where my eyeballs fell out of my head and rolled across the desk, because the capital cost for the total ISEP system was $10 million. The operating costs were at about 250, $275 an acre-foot. Now, the reason that my eyeballs rolled across the desk is that we were considering the idea of installing that system in conjunction with the use of the City of Pasadena wells. We'd need two of those for that. And with preparation and connections and so forth, we're in the 25- to $30 million range.

ROBLES: That's the whole environmental NASA budget.

BURIL: That's the whole budget for NASA.

DAVOL: Forever.

BURIL: It seems like forever. But if we were in a position of having to deal with that level of investment, it would have to be a special appropriation by Congress as a line item. We would have no way of getting it in the current NASA budget.

I have asked Calgon to provide me with

other data regarding services that they would employ, either through lease, rental or other type of arrangements, with this same system. That was supposed to have been to me yesterday. It did not arrive, because I did want to share that with everybody today. I can only anticipate that it will show up sometime in the next day or so, hopefully today. I've been told that it should be significantly lower, which would hopefully mean that it would be significantly more useful in terms of its possible applicability.

To get an appropriation through Congress like that, I think an act of God is probably an easier thing to get in a timely fashion. So it would be very difficult. It would have a major impact on cost and on schedule if we were in a position of having to go to that.

RIPPERDA: What does Baldwin Park use?

BURIL: Well, this is interesting because -- this gets into some very interesting things. Baldwin Park is using the ISEP system, but it's not the ISEP Plus. It does not have the perchlorate-nitrate destruction module. That is actually half the capital cost alone, because the catalyst is extremely expensive. They estimated the

cost to fill a full-size unit at some $3 million.

So the Baldwin Park site is not using that very expensive catalyst. They have a brine line which they can tie into which is -- I'm not sure how far away it is, but it's close enough to where it's economic for them to build from their site to the brine line and tie in. There are no brine lines in this area, not within miles of us.

And it doesn't appear that we would be able to put this stuff directly into the sewer system either because it is going to be containing perchlorate, and so forth, and L.A. County expressed some reluctance to deal with that.

So we are in the process, and I'm going to turn to Mark and Mark to let us know what's happening in two other areas that we're looking at. We have work that's ongoing with biological and work that's ongoing with RO.

So, Mark, do you want to give a thumbnail on that?

LOSI: Sure. There's not much more to report, really. I don't have any costs yet. We expect those fairly soon.

But the preliminary data that we're getting suggests that the RO will deal with this

water and will reject approximately 15 to 20 percent of volume treated. Okay.

And then we have an additional study to look at further concentrating that 15 to 20 percent. And in order to get the perchlorate levels below the detection limit, you can reject about 50 percent of that.

So it's approximately, you know, 7 to 10 percent would be the final flow -- 7 to 10 percent of the influent would be the final --

RIPPERDA: Waste flow.

LOSI: -- waste flow.

BURIL: Waste flow. So if we were talking large volume containment or large volume treatment, depending upon how we might implement some of these things, for a 500-gallon a minute stream we're talking 50 gallons a minute, which is not inconsequential when you're talking about disposal. If you're talking about something that deals with a plume capture and containment in the thousands of gallons a minute, you can see that things get interesting in a big hurry.

Worst case scenario that I could envision would be to utilize this system at, say, a 4,000-gallon a minute rate, in which case we're

generating enough of this stuff to fill a swimming pool in about five hours, six hours. And that's a lot of waste.

RIPPERDA: AeroJet's biological system has to be a lot cheaper than that. I can't imagine they'd be spending that much.

BURIL: Well, yeah. We have an interesting scenario with the AeroJet folks. They claimed the cost of $80 per acre-foot with their particular system. It's currently treating, I believe, 20 -- excuse me, 2,000 gallons a minute. I've been in pretty good contact with Mike Girrard, the project manager for AeroJet. He and his boss, Jerry Swannick, visited here and toured our facility.

Basically, what they're telling me is that for an application where you're not dealing with very large volumes of water, that the ISEP system may actually be more economical in terms of the long-term amortization of cost. For systems where you're talking about large quantities of water, their system appears to have the edge. However, the end use of the water becomes critical, because if you can reinject it, then there may be the issue of how clean does it have to be. Reinjection may not be all that bad. If you spread it, it's maybe a

little different.

If you want to use it directly for potable use, the Department of Health Services has quite a few concerns about that. So our initial goals have been focusing on something that we could utilize for potable use directly mainly because of the ajudication of the basin and the fact that we have groundwater wells that supply municipal systems that are currently out of service. And we're not convinced that the use of biological may not be useful here on site for hot spot removal if we can find an appropriate means of disposal of the water.

ROBLES: And if we can find a place big enough to hold it, too.

RIPPERDA: Yeah. Putting ISEP on the City of Pasadena wells, would you have -- I forget all the exact concentrations of all the wells and everything, but you probably wouldn't have to treat the entire flow out of those. You could treat like the hottest well, mix it with the other three or like mix it all, treat half the flow.

BURIL: You're going right to the problems that we have in terms of ARARs and other policy considerations. Maybe this is a good point to depart on that, because you just gave me a segue

that I think is going to be very important for us to deal with.

RIPPERDA: Although if the other stuff is really simple, maybe we should just knock that out and come back to where we are right now.

BURIL: The other stuff is relatively simple. That's basically the perchlorate update, to let you know. If we want to proceed with number 6 and number 7 --

ROBLES: Why don't we do that.

BURIL: We are going to spend a fair amount of time on this other policy issues because we do have quite a few questions about it.

Let's talk a little bit about the OU-1/3 initial risk assessment results. I brought the draft-final report up with me. This is my copy. This is my marked-up copy. But I wanted to show you -- Mark, what figure do I want to get?

CUTLER: The figure is in section 6.

BURIL: Thank you. As you can see, I have not gotten that far yet.

This is the thing that came out when we look at the kind of analysis that I guess you and Dan wanted to take a look at. Here is -- which one is this? Total hypothetical noncarcinogenic risk.

RIPPERDA: Could you have said possible total hypothetical?

ROBLES: Potential possible total hypothetical.

BURIL: Really out there possible total.

ROBLES: What's the dark blue? What's the light blue?

BURIL: The black is where we have a hazard index greater than 100.

ROBLES: Okay.

RIPPERDA: Greater than 100. And 1 to 5. That's hazard index.

BURIL: Yes. You can see it's all over the place.

ROBLES: What does that mean?

RIPPERDA: EPA's limit is 1.

BURIL: EPA's hazard index, if you're greater than 1, 1 or greater, you pose a greater than allowable noncarcinogenic risk. And it's interesting that we can see that this appears to be coming off here at an already higher than desirable hazard index. And when we get on the site here, you can see we've got some patches in the area here and the Arroyo well has got another slug of stuff there that appears to be (UNINTELLIGIBLE) problem.

RIPPERDA: I'm just going to ask a few detailed

questions about this, but to a layman, Peter is here, before we get started, I don't care about these risk isopleths that much, but Dan really wanted them. You had to do them. But whether you averaged aquifer layers or did a distinct one for each layer, I'm not going to make you redo them, probably, but I do just want to know what it was you did do.

CUTLER: That's for the entire well. It's an average. For the multi-port wells it was a 95 percent upper confidence limit average for all the detects in that well. And if that 95 percent UCLL was above the maximum detected in that well, the maximum was used.

BURIL: So that's the noncarcinogenic one.

This is the one for carcinogenic risk, with the lightest shade of gray being between 10 to the minus 6 and 10 to the minus 5th. And then it goes up from there. The shape of it is similar.

RIPPERDA: That's 10 to the minus 3, 10 to the minus 3, 10 to the minus 4. And this is all -- the higher end of the acceptable risk range 10 to the minus 4, 10 to the minus 5.

I don't care about the risk isopleths too much because MCLs are going to drive it anyway.

BURIL: Right. So that's where we're at with that. I thought I'd just share that with you and see if you had any immediate comment with regard to what you're seeing there from anybody. We are on track to submit this to you according to schedule.

RIPPERDA: So you could do it much faster, actually, than --

BURIL: We were able to get it done a little faster. I've now got it going through legal review right now. And depending upon how loud they shout, we may - I emphasize may - get this to you faster than what's on the schedule.

RIPPERDA: Once you actually pick your methodology, and this wasn't that hard to do, once you decided to average versus layered approach --

CUTLER: Right. That actually took a lot of time to get with Yugal and with Dan to find out what methodology would work for both of them, because they both had different ideas.

RIPPERDA: Yeah.

CUTLER: And a big part of the schedule, I've got to be honest, JPL review cycles as well.

BURIL: We do take a fair amount of time to review because, as you're all aware, we have significant issues outside of the CERCLA area that

we have to deal with, and these play a major role in that.

RIPPERDA: This looks good to me. I'll have to look at a description of the averaging and the methodology, but I doubt that I'm going to quibble about it. If you talked to Dan and you've kind of like already discussed it with him, that's more important than making me happy. Because certainly if he's happy --

BURIL: We always want to make you happy.

RIPPERDA: If Dan's happy, I'm happy.

CUTLER: This is Dan's methodology right here, Dan and Yugal's. We were on the phone several times with both of them.

BURIL: That was the bulk of what I wanted to show you. Most everything else is as we discussed in the RPM meeting. I don't think there was anything that was major, per se. There was that one discussion that we had regarding the perchlorethene and some of the additional data that we had. But I haven't read that yet. That's the stuff you were talking about yesterday.

CUTLER: Yeah.

BURIL: Well, anyway, we'll get this to you no later than the schedule. And with luck we may even

get it to you earlier.

ROBLES: We also need to get a copy to Atwater.

BURIL: When it's done and it's submitted to these folks, yes, Rich is on the list to get a copy.

Okay. So that's the initial results of the risk assessment.

This is kind of a general question for the agencies with regard to what we are in need of doing on the public relations side of the house. Now, I've gone back and looked at our community relations plan and it says that basically we'll issue some form of communication at major milestones within the project. Draft-final is possibly one of the major milestones in my book because you're 30 days at that juncture from the thing going final when it's going to land on the public.

So for OU-s 1 and 3 and then ultimately Operable Unit 2, we're at that major milestone point. We're at least trying to make plans with regard to public relations kinds of efforts that we might want to put into play.

With that in mind, let me share with you something that just recently came out, in fact, just over this last weekend. What I'm going to hand out here is an article published by the Pasadena Weekly.

These folks publish a newspaper once a week and it's basically focused in the area of Pasadena.

This particular issue they were focusing on some efforts that are occurring with the development of the Hahamongna watershed park. Just for the record, I found out finally that Hahamongna means, "flowing water's, fruitful valley," in the Shoshone language.

And what was being said with regard to this site was that they were concerned. First of all, "they" is an organization called Spirit of the Sage, which apparently deals in some relationship to Indian Nations, most notably, I believe, the Shoshone Nation that was located immediately around JPL way back when. The development of the park is a concern for them because of some of the things that they have regarding tribal burial grounds and maybe a few other native-American issues.

But then also, they've brought out the fact that they question highly the idea of bringing a park to a Superfund site. I'll just pass this out to you. I've got the sections highlighted that talk about JPL. If you look at the first one there, it's toward the end. You can see the underlining there. It appears that these folks do tend to be somewhat

litigious.

RIPPERDA: So it sounds to me like Klippstein is against the park and is using you as a way to fight the creation of a park.

BURIL: Well, that may be their agenda. I don't know that definitely. But certainly, they have expressed in the first article, and then the second article also, they first highlighted section there, they say it's not safe to have kids come play in a Superfund site.

RIPPERDA: Right. But that fits within --

BURIL: Yes, I understand what your logic is. Yes.

RIPPERDA: She's not against JPL. She's actually against the park and you're her excuse --

BURIL: It seems.

RIPPERDA: -- to convince the City Council not to have a park there.

BURIL: It may be. I see that logic.

But this is the kind of thing that we're beginning to see a little more of here as the Hahamongna Park develops.

My question basically, then, with this kind of stuff in mind is, in your experiences, what has been the timing for providing information? Like

I say, we're at the point of a milestone being reached. Is the timing now? Is it after it's been in the repository? What are your experiences in terms of the timing of these kinds of things and what experiences have you had with regard to reactions from these things?

I can talk to my friends over at Lockheed and hear some of the horror stories that they have to tell, but it would be helpful for me to maybe get some experiences from you folks so we can begin to understand a little bit of that.

