IDAHO ENGINEERING LABORATORY PROPOSED PLANS

PUBLIC MEETING and COMMENT SESSION

May 16, 1995

Idaho Falls, Idaho

PRESENTATION NO. 1

Stationary Low-Power Reactor-1 and Boiling Water Reactor Experiment-I Burial Site Investigations and Track 1's

SPEAKERS:

Alan Jines, DOE Idaho
Jean Holdren, Lockheed Martin Idaho

PRESENTATION NO. 2

Central Facilities Area Landfills I, II and III and Track 1's

SPEAKERS:

Alan Dudziak, DOE Idaho
Steve McCormick, Lockheed Martin Idaho

AGENCY REPRESENTATIVES:

Jean Underwood, Shawn Rosenberger - Idaho Division of Environmental Quality

Howard Orlean - Environmental Protection Agency Region 10 Office, Seattle, Washington

MODERATOR

Reuel Smith

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IDAHO FALLS, IDAHO, MAY 16, 1995, 7:10 P.M.

MR. SMITH: I'd like to welcome you all here to this meeting. And, it is true, we had expected a larger turnout tonight. Nonetheless, the presentation is still a great presentation. We have lot of information to talk about tonight. We want to keep this meeting informal, and hope that regardless of your affiliation with the project with the INEL, this is the time to just brainstorm ideas, interact with the project managers and, you know, test them.

Did the agencies convince you that the recommended -- that the Preferred Alternatives is the one that should be done? Just to reiterate, the purpose of tonight's meeting really is to have dialogue. The agencies have prepared information that they will summarize. Much of the information is a summary of what you read in the proposed cleanup plans.

And aside from that, from presenting the information, we wanted to discuss your concerns and the issues that you see that are associated with these projects. Additionally, we will have a comment period where we have a court reporter with us tonight, and we have -- a percentage of the meeting will be dedicated to taking your comments. These comments will be responded

to in the Record of Decision, and the Record of Decision will be available to the public in the Administrative Records File for this project.

My name is Reuel Smith, and I'm the INEL Community Relations Program coordinator, and I've been involved in the cleanup meeting since the very first one. And tonight when we do the meeting and we do the meeting in Boise and then the meeting in Moscow, we will have completed our 56th meeting, public meeting on a cleanup project.

That includes five meetings on the Federal Facility Agreement itself, so there has been quite an outreach effort by the Department of Energy to involve the citizens around the state in cleanup meetings like this. I wanted to raise -- make you aware of something tonight. The INEL Community Relations Plan, which has been under revision for the last couple of years, has now been released and is available, and copies are available back here on the table.

This document really embodies a lot of comments that citizens have made about this program. And, incidentally, on the back of the agenda for the meeting tonight, there's an evaluation form. The comments that you give us about this meeting will eventually work their way back into this Community Relations Plan.

We hope to improve the way we do business. If it's advertising, if you stay away from nice spring days like this to get people out, you know, we should both have to consider those types of things. But this is available. I wanted to just make a couple of notes as an example. Citizens have made comments on a number of the cleanup proposals that we've had, and this document really addresses what the agencies have done in response to those comments, so that's another good feature about this document.

A couple of things that are in response to public comments -- these poster boards, the format of this meeting has been designed to respond to the public. They've asked for an availability session before a meeting, and that was held tonight. They've asked that we set up a 1-800 number, and because -- in response to public comments -- and the INEL now has a toll-free number. It's a citizens' information line where they can call and get direct access to program managers and get answers to their questions.

Concerning the presentation tonight, we'd like to acknowledge the fact that there are four ways to comment. We have the comment forms on the back of the proposed plans. For those who choose not to fill that out tonight, it's a business reply form and you can turn

that in at any time. No postage required. And this was sent out to about 7,500 people on our mailing list, and we've already received a total of about 14 comments on the two projects since the comment period started. So there is interest out there.

If you do fill this out tonight, we have a comment form collection box back here on the back table, and if you'd like to leave those, we'll be glad to collect them. You can also comment on the record with the court reporter when we open that up. We have a tape recorder here for those that would be interested in giving comments for the record but would choose to do it in the back of the room or in another setting.

Additionally, you can call the 1-800 line now and go directly to a recorder and leave a recorded message about the -- one of either of these two projects. This is the first time that that's been done but it's again in response to citizen request.

We have some information in the back of the room about the environmental restoration program and the things that have been happening over the past year. If you're interested in some of those things, please feel free to pick up copies of the information. In the past we've had fairly elaborate semi-annual briefings, and we felt like because of the cost associated with those

briefings, that we would make this information available whenever we had meetings anywhere and use our resources a little more efficiently.

I'd like to just go into a little bit of background about some of the topics that we'll hear tonight. When the agencies were negotiating the Federal Facility Agreement, they identified and actually custom designed patterns of investigations that would help use resources effectively here. To begin with, there was a series of preliminary investigations. If it turns out -- they set up a process where we would have Track 1 and Track 2 investigations.

Now, the Track 1 investigation essentially said, look at existing information. And if you can determine from that information that there are no contaminants there, no release to the environment, then you can issue a -- you could call that site a No Action site or you could say we don't have enough information; let's do a more detailed investigation, and we'll call that a Track 2, and that might involve sending workers into the field to do some sampling activity.

So it's a little more detailed in its orientation than a Track 1. A Track 2, then, could also become -- depending on what you find out -- a No Further

Action site, or if it looks like there's an imminent threat of a release to the environment or that would affect workers or the public, an interim action may be undertaken, in which case it's just an abbreviated investigation. But it must go through all the same legal requirements that the full-blown investigation does, depending on what the agencies determine.

They may also do a remedial investigation feasibility study, which in some cases could take two to three years. Throughout the investigation schedule that we have in the agreement, the Department of Energy can initiate a removal action at any time, again, if there is an imminent threat of release of contamination to the environment or workers and that type of thing.

So while this is a little separate from the investigation phase up here, it doesn't quite -- it doesn't go through the same process to get to a decision. However, these other investigations -- and tonight we'll have remedial feasibility studies, and these plans have Track 1 investigation results published in them also. The agencies are putting these investigations together in one document so that we can come to a decision point and have closure, an official closure point, on those investigations.

So tonight in the proposed plans you will

see both of those types of investigations. We're here tonight in the decision phase. The agencies are inviting public comment. Based on public comment, the agencies will factor in public acceptance of their Preferred Alternatives, so we're asking citizens tonight to not only consider the Preferred Alternatives, but to consider all the alternatives that were mentioned in the plan or other alternatives that you may be aware of that might not have been considered but that you feel would be appropriate.

Following the decision phase, the agencies issue the Record of Decision, which will include a Responsiveness Summary to the public comment, and that will be publicly available. And then based on the type of decision, the scope of work for upcoming activities would be laid out in that document. When we actually go in to take comments, we'll have a few ground rules; we'll go ahead and mention those at that time.

But if you'd like to just look at your agenda quickly, the meeting is broken up into two parts. The first presentation will be the Stationary Low-Power Reactor-1 and the Boiling Water Experimental Reactor.

The second presentation will be on the Central Facilities Area Landfills, and we'll have a break in between. But after each project is presented,

we'll have questions of clarification. Now, if during the presentation there is something that is not clear and you would like to have that answered before we move on, please raise your hand and we'll address that question.

Otherwise, we'll have a Question and Answer session at the end of the presentation, and once everyone has their questions answered or we've had a good discussion, we'll take comments for the record. With that I'd like to introduce the agency representatives who will make the presentation tonight.

First for the Stationary Low-Power Reactor and the Boiling Water -- we're probably going to hear this -- better explain about the acronyms. But we have the Department of Energy representative Alan Jines here tonight, and with him will be Jean Holdren from Lockheed Martin.

The State representative for this project is Jean Underwood from the State of Idaho, and from EPA Region 10 we have Howard Orlean. So at this time we'd like to, Jean, turn the time to you, if you'd like to make a statement on behalf of the State.

MS. UNDERWOOD: Sure. Good evening. I'm the Waste Area Group manager for the Low-Power Reactor facility and the Auxiliary Reactor Area, which includes

the SL-1 burial ground. I'm also responsible for the Borax burial ground, which -- because primarily it's being characterized concurrently or evaluated concurrently with the SL-1 site investigation.

With me also this evening is Scott Reno with our Idaho Falls office. Scott was the Waste area group manager for this project until about 2-1/2 months ago, and so he's here tonight to help with this meeting. This evening also there's going to be information presented regarding the SL-1 and Borax burial ground sites, as well as several Track 1 sites.

The State believes that the Preferred Remedial Alternative identified in the proposed plan for the SL-1 and Borax sites is the best approach, as is the No Further Action proposed for the ten Track 1 sites. However, as Reuel explained, any comments that you have, those will be considered and used by the agencies in any final decision. And the State -- we want to emphasize that the State, you know, frankly encourages your participation in this process. So with that, I'd like to thank you for coming tonight.

MR. SMITH: Thank you, Jean. Howard?

MR. ORLEAN: My name is Howard Orlean. I'm the EPA project manager for the Waste Area Groups 4 and 5, and also the SL-1 and Borax reactors, so I'll be

involved in both presentations tonight, actually. And I also wanted to reiterate what Jean just said in that we do welcome your comments and your involvement in this meeting, and also to reiterate that EPA has reviewed the proposed plan and all the study documents and the Investigation Feasibility Study, and we do concur with the Preferred Alternative which will be presented today to you folks.

So with that, let me give it to Al.

PRESENTATION BY DOE IDAHO

MR. JINES: Tonight I'll be discussing the burial grounds for two reactors. The first is the Stationary Low-Power Reactor, which -- we use the acronym SL-1 for that reactor. We like to use that for the Stationary Low-Power Reactor, so if I say that, please forgive me. I'm used to it.

The other project we'll be discussing will be the Borax-1 Reactor site. Now, both of these are burial grounds where former reactors were buried, basically. The Stationary Low-Power Reactor-1 was an experimental reactor built in the 1950's.

In 1961, as a result of an accident during a routine maintenance operation, it achieved a critical reaction. This resulted in a steam explosion,

the death of the three operators on duty, and the rupture of the containment vessel. When the accident occurred and during the demolition phase of the projects -- well, let me back up and orient you a little bit with the site. This is the original location of the SL-1 Reactor. If you want to look on this photograph, the original reactor was right in here.

Now, this is a photograph, an aerial taken at the INEL, and you're looking south. This is Southern Butte. When the reactor was demolished after the fuel core inside the reactor was removed, the soil around the reactor facility was contaminated. The reactor building itself and the soils around the reactor were hauled up and buried in the SL-1 burial site, and this is shown on this inset picture right here. This is the way it looks today. It's basically a flat spot with sagebrush on it.

Now, during the burial activities, some of the radionuclides were scattered in the air around the burial ground. This represents about 37 acres of slightly contaminated soil. The burial site itself consists of three excavations, each of which is about 400 to 500 feet long. The burial ground covers about four acres. The Borax-1 was an experimental reactor built in 1953.

In 1954 at the end of its design life, it was intentionally destroyed, and we've got a great photograph of the event recorded. The Borax-1 -- no, I missed the slide. I apologize. The SL-1 reactor is located here. This is the INEL. And the Borax-1 reactor is located here, and this is the Radioactive Waste Management Complex, for anybody that's new here.

When the Borax site was destroyed, the reactor building was contaminated, the foundation was contaminated, and the soil around the reactor building was contaminated with uranium-235 and other radionuclides. After reviewing debris and hot particles from this area, a six-inch gravel layer was laid down over an area about two acres in size, and this gravel layer is bounded by this dotted line that you see.

The gravel was placed in order to reduce the radiation levels coming up from the contaminated soil. The building was collapsed into the foundation, which is this little green figure, and clean fill was placed over the site, and that's the way it remains today, and this is a photograph showing the site the way it looks today. You can't see it in the photograph, but there's actually a rise about four to five feet above the surrounding terrain.

Since both of these sites involved

radiologically contaminated buried debris, we decided that we could save money by evaluating the sites together and considering the various remedial alternatives only once. The remedial investigation focused on determining the contaminants in each of the burial grounds and the risks that they might pose to human health and the environment. After examining the available records, the agencies agreed that no sampling would be performed at either of the burial sites. This decision was made because we had accurate records of the fuel loads in each reactor just prior to the accident and because it's difficult to obtain useful sampling information from a burial ground.

Using the known fuel loads, the operating histories and computer models, we were able to estimate the contaminants located or buried in each of the burial grounds. The primary difference between the Borax-1 burial ground and the SL-1 burial ground is that at the Borax-1 we have considerably more uranium-235. This is important because uranium-235 is hazardous, and it's a very long-lived radionuclide, whereas most of the other radionuclides decay away sooner.

Jean Holdren is the primary author of the remedial investigation report, and she's here to discuss her findings. Jean?

PRESENTATION BY LOCKHEED MARTIN IDAHO

MS. HOLDREN: Risk assessment examines the dangers that a person might encounter by either working or living on a site. We performed what is known as a baseline risk assessment, meaning we examined the risk that would exist under the assumption that no remediation is performed at either location.

The exposure scenario is a description of how a person working or living on a site can come in contact with the contaminants. Ten exposure scenarios were examined for each of the two burial grounds representing three time frames: today, 30 years in the future, and 100 years in the future. For today's discussion we chose one from each of those time frames, just for discussion: a current worker, a resident living on the site 30 years from now, and a person on the site a hundred years from now.

Now, how a person can receive exposure from a contaminant is called an exposure pathway. Of all the possible exposure pathways, we looked at particularly exposure to ionizing radiation, and ingestion and inhalation of contaminants. These were considered appropriate for the conditions at these two burial grounds. These exposure pathways were assessed for each of the scenarios.

The current occupational scenario represents a worker spending up to two weeks a year on the site performing monitoring, fence maintenance, and observation. The exposure pathways for this scenario are direct exposure to ionizing radiation, soil ingestion, and inhalation of dust. The scenario 30 years in the future represents a resident living on the site, building a house, living there for 30 years. And the exposure scenarios, the exposure pathways for this person are -- we added the residential groundwater ingestion.

Note that for both of these scenarios we modeled the assumption that the person would be directly exposed to the waste. In reality at least two feet of soil cover exists over each these burial grounds. A worker on either site today is protected by the shielding afforded by this soil cover and as well by the protection measures that are in place. However, for risk assessment purposes we assumed direct exposure to the waste in these two scenarios.

The scenario 100 years in the future represents a subsistence farmer who lives on the site for 30 years, raises crops and livestock, and consumes what is produced. Ingestion of plants, meat, and milk were added to the exposure pathways. Exposure to

ionizing radiation and soil ingestion are the primary and secondary exposure pathways.

This was determined by comparing the estimated risk to the acceptable risk range. The Environmental Protection Agency has established risk guidelines to help us make remediation decisions and assess risk at a site. Each of us is already at risk for contracting cancer. As a matter of fact, about one in every four of us will have cancer in some form sooner or later. Excess cancer risks are those over and above the standard risk of getting cancer.

The EPA has defined the range of acceptable excess risk from between one in 10,000 to one in one million. A range is used because estimation of risk is not an exact science. And when we say that the excess cancer risk is one in a million, we mean that there is a probability that one person in a group of one million people has a chance of getting cancer as a result of radionuclides at one of these burial grounds.

This one person in a million would be in addition to the one person in four already expected to get cancer from some other reason. Excess risks were estimated for all scenarios and compared to the EPA's risk range. The baseline risk assessments focused on cancer risk because all of the contaminants at both

those sites are radionuclides.