RIPPERDA: I think it's never a bad time to put out a fact sheet. You guys have been sorely lacking in the number of fact sheets you have produced and distributed. So if you want to tie it to the draft-final, that would be a good idea. I think the more you include the public and the more information you give to the public on an ongoing basis, usually the less problems you have, rather than more.

BURIL: Okay.

DAVOL: Do you ever hold informational meetings?

BURIL: No, we have not done that to date. But that is something that is part of the CRP.

We've had our open houses here. We always have a display available and we have handouts, all

our fact sheets, and someone is there, it's usually either Judy or myself, that's able to answer Superfund-related questions.

We have had requests like from the City of Pasadena to bring them up to speed with regard to what's happening on the project, and all such requests have been answered without any problem whatsoever. And it's just basically giving them the update of where we're at.

We do attend the Raymond Basin Management Board meetings regularly and provide them with updates at that time to be sure that they are aware. Mark is right that we have not published a fact sheet in quite some time, and I guess that's where I'm at right now, is that we're at the juncture of probably needing to publish one of these things.

But if you have any thoughts with regard to things that you saw work successfully at other locations that you've worked on that met this particular milestone or reached this particular milestone, or if you have any experiences as to, good God, don't do this --

RIPPERDA: None of my other sites are like this, in that all of my five other sites have public meetings seemingly all the time. They're always

producing fact sheets. I've never dealt with a site that's so entrenched against the public or has such an existing bad public opinion of them or like however it works. I don't have any experience that can help you because the other sites I work with are always doing site tours and site fact sheets and people are invited to the RPM meetings. So I don't know. Just --

BURIL: Either of you from the State agencies have any experiences?

GEBERT: Yes. I think it is overdue. I agree with Mark you are overdue. In fact, I think the last time the Pasadena Weekly came out with an article we talked about issuing a fact sheet to kind of rebut that, and that kind of died. But it's a perfect time, with the milestone of the RI final and more articles.

BURIL: I would agree 100 percent that the time is now, and we'll be doing that.

RIPPERDA: So I have a question, since I don't really know much about your site historically and what kind of data is out there. So I'm a member of the public and I like this park. I'm not this woman Klippstein, but I want the park. But I read her concerns and so I ask the site, I come -- "How do I

know this Arroyo is not contaminated?"

BURIL: Okay.

RIPPERDA: So how do you answer that?

BURIL: How do I answer that?

RIPPERDA: Yeah.

GEBERT: You have to answer that in a fact sheet.

BURIL: Well, I would answer that by sending her all the information, or you all the information that we have currently.

RIPPERDA: No. I don't want that. What, you want me to look through all these reports? Like how do I know it's not contaminated? Just tell me.

CARLOS: I guess what Mark is saying in this fact sheet, at least the ones that I've seen that the Board has procured, what the answer is you don't want to make it too lengthy, but at the same time you want to pose questions that the public are more likely to ask.

BURIL: Sort a frequently asked question format, perhaps.

CARLOS: Yes.

BURIL: Well, the answer to your question, to try to answer that, is that all the data that we have that we've generated over the course of our

investigation indicates that the groundwater is contaminated, but the groundwater is 200 feet below the surface, so your opportunity to be exposed to anything is basically zero when you're standing in the Arroyo. And based on that --

GEBERT: That's exactly what they need to know. The question is: Is it safe? They read this and there's questions in their mind.

BURIL: And that's the kind of answer I would give to anybody who had that kind of question.

RIPPERDA: That's a great answer. But then I'm going to follow up that by saying "Well, you're up the hill. The Arroyo is downhill from you, so how do I know that the soil or the water in the Arroyo is not contaminated?"

BURIL: Basically because we have absolutely no indication that any of the operations at JPL have created any kind of problem in the Arroyo. We've done sampling in the Arroyo. We haven't found anything. So the principal problem appears to be located in the Laboratory proper in terms of the soils. And anything that's going on off site is being carried by the groundwater. But that's, like I say, 200 feet plus below.

RIPPERDA: That's the kind of fact sheet I would

like to see.

DAVOL: Also, how about surface runoff? Do you have like storm drains?

BURIL: Yes. We have storm drains and --

DAVOL: Include all that, because --

BURIL: We have a storm water permit. We do regular monitoring of that and the water has come pristine.

DAVOL: Right. You need to include all that. Show that it's not leaving the site and (UNINTELLIGIBLE).

BURIL: Yeah. Right.

RIPPERDA: So maybe, you know, some general fact sheets like you've done in the past, but maybe a fact sheet that's kind of like, you know, maybe a question-and-answer format, maybe not. But --

ROBLES: Specifically focus on Hahamongna, specifically focus on groundwater, specifically --

RIPPERDA: Don't tell me "I've got tons of data, like here, I'll give it all to you."

BURIL: Take a look at all this, yeah. That's what I tell the agencies.

DAVOL: Plus, via that data that's in question, right, that's the data that you have.

RIPPERDA: You were telling you've got lots of

sampling that show you're not at risk.

Say, "Well, we took soil samples in the Arroyo," or "We took samples along the edge."

I'm going to say "Well, the Arroyo is downhill from JPL. When it rains everything washes from JPL out to the Arroyo."

So take a few hours as you're driving to work over the course of a week and think that you're some person and what would you ask as that person and what kind of answer would you want -- not what kind of answer do you want to give, but what would that person understand.

BURIL: Sure. Okay. That's great.

RIPPERDA: Just standard community relations kind of stuff.

BURIL: Do you folks have any experiences on reaching this milestone as far as the various reactions from the public in reading reports like this and things we might keep in mind as far as good things to do or good things to avoid?

GEBERT: Try not to be too technical.

BURIL: That's easy.

ROBLES: KISS principle. Keep it simple, stupid.

CARLOS: You may want to regularly update fact

sheets.

BURIL: Oh, yeah. That's something that we haven't done of late, but that's pretty obvious.

Okay. Well, I don't see anything that you have a horror story to tell with regard to --

LOSI: Can I ask a question? What's your disposition on -- how would you look as a member of the public when you look at that isopleth map and you see that it's blue all over that park?

RIPPERDA: I think all blue is clean.

LOSI: But then you look at the legend.

RIPPERDA: I'd have to look at it again. The legend, I forget, but it seemed kind of double speak-ish.

ROBLES: The bottom line is if you see blue, it's a problem. That's what the public is going to see.

RIPPERDA: But it's groundwater. If you have information, you can tweak how you present it, but you cannot not present it because you're afraid of what the public is going to say. You just have to come up with a way to explain that.

It's like I've not had a problem with my other sites where you had contaminated groundwater and the public is worried about it, but you say

"This is groundwater. The only way you're exposed to it is through a drinking water well and we treat it before you drink it."

And then they'll say, "Well, what if the treatment system breaks down?"

So you have to be able to explain all those potential problems that the public -- like, "Well, treatment systems break," or "What about when JPL goes out of business?" Or --

LOSI: I see that as you're throwing a ton of data at them now.

RIPPERDA: But you're not throwing -- you're making this whole thing available. But what the public knows is that there's contaminated groundwater. They know that. So you have to not act like you're hiding that from them. You have to say "Yeah, the groundwater is contaminated. Here's our plume. And if you were to drill your own water well right here and drink that water, yeah, there would be some risk. But the only way you're exposed to it is via water wells owned by the City of Pasadena, La Canada-Flintridge. That water is treated."

DAVOL: Maybe provide data from there. They test their water.

CUTLER: Obviously there's going to be a lot of support from the agencies if there is any public concern about some of this.

RIPPERDA: Yes.

CUTLER: You're obviously defending --

ROBLES: They're behind us. They're standing way back.

RIPPERDA: No. I've stood up in public meetings and said exactly that. It's like you give your spiel and then like however you want to structure -- when you actually get to a proposed plan for the ROD. Like you put together a public meeting. If you want to have me or probably these guys stand up for five minutes and say why do we support the remedial decision and at the groundwater RODs I've done in the past, the question-and-answer period, people are always asking me and the State person, it's like, "Well, do you really agree with this?" Like "What's this mean?" because basically they don't trust you guys. And they don't necessarily trust us, but they trust us a little more than they trust you.

ROBLES: Bottom line is that for the site of the contractor, we are guilty, we have to prove we're innocent. It's that simple. And we have to give

this information out. We cannot keep it. The bottom line is, as Mark has stated, and there is no way around it, when we have public meetings it's going to get nasty and we just have to stand there and take the tomatoes.

And the bottom line is we have to have plausible explanations that are reasonable and that can be quantified and qualified. They don't want the technical data. We will get companies and civic groups and Sierra Clubs to deal with that or let lawyers deal with it. That is the nature of the beast. But we must give that information.

CUTLER: There's no doubt. That's why it's there. But I think the --

RIPPERDA: The public believes you more when you admit some guilt, like when you show them that map and say "We contaminated the groundwater. There is a risk if you drink this water," and you show it to them and it's there, and then you explain it. That's always easier than not being right up front with some information.

ROBLES: Right.

RIPPERDA: So I don't think you're going to have a problem by drawing a blue picture that shows risk.

CUTLER: I don't want to belittle this point too

much, but the point you just said, you show them a map that's contaminated, high risk, there's a bigger issue here that's not all JPL's.

RIPPERDA: Right.

CUTLER: Obviously, everybody understands what that is and the support of the agencies. It shouldn't be --

RIPPERDA: I don't have a problem with you giving your best explanation of what you think is yours and what you think is upgradient off-site sources.

ROBLES: Or other sources?

RIPPERDA: Or other sources. But there is a plume there and you are responsible for some. So basically just explain what you know.

BURIL: All right.

ROBLES: That's it.

BURIL: All right. Well, that's helpful. We'll be generating a fact sheet here directly. The FFA specifies all the review process.

I will ask, when we do get a fact sheet to you folks, one of the things that has been a real problem for us in getting things done with fact sheets is that your predecessors have taken extraordinary amounts of time to review these

things. At one point, not wanting to pick on an agency, but DTSC took six months to get back to us with comments. We would very much like to have that become a priority when you do see it so we can make the fact sheets timely. So just to lay that out there in hopes that we might be able to get a good timing review.

GEBERT: If you could give us like a heads up --

BURIL: That it's coming. Absolutely. That's not a problem.

GEBERT: That would help a lot. I could notify the people it's coming.

RIPPERDA: It's tough to force other people to do something. But at all my other sites, the military is only nice to a certain point. They give us a 30-day or 45-day comment period on all nonprimary documents. So like I'm legally as bound as the RI, FS, ROD.

BURIL: Sure.

RIPPERDA: In the letter that goes out with it it says 30-day comment period, if we don't get any comments at the end of that period, we'll assume you concur. And the Navy doesn't sit around and wait for six months. They give us 30 days and they move on. So --

BURIL: That's fine. I have no problem with that. Okay.

Let's take a check of the time first. What time is it?

ROBLES: 12:00.

BURIL: What?

NIOU: 12:00.

BURIL: 12:00 o'clock.

I would suspect that this issue that we are going to take is going to take considerably longer than just an hour or so. I would suggest that perhaps we break for lunch and then come back. Anybody have any objection?

ROBLES: 45-minute lunch?

BURIL: Come back at quarter of 1:00 and proceed with the last thing, which is the ARARs and Policy Issues.

(At 12:04 p.m. a recess was taken until 12:53 p.m. of the same day.)

AFTERNOON SESSION

12:53 P.M.

BURIL: Maybe we better start and Pete can catch up.

CARLOS: DHS is requiring all water producers to do the impairment study.

BURIL: Without trying to jump into it too fast before Pete shows up, we basically have a lot of questions with regard to how CERCLA cleanups deal with things like that policy, how we deal with other issues. Your comments were actually very helpful in terms of understanding some of it. But we have some specific questions that may be best discussed in terms of understanding where we're at in terms of which remedial actions we're looking at.

Now, you looked at the latest ones in that March 2nd letter. We have a few others that have come to light as a result of some other additional work. And let me see if I've got that here somewhere.

Mark, did you bring that up with you? Did you get the copies from Kathy? I don't think I got them.

NOVELLY: What are you looking for?

BURIL: The remedial alternatives.

CUTLER: Oh, Mark has tables.

NOVELLY: It's in here.

LOSI: The one that I gave you has some corrections on there, but --

BURIL: Okay. That's all right.

LOSI: Actually, that has it. Keep in mind this is an evolving document.

BURIL: Very evolving.

LOSI: Yes. It's changed.

BURIL: Why don't we go ahead and just let them take a look at it.

LOSI: Just within the last couple of days this thing has gone upside down. So keep that in mind.

BURIL: This is just kind of a compendium of different things that we've been thinking about. This will hopefully help us lead into the discussion about policies and interpretation of ARARs and such.

I'll share with you that we have not discussed this at all, except in very general terms, with anybody outside this room. City of Pasadena, we did take a tour of their facilities and got some insights as to what might be possible. But we have not opened any formal discussions as to what it is we might want to actually do.

Raymond Basin has some inclinations as to what we might be thinking of, but we have not pursued them formally as yet. I'm in the process right now of developing a presentation to my executive management regarding these things. That takes place on May 12th. After that, we fully anticipate that we will be talking with whatever parties are going to be associated with developing these things.

(Mr. Robles entered the room.)

BURIL: Basically, where we're at right now is trying to understand the different requirements as they would be imposed on us from these various things. We've got a bunch of things here that we can actually look at and know that we'll be dealing with one and another one.

Mark, why don't you walk us through this just a little bit. We'll get kind of the feel for the logic train on this.

LOSI: All right. Well, Mark Cutler and Vitthal, feel free to chime in.

The first one is obviously no action, which is required by policy to carry through for comparison with the other alternatives.

And then the 2a and b are essentially

alternatives that we've been talking about, we've been discussing since we started, or since long ago anyway, where we apply wellhead treatment at the Pasadena wells. I guess the distinction between these two is 2a is where we would apply the perchlorate treatment to all of the wells and all of the flow and 2b would be where we, in an effort to minimize the flow requiring perchlorate treatment and also minimize the waste, we would apply the perchlorate treatment only to the well or wells where it's needed. Okay.

Now, I guess I should go through these in detail, or should we discuss or just briefly go through them?

BURIL: Let me just kind of jump in here as we go through these, because what you'll see is some of the things that we kind of presume will be useful to us. For example, when we talk about disposal of the treated water, we talk about reusing it as drinking water. That brings with it a plethora of requirements, some of which we think we understand. Some are policies which we only became aware of last week, which is that DHS policy we e-mailed to each of you.

Why don't we go through each one kind of

in the same fashion that you just did, Mark, and we'll kind of hit the questions that you folks have and lay out some of the policy thoughts that we need to consider.

LOSI: As Chuck mentioned, you know, the treated water from alternatives 2a and b to be used as drinking, and then the waste streams from either the ISEP or the RO, or whatever, would be -- RO would be into the sewers and the ISEP would be transported off site.

Section 3 is just basically -- alternative 3 is basically alternatives 2a and b, but with on-site hot spot reduction added. So basically, you're still going to treat all or some of the flow at the Pasadena wellheads, all or some, and then you're also going to have approximately a 500-gpm extraction well with a treatment system on site to try to knock off some of the hot spot, some of the contaminants on site.

And then again, the Pasadena -- the treated water from the Pasadena wells will be reused as drinking, and then the off-site -- or the treated water from the on-site well can be used for drinking potentially if it's treated by ISEP or RO. If by bio, it would have to find another use for it, which

would be injection, potentially, or disposable water bodies, which we'll discuss in a little while.

RIPPERDA: So that's a typo. That should be "on-site"?

LOSI: Which one?

BURIL: Yes. It is a typo.

LOSI: Yes. Thank you.

ROBLES: Where?

BURIL: Row 3, Disposal, Treated Water column.

LOSI: Right.

ROBLES: That should say "on-site."

LOSI: Yes.

BURIL: On-site wells.

LOSI: Thank you.

Alternative 4 is an alternative where we assume that perchlorate cannot be treated technically, for whatever the reason. Okay. Because most of these treatments are pretty new and we're talking about a lot of money here. For whatever the reason, if we decide that it's not technically feasible to treat for perchlorate, we'd be looking at something like alternative 4, which involves collection with the Pasadena wells, all or part, and it's essentially -- it's just a containment alternative, where we would try to

extract from those wells and then treat it for VOCs, but then reinject the water that still had perchlorate in on site and try to create, essentially, a closed loop. Okay.

And then --

NIOU: A question here.

LOSI: Sure.

NIOU: What are the current perchlorate concentration at the four Pasadena wells? What's in my mind, why I ask that question is say if you only treat Well 52, which has the highest, and blend the rest, if that take you below 18, maybe that's --

BURIL: Let me address that just a little bit.

ROBLES: I think we should hold off until we talk about the policy.

BURIL: I just want to address his specific question.

First of all, it's the Arroyo well that's the highest. That's the one that's been shut off for what will be two years this July.

NIOU: Arroyo well, not 52. Okay. Arroyo well.

BURIL: Now, 52 has also increased in concentration. The last information that I have from the City of Pasadena indicated it was in the mid to high 40 parts per billion. So it is already

over the 18-part interim level.

NIOU: Yes.

BURIL: They do not run the Arroyo well at all. They do not have the volume sufficient to be able to blend it down to acceptable levels. Well 52 can only be run currently in conjunction with Windsor and Ventura. If either of those wells go down, the entire four wells go down. Because Well 52 is of high enough concentration that they cannot blend it down low enough unless they have the combined flow of Windsor and Ventura.

Keep going.

LOSI: And again, we have a scenario like that. 2b is something like that, where we only treat part of the -- I know I'm going over these fast. But that's where we only treat for perchlorate where needed, okay, and maybe have some kind of scenario like that, if possible.

HOSANGADI: Like in 2b, you know, if you look at the perchlorate treatment, i.e., RO (UNINTELLIGIBLE) gpm, for some reason if you figure out that only the Arroyo well needs treatment, then it may only be that.

NIOU: So it's flexible.

BURIL: It is flexible to a degree. But this is

what Peter mentioned earlier. This is where these other policies and requirements begin to factor in. That's where once we get through this I'd like to discuss some of that with you so we can get your viewpoints on these things.

RIPPERDA: Under the definition, when you're saying on several of these like, 2e and 3, when you say "plume containment," that just means pumping out the Pasadena wells thinking that that provides some containment.

LOSI: Right.

BURIL: Basically, yes.

LOSI: With modeling support to help us to arrive at a flow rate that would be sufficient to, you know, give us some indication that it will provide containment.

HOSANGADI: Right. Modeling, basically, in terms of suggestions that aren't normally existing, and then obviously groundwater data that we have so far for existing. For example, if we are pumping all wells to capacity, then we have X years of data to show that we have captured based on the levels and then based on the plume maps. And then produce -- say if we are proposing to pump them at a reduced rate, then we would support that with modeling.

CUTLER: We don't want to produce waste. Just pump what we have to. If the modeling says 1,000 gpm will do it, it would be ideal just to pump at that instead of the 2,000 that it's currently pumping.

BURIL: Okay.

LOSI: Okay. Now, alternatives 5a and b, now, these are kind of outgrowths of this recent revelation of this policy, this DHS policy, where it seems to indicate that we would not be able to treat and then provide that as a drinking water source. So these alternatives take that into consideration.

Now, alternative 5a would be where we would pump just the contaminated City of Pasadena well in addition to an on-site extraction well such that we could achieve usable plume containment. Under this alternative the Pasadena wells would continue to pump and provide water with blending as they currently are. And we're assuming here that they would be, shall we say, grandfathered in so that they would not have to -- they would still be able to -- we're assuming that DHS would allow them to pump and supply as currently being done. Okay?

And so that is alternative 5a. Okay. So it's, you know, essentially just those two wells.

And then 5b is assuming that the City of Pasadena will not be able to pump and supply any more, based on this DHS policy. So this is -- it's just like 5a. It's pumping again at the Arroyo well and an on-site well, but under this scenario JPL would then have to provide all of the water for City of Pasadena to meet its needs.

BURIL: Mark, the column Disposal, Treated Water on 5a, should that indicate, also, that it's got a use for drinking water to the City of Pasadena or to water purveyors?

HOSANGADI: Yeah. That's from the three wells that (UNINTELLIGIBLE) in current production.

LOSI: No. Because we're assuming here under the DHS policy that new wells cannot be sunk into this greatly impaired source.

BURIL: But the existing Pasadena -- the Arroyo well, we could conceivably do that. Is that right?

HOSANGADI: We're assuming not.

LOSI: We're assuming not.

BURIL: Okay. That's fine. Just so I'm --

LOSI: Since they're not pumping it now, we're assuming for this one that they can meet all their needs as they are right now.

BURIL: Using the other three wells.

HOSANGADI: Right. If they start something new, then it would not --

BURIL: Okay.

CUTLER: Go through that permit process to start the Arroyo.

BURIL: Right. I'll just interject a little bit about this policy thing. Because we have the VOC plant out there that's been there for some 10 years, the requirements of this particular policy that DHS has come out with appear not to apply because they've been grandfathered.

ROBLES: The operative word is "appear."

BURIL: Yes.

ROBLES: It can not apply.

BURIL: This is one of the questions that we have overall. Let's finish this and then I'll dump all the questions here and we can go through them all.

LOSI: And again, alternative 6 assumes that there's going to be a conservative interpretation of this DHS policy, and therefore you cannot -- no water that we pull out and treat can be supplied as a drinking water source. So this is remediation and containment on a little bit larger scale than alternatives 5, okay, where again JPL would buy all

the water necessary for the City of Pasadena to provide and then they would pump some or all of the Pasadena wells, treat it, and then either dispose of it to the water bodies or some kind of a -- you know, this is actually -- this one is written to address the idea of the Hahamongna Park, which may or may not look ridiculous at this point.

BURIL: I'll share with you that some of these we're going to talk about disposal of water to water bodies, that could either be the spreading basins that are in existence or the water feature associated with the Hahamongna Park, even though that's kind of a tossup as to which that might be.

LOSI: Right. Alternatives 7a through e are variations on the theme that we would not expect any cooperation or we would, for whatever the reason not collaborate with the City of Pasadena and that JPL would do everything on their own on site.

HOSANGADI: Actually, there's a slight -- I think that we've decided that it's either on site or off site. If we are to do plume containment without City involvement, we might need to have (UNINTELLIGIBLE) with the off site --

CUTLER: An off-site extraction well.

HOSANGADI: -- in order to provide the DPF

containment (UNINTELLIGIBLE).

LOSI: But these are basically excluding any collaboration with the City of Pasadena.

HOSANGADI: Right.

BURIL: You can see that basically we're using ion exchange or RO or bioreactors or no treatment at all for perchlorate. That's the basic variation on the theme as to which methodology we would use to deal with perchlorate.

LOSI: So basically, if you have a way -- if you're able to treat perchlorate and VOCs, you can inject the water into a clean portion of the aquifer, presumably.

BURIL: That's the theory.

LOSI: Right. And then -- so that would be 7a.

7b would be a treatment with a bioreactor. So that's just the difference between a and b.

C, again, 7c assumes that you cannot treat perchlorate. So in that scenario you would have to reinject back into the plume so you're not injecting in any more contaminated water. And that's, again, just a containment scenario assuming that you cannot economically or technically treat perchlorate.

And then 7d and e are -- these are scenarios where you pull the contaminants out of the

site and instead of injecting upstream or up-gradient or cross-gradient we have a scenario where we inject downgradient directly in front of the City of Pasadena wells in an effort to provide clean water there and to hydrologically isolate the site.

BURIL: Okay.

ROBLES: Hold on. You forgot 8. What happens if we can't inject?

LOSI: Okay. Well, that's one of the many questions that we hope to --

ROBLES: We can't use it for drinking and we can't inject anywhere, that is number 8.

LOSI: That's one of the issues that we hope to talk about.

CUTLER: That's one of our big questions.

ROBLES: I need a number 8. I need a to e under number 8. Can't use any of these treatment methods that you want to run treatment for perchlorate. But you cannot inject and you cannot put it in your drinking water. And we are doing it on our own because we can't work with Pasadena because of the DHS policy.

BURIL: You want a line to the Pacific Ocean? Is that what you're saying?

ROBLES: Whatever it is. It may be we stop the project, we're finished until we settle this issue.

BURIL: Let's take a look at the policies that we're concerned about.

ROBLES: Wait. Chuck, Chuck. I want an 8.

RIPPERDA: Okay. Give him an 8.

ROBLES: Where is 8?

BURIL: We'll find that 8 for you.

LOSI: You know what 8 is, then? Maybe it's provide all the water to the City of Pasadena --

ROBLES: Right.

LOSI: -- and do nothing else.