For radionuclides, the risk of getting cancer far outweighs the risk of the hazard constituents of the chemicals. Chemical toxicity was considered but dismissed since it was not a significant component of the total risk at either site. Of all the exposure pathways assessed, exposure to ionizing radiation had the highest risk in each of the ten scenarios. Soil ingestion was identified as a secondary exposure pathway for some scenarios but at much lower risk levels. There were no other exposure pathways at any scenario with risk above EPA's acceptable risk range.

In particular, risk due to groundwater ingestion is not a driver at either site because the aquifer will not be signifiantly impacted by contaminants from either burial ground. In fact, modeled estimates indicate a maximum excess risk at SL-1 right at the bottom of acceptable risk range about here; and for Borax, just above that. Cesium-137 and strontium-90 were identified as the current primary risk drivers. Uranium-235 is a component that will increase in importance in time as the cesium and strontium decay away.

Uranium-235 is especially important at Borax. Estimates of the excess cancer risk are

unacceptably high for all exposure scenarios. For the resident living on the site 30 years in the future in this scenario, if no remediation is performed at the SL-1 for this person living on site, the risk, excess cancer risk, is about 5 in 10. This means that one out of every two people living on the site could get cancer as a result of exposure to ionizing radiation at SL-1. Risks are somewhat less for the other two scenarios but still well above the acceptable risk range.

Similarly, and at Borax-1, if there's no remediation performed, about three of every 100 people could suffer radiation-induced cancer. Total excess risks for the other two scenarios are also unacceptably high. However, these risks are decreasing with time. Cesium-137 has a half-life -- and that's the time it takes for half of the radionuclide to decay away -- of only about 30 years. Because of this short half-life, the risk from cesium-137 will decrease appreciably within the next few hundred years.

At SL-1 the excess risk due to cesium 137 will enter the EPA's acceptable risk range in about 400 years, and there it will remain and continue to decrease until it stabilizes about right here, where it will then remain due to the presence of uranium-235, which has a very long half life. At Borax the excess risk due to

cesium-137 will decrease to EPA's acceptable risk range in about 320 years. Prior to that, however, the excess risk will become dominated by the presence of uranium-235, and so the total excess risk will level off just above the acceptable risk range.

As these figures demonstrate, remediation must be effective for a minimum of 400 years at SL-1 and for a minimum of 320 years at Borax in order to be protective of excess risk due to cesium-137. Alan will now come back up and discuss with you the remediation alternatives that we looked at to address these risks.

MR. JINES: Thank you, Jean. A feasibility study is conducted to examine the range of alternatives, remediation alternatives that are available for a site. In this case we performed what's called a Focus Feasibility Study. A Focus Feasibility Study is limited to looking at remediation alternatives that have been selected for other similar sites. The Focus Feasibility Study allows us to save time and money by concentrating only on remedies that are most likely to be effective.

In this case we focused on four alternative actions. The first alternative action is No Action. We're required by law to consider this. The second is Institutional Controls. This would consist of limiting access to the site so that nobody could go onto

the burial ground and become exposed to any radiation. The third alternative is Containment, as with a cap or an engineered barrier; and the fourth alternative is Excavation and Removal of the contaminated debris.

In order to choose between these four alternatives, we compared them to these evaluation criteria, all except for public acceptance, which is what we're evaluating tonight. When we performed this evaluation, the Institutional Controls Alternative dropped out because it doesn't meet the test for long-term effectiveness.

In order to meet that test -- well, for Institutional Controls, you have to assume that there's an institution there to maintain control, and since these radionuclides are going to last 3- to 400 years, that's not an assumption that we're prepared to make. That leaves us with three alternatives, the first of which is No Action.

Under the No Action Alternative, we would leave the waste in place. We would drill monitoring wells and perform long-term monitoring. The cost estimate for the SL-1 is $1.1 million, and for the Borax-1 it's $1.4 million. That's based on 30 years of monitoring. The second alternative, which is the Preferred Alternative, is containment by capping. This

would consist of constructing an engineered barrier over each of the burial grounds. The primary purpose of this barrier would be to prevent people from being exposed to the ionizing radiation that's contained within the burial ground.

The cap would consist of sand, gravel, and large basalt layers to effectively inhibit ant intrusion, small mammals, large mammals such as coyotes, and with what we refer to as the inadvertant human intruder. That's somebody that just happens to be out digging around. They're unaware that they're on a burial site. They don't see the signs, and they want to dig a hole. Large basalt chunks will deter them. The cap would also inhibit contaminants by preventing wind and water erosion. We would perform periodic monitoring, and the cost rate for the SL-1 is $3.8 to $8.8 million.

Now, to understand the cost range, you need to go back to the site map -- and that's the wrong one. We have these lightly contaminated soils around the burial ground. If we have to consolidate these soils underneath the cap -- we have to consolidate all of them -- we'll be at the upper end of the cost range. If we don't have to consolidate any of these materials, then we just cap the burial site alone, then we'll be at the lower end of the cost range. For the Borax-1, the

cost estimate is $2.3 to $4.7 million. And the cost range again is explained by the final disposition of these contaminated soils.

Now the evaluation is being conducted right now to determine which if any of these soils at each location will have to be placed underneath the cap. The third remedial option considered is excavation and removal of the contaminants. Under this scenario we would construct a building over each of the burial sites to prohibit dust from escaping and spreading the contamination.

We would use conventional excavation equipment to go in, excavate the material and haul it to the Radioactive Waste Management Complex. We would then backfill each of the cases and seal them, and we would have a clean site. For the SL-1, the cost range is $68.9 to $201 million. The cost range reflects the uncertainty of how much of these soils would have to be picked up and hauled to the Radioactive Waste Management Complex.

For the Borax-1, the cost range is $8.4 to $20.5 million. Again, the range reflects the uncertainty of the contaminated soils around the burial ground. The advantages of the Preferred Alternative, which is containment by capping -- primarily it reduces

risk to levels that protect human health and the environment by inhibiting exposure to the ionizing radiation. The second advantage is -- and it's really significant to understand -- is that it protects workers and the public while the remedial action is being conducted.

This is a significant difference between the capping alternative and the excavation and removal alternative where we would have the possibility of some short-term exposures. The Preferred Alternative would inhibit the migration of the contaminants, and it provides for an effective long-term isolation of the contaminants.

The last issue you need to understand from this alternative is that for the Borax, as Jean discussed, we have a residual risk of two in 10,000. When you design a cap, you can't assume that it's going to last forever. You have to assume that someday it's going to fail. And in the case of the Borax, if the cap completely goes away after its design life of 320 years, then there is the potential risk of two in 10,000 to somebody actually living on the site.

We have ten Track 1 sites that have been incorporated into the proposed plan that we're discussing tonight. The Track 1 process is used by the Department of

Energy to determine whether or not a removal action needs to take place or if further analysis needs to take place on a site. In this case the Track 1s -- let's see if I can find my original -- seven of the Track 1 sites are in the Power Burst Facility, which is located just north of the SL-1 reactor. And three of the sites are located in the Auxiliary Reactor Area, which is the same as the SL-1 reactor area.

In each of these sites we have found either no contamination or very low levels of contamination. And the contamination that we found does not pose an unacceptable risk. Based on this information, the three agencies are recommending that no further action be taken at any of these sites. The proposed plan itself has more information on each of these sites that's available for you to read if you're interested in more details.

MR. SMITH: Okay. That concludes the presentation on these two projects. Are there any questions that you'd like to ask for clarification, something in the presentation that might not -- that maybe wasn't as clear as it should have been?

AUDIENCE MEMBER: Yeah. On the surface soil consolidation, what criteria are you going to use for it on that?