ROBLES: That's right. That could be it.

LOSI: That was on the list at one point.

ROBLES: That's it. That could be it. That's the worst-case scenario.

LOSI: And monitor.

BURIL: That could be 8. Okay. There's 8.

Okay. Have each of you had an opportunity to peruse that DHS policy in any way, shape or form?

RIPPERDA: I looked at it, but it was hard to read because it was an adobe of a --

BURIL: Of a document that we got, yeah.

RIPPERDA: Given that it was hard to read, I didn't spend too much time because I didn't realize

the level of ramification that it might have. I'll read it more carefully.

BURIL: Let me try and hit a few of the highlights. Pete and Mark, Mark, all you guys who have read this thing, chime in as we go.

What I just handed out to you is something that we found on the DHS Web page here just recently. This was found by Craig at Foster Wheeler for us.

RIPPERDA: So you fired him. Right?

BURIL: Well, I thought about it, believe me. Shoot the messenger is my way of doing business some days.

Basically, as I understand it, and please correct me if I misstate this, we have a policy which was sent to you folks by us which was drafted in late '97. This description of the program that is associated with that policy was just recently published in '99. This, as I read it, basically establishes the requirements to implement the policy that was written in '97. And the requirements here are -- well, let's just say they are extensive.

And here is the kicker that deals some death blows to some of the things that we have on our list of potential remedial alternatives.

One, the policy states that you must identify all potential sources of contamination to the basin in question.

ROBLES: To the source.

BURIL: To the source.

ROBLES: That's the problem right here. The policy guidance is for direct domestic use of extremely impaired sources. Key word. What does "extremely," "impaired" and "source" mean?

BURIL: Well, we can take a look at that in the policy when you have opportunity. But I'll give you -- I don't want to attribute too much detailed discussion to myself and Gary Yamamoto at the last Raymond Basin Management Board meeting because we did not have long, lengthy conversations. But the way I understood his interpretation of this policy when looking at the criteria as to what basically makes up an extremely impaired resource or source, there are a number of criteria. The ones that kick us directly into the fray of this thing, at least from direct implementation of this policy, is that we have two different kinds of contaminants. We have organics and we have inorganics. So the fact that we have perchlorate and VOCs will trigger that particular criteria.

A second criteria which is also triggered is having municipal wells in close proximity to a known contaminating source, JPL. So between those two alone, we are triggering the impaired source, extremely impaired source criteria.

So the folks that are immediately adjacent to the City of Pasadena, Lincoln Avenue, Valley Water, Foothill Water, they are the ones that are both immediately upstream and downstream from us. They are withdrawing water from what is, by DHS' interpretation, an extremely impaired source.

Given that, we have a lot of other requirements that now fall into place. The first was one I just mentioned. You have to know all of the potential sources of contamination and you have to evaluate their potential impact to the source.

ROBLES: Let me read that because it's a little --

BURIL: Have you got it there, Pete? Because I forgot to bring my copy.

ROBLES: "Identify all potential contaminated sources and determine the vulnerability of the water source to these contaminated sources."

RIPPERDA: Where are you reading from?

ROBLES: Reading from the policy.

BURIL: He has the policy. This is the program.

ROBLES: "2. Identify chemicals of contaminants used at or generated by facilities responsible for the known contamination.

"3. Identify the origin of known contaminations found in the water source and predict contaminant level trends."

BURIL: That's the first incredible requirement.

Then when you go into some of the issues with regard to treatment, I'm just going to hit some of the highlights. And, Pete, if you have that thing right there, you might --

CARLOS: I have a copy of it.

BURIL: Do you have it there? Can I borrow it? Thank you.

ROBLES: Hold on before you finish here. Then it talks about characterization.

"Title XXII. Drinking water, regulated and unregulated chemicals. All chemicals for which drinking water level actions are established, all chemicals listed pursuant to Safe Drinking Water Act, microbiological quantities, priority pollutants, gross contaminant measures, any component identified under source water assessment." On and on and on.

Also, it talks about that you have to have public involvement to determine so that what is called the Santa Clarita scenario could happen, where a Santa Clarita company contaminated the water source, they cleaned it up to nondetect. The public said "We don't care. We don't want it reinjected back into our water system. We don't want it reinjected back into our aquifer, even though it's cleaner. We want you to take it to the ocean." And that's what they have to do, because the public determines the public health under this policy guidance. Not you, not we; the public.

BURIL: Let me continue on a little bit with some of the other requirements here because that is one of the more frightening ones that he just pointed out.

Under Effective Monitoring and Treatment, which is section 4 of the document we e-mailed to you folks, it talks that "All treatment processes used must be optimized to reliably produce water that contains the lowest concentration of contaminants feasible at all times. The entire flow from the extremely impaired source must pass through the complete treatment process or processes. Any water from other sources that is available for

blending prior to entry into the distribution system should be used to provide an additional safety factor."

So keep that in mind. Entire flow.

ROBLES: Which means that our treatment facilities have got to handle the whole Raymond Basin aquifer, according to this policy.

BURIL: Now, we also have proposed monitoring of the treatment, which really doesn't look like it's all that onerous, except that what they state here is that for a facilities treating water containing specific contaminants for which the MCL is higher than the MCLG, it's the MCLG that becomes the design criteria.

Let's see. Let me go through this a little bit more. Human health risks associated with failure of proposed treatment. We have to -- according to this policy, an evaluation of the risks of the proposed treatment system must be performed, which includes the probability to fail, thereby exposing customers to untreated water from the impaired source, and all failure modes must be evaluated. The evaluation must include an assessment of the proposed frequency of monitoring as it relates to the protection of the public from

insufficiently treated water, and assessment of potential health risks associated with the failure of the proposed treatment system, including the duration of exposure that would result from such failure, the risks themselves, the cumulative risks due to multiple failures, and the requirement for additional treatment, if your scenarios that are accepted indicate that the proposed treatment system is ineffective.

ROBLES: Now, what does this mean?

BURIL: Hold on, Pete, because I want to be sure they understand all the ramifications of this.

Identification of alternatives to the use of extremely impaired source. The completion of California Environmental Quality Act review. Public participation requirement for the permit that is required to establish this, and the fact that there is a permit which will be required by DHS to allow any water purveyor to withdraw water and serve it to the public from an extremely impaired source.

Basically, folks, what we're looking at on this is items 1 through 6 just became undoable.

ROBLES: It's even worse than that, Chuck.

BURIL: It is.

ROBLES: The bottom line is that this policy

basically makes null and void CERCLA. That's the problem. We here do not make the decision about how the remediation is going to be done. We have to go back and start over with this policy, the whole process, if we're going to follow it to its conclusion.

And the bottom line is that CERCLA cannot be circumvented, it takes precedence over this policy; two, this will not be an ARAR; and, three, we do not implement State policies of this nature. We do not agree with it. We define the source as totally different. So we're going to have an impact.

Now, to Gary Yamamoto, the key is he doesn't have to touch us. He has to touch the purveyors of water. If we have to take our water and clean it up and send it to them for drinking, they, the purveyors of water, need a permit under this policy and he can stop them from distributing water if he chooses or his people choose.

So basically, 1 through 6 remedial option is null and void. We basically really are on our own and have to clean it up by ourselves as a closed-loop system. As long as we don't make it drinking water, the policy does not apply. But

technically, what is disturbing is that for all federal facilities, this circumvents CERCLA.

BURIL: Now, I have another wrench to throw into this already seemingly broken machine, and that is that when we start talking about the protection of human health requirement, in dealing with this, this is obviously written to protect human health and it appears to be very conservative in its means of doing so. If we were to approach our remedial action in the fashion that Pete has described, we deal with it by ourselves, closed loop. We do not deal with water purveyors if they have their own issues.

Theoretically, then, we may or may not meet the requirement of protecting the public health because we have not taken action to mitigate the problems that are in the municipal wells.

So we've got another problem in terms of what's actually going to be required via the CERCLA route from the standpoint of protection of public health. And if we are going to protect the public health, in one facet or another it appears that this policy is going to be imposed. Now, whether it can be imposed on the CERCLA remediation becomes an ARARs question.

ROBLES: Or on the purveyors of water --

BURIL: Exactly.

ROBLES: -- which ultimately falls right back into it because we cannot do anything without the permission of the purveyors of water.

BURIL: This is the point that I was getting to. If we were to say, "Sorry, DHS, this is a CERCLA issue, we do not need your permit," the water purveyors still do. And as a result, the water purveyors then are forced to accept all the requirements and until such time as those requirements are met, DHS will not give them a permit, which means that we would more than likely not receive permission to use any mechanism that would deal with providing water to the public or utilizing their wells or providing treatment in any way, shape or form that deals with their ability to purvey water.

It gets a little worse yet because if you talk about reinjection, we're still talking about reinjection into what is technically an extremely impaired source by the definition of this policy.

Also, surface body water, we can put it back in that way. We still have the same problem that the purveyors are still withdrawing water from

an extremely impaired source by definition of this policy. And so we go round and round. Every time we turn around, it seems that we run into this policy. And this policy is basically, as Pete said, it is taking the ability of our judgment, in at least many respects, and eliminating it, stating that thou shall do it this way irrespective of what you may determine through the CERCLA process.

ROBLES: What it may come down to is that we just shut down the whole CERCLA program down and just buy water. We can't even touch the water in the aquifer because basically we can't get rights to inject, rights to pump up, rights to treat because that impacts the purveyor's water. And this is where the key problem is.

More importantly, which really bothered me, is that Gary Yamamoto said this is on a case-by-case basis they will make that determination. They're going to play God. And the reason is because this policy is not being enforced in State Superfund sites because they couldn't handle it. But they're enforcing it on everybody else. And that's where I'm feeling this is capricious and arbitrary and this is where we're going to have a real hard problem with this policy.

And the definitions basically circumvent CERCLA.

So I don't know how to treat this. I talked to my legal staff back at NASA headquarters. We do not implement policy directives or memos or guidances as ARARs. And this basically conflicts totally with the NCP and CERCLA. This circumvents it.

By law, I can go to jail if I don't follow it, CERCLA. That takes precedence over this.

BURIL: There's another interpretation that I personally looked to at one point or another, and that is the State, with its basic state's sovereignty, is able to impose restrictions more stringent than federal, has every right and every legal means to do exactly what they've done. Now, while we can maybe push aside that State requirement, as Pete has described, if we are to use the water purveyor's facilities or the desire to dispose of the treated water, the processed water as a resource to be used by the general public, the water purveyors have no choice but to follow this policy, in which case I am certain they would turn to us and say "This is your problem. Fix it."

RIPPERDA: I think we've heard enough.

BURIL: You've heard the doom and gloom.

RIPPERDA: Of why it's a problem. So can I ask a few questions?

BURIL: Absolutely. Please.

RIPPERDA: First, can I get a copy of the policy?

BURIL: You'll have it before you leave.

RIPPERDA: I, of course, will then give my lawyers a copy, which will communicate with your lawyers.

Have the water purveyors already been told by DHS that they must apply for this permit for producing from an extremely impaired source?

ROBLES: It's on a case-by-case basis. They have been told that there'll be meetings. We're supposed to have a meeting with Raymond Basin and DHS next month to sit down and talk about its impact. I don't think they recognize the impact. I think they see this, basically, from talking with Mr. Atwater off the side of the meeting there, oh, it's not a big deal, we can go through this very easily. I don't think they understand the impacts. And I don't think they understand how it's going to apply to them.

RIPPERDA: You're globalizing this. It may be that big of a global problem, but many of the

aspects you're talking about aren't that bad. But if -- what I see as being the biggest potential problem is if they require a permit and that permit requires public review, that's the only make or break thing. All the rest of it is just providing documentation, doing the risk assessment, providing descriptions of the sources. All the rest of it you've got. It's only whether or not the public will deny the permit.

ROBLES: The only problem that I have, Mark, with that is according to this policy, what we've done does not meet this. All the work that we've done does not meet this policy.

BURIL: Let me explain why. In the course of development of the RI we came to the conclusion, and one which I think is generally accepted by everybody in the room, that there are contaminants out there not of JPL's doing. And while we can argue that point, let's take that as a given for the time being, perchlorethene is the one that jumps up to my mind. In the situation that we are faced with, NASA has basically stated that they will not be dealing with perchlorethene because we cannot find ourselves as being the source.

This policy makes no such distinction. It

demands that any and all contaminants be treated, any and all sources providing those contaminants be identified and characterized.

So we have another situation here, it appears, that we've got a series of contaminators, shall we call them, but no one knows where they are, no one knows who they are, and no one has taken the initiative to go and find them. And so in that situation, we have not met the requirements of this policy, in which case the onus of this may fall on the purveyors, it may fall on us. There could be a lot of argument for that.

But the upshot of it is that it ain't done.

RIPPERDA: I guess I don't see that as a make or break problem. It's a problem, but this is DHS talking to water purveyors, not DHS talking to contaminators or Superfund sites. So they require the water purveyor to provide this description, the water purveyor to do all of that. You know you have contaminants. You've done your investigation.

BURIL: Right.

RIPPERDA: You can provide what you know. So I don't see that as being a terrible thing for JPL.

The water purveyors can then turn around

and scream at you, but, you know, you've done more investigation than the water purveyors will, and any other nonfederal facilities Superfund site could be privy to. So I guess it still seems like --

BURIL: But would you, Mark, then agree that if this policy is being enforced on the water purveyors, that when we go to a water purveyor, no matter who it might be, and say, "Look at items 2 through 6. Which of these can we work with you on to try and get something together?"

I would anticipate the answer would be "None of them," because we are not prepared to try and deal with this permitting issue from the standpoint of all the requirements that are laid out there.

ROBLES: For example, Mark, if we go and say "Pasadena, we want to work with you on your well, pump it out so we can do containment, put it back in your water system" and so on, they're grandfathered. Their VOC plant is grandfathered. If we start doing that, triggers in this permit, policy jumps in. They say, "Whoa, we don't have the money to do this. We got to do this together."

And I'm saying what that says is to characterize the whole Raymond Basin. That's not

the impact area that we're talking about. That's not the impaired source that we're looking at and so, therefore, we can't provide money for you to look at the whole Raymond Basin.

CARLOS: I don't see that that way. I don't think -- to give you an example, the City of Glendale, Burbank, they're going through a thick -- something similar.

BURIL: They're going through exactly this.

CARLOS: Exactly this. The PRP is in north Glendale, south Glendale area. They're coming up with treatment system to treat VOCs in groundwater. The treated water will eventually go to the City of Glendale for consumption.

BURIL: Okay.

CARLOS: But they're working with DHS to, I think, get this permit.

BURIL: Okay.

ROBLES: So you're basically saying that the way the DHS may interpret it may not be as strict, they might try to give some relief?

CARLOS: I don't know.

RIPPERDA: Maybe --

CARLOS: I think you -- maybe it's --

ROBLES: I may be overblowing it? I may be

overstating it too much?

RIPPERDA: I don't think we can discuss this too much more right now. I want to read it. Alex should probably read it. He can be -- my gut feeling is you're overblowing it. So go ahead and talk to the cities, talk to DHS and I'll have my lawyers look at it just in terms of the legal aspects of the federal CERCLA stuff, not whether or not the water purveyors have to get the permit or what that means, but just the pure CERCLA ARAR issue. But I can't believe that DHS would shut off an entire groundwater basin out of capriciousness.

BURIL: I think, Mark, that what you'll probably find, just to throw my own two cents worth of legal interpretation in here, and that's probably all it's worth is two cents, is that I doubt seriously that this would be viewed as an ARAR because it is a policy as opposed to a promulgated standard. So from that perspective, I think we probably find it's not an ARAR, and in fact, treating it as an ARAR would probably be inappropriate. To be considered, definitely. To what degree it's considered is a question for open debate and probably something that we aren't prepared to do right now.

But practical application, when we talk

about remedial alternatives for this site, it becomes a very, very powerful thing because we run squarely into the requirement of working with the water purveyors, who have no means to legally push back at this. They are mandated to follow it to the interpretation of DHS. And if it is dealt with in the strict terms of the policy, then it's very unlikely that our 2 through 6 would ever come to fruition. And, in fact, questions arise, really strong questions, as to the practicality of any of the number 7s because we really don't have any way of dealing with the water if we can't get the appropriate permissions to reinject or to spread or to do any of the other things.

RIPPERDA: I guess I'm just not willing to give up immediately --

BURIL: Oh, I'm not either. But I'm raising this as an issue because, one, we had never anticipated anything like this and the fact that the program that we handed out here today has been written in 1999 indicates this is a brand new thing.

And, two, I know the City of Pasadena, as well as other water purveyors, are more than willing to work with us. They see us as an opportunity to improve their water system and get, basically, their

operations back up to speed where they would like to have them. And I think to the degree that it's reasonable to do so, NASA is more than happy to do it. It's when things like this step up that make far greater demands than what we would, quote-unquote, technically need to do, that things become very difficult.

ROBLES: Let me make a recommendation. You don't have to answer now. I look at the policy guidance and once we add number 8s to it, look at the alternative and maybe, you know, the 10, the death note, I don't know what, that we kind of maybe need to have a meeting with DHS, that once we get along where we say, hey, look, this is our matrix, this is what we're coming up with and your policy has a tremendous impact, and kind of get a feel for them so they can understand.

Because I think Mark hit something on the head, is the fact that maybe we're blowing this overboard and DHS may be looking at what is the reality. Because I think it's tied into public health. And if we can show that our alternatives will meet their needs and they have some input through one of the RPMs, that they may be able to work with us and that we might need to have a

meeting in the future, maybe near or far, I don't know.

BURIL: Let me offer a suggestion that was made at the last Raymond Basin Management Board meeting, and that was that representatives from Raymond Basin, I would assume probably Ron Palmer and Rich Atwater - it's a shame Rich isn't here to chime in on this - ourselves, NASA and JPL, and then the regulatory RPMs get together with the Department of Health Services, be this in person or be it telecon makes no difference to me, but later will impact the schedule because we don't know whether this is going to be something that leaps out at us unless we take action now. We need to take action now to understand what the impact of this is.

RIPPERDA: I thought you already had a meeting scheduled for next month.

ROBLES: Yes. Next month it's going to be just focused on this policy. Yamamoto is going to come in and try to give us more explanation.

BURIL: Next month?

ROBLES: Next month. Yes.

BURIL: When was that set?

ROBLES: That was at the Raymond Basin, that the president said, hey, we need to table this and have

just a meeting on this policy, just on this policy, and have Yamamoto come back and all the purveyors of water and we just discuss this policy and its impact. Because they don't have an idea how this can impact them. He said next month. Not May, but June.

BURIL: Okay. I'm going to call Ron and find out exactly what the date of discussion was. I don't recall it being -- when we said next month, it was still April.

ROBLES: No. He meant next month, June.

BURIL: No. Then, in all candor, we've got a problem.

RIPPERDA: But that was Raymond Basin wanting to get --

ROBLES: Information. Just information about what the policy --

BURIL: But at the same time, I think that this group --

RIPPERDA: Right.

BURIL: -- may need to meet sooner to understand. And the reason, put quite candidly, is that we have questions about the need to continue on any number of these fronts as far as evaluations. Because if this policy is going to slam dunk a few

of these things out of consideration, then we may be faced, as Pete said, with one alternative, if this thing is to be enforced at its full strength, and that is provide alternative water.

And there are a number of ramifications to that particular remedy as well, not the least of which is that if we're talking about alternative water for the entire source, as the policy states, facilities which bring that water aren't sufficiently sized to do it.

RIPPERDA: Right. Which is why I just --

BURIL: I have a very hard time believing DHS is going to do this. But at the same time, the fact that they bring it out now and the nature in which this thing is presented, it just gives me great pause to say, well, hold on.

We better meet. We better get everybody in the room to understand what's going on. And if Gary and his folks can give us some kind of understanding of how this will be implemented so that we can continue on with these things, then that's going to be ideal. But put candidly, we need that now.

RIPPERDA: Yeah. That sounds good.

BURIL: Right now.

CARLOS: In fact, as you get closer to selecting a remedy, I mean, you can even request from DHS have their own representatives, for example, in RPM meetings.

BURIL: That's something that we hadn't discussed, but I think that that is probably a very good suggestion, that perhaps we start involving them to a much greater degree, particularly since we are appearing to be in a position of needing more of their input due to the kinds of remedial actions we're thinking of than what we might have anticipated at the outset.

RIPPERDA: But even more than that, it's like meetings are great, but they're just meetings. We have to meet with Gary sooner rather than later to understand his interpretation of the policy. And after that, if any of your potential remedies that you think are seriously potential intersect with that policy and require the purveyors to get a permit, you should start the permit process if it's not like too expensive, just to like -- I don't know anything about the permit process, but if you think that that's a total killer and it's going to take forever to get the permit, you might just like start the permit process before you have the ROD.

BURIL: Yeah. This is obviously very new, something that we don't know how to interpret. The conversation that I had with Gary subsequent to the Raymond Basin Management Board meeting, while he didn't commit anything, let me be sure that everyone knows that, I had the impression based on that conversation that DHS is planning to be fairly strict with us. But that is something that we need to get a much more in-depth understanding of. And I think that bringing this group together with DHS to discuss remedial actions, and so forth, would be very important, and with the addition of the water purveyors via the Raymond Basin Management Board. We may very well be in a position where in spite of anything that we think is a great idea and a generous interpretation of the policy, the water purveyors may not like the idea. We don't know yet. We have not broached this with them.

RIPPERDA: And they would be the ones actually applying for a permit so it wouldn't be you guys -- I'm not suggesting that you go out and apply for all these permits, but --

BURIL: No, we wouldn't.

RIPPERDA: -- they would have to do that. The reason I just can't believe this is that big of a

problem is that this comes out of the wellhead protection area as source control. It's more trying to protect sources like the surface water source or the groundwater source than it is to deal with actually produced -- you know, the treatment systems.

BURIL: Okay. Well, I will get you a copy of this, and I would encourage you to please go ahead and read it.

Perhaps it would be to our benefit that after you folks have this and have the opportunity to read it, and I would say that probably sooner rather than later, that we convene a telecon for, say, early next week to get your kind of gut feel for what you've read, now that you've had opportunity to review it, and see whether you're still of the same opinion that it is not the planet killer that we think it might be.

CARLOS: The way that we understand this policy, water purveyors are also required to do this assessment, but not necessarily get a permit. For example, the main San Gabriel Valley water masters, they're going through this exercise and going through practically all of our files in San Gabriel Valley, at different sources, whether it's gas

station or what investigation sites, VOC, non-VOC, potential sources.

BURIL: Okay. It sounds to me like they're, at least in one fashion or another, trying to prepare to deal with that source characterization requirement. I guess the only thing that I would say is that we need to perhaps do something like that, but we can only supply information to the water purveyors. As Pete said, we can't deal with the whole Raymond Basin. And so there is that issue, without trying to belabor this whole thing anymore.

RIPPERDA: So should we talk about it on Tuesday?

BURIL: I think that's fine. Tuesday at what time works well for people?

RIPPERDA: 10:00 A.M.? 2:00 P.M.?

ROBLES: Next week Tuesday?

BURIL: Next week Tuesday.

ROBLES: 2:00 P.M.

BURIL: You won't be around on that day?

CARLOS: I'm on vacation all the rest of the month.

BURIL: You're on vacation the rest of the month?

ROBLES: Who gave you vacation?

BURIL: I'm going to have to talk to Art.

ROBLES: Did this committee give him permission to take a vacation?

CARLOS: I'll be back after Memorial Day.

BURIL: That's a nice vacation. Is there anyone we could talk to in the interim, Alex?

CARLOS: I'll talk with Mark.

RIPPERDA: It doesn't have to be somebody who is familiar with JPL. They just need to be familiar with the policy.

BURIL: Somebody who can understand the ramifications and the implementation of this policy would be really helpful.

10:00 A.M. on the 11th. We'll get a number for everyone to call in to, and we can go from there. I think it would be far better to do it now than later.

RIPPERDA: And then --

GEBERT: Question.

RIPPERDA: Then I would suggest after that, I don't want to have a -- unless I read this policy and I think you guys are really missing the boat, I don't think you're really missing the boat, it's just a measure of gradation, but I would not want a

teleconference with Gary. I'd much rather have a meeting in person.

BURIL: Face to face.

ROBLES: Could you find out if he's coming to the Raymond Basin next month? Because I believe that's what he said.

BURIL: Yes. I'll call Ron this afternoon.

ROBLES: Because that would be a perfect time for us to meet him since he's going to come down here and explain to the purveyors of water what the policy means.