MR. JINES: The Proposed Plan indicates that we will base that decision on this residual risk that would result from the surface soils at the end of a 30-year period, so if -- when we sample the surface soils, if we find that there's not enough containimants to pose an unacceptable risk after 30 years, which is our assumed period of institutional controls, then if there's an unacceptable risk, we'll remediate those soils.

We'll take them up and put them under the cap or we'll haul them off. If the risk is in the acceptable range, we'll leave them where they are and allow them to decay.

AUDIENCE MEMBER: You want comments on that now?

MR. SMITH: Well, this is mostly for clarification. You know, if you want to -- the point where you want to express your opinion and your thoughts about the project would be in the comment period. Yes.

AUDIENCE MEMBER: Reuel, I think the numbers showed that that was $5 million difference, $5 million difference between, you know, the one where you

didn't have to consolidate the dirt and where you did. Why -- can you explain why that amount of cost?

MR. SMITH: Is this between alternatives that you're referring to?

AUDIENCE MEMBER: Well, it's the two between the SL-1, I think. I think it's the range given on the Preferred Alternative.

MR. SMITH: Okay. Alan, do you want to address that one?

MR. JINES: Sure. The additional cost -- you need to keep in mind the size of the area. The SL-1 burial ground is four acres of contaminated soil. Around it is 37 acres. The additional cost would be required to actually scrape the entire 37 acres, replace it and reseed it. And for the Borax it's a similar situation. It's really the size. It's kind of deceiving.

MR. DUDZIAK: I guess I just wanted to add that the cost will really be narrowed down after this is done as soon as they determine how much material needs to be consolidated, during the reload design phase when they actually go out to do the sampling to determine how much soil material needs to be consolidated or removed at that time.

MR. SMITH: Okay. Did that answer your question?

AUDIENCE MEMBER: Yes.

MR. SMITH: Question back here.

AUDIENCE MEMBER: There seems to be one alternative looked at that involves removal, you know, of the waste. And that -- it seems to me that there might have been or maybe there was consideration given to another alternative that also involves removal but not total removal. That is one thing that impresses me, is that there's a pretty fair amount of uranium, especially at Borax-2 or Borax-1. The Borax-1 site has about 89 pounds of uranium-235 that wasn't recovered, and, you know, the thought occurs that it would be certainly a plus if some of that or most of it could be recovered because that's enough to make a nuclear weapon or two. And, you know, it's valuable material and it's strategic material and so on.

And it also has this very long, you know, 700 million year -- half-life so that anything that isn't recovered is effectively there, you know. It's always going to be there and it's always going to be influencing, you know, the situation. If -- I suppose eventually -- and you've run calculations, I believe, on this -- some of it at least gets down to the aquifer and manages to make its way in the plume from that location, and that plume initially may have some other things like

cesium-137 in it, but those die out in a fairly short time, you know, two or three centuries.

But that the uranium stays there, and it produces daughter products that are more troublesome than the uranium itself. So again, you know, what I'm painting is a picture that makes it look like it's desirable to make an effort to get that uranium because it does have that long-term impact potential and so on, and so that is the thought, anyway.

If one could take the -- a scraping device and scrape that original ground surface -- I don't know how hard that is, but if you could, that -- you know, that was there when this reactor exploded, then there's got to be some of that uranium scattered around, and it -- you know, wasn't massive enough to dig down into the groundwater much. It's there pretty much at that surface, and so if one scraped that top inch or two into a heap, you might have a pretty fair amount of uranium in that.

And there are methods that weren't available back when that explosion took place to separate out radioactive materials. There are these devices like a big conveyer belt that you can put contaminated soils on and this conveyer will carry the soil to splitter strips of metal. And then each channel

through -- between the pair of splitter strips gets surveyed and the survey meter is hooked to a little device that will redirect contamination when it finds it, and those things are fairly effective.

I think you used them on Johnson Island to get contaminants out of the soil, the contaminants. And maybe with the right kind of adaptations, the alpha emitters and beta emitters too. So anyway, there seems to be a possibility there for scraping up the raw material and then taking it through this kind of thing and then maybe even using some kind of a device that would help you separate uranium, since it's a very heavy metal more or less like gold, by just taking advantage of its additional gravity.

All I'm saying is that it seems there are methods that might be used to go after that uranium, and so the partial cleanup that, you know, that I'm asking about would involve making an effort to get that uranium, and in the process maybe also get into the location where the hardware was buried and just take out anything that is above NRC Class A limits and that cause you to take out things that the -- before were problems.

MR. SMITH: Let me ask you this. What about for purposes of Question and Answer, I think I heard about two issues that maybe they could talk about.

One, you were talking about a partial removal and recovery of uranium.

AUDIENCE MEMBER: I'm talking about an alternative, really, not so extensive as trying to get everything out of the ground.

MR. SMITH: Okay. But the other issue was that the contaminants would eventually make their way to the Snake River Plain aquifer?

AUDIENCE MEMBER: Yes.

MR. SMITH: Those are two things I think we can talk about, and I can tell by what you're saying that you're getting into recommendations to the agencies, and I would encourage --

AUDIENCE MEMBER: No. I'm asking questions, really.

MR. SMITH: -- you to make that comment.

AUDIENCE MEMBER: Well, yeah. I guess I would tend to recommend something like that. But at this point I was really basically asking, were there other alternatives considered when it comes to removal besides total removal. Total removal is awful hard. To get everything is virtually impossible. But the thought is that you don't really need to get everything.

MR. SMITH: If there were other alternatives considered along the line.

MR. JINES: Yeah. The only other removal alternative we considered was excavation using remote equipment. We didn't formally analyze the partial removal scenario, and the reason we didn't do that -- in 1954 a concerted effort was made to gather as much uranium as possible from the contaminated soil around Borax-1.

In fact, most of the equipment in the Borax-1 was successfully decontaminated and hauled off site for further reuse. We believe that most of the uranium is actually contained within the foundation of the building. When this -- I like this photograph. When this blew, it didn't actually rupture the foundation, and that's where we believe the bulk of the uranium is.

AUDIENCE MEMBER: Well, then I guess the thought that would follow that is that that's a pretty valuable commodity there, and it's going to have a perpetual effect and maybe it's worth going after.

MR. JINES: It's a thought.

MR. SMITH: Okay. The impact on the Snake River Plain aquifer. Any comment on that?

MR. JINES: Yeah. We did model the migration of the uranium and we anticipate that it reached the groundwater in 10,000 years. And even with that we didn't find that it was within the -- that it

was outside of the acceptable risk range. So it's there.

AUDIENCE MEMBER: There's been quite a lot of changing, I know, going on when it comes to the estimated travel time at least for water to get from the surface to the aquifer. I think there was a time where at the RWMC the estimate was, you know, 10,000 years, and then it decreased and then it decreased. And I think the current estimate is 30 years.

MR. JINES: Do you know that?

MS. HOLDREN: I don't know which model they're using.

AUDIENCE MEMBER: This is water now and, of course, the rate of something like a uranium compound or a uranium metal might be a completely different horse because, you know, it may hang up, you know, be somehow or other held up by, you know, some kind of an ion exchange or something.

MS. HOLDREN: Well, uranium does absorb into the soil and it's also the case that the uranium we're looking at is not particularly soluble. So we wouldn't expect it to move.

AUDIENCE MEMBER: So it's not certainly going to move at the rate of water.

MS. HOLDREN: That's right.

AUDIENCE MEMBER: And how did you come up

with 10,000 years?

MS. HOLDREN: We moved the modeling.

AUDIENCE MEMBER: There's a whole other question along this line, but I'm just trying to clarify what's going on. Jean, I think you mentioned there was no chemical risk, but I think you also said there was extremely limited sampling done around SL-1 and Borax both.

Both those plants, I think, used water treatment and I'm wondering -- you did it on your Track 1s up there, I know, your overspray, everything else. Are you here to assure us that there is no chemical contaminants?

MS. HOLDREN: Do you want me to take that one?

MR. JINES: Yes.

MS. HOLDREN: Yes, we are here to assure you of that. I didn't say that there were no concerns about the chemical characteristics. What I did say is we took a look at all of it and determined that it was such a small part of the total risk that it did not require a complete assessment like the radionuclides did.

We did do a complete assessment of all the radionuclides and a qualitative assessment of the toxicity.

AUDIENCE MEMBER: I understand that, but how do you know on the -- what levels did you use for your chemical constituents?

MS. HOLDREN: We didn't assess levels. And for the SL-1 site, we're looking at a burial ground that's removed from the regional facility.

AUDIENCE MEMBER: What if I had a million parts of chrome out there? How do you know that I don't have that?

MS. HOLDREN: From the historical record we looked at, that's how we determined what our constituents were.

AUDIENCE MEMBER: Okay. So historical records on the chemical contamination site. Okay. Alan, you said that U-235 is hazardous. How do you mean that?

MR. JINES: The carcinogenic hazards.

AUDIENCE MEMBER: Internal? External?

MR. JINES: It's an alpha emitter, so it would be internal.

AUDIENCE MEMBER: In the write-up it mentions that SL-1 had a prompt criticality. It says in the margin this is an accidental and uncontrolled nuclear reaction. Everybody keeps referring to Borax as explosions. Is it also a prompt criticality?

MR. JINES: I can address that. Yeah. They were the same. SL-1 was an accident and Borax-1 was intentional. In the case of the SL-1, the main control rod was removed so we had a nuclear reaction taking place in the core which resulted in the formation of steam. There was a water-cooled reaction, and then the steam exploded and ruptured the vessel. In the case of the Borax-1, it was -- I believe it was the same situation. It was cool water that went off, and so it's really similar.

AUDIENCE MEMBER: So both of them were a prompt criticality?

MR. JINES: That's correct.

AUDIENCE MEMBER: Really, then your definition in the margin should be beefed up on prompt criticality. But that's all right.

MR. SMITH: Okay, Bob -- let me ask. Anybody else want to follow up with a question here? Okay, Bob. It looks like we're back to you.

AUDIENCE MEMBER: You didn't address land use, did you? You got 30-year and 100-year scenarios and we're going to spend an awful lot of money with no land use scenario. What's the State and the EPA considering for this land? You know, the most populated countries on earth, China and those, still have very

open areas where there's no people. It's hard for me to visualize that in 30 years the INEL is going to have a population where they have people out there.

MR. ORLEAN: Well, the scenario we would use -- the last scenario we're using would be an industrial type scenario, not a residential type scenario. We would hope that Institutional Controls that would be in place at that time would lead us, you know, to -- would lead to that industrial use of the land. So we certainly don't expect condominiums out there in 30 years or so. We're hoping --

AUDIENCE MEMBER: I thought they were calculating an exposure scenario for somebody who grew food there.

MR. ORLEAN: It was an agricultural scenario that was calculated also, yeah. The surrounding fields, which are -- I'm not a toxicologist, so I don't know if you can take that. The agricultural risk scenario is generally -- my understand being it's much less stringent certainly than a residential scenario but a little more stringent than the industrial, somewhere in between.

AUDIENCE MEMBER: Do you know about how much more stringent the agricultural scenario is compared to the industrial?

MS. HOLDREN: Well, in comparison to the scenarios we talked about here tonight, the future subsistence farmer is actually a little less stringent than the residential scenario because we did not model direct exposure to the waste. We assumed that there would be shielding from the soil cover. But we also assume that the contaminant concentration that we have on record from historical sampling would be present in the soil, and there were unacceptable risks even in that scenario a hundred years in the future.

AUDIENCE MEMBER: I guess what I'm getting at is that you're stating that industrial may be envisioned for this place in 30 or 100 years and never residential. So why calculate for the agricultural residential when all we're going to have here is probably, in the next hundred years anyway, is going to be industrial at the most?

MS. HOLDREN: Howard, do you want to take that one?

MR. ORLEAN: Okay. Generally what we -- we would require is that the -- if there's an uncertainty there -- and in this case there is an uncertainty, what I said is that it's feasible that the industrial scenario would play out over 30 years. But if there is some uncertainty there, we calculate the most

stringent, and in this case it would be the residential.

MR. SMITH: Okay. Another question back here.

AUDIENCE MEMBER: Just a quick one. I was noticing on your farming scenario, did you consider the uptake into food crops as you were doing that scenario?

MS. HOLDREN: Yes. We've considered uptake through both meat and plants and milk.

MR. SMITH: Yes.

AUDIENCE MEMBER: Well, those scenarios sound kind of like NRC scenarios. Are they pretty much the same as the NRC scenarios?

MR. ORLEAN: No.

AUDIENCE MEMBER: Well, you know, there is an independent --

MR. ORLEAN: No, they're not. Take my word for it.

MR. SMITH: Do we have someone that wants to take it? Yes, Scott.

MR. RENO: Scott Reno for the State. I emphasize that decisions have not been made on this yet, which is one of the reasons we're here today. As far as the scenarios that were chosen for the purposes of the baseline risk assessment, the 30 years is a default

INEL future risk scenario for future residential.

We also, for the purposes of assessing the risk managers making that decision, show a 100 year residential scenario for comparison. Now for the State, the outcome of the site-specific advisory board or the Citizens' Advisory Board here are going to have a big impact on the decisions that IDHW did or the State makes on the future land use decisions. But that will be based largely on the outcome of the Citizens' Advisory Board, and they have not made those decisions yet.

AUDIENCE MEMBER: Well, Scott, you can see the importance of it. I mean, we're spending $8 million here on SL-1 if we go with Alternative 2, just for consolidation of the soil. I hear the EPA telling me that this is an industrial scenario. I don't even see an industrial scenario up there. We brought out that we got the current worker exposure. What is it for an industrial scenario 30 years down the road?

MR. JINES: We modeled 30 scenarios. We modeled 30 scenarios.

MS. HOLDREN: Ten each.

MR. JINES: Ten each. So I guess there were just 20. We just presented a few tonight.

AUDIENCE MEMBER: And you took what, though? I mean, is this the worst case?

MR. JINES: Uh-huh.

AUDIENCE MEMBER: Why take the worst case? I mean, you know, the government keeps saying don't spend the money. I mean, let's do something.

MR. ORLEAN: Again, it's the concern --

AUDIENCE MEMBER: It is.

MR. SMITH: This is probably for the comment period more.

MR. ORLEAN: Yeah, you're right. It is the uncertainty there that Scott mentioned, that there's not been any decision made as to what the future use is; therefore we have to devolve to this more conservative one.

MR. RENO: Then in addition, the risk is going to be above the EPA acceptable risk range for 400 years at SL-1, and at Borax-1 it will be above the acceptable risk range for 320 years. So, you know, even though our risk assessments are only based on 30 years and a hundred years with residential scenarios, the risk will extend far beyond that because it's very --

AUDIENCE MEMBER: Well, Scott, I think we understand that, but that's for a direct exposure. If you don't have people out there on an industrial thing or you got asphalt over the top of this thing, if it is industrial, it's a lot less.

MR. RENO: I agree. In fact --

AUDIENCE MEMBER: So we're a little premature.

MR. RENO: For the 30 year future occupational scenario, the total scenario risk was a one in ten risk for 30 years.

AUDIENCE MEMBER: Okay. So then that puts us back to maybe the No Action.

MR. ORLEAN: Is that one in ten?

AUDIENCE MEMBER: One in 10,000.

MS. HOLDREN: No. One in ten.

MR. ORLEAN: When you're talking about radionuclides, you know, that -- you know, even if in many cases even "background levels" are above EPA's risk range. Some sites I've seen that have "background rate" levels of radionuclides, you're already at 10 to the minus 2 level, so you're already above that, so it's moot.