BURIL: I think that we need to take a hard look at what this means to the schedule, because depending upon the answers we get back, it could have a fairly dramatic impact. Maybe not so much in terms of the actual submission of the report. I mean, that may be impacted some degree, but the actual implementation of anything that may come out of the FS could be impacted very severely.

So let me check with Ron with regard to what dates they're talking about. If it's honestly next month, given the fact that this is the 4th, I'm going to ask that we move that up and move it up fairly dramatically, by at least a factor of two weeks.

That would have to be something, Alex, that you would have to talk with Arthur about because we're going to be doing a lot of meeting here, it sounds like, and you're not going to be available. So by all means, please let him know. We're trying to resolve this issue as rapidly as we can so we have the least amount of impact to the project.

ROBLES: Or at least try to get kind of a broad interpretation from Gary how this is going to be implemented, what are his views, so then we can take it back and discuss it among ourselves.

BURIL: That's basically what I'm after. I'm concerned with regard to the timing principally because we're rapidly approaching due dates for reports and public hearings and things like that. And this has a potential of creating some problem. We just need to resolve what impact, if any, it will have. Maybe we'll get lucky and they'll say don't worry about it, just clean it up.

CUTLER: We had talked a little bit earlier. It's just really at the point we're in our end of impacting schedule.

BURIL: We're right up to the edge.

CUTLER: We need to get something to deal with

really in four weeks. And as you know, this whole list of alternatives turned upside down in a matter of the last two days. So we backtracked quite a bit. It's critical to us, as you know, whether we can do wellhead treatment or not.

BURIL: Right.

CUTLER: So if we can't get this issue resolved in a few days, which we can't, I think it will impact the schedule.

BURIL: Let's do this. Rather than trying to guess what the schedule impacts, if any, are, I hear you, I understand what you're saying, let's get the meeting set and let's get things rolling as best we can.

I would suggest that in the interim between then and now that we would pursue this, these alternatives --

ROBLES: As is.

BURIL: -- as is.

ROBLES: With number 8.

BURIL: With the number 8.

RIPPERDA: And 9s. I want 9s.

BURIL: I've always liked being a 10.

RIPPERDA: You can absolutely pursue your document. You can maintain this list. And if it

ends up that you've got public or local government or DHS acceptance over here, just like not acceptable, not acceptable, like that can go in there. But the rest of the document --

CUTLER: Quickly.

RIPPERDA: -- can move forward.

BURIL: Let's look at it in that fashion.

CUTLER: There's a lot we can do and we were going to plan on.

RIPPERDA: Whatever Ron Palmer's schedule is, like I don't know if that means early June or later June.

ROBLES: He was talking about the meeting. And, Chuck, you were there. What he said is --

BURIL: I must have gone on vacation at that particular moment. I don't know. I don't remember that.

ROBLES: What he said is that he was looking at the first or second week of June to have Gary come over to talk about this policy.

RIPPERDA: Because you might want to have Gary, to move things along quickly for your own sake, at least for your own understanding, have Gary come here, if you could get him, I don't know how hard he is to get, the last week of May and we'll have

another -- even without Alex, just have a meeting the last week of May.

ROBLES: You know, that might be better to just ask him --

RIPPERDA: Because you have your own issues that are separate from the Raymond Basin's.

BURIL: You're right.

ROBLES: That might be better, is to basically get him here and --

BURIL: Let's see what we can do as far as finding it in coordination of schedules. I think if we can coordinate with Raymond Basin to get them in the door as well, I think we would be yards ahead because they are going to have things to say about this.

RIPPERDA: But I think you should, if you can, have a meeting with Gary without the Raymond Basin or with just Mr. Atwater from the Raymond Basin.

ROBLES: Right.

BURIL: That's who I mean.

RIPPERDA: Because our questions are very different from their questions.

ROBLES: Right.

BURIL: Now, before we leave this particular issue of policy interpretations, Mark, you had about

a half a dozen questions that we posed to each other last night that maybe we might want to just throw on the table as well so that folks have a better appreciation of some of the things that we're considering.

Now, I don't know whether there are immediate answers to these questions or not, but they have impact on a number of the alternatives that we identified here. And we just want to raise them up to you folks so if you have an immediate response that is useful to us, then it would certainly be good to hear it.

CUTLER: This pretty much came out of the last RPM meeting when you had commented on our list of ARARs and said that's fine, but we really need policy issue questions. This is where we really get into what an ARAR will mean to us.

One of the questions that came up at the last meeting was where do you have to meet MCLs. Can you meet them at the tap or in the basin. And that was one issue that we had talked about a little bit last time.

That could play an important role in which remedial alternative is acceptable, wellhead treatment. Or course, that's a question for other

reasons but could play a role with that alternative.

BURIL: Before we go off of that one, Mark, let's talk about that for just a little bit because a lot of the policy that we've been discussing here for about the last umptyump minutes is really pointed at wellhead treatment. And it doesn't discuss the issue of aquifer cleanup and aquifer quality, resource quality at all.

Some of our proposals actually do touch both. We can both remediate an aquifer and deal with wellhead treatment.

I guess the thing that I would like to get some kind of general acceptance on is that when we're talking about a remedial action, where do we apply, as Mark asks, where do we apply the standard? If we apply the standard at wellhead, then that has certain ramifications. If we're talking about anywhere within the aquifer that's identified as being impacted, that carries with it some strong ramifications as well, in addition to wellhead.

It's my hope that we can define this as meet the criteria at the wellhead as opposed to in the aquifer, put simply, because that's the point of exposure, that's the point where we're going to be dealing with it.

CUTLER: Talking with Craig, we believe that the ARARs that we've identified will allow that wellhead treatment.

RIPPERDA: ARARs allow -- well, whatever. You can do wellhead treatment, but -- and there's many ARARs, but one of the ARARs is you have to meet MCLs within the aquifer. That is an ARAR.

CUTLER: Right. The question there is time.

RIPPERDA: Right. But you can't just say the ARAR is at the wellhead. One ARAR out of many is MCLs within the aquifer. And then you discuss whether you can achieve that within a reasonable time. And if you can, fine, you've got remediation happening. If you can't, it doesn't mean you can't pursue that remedy, because you could still do some kind of waiver of the ARAR. But you can't tweak the system by misapplyng the ARAR.

O'ROURKE: What requirement is that, or regulation?

RIPPERDA: That's in the NCP. That's part of CERCLA.

ROBLES: Basically NCP says that you have to return the resource back to its original intent. And however long it takes, 300 years, it doesn't matter, you got to keep doing it.

CUTLER: Even with wellhead treatment you could be doing that. Especially the Arroyo well, you are --

ROBLES: But the goal of the NCP is always the resource. The aquifer that you have stated, this is the portion that we are impacting.

BURIL: That impacts us just from a couple of perspectives, and I'll just share this with you very briefly. One, if we go to a wellhead treatment type system, we could very well be in a situation where we treat, very minimally, water that comes out due to blending across the length of the screen and things of that nature. The actual well water itself is very close to being clean, if not completely clean, and yet our monitoring wells show that we still have something greater than MCL, maybe vanishingly small over MCL, but nonetheless over MCL, in our wells.

The strict interpretation of that would tell me that we would continue wellhead treatment, theoretically, in trying to deal with the aquifer cleanup for as long as those monitoring wells showed anything that was above MCL. That carries with it some pretty high ramifications in terms of operations and costs. And that's understandable,

but I just wanted to be sure you understand that.

RIPPERDA: I didn't understand something you said. You only run the wellhead treatment system as long as your well is above MCLs. You continue to monitor as long as the aquifer is above MCLs.

BURIL: Now, that is an option that is useful. I mean, that is acceptable, given that we are not -- we would not be actively remediating the aquifer unless the wellhead were operating. That's the assumption built into this.

So if we were, say, the City of Pasadena, just using them as the example, we're not pumping their wells because their buying their water from Metropolitan Water District because it happens to be cheaper, we would not be actively remediating the aquifer.

Would that be something that would be acceptable when dealing with the ARAR?

ROBLES: That is part of the production or the operations of the remediation technology. Because I've been at sites where the purveyor of water may not pump their water, but you kept the technology running and just reinjected it back in there.

BURIL: See, there you have a difference, though. What I'm talking about is that there is

nothing, there is no active work whatsoever being done to the aquifer. But if you're talking about at some point in time the water goes to one place or another, but it's always operating, that's a different scenario. That's what we need to try to understand.

ROBLES: I've never viewed a site that I've worked on, I've worked on five of them, where you could say we're not doing anything. The bottom line is the NCP says that the resource, the aquifer, has to be dealt with, even if that means that that water is not used for drinking. I've been in the middle of Texas, east New Mexico, west Texas. That's only used for just irrigation on farmland. You had to clean it up and you had to deal with it, even though it was not being used for drinking water.

BURIL: Well, the opportunity to actually do something, if you talk about active remediation versus monitoring what's going on, you're still doing something by monitoring. I don't know, Mark, if you are alluding to the idea that as long as you're monitoring and treating the wellhead as it's necessary you're okay without doing active remediation. I don't know.

RIPPERDA: Right. I wasn't quite going there.

I didn't understand something you had said. I thought maybe you were implying that as long as the contaminants exist within the aquifer you must also treat at the wellhead no matter what the contaminant level in the wellhead is. I wanted to break those two apart.

BURIL: Sure.

RIPPERDA: What Peter is saying is true. Region IX's interpretation of this, which is what you have to deal with, although you also have to deal with the State and they've got, in many cases, more stringent groundwater stuff than we do. But only saying, well, you have to deal with us, and then the State can break your (UNINTELLIGIBLE).

BURIL: Sure. I'm waiting to hear the State's interpretation, too.

RIPPERDA: The aquifer -- an ARAR for the aquifer is MCLs. The NCP has a stated goal of aquifer restoration, but we only drive it to MCLs. Once the aquifer has hit MCLs, you're done. So MCLs throughout the aquifer.

BURIL: Throughout the aquifer impacted by our contamination.

RIPPERDA: No. I want you to clean up your aquifer until the Santa Clara aquifer is clean.

BURIL: I'm trying not to be flippant, but I'm thinking specifically of perchlorethene.

RIPPERDA: Your contamination. As long as there is a drop of TCE in, I don't know, in Nebraska, you have to clean your aquifer.

ROBLES: We understand.

BURIL: I just want to be sure that we understood that there was that limitation of what's attributable to JPL.

RIPPERDA: Right. So you're responsible for contaminants in the aquifer until the aquifer has been restored to MCLs. And I keep saying, not that you must restore it, but that the ARAR is for MCLs, because you can either restore it to hit that and that can be either through an active system that you install or you're using the City of Pasadena wells where there's some kind of active restoration going on, or the remedy can be natural attenuation.

BURIL: We may combine those two.

RIPPERDA: Or you may combine the two. You can't just say you're monitoring the aquifer. That's nothing. But if you say we're letting the aquifer naturally attenuate and we're monitoring that attenuation, that's a remedy.

BURIL: That's a remedy. All right.

ROBLES: Natural attenuation will not work because California, Alex's group, the resource must report back to cleanup level.

BURIL: Why don't you let Alex tell us that.

RIPPERDA: I'm just finishing off my part. Then you can listen to the State part.

If neither of those are -- if active remediation or natural attenuation are not practicable for a variety of reasons, and your whole perchlorate thing may be one of them, you can waive the ARAR for aquifer restoration, in which case leave the aquifer as a cesspool of contaminants, but --

BURIL: Strike that word.

RIPPERDA: But you still need all the other ARARs, of which producing water from the production wells meets MCLs also. So you're just waiving that one particular ARAR for MCLs in the aquifer, but running the treatment systems at Pasadena all exist and everything else still exists, forgetting about the DHS policy.

BURIL: Right. Right. Okay.

Does that answer that first question?

CUTLER: Right. Yes, I think it does. It will be interesting to hear what the State has to say

about --

BURIL: Yes. Please.

CARLOS: I think with respect to the Board, in general, we'd want to see if -- restoration, aquifer restoration not necessarily to pristine condition. You look at -- we have to look at the economics, the technical feasibility.

CUTLER: Well, let me say one of the scenarios that this may be important to us is, all along, assuming -- disregarding the DHS policy, wellhead treatment hot spot reduction was always kind of number one on the list. But if we went on site to try to knock the head off this, we were wondering, do we have to get in a situation where we have to, once we get in there, keep going to MCLs knowing that we have such a dynamic aquifer? It's just so much going on there. Or can we just take as much as we can and pick up anything that's left, a little fine polishing at the wellhead? Or would an ARAR say no, whatever, once you get into that, you have to keep those pumps going and keep this treatment on site going until you get to MCL. So that was just one of the issues, besides the ones you were talking about, where it was important to us.