MR. SMITH: Then I get the feeling, then, that we're about ready to go into some comments. Is that -- do you have that feeling? One more question, one here.

AUDIENCE MEMBER: I still have a question. The two different systems for intruders, future intruders, is one of the main differences between the EPA and the NRC systems. They sound a lot more or less alike, you know,

to the casual listener because, you know, you're talking agricultural scenarios and you talk a residential scenario and those are -- those have counterparts, you know, in the NRC system. Is there -- is it fairly easy in a sentence or two to say generally what the differences are?

MR. SMITH: Let me just ask you this for -- going into NRC comparisons with this, that might be -- is that something we can talk about at the break?

AUDIENCE MEMBER: Well, maybe I could just find out where it is written and I can read up on it myself.

MR. SMITH: Okay. If you have information on that, Howard, let's talk about that at the break.

MR. ORLEAN: Okay.

MR. SMITH: Yes?

AUDIENCE MEMBER: I have one more, if you wanted to go ahead into it.

MR. SMITH: Yes.

AUDIENCE MEMBER: We tend to talk about the intruder, you know, and the impact on the intruder and so on. I'd like to get back to talking about the material that makes its way to the aquifer and the plume that results from that. The general direction or movement of the aquifer, as I understand it, is sort of a southwesterly, you know, under the site, and so the

plume from the SL-1 reactor site will be sort of a widening thing as it proceeds southwesterly.

And it seems that it might overlap the plume up from the Borax site. Would that be indeed the case? Well, let me proceed anyway. I'm raising a question, really.

MR. SMITH: Let's take time to see if they give an answer to that question.

MR. JINES: We haven't really evaluated that.

MR. SMITH: Do you want to address that?

MR. JINES: We haven't really evaluated the possibility of overlaping plumes. I really couldn't give you that.

AUDIENCE MEMBER: Well, the reason for my question is that one of the things that one -- some people look at, you know, whether it comes tomorrow like this is the impact on the member of the public at some future time, and that impact is via the water. And it gets down to what he ingests, you know, from the water.

And if you look at just this one site -- say the SL-1 site -- you could say, well, in the future a member of the public is going to ingest water that has these contaminants, and that's going to be a small impact on him. And if you look at the Borax plume, you

might be able to make some similar statement about it. But the fact is that the future member of the public really is impacted by the combination of the two, not just the one or the other.

And in addition to that there was another site that was evaluated a few months ago, the -- the Pad A site where the conclusion was that if you leave the Pad A waste -- I think about 18,000 drums of Rocky Flats waste, and about 2,000 boxes, 4 x 4 x 7 boxes, of Rocky Flats waste, pretty much in place as they are, and so that will also have its plume, and I think that plume probably overlaps these two plumes too.

So the impact on the member of the public in the future is the sum of the impacts from each of those three locations. And then it goes on, you know, that the RWMC itself is near by, and it has a plume, and so there's another plume that overlaps and there's CPP not very far away and ATR that's not very far away. And all of these things may contribute to the worst case impact on the future member of the public. And so it seems that you can't really look at these individually and make a decision about what to do regarding each one on the basis solely of its situation.

You instead need to look at the results of the combination of all those things that might impact

the future member of the public, okay, and that might lead you to a different conclusion than the conclusion you might reach if you look only at, say, the SL-1 or only at Borax.

MR. JINES: I'd like to respond to that.

MR. SMITH: Yes, Alan.

MR. JINES: That's just an excellent comment. Each of these little blue squares represents one of the major areas out on the site where we have -- well, buildings and contamination. Of course they're related to each other. And the way we've broken the INEL down is we have a total of ten waste area groups.

Each of the first nine waste area groups corresponds with one of the facilities, like ten and TRA, and CPP and MTR, RWMC and the PBF, and the SL-1. We're performing investigations of each of those sites right now. And when we're done, we'll do the tenth one, which is the INEL as a whole, and all of the decisions that we make in the other nine waste area groups are subject to review where we look at the possibility of any overlapping plumes and any other -- any other effect where you have a little bit from each coming together to cause a larger risk, and that will be the final Record of Decision that we write.

AUDIENCE MEMBER: The action, then, won't

be nonreversible for any of these sites until you've gotten to that tenth stage --

MR. JINES: That's correct. That's right.

AUDIENCE MEMBER: -- and you've looked at the overall -- okay.

MR. SMITH: Might mention too that this waste area group ten is the Snake River Plain aquifer, you know, so . . . We have a comment back here in the back.

AUDIENCE MEMBER: My only question was that do you -- primarily to Alan. Do you agree that when we're talking about Borax and you're talking specifically about the uranium, that that will contribute to a plume effect? In other words, the comment of plumes gives you an impression, a plume line you know, like a plume, et cetera.

Okay. Do you really think that your uranium is going to go into a plume type situation, or is it going to remain in the soil?

MR. JINES: Well, you're really getting into a matter of definition. And I understand your point. We believe that eventually there will be some radionuclides, individual atoms, reaching the ground water, uranium-235, and they will flow with the groundwater downstream. Now, whether or not that

constitutes a plume in the traditional sense, I think is really open to discussion.

AUDIENCE MEMBER: It's just a term that's used in this kind of thing.

MR. JINES: Right. Right.

AUDIENCE MEMBER: I understand.

MR. JINES: But it's not like an oil slick.

AUDIENCE MEMBER: When your heavier nuclides include -- that don't tend to plume like your lighter ones and especially those that are not dissolved in the water, is all I'm saying. And therefore they do not migrate as such. That's the point.

MR. SMITH: Okay. Thank you. At this time, then, we would like to go into a comment period, you know, barring any hands for questions of clarification.

During this portion of the meeting, we would ask those of you who would like to comment to -- if you could just -- you're welcome to stand in place. If you would give us your name and if you'd spell your name, please. And if you'd like to get a copy of the Record of Decision, and the responsiveness document also, if you'd give us your address also.

For those of you that signed up to be here in the meeting tonight, we will send a copy of the

Record of Decision to you for being here at this meeting. But if you'll state your name clearly -- and you might need to speak fairly loudly so that it can be recorded for the record. The transcript of tonight's meeting, including the comments that you make, will be available in the information repositories, and we'll try and get that out to you before the -- well, we've got about two more weeks left in the comment period. It will be -- try to get that out before the end of the comment period. So with that, do we have someone that would like to give comments, then? Yes.

MR. WADKINS: Robert Wadkins. Last name is W-a-d-k-i-n-s. And I think they have my address. There's been a lot of discussion on these plumes, and what might reach the groundwater. Of course, that's one of the major things that the citizens of the State of Idaho are concerned about. I heard tonight that it was going to be 10,000 years before the heavy metals, U 235 would reach the groundwater by modeling by a code name "GW Screen." My understanding is there's been very little benchmarking of these codes done.

Last summer there was what was called the aquifer stress test to try and do some benchmarking. There's been considerable work to validate codes -- we've heard about the NRC -- to validate computer codes

to make sure that they predict what's right. The codes that are being used at the INEL are not benchmarked. They are not validated. And I think we're getting the cart before the horse on this and going out and taking actions before we really know what we've got as far as contaminants. Let's get some good computer codes. Let's get some good modeling. I see dated and transport modeling in here. And again it's the old adage of "garbage in, garbage out." And I think that's what we've got here.

We don't know the ion exchange of these metals between the soil. Conservative values most largely are being used, but there's a lot of unknowns, and there needs to be some overall benchmarking of those computer codes that are being used similar to what the NRC has done with the relapse models, the Skadat (sic) models.

We talk about us spending huge sums of money on reactor safety, and we're talking about risk here supposedly, according to the EPA, of five in 10,000. This is much greater than what the NRC is saying you're going to have from some of these spare reactor accidents. So let's get some codes validated and benchmarked, and then let's proced with what we have -- either a No Action or Alternative Actions.