RIPPERDA: From an ARAR -- it's like once you

start, it's like that doesn't commit you -- you have to meet that ARAR whether you start or not. If you don't start knocking the head off it, you still have to monitor it to show that natural attenuation is working. If natural attenuation isn't working, you then have to either do a waiver or go in and hit it actively. So no matter what, that ARAR is still there.

CUTLER: Right. I understand that.

BURIL: So the interpretation of this is flexible from the standpoint that if we want to put in something here on site --

ROBLES: We've got to come up with this.

BURIL: Oh, I know. Right.

ROBLES: And whatever we want to do, the ultimate goal is the ARAR. So if we knock it down but we don't get to MCL levels, as long as the overall, we're doing something. That's what counts. It's not the thing is -- I know what you're talking about. You get in there, you're going to keep it on and turn it on. We have to go if we can show in a logical progression that the matrix of technologies that we're doing gets to our ultimate ARAR, that's enough. And we can tweak that over the life of the project.

CUTLER: Perfect.

BURIL: So that's all we need to know.

ROBLES: This is going to be an ongoing process because as new technologies come on board and new standards come on, we're going to have to relook at this. But this is a dynamic thing.

BURIL: Now, that's NASA talking.

Alex, do you agree with that, or Richard?

CARLOS: Yes.

RIPPERDA: Yeah.

BURIL: I mean, from the implementation from the State policymaker standpoint or State implementer's standpoint, that would work.

GEBERT: That would work, as long as you're making progress towards the goal.

RIPPERDA: I use the word TI waiver, which is acceptable to EPA. But what does the Board or DTSC think about something that a site says it's just not practicable because the ISEP system is going to cost 25 million, or something like that. At what point do you allow them to not actively -- not actively, because the Regional Board does accept natural attenuation. I think both the Board and us kind of view natural attenuation as being within a matter of decades. You know, 30 years, maybe out to 50. But

if you're going to claim natural attenuation as a remedy you have to be able to show that you're going to hit MCLs, for us anyway, within 30 years, maybe 50.

CARLOS: Actually, if you claim natural attenuation, then it kicks in a series of rationale to justify that, you know, it would work.

RIPPERDA: Yeah. You have to --

CARLOS: There's a whole guidance.

BURIL: There's no just trust me guys, it will work kind of approach to this.

RIPPERDA: Right.

CARLOS: It's not something that you claim in your text we'll use natural attenuation, we'll monitor. There are a series of requirements.

BURIL: Requirements to establish that natural attenuation is actually viable.

CARLOS: You have to demonstrate that it's working.

BURIL: Okay. That's makes perfect sense.

GEBERT: There's an awful lot of monitoring with that and it's very expensive.

HOSANGADI: (UNINTELLIGIBLE).

RIPPERDA: So recognizing that it is a remedy and you actually have to do a lot of work to prove

that it's a remedy, at what point does the State allow you to not have a remedy for the aquifer?

BURIL: What you mean is when do we say what we're doing is not effective anymore?

RIPPERDA: Right.

BURIL: And so we're not going to do this anymore.

RIPPERDA: Or even right now to say to actually remediate the perchlorate is just not technically possible. We don't have technology to do that. What kind of dollar number or what kind of proof or what kind of effort does the State require for a site to say, "We just can't handle this."

CUTLER: That's a good question for Pete to answer.

GEBERT: I don't think there's ever been one, that I know of.

RIPPERDA: EPA has a TI waiver. We very definitely have a TI waiver.

GEBERT: Is there a dollar amount?

RIPPERDA: And there is no dollar amount on it. But we grant TI waivers. I've done a TI waiver.

BURIL: When can you get it?

CARLOS: I don't think the State has a dollar amount.

DAVOL: I don't think cost is the factor in the TI. Right?

RIPPERDA: Right.

BURIL: Technical feasibility.

ROBLES: Two states that I have worked on this, the government had to go back to Congress, ask for a line item. If Congress doesn't fund the line item we had a force majeure issue and then we have to go to the State and say we can't get the money. Because basically I've never been in a situation even when we asked Congress for so much money, we showed the economics to the State and the comment that came back to me, this is the State of Ohio, was basically, "We don't care." You got to go back -- I don't care if it's a bizillion dollars and it takes the whole DOD budget. Go back and ask Congress. We did. Congress said no. We said we have a force majeure issue and they had to accept the decision by Congress.

RIPPERDA: That's NASA's response, but we're just trying to figure out at what point we'll make you do that.

BURIL: I'm just smiling because I'm thinking of that happening. I'm really wondering why I'm smiling.

RIPPERDA: Like I can't give a dollar amount. I can say we do TI waivers. We're willing to grant them, but I can't say we do if at 1 million or 100 million.

BURIL: The State agencies, you fellows in your experience haven't had anything that's --

CARLOS: I don't think the Board has any dollar amount either.

BURIL: But do you deal with anything in terms of technical feasibility?

GEBERT: Very definitely. It depends on the RP to a large extent, and the available resources.

RIPPERDA: My question might be more like has your management done that. Some regional boards are famous for not allowing this to even be discussed, and other regional boards are much more lax.

CARLOS: I think it can be discussed. I'm trying to think of -- I haven't encountered something like this before.

NIOU: At George there is a particular site being granted for TCE for natural attenuation. George Air Force Base at Victorville. There is a site being granted. Lahontoun Board.

ROBLES: The reason for that was because it was hydrogeologically isolated and it could show that

there were parameters which meant that this was not drinking water, this was not going to flow anywhere else, it was kept and it was monitored the hell out of it.

Edwards is applying for three of those, and they're getting them. But again, no aquifer, isolated hydrogeologically, source contamination, controlled by natural bedrock, and natural attenuation, and they monitor the hell out of it.

NIOU: True.

CUTLER: So it's probably economics here.

ROBLES: It was the economics driver.

BURIL: Well, I think we probably got as much of an answer on that as we could expect at this point.

RIPPERDA: For your FS you have to basically carry all of these, plus 9, 10, 11 through the nine criteria, which includes the ARARs analysis. And, you know, you just have much more work to do.

BURIL: I've seen the list before.

How about the other questions, Mark?

CUTLER: This might be more for -- well, it's more of the L.A. Basin plan. They have requirements for reinjection, like TDS, for example, sulfate, chloride, and for surface water body disposal. Colorado River water that's being injected

upgradient has high TDS, almost twice as much as what's allowed in the aquifer, has high sulfate, high chloride, all of them above the basin plan. So here we are, water is being injected for recharge. It's out of compliance with the basin plan. We're going to try to do -- one of our scenarios is to do hot spot reduction, possibly treat it biologically or ion exchange, which won't deal with TDS. So here we have water that -- the question is do we have to treat that TDS before we can reinject it even though it came out of the aquifer out of compliance?

BURIL: We pull it out of the ground at --

CARLOS: It's the same -- you're reinjecting it to the same aquifer.

CUTLER: Right. The question is are we held to the requirements of the basin plan or any other requirement. It's more stringent to put that water to a surface body than it is to put it back in the aquifer. So we'd have to even treat it more to be able to put it in a surface impound.

BURIL: Let me share with you that in my dealings with the Regional Boards in Northern California, I won't mention which region, they did require someone who was taking water out, treating it for the constituents, which they created a

problem with, and then wanted to reinject. They did require this. They did require that they meet their basin plan for TDS irrespective of the fact that it's basically exactly the same quality in terms of TDS that they were going to put back in that came out.

That was, in my opinion, a poor excuse to try and enhance their resource.

CARLOS: Doesn't make sense.

BURIL: It doesn't make sense to me either. But this is our question. Would we be expected by the L.A. Board to do that?

CUTLER: Do you guys have any examples?

CARLOS: I can pose that question to our permitting folks.

CUTLER: There again, it has direct influence on this table. I mean, in certain things we have to add some type of TDS or chloride or sulfate treatment.

BURIL: Or maybe that bounces that remedial alternative out the door, too.

CUTLER: Or puts it to RO or whatever. Yeah. Right.

BURIL: So we need to have some kind of understanding of that ramification.

CARLOS: This is very similar to -- I have a case where they are pumping VOC-contaminated water. They're putting it in a spreading basin. This is development water that they're pumping out. And then they're going to install extraction wells as part of regional groundwater treatment. It's okay -- the Board will not require treatment of that development water. It will let it percolate, and the percolated water will eventually be within the captured zone of your extraction well.

CUTLER: That's interesting. Are there very high volumes of that, or is this relatively low?

CARLOS: It's about three or four wells. It's a high volume, but short term.

CUTLER: Is it continuous?

CARLOS: No. Short term.

BURIL: Interesting. So you're going to check on that for us, Alex?

CARLOS: I'll check on that.

BURIL: Keep going, Mark. I think he's got four more.

CUTLER: Just a couple more.

One of the scenarios deals with if we can't come up with an economical way to treat perchlorate, do we try to contain it, keep it from

going downgradient, impacting anybody else. We treat the water for VOCs and then inject that water back into the aquifer.

Is there anything out there that would not allow us to inject contaminated water?

CARLOS: Repeat that again.

CUTLER: One of the scenarios is containment, particularly perchlorate. If there's no economical way to treat perchlorate, we'd want to try to contain the limits of perchlorate.

ROBLES: So we would pump the water out, clean out the VOCs, leave the perchlorate in --

BURIL: Turn it right back around, put it back in the ground and try to set up this closed system, if you will, to prevent migration further downgradient.

CARLOS: Just treat VOCs.

CUTLER: Right. So technically we're pumping dirty water back into the aquifer.

BURIL: From that perspective, we would not be able to meet that ARAR that you were talking about earlier, Mark, the cleaned MCL requirement for the aquifer, but then the rationale behind not doing that is that it's just not feasible, but we're preventing migration.

RIPPERDA: This is something I have to check. MCL is not applicable to perchlorate because there is no MCL for perchlorate.

BURIL: That's a good point, too.

RIPPERDA: That's something I'll have to ask the lawyer, how does a State health advisory fit into -- then, again, this is just from EPA's perspective.

BURIL: Sure. Sure.

CUTLER: Or eventually in a couple years --

RIPPERDA: It specifically says MCLs, not State health advisories.

CUTLER: Well, in a couple years there might be an MCL, too.

RIPPERDA: Right. In which case you might want to --

CUTLER: Worry about it later.

BURIL: That might be more of an answer than we need.

Well, it sounds to me like --

CUTLER: It impacts --

BURIL: We've got the question posed, so if we could get some feedback on that.

RIPPERDA: You got a couple more to go, but issues-type questions like this you should probably put in a letter, send to us with a response date on

it. And just long-term, big picture, if some of these issues are still open when you're going out with the feasibility study, just provide like your best guess in the feasibility study.

BURIL: This is how we interpreted it and they can correct us if it's incorrect.

RIPPERDA: Right. Then you've got the FFA schedules and -- so don't wait around forever like for all of us to iron out these somewhat fuzzy issues, but do a good-faith effort beforehand.

BURIL: So basically, then, take the advice that we'll take our best shot and if it's incorrect for whatever reason, the review should turn it up.

RIPPERDA: But it would help take your best shot if you pose this as a formal question in writing to us.

BURIL: Sure. Sure. Okay. We can manage that.

You had a couple others there that are big ones.

CUTLER: Couple others. We think Craig got a pretty good answer to this one, just to let you know what we were thinking.

Can't we discharge bio-treated water to surface bodies or reinject to the aquifer? What Craig found, correct me if I'm wrong, there are just

certain basin plan requirements. As long as you meet those, you're okay. The actual treatment method is not the critical part. And one of the things is, of course, the coliform and other bacteria type analyses, just to make sure any excess bugs don't get through.

So that was our interpretation of that question.

BURIL: Okay.

O'ROURKE: Yes, you can.

CUTLER: One of our questions, are treatment standards relaxed for water to be used for anything other than drinking? We pretty much found they were worse, that is, there are more stringent things for surface water body disposal than for drinking water, so we figure it's probably better just to let people drink it, based on the regulations.

BURIL: I'll share with you just briefly this is one that goes to the use of any product water from a remediation for supplying water to, say, a water feature in the Hahamongna Park. We're fast coming to the conclusion, at least I am, that it's probably not something we want to do simply because, sharing some experiences that I've had in the past, we've analyzed for a given constituent, found nothing, and

yet when we went back and began looking at sediments and the biota, we found it. And that created a very large problem.

So I don't know that this one is going to fall through just for that particular problem.

RIPPERDA: There's no way you'd want to discharge to a surface water body.

BURIL: This was a suggestion that came to us from the City of Pasadena that maybe some of the water that we might generate here might supply something like that. But the more we look at it, the more it appears to be something that we might not want to do.

CUTLER: And a couple other questions. Interim water, what does this Hahamongna scenario do to us or this MWD basin water storage plan, how will that impact us? Are there any other requirements related that?

BURIL: The Hahamongna Basin is -- or park development I personally think is a non sequitur to this whole process. They're talking about things that are going on on the surface and unless we're doing something that impacts the surface, I don't know that we would have anything that would be built into this. I think if we eliminate the discharge to

a surface body as an alternative, then we'd have no reason to be dealing with those folks, aside from other issues that may impact JPL outside of the CERCLA issue.

CUTLER: Especially since the Spirit of the Sage comments, that might be --

BURIL: Well, the Spirit of the Sage comments, I think we need some better education out there as far as what this site really does mean and what's going on. They appear to speak from a lack of information.

NIOU: Chuck, I have a site question. Where is the source of the water going to those spread basin and what's the water quality of it?

BURIL: It's basically surface runoff from the Angeles National Forest.

NIOU: Just natural?

BURIL: So it has nothing being introduced into it that isn't in the water naturally.

O'ROURKE: Just to follow up on what Mark was saying on, I think, his second question. He mentioned that the requirements for the basin plan for TDS are, I think it's 450 if you want to reinject back in aquifer and then maybe higher than that, just based on the water we extract. And,

Alex, you're going to check on that. But I also want to check on discharge of that water to the spreading basins. Because again, the L.A. Basin plan is more conservative. It says 300 TDS. So are you rechecking on the one, too?

CARLOS: I'll check on that.

BURIL: Thanks.

Do you have one more question, Mark?

CUTLER: That's pretty much it.

BURIL: That helps us. That helps clarify a few things. I think the real policy issue that stands out right now is the interpretation of this DHS policy and how it's going to be imposed upon our efforts here. We will strive to get meetings set up so we can start to understand this a little more clearly.

Okay. That helps us out in terms of the policy stuff. Appreciate your inputs on those.

Just a couple other perfunctory things --

RIPPERDA: I have a physics question. I think it's about number 4. You're saying you might -- one option is to pump the water out, treat it for VOCs, reinject it somewhere back on site, see how this like closed loop of perchlorate. But if you got a closed loop, then you got a closed loop for VOCs

too, so why even bother treating for VOCs?

BURIL: Interesting question. Very interesting question.

LOSI: Say again?

RIPPERDA: I don't believe you would have a very successful effort by creating a closed loop, because if you're going to use the Arroyo wells as your extraction wells, then you have to buy water for the City of Pasadena. But if you're going to start pumping more, like further downgradient, you're just going to create stronger drawdowns and kind of break down your curtain.

BURIL: That one may actually go away because I had a similar question last night. I think there may have been a miscommunication between me and Foster Wheeler as to what I was looking for. I know where you're coming from. I'm not sure that one won't go away.

LOSI: You have to consider, though, you might not be able to treat perchlorate.

RIPPERDA: Exactly. So once this option, the way it was explained --

BURIL: Why treat anything at all.

DAVOL: You're even providing water so you --

BURIL: You just cycle it.

RIPPERDA: If you're creating a curtain, basically blocking JPL's plume off from the rest of the world, then why treat anything if you've blocked it off from the rest of the world.

LOSI: Why not, if you can remove VOCs fairly easily.

CUTLER: We thought it would be a responsible thing, basically.

BURIL: There's arguments both ways.

RIPPERDA: Yeah. Anyway.

CUTLER: That was our rationale.

LOSI: We were thinking you'd argue the other way.

CUTLER: Exactly.

BURIL: Anybody have any other questions as far as policy issues and things like that they want to put on the table?

O'ROURKE: I got one more.

BURIL: Sure, Craig.

O'ROURKE: From reviewing the comments, I guess they were from Mark on the ARARs that were distributed a month or so ago, in a couple places you note in interpretation of the State Board Resolution 6816 you say review the Mather Air Force Base, George Air Force Base dispute resolution. Do

you have a copy of that?

RIPPERDA: I can get a copy of that. I'm off for the rest of the week, but I'll try and fax you. Can I have your fax number?

BURIL: Actually, if you fax that to me I'll get it over to him.

RIPPERDA: Just to give you a quick synopsis, this has to deal with the differences between the State and the federal government on whether you have to be pristine in the aquifer or meet MCLs in the aquifer. It's EPA's position you meet MCLs. It's sometimes the State's position that you have to be pristine. So this, in particular, is our legal staff giving the determination that pristine is not an ARAR, which then just kicks it back to you and then you have to fight it out with the State. But it's our position that like basically we would agree with the federal facility that MCLs are where you need to go. That's kind of in a nutshell what that whole thing says.

ROBLES: You guys just fight it out.

BURIL: Why don't we just put ourselves in the middle of a big circle and give each of them a big stick and they can take turns.

Let me just touch on a couple of the

perfunctory things that we have at each RPM meeting, then.

Approval of the March 25th minutes. Did anybody have any comments or changes that they wanted to incorporate?

Hearing none, I will assume that they are good as is and approved.

And we want to go back and take a look at our action items briefly for the last meeting. I need to dig those out here.

Mark, there were two action items that came out, and one of them was about the FFA and the guidance to see where we were going to put a QA/QC section. It was something that you had indicated, it's one of your comments, but you didn't remember what it was and you were going to go back and check to see --

RIPPERDA: Yes. I don't know what it was so forget that.

BURIL: Why don't we just call that one dead closed and we'll leave that one alone.

It doesn't appear that we had any other action items, with the exception of getting you folks a copy of the ARARs review list and then to discuss that to the greatest degree that we could.

We did discuss it a little last meeting. We discussed things in more detail this meeting. And I think that we're progressing on that particular issue, but I don't think that we can call that one closed yet because we have a number of outstanding questions.

And it sounds to me like, Alex, you're going to get with your folks to talk about some of the interpretations. I think you were going to talk with your lawyers about the DHS policy and things of that nature, be sure that we can understand how all of this is going to ultimately impose requirements on us.

Judy, do you have a list of action items from this meeting, by chance?

NOVELLY: Yes. B.G. is going to check on how the peaks were being read on the soil vapor data.

We're going to start getting those replacement samples from the pits.

On NDMA we're going to drop that for this quarter. Alex is going to get back to us and let us know if this is going to be done annually. And Mark wants it done on a five-year review, the laundry list of analysis.

Foster Wheeler is going to contact Dan

Stralka to clarify the comment on absorption.

We're going to get another fact sheet out.

We're going to add another option to the remedial alternatives to provide for alternative source drinking water and no reinjection or other use of treated water.

We have a conference call Tuesday, May 11th at 10:00 o'clock.

Chuck is going to check with Ron Palmer to see when Gary Yamamoto will be doing the presentation at the Raymond Basin Management Board meeting, and he's also going to try to set up a JPL meeting with Yamamoto in May.

Alex is going to check on the Board's policy on TDS levels in reinjected water and meeting basin plan objectives.

Mark is going to check with his lawyers on how a State health advisory fits in. Fits in what? That's as far as I got.

BURIL: Fits in the ARARs requirements.

NOVELLY: In the ARARs.

And we're going to put the issues questions in a letter to the agencies with a response time. And we'll go forth with a good-faith effort for the FS on these issues.

And Mark is also going to get information for the Mather Air Force Base determination on ARARs to Foster Wheeler.

That's it.

BURIL: That's a lot. Okay. Anything anybody else has to add to the cause for this meeting?

NOVELLY: Do we have the sign-in sheet done?

BURIL: I think I saw it making its way around.

CARLOS: Do we have an RPM meeting?

BURIL: Next RPM meeting. Let's go ahead and lay that out.

I'm going to suggest that three months, given these issues of ARARs and things of that nature, that we probably want to meet a little sooner than that, particularly since we're talking with the FS becoming due in relatively short order here.

I'm going to suggest that we not go out to August, which would be the next required meeting, but that we look at --

ROBLES: End of June, early July.

BURIL: I was going to say no later than middle of June. And the reason for that, quite honestly, is to be sure that all the issues are resolved. And if we've run into any snags, then we would be able

to determine what impact it has overall. I'm thinking specifically of getting some information on the DHS policy and how that's going to impact us, and things of that nature.

I would say the week of June 14th would probably be a good time frame. We're breathing down due date for the FS right there. And even that might be a little late, but we do have our telecons that we can try to set up to try and get some of these things maybe resolved a little faster.

Is there any time frame of that week of June 14th that anybody finds completely unacceptable?

GEBERT: The 14th and the 17th I can't make it.

BURIL: Okay.

GEBERT: Any of the other ones.

BURIL: How about June 16th, then? That's a Wednesday.

CUTLER: I'll be gone that whole week, but we can have someone cover.

BURIL: Why don't we plan on that, anyway, just so we've got it. And we'll get Vitthal and Mark to cover for you, Mark. I don't think we want to go much further than that because then we're only a couple weeks away from the FS.

ROBLES: So we're going to meet the 15th?

BURIL: The 16th, which is a Wednesday.

RIPPERDA: If the Raymond Basin meeting with DHS is earlier than that, I would want to come down for that, whether it's an RPM meeting or not. And if I am coming down and it works for everybody else --

BURIL: We might just call it then, too.

RIPPERDA: Yes.

BURIL: That's fine. Let us try and find out what the earliest date is we can do that. We might want to change that around. But if everyone here is available for that date, then it makes sense to go ahead and do that. Sure.

RIPPERDA: But it's good to have a date set.

BURIL: Have a future date in there. The other one is still kind of fluid. That's the one with DHS.

To try and maybe get a little jump on some of the questions that we have here in front of us, I'd like to suggest that we hold a telecon. You indicated which date that we were going to try to hold it?

NOVELLY: Tuesday, May 11th.

BURIL: Does everybody have that down? That's at 10:00 A.M.

ROBLES: Right.

BURIL: That actually works very well for me because I have my executive management meeting the following day. So that will hopefully give us some insights.

Anything else on the table that we need to discuss while we're all still here?

All right. Thank you all very much.

ROBLES: Good meeting.

BURIL: That was very helpful. See you next time.

(The RPM meeting adjourned at 2:37 p.m.)

MEETING ATTENDANCE RECORD

Environmental Affairs Office
Looking Beyond Tomorrow

NASA/JPL SUPERFUND SITE RPM MEETING

May 4, 1999

Please print the information requested below and pass this sheet along to the next person. Thank you.

NAME	COMPANY/AGENCY NAME, ADDRESS, PHONE
Charles L. Buril	JPL - 4800 Oak Grove Drive, M/S 171-225, Pasadena, CA 91109 (818) 354-0180
Judith A. Novelly	JPL - 4800 Oak Grove Drive, M/S 171-225, Pasadena, CA 91109 (818) 354-8634
Stephen Niou	URS 2020 E. 1st St., #400, Santa Ana, CA 92705 (714) 835-6886
Phebe Davol	TechLaw, Inc. 5675 West FM 487 Florence, TX 76527 (254) 793-3419
Mark Ripperda	USEPA, 75 Hawthorne Str., CA 94105 (415) 744-2408 Ripperda.mark@epa.gov
Richard Gebert	DTSC 1011 N. Grandview Ave. Glendale, CA. 818-551-2859
B. G. Randolph	Foster Wheeler - 611 Anton Blvd, Ste 800, Costa Mesa, CA 92626 714/444-5527
CRAIG O'ROURKE	" " " 714/444-5511
Mark Cutler	" " " (714) 444-5526
Peter Robles Jr	NASA Mgt Office 4800 Oak Grove Dr, M/S 180 801 Pasadena CA
Alex Carlos	RWQCB - LA, 320 WEST 4th St, LOS ANGELES, CA 90013 (213) 567-6726
VITTHAL MOSANGADI	Foster Wheeler Env. Corp 611 Anton Blvd #800 CA 92626 714 444 5537
Mark Losi	" " " " " " " " " " 714 444 5516
Richard Howarter was present for 1st hour of meeting before sign-in sheet set out	