MR. SMITH: Okay. Thank you. Yes, sir.

MR. LOGAN: And I have some comments. If I promise to speak loudly, may I remain seated? Incidentally, my comments are written down, and I'll provide your secretary with a copy of those.

MR. SMITH: Would you state your name also, please.

MR. LOGAN: Yes. My name is John Logan. Okay. I would first like to interject that I heartily agree with what's just been said when it comes to the need for the improvements that he's talking about. There's certainly a real need there. All right. I have seven comments, and here they are.

The first one goes like this. According to DOE's reports regarding remediation of these sites, considerable uranium-235 remains unrecovered -- about two pounds at the SL-1 site and about eight pounds at the Borax-1 site. Because of U-235's very long half-life, as a practical matter it will never decay away, and there is enough there to make one or more nuclear weapons.

With today's improved equipment, scraping an inch or two of topsoil from the ground surface and passing the scrapings and any other appropriate excavated soil through soil decontamination equipment

and a heavy metal particle separation device could probably recover a considerable amount of the uranium and other radionuclides for disposition elsewhere.

And before replacing more cover material, it appears that this should be tried on a limited scale and used more extensively if the trials prove successful. Removal of uranium-235 will not only restore this uranium to secure storage; it will also decrease these sites' long-term impacts that will not be reduced appreciably during the limited lifetime of an engineering barrier. That was comment No. 1.

Comment No. 2. What water transport time (from the surface to the aquifer) and what flow rate in the aquifer were used in the evaluation? Since these are uncertain, what extremes were considered in the uncertainty analyses? What kind of uncertainty analyses were done, and what were the resultant extremes of dosage imposed by the more significant radionuclides in the aquifer plumes from SL-1 and Borax-1?

Comment No. 3. Will the SL-1 contaminant plume in the aquifer overlap the plume from Borax-1? Will these plumes overlap the plume from the previously evaluated RWMC Pad A? (Pad A is downstream from Borax-1 and SL-1. And for Pad A, DOE previously concluded that a cap will be installed over about 18,000 55-gallon

drums and 2,000 4 x 4 x 7 foot boxes of alpha-contaminated Rocky Flats waste that is to be left buried there.) My concern is the combined impact of these on a future member of the public since it is the combined impact on the maximally exposed individual that counts.

And this combined impact is what should be considered in deciding what to do about the waste at each disposal site. In addition, the following locations emit plumes that may overlap the plumes from SL-1 and Borax-1 and Pad A. Waste buried from 1984 through the end of RWMC waste disposal operations, the Test Reactor Area, the Idaho Chemical Processing Plant, and the portion of the RWMC that was used for rad waste disposal from 1952 to 1984.

The impact of all of the plumes that overlap should be considered in reaching a conclusion regarding the appropriate remediation action for waste at any one of the locations. Moreover, the extent of time in the future that should be addressed should not be restricted to a relatively short time period like 100 years or 1,000 years but should extend much further to at least 10,000 years.

Comment No. 4. These sites are essentially inactive disposal sites for spent fuel, transuranic waste, greater than Class C waste, and low level waste. There

are laws against disposal of such waste -- that is, 40 CFR 193 and the Low Level Waste Policy Act of 1985 -- unless the waste can be shown to be adequately confined for at least 10,000 years. How are these requirements accounted for?

Comment No. 5. Considering the Nuclear Regulatory Commission scenarios regarding a future inadvertant intruder onto an in-future abandoned waste disposal site -- that is, the well drilling scenario, basement excavation and home construction, farming and excavation and discovery of buried articles -- what would be the maximum dosage to such an intruder at the times of maximum dosage regardless of how far these are in the future? Or at least to 10,000 years?

How do these doseages compare with DOE and NRC dosage limits for a future inadvertant intruder onto an unrecognized abandoned rad waste disposal facility?

Comment No. 6. The planned cleanup of Pit 9 could provide experience-derived information on which to base cost estimates for cleaning up the SL-1 and Borax-1 sites. And changes to their cost estimates could influence the decision regarding which remediation alternative to pursue. Consideration should be given to deferring the final decision regarding these sites until

Pit 9 cleanup has progressed sufficiently to permit better assessment of the methods and costs that should be involved in their cleanup.

Also possibly some of the waste generated in these cleanups could best be prepared for disposal by processing them through the Pit 9 treatment facilities.

Comment No. 7. The Site Disposition Alternatives considered apparently only one involving waste removal -- removal of all contaminated materials, the most expensive of all. Partial cleanup involving the above mentioned ground scraping plus removal of materials contaminated beyond 10 CFR 61 Class A limits deserves consideration as an alternative.

Such a partial cleanup could substantially reduce the very long half-lived portion of these sites' radioactivity plumes in the aquifer and their impacts on future inadvertent intruders, and the cost should be substantially less than that of total cleanup. That's all my comments.

MR. SMITH: Thank you, Mr. Logan. Any other comments from the audience?

MR. WADKINS: Yeah. I'm doing that one at a time rather than doing them -- maybe I'll cheat. Robert Wadkins. I still have a question on the land use and the industrial scenario, and I think that any

further action or closing out or accepting of any alternatives be delayed until we get a land use plan for the INEL so we know where we're going and what we're going to do with it.

The one in ten scenario -- again I believe on the industrial, the risk scenario, I believe there's a direct exposure driving that, and it's a direct exposure to an individual with no capping, no asphalt, or something like that. I believe it needs to be a realistic scenario on the industrial scenario, and that factors again into this land use.

I think that we're just sitting here spinning our wheels and perhaps spending a lot of money along with the wheel spinning if we proceed with some of these alternatives before we've got a land use plan in place for these areas that we're considering tonight, and perhaps even the total INEL. The soil consolidation variables that were mentioned, I think that if you're picking up any contamination out there under the EPA criteria, if you're going to say that it's going to be exposed and there's no cover on it, you're going to have to consolidate the soil.

I don't think you've got any choice with the cesium-137 out there. The other question I have, is there's a number of studies going on on various capping

things on what was called the old dairy farm out there. I don't know what those studies are called, but they've done a number of studies and looking at animals burrowing into the soil and things like that.

I think those should be factored in. Here there's a lot of research going on out there, and I keep seeing these things and none of it factored in here. Here we're proposing some things, that of capping and that -- let's use what work we've done and what research we've done out there. Are you aware of that?

MR. JINES: Oh, certainly.

MR. WADKINS: That it's been factored?

MR. JINES: Oh, certainly.

MR. WADKINS: How?

MR. SMITH: For participating during the comment phase, thank you, Mr. Wadkins. You know, if you want to go back into some Q and A, we've got a break coming up, and you can do that.

MR. WADKINS: Okay.

MR. SMITH: Any other comments tonight for -- okay. Let's take a five-minute break and we'll come back and discuss the -- but before we take the break I want to show you one other slide here just to remind you.

The comment period for this project on

the SL-1 and Borax projects is May 3rd through June 3rd. If other comments, ideas come to your mind, you know, you still have time to get those in to us. Let's see, then. With that, let's go ahead and take the break. If you'd like to, when we reconvene, go through the Question and Answer you just raised, we have time for that.

(A recess was taken.)

MR. SMITH: We'd like to start the next section. Originally this project was taken out -- in the early stages was taken out to the public in the summer of '93, and at that time citizens were asked if they had any ideas or suggestions that we might consider during the investigation. The investigation has been proceeding during that year and a half. Tonight we're going to be presenting the results of that.

With the Department of Energy is the project manager, Alan Dudziak, and from Lockheed Martin, Steve McCormick. So -- and the State of Idaho representative on this project is Shawn Rosenberger, and Shawn's office is here in Idaho Falls. And from EPA Region 10, again Howard Orlean. So, Shawn, is there anything you'd like to mention about CFA before we begin?

MR. ROSENBERGER: I guess it's pretty much what we said with SL-1. We've been involved with

the investigation and reviewed the study reports and have been -- helped develop the plan, and we concur with the Preferred Alternative. And we just encourage your comments, your questions tonight. We'll consider those when we write the Record of Decision. That's it.

MR. SMITH: Okay, Shawn. Thank you. Howard?

MR. ORLEAN: I'll try to repeat myself slower this time. Again, EPA has also reviewed the investigation documents and we've reviewed the proposed plan, and we concur on the Preferred Alternatives. So with that, take it away.

PRESENTATION BY DOE IDAHO

MR. DUDZIAK: Thank you. Good evening. I'm Alan Dudziak. I'm the DOE manager for Environmental Restoration at the Idaho Central Facilities Area, and I'm here tonight to tell about you the Central Facilities Area Landfills and some other No Action sites that we evaluated under the Track 1 process that Alan Jines described for you earlier.

Our project is a bit different from SL-1 Borax, primarily in that we do not have any clearly identified risks, and we also don't have the long-term radiological issues that you heard about earlier for

SL-1 in Borax. Okay. A little bit of the location. You've seen this before. This is Idaho. This is where the INEL is, and these are the two projects you've heard earlier. And now I'll be talking about the Central Facilities Area, primarily the landfills, and also the Track 1 sites which are located in this vicinity.

And then there's one that's up in the Fire Department Training Area about four miles north of CSA. First a little bit of background. This is an aerial view photograph of the Central Facilities Area with the landfills. Landfill II kind of got cut off in this particular picture, but you can see where it is at least.

Basically, Landfill I operated from the 1950s until about 1984. It's approximately eight acres, and most of the disposal was before Landfill II opened. There has been limited disposal since then. That's why we say '84 for the end. Landfill II, from 1972 to '82; it's about 15 acres. Landfill III, from 1982 to 1984; it's approximately 12 acres for a total of about 35 acres, is what we're looking at.

This area here is Landfill III extension. It is not part of this investigation because it operated until 1993. A little bit about the types of waste we had on these landfills. There were smaller quantities

of waste such as metals, oil, sludge, paint, paint thinner, solvents and such, but the vast majority of the waste was ordinary trash and sweepings, cafeteria garbage, wood, scrap lumber, masonry, concrete, other building materials, things like that, and, you know, weeds, grass, miscellaneous waste like that.

As the wastes were disposd they were covered up with dirt, as one might expect, and the final layer on each of the landfills is approximately one to four feet thick, and that's what we'll be referring to this evening as the existing soil cover. Starting about two years ago, we conducted a remedial investigation on these landfills, and I'd like to introduce Steve McCormick to tell you about it. Steve McCormick is the technical lead on the landfills project. He's been involved throughout the investigation. Steve.

PRESENTATION BY LOCKHEED MARTIN IDAHO

MR. McCORMICK: Thanks, Alan. Our investigation primarily consisted of looking at these exposure pathways. We focused on these pathways simply because these are the most likely pathways from which an exposure would occur from contaminants that would migrate out of the waste, that would potentially migrate out of the waste, and cause an exposure.

We collected samples from the existing surface soil covers, from the air above the covers, and from groundwater, a network of groundwater monitoring wells in the vicinity of the landfills. The results shown here indicate the presence of these compounds at the landfills. Risk assessment shows that these compounds do not pose a clear unacceptable risk at the site, and there is no clear trend of contaminants in the groundwater.

The data don't indicate a clear trend of contamination from our groundwater evaluation. Also it's apparent that there's no hot spot or an area in the landfills where there's an intense concentration of contamination that's migrating out. But you notice we just evaluated these pathways that involve contaminants that may migrate out of the waste.

We did not sample the waste for the purposes of risk assessment. The reason for that is that that's an approach that involves a lot of uncertainty. The best way I can illustrate this aspect of uncertainty is just to suggest this -- that most of you have been to a landfill at some point or other. You've seen people disposing of everything from grass to televisions to couches and containers with who knows what's in them, and essentially the bulldozers would

compact the waste down and over a period of years after the landfill becomes full, we end up with the soil cover. And then we're faced with the task of evaluating what's in the landfill.

It's very difficult and very -- and not cost effective at all to try to collect a sample at a given location that's indicative of the rest of the waste throughout this mass of waste. So essentially this illustrates the idea of uncertainty when it comes to sampling the waste in the landfill itself. So the first one we just looked at the representative -- the representativeness of a sample that you may collect.

And also the disposal records are not specific on the specific contaminants and volumes of waste involved. And I think this just illustrates some of the uncertainty involved in a site like this and those decision-making properties. And it's because of this uncertainty that the agencies have decided to evaluate alternatives relating to this site. Now Alan is going to tell you more about the specific alternatives we evaluated.

MR. DUDZIAK: Thank you, Steve. You've got a little bit of background and some information on the investigation we conducted. So now where do we go from here? Basically Steve mentioned that the baseline

risk assessment did not clearly identify any unacceptable risk. However, there is some substantial uncertainty with both the sampling because of the unsorted nature of the waste. It's hard to get representative samples, so there's uncertainty from that.

There's also uncertainty in the disposal record. Especially in the earlier days, the disposal records were more general in nature. It doesn't say we have so many grams of this contaminant and, you know, whatever. It's just like, you know, well, a load of construction debris or something. And I guess it's impractical to fully characterize the landfill. Because of the unsorted nature it would take too many samples in order to characterize it, and so it's not cost effective to do so.

Because of this uncertainty it's possible that there is a risk higher than the specific numbers we've estimated. And for purposes of selecting a remedy, we've made a presumption that there could be a higher risk, an unacceptable risk, and we're taking remedial action accordingly.

It's also important to note -- and I think Steve alluded to this -- that the remedial investigation did not reveal any extraordinary risks associated with the landfill waste. We didn't find any

particular hot spots or something that would warrant a more severe action than what we're proposing tonight. In order to minimize the potential risk, we've developed some remedial action objectives. Primarily we're basically trying to prevent contact with the waste, protect the aquifer, and comply with all applicable or relevant and appropriate requirements. That's a mouthful.

We refer to them as ARARs. Basically this is the laws and regulations that are out there which either apply to us or can be -- provide us with good ideas on how to deal with our situation. And "applicable" means that it does apply to the site. "Relevant and appropriate" means it would be something that we could use for ideas on how to best deal with our situation. Okay. One place we looked for guidance on how to meet these objectives was in the EPA's Presumptive Remedy Guidance for CERCLA landfills.

And a presumptive remedy is basically a set of actions or elements of an action that you can take to deal -- they're generic in nature, and they're to deal with a certain type of site -- in our case a landfill -- and they provide us with ideas on how we might remediate our particular site. And we did find that for these landfills our proposed action of

containment is consistent with the presumptive remedy -- okay -- to meet the objective. We have some -- in order to meet these remedial action objectives, we looked at some general response actions. First is No Action, and that is because the law requires us to evaluate that. It's kind of a benchmark to start from.

Institutional Controls and containment are elements of the presumptive remedy. Institutional Controls is basically putting up a fence or warning signs, things like that to control access to the site. Containment would be actually taking measures to contain the waste or to contain contaminants from the waste such as additional soil covers, things like that. And -- let's see.

And the containment will limit exposure to the waste and also limit potential migration of the waste. Okay. Some specific alternatives that we developed, or -- actually, just a moment. I'm getting ahead of myself here. In order to develop specific alternatives, we look at some evaluation criteria, and these will be applied to the alternatives that we consider. Basically what we're trying to do is be protective of human health and the environment and to comply with ARARs. We have various others you can see here, and what we're here for tonight in part is this last

one, and that is public acceptance.

We're here to get your feedback and -- you know, to input into our final decision. Now, we're also here to provide you with this information, but part of what we're here for is to get your feedback. Okay. Now, we considered four specific alternatives. We considered four specific alternatives for these particular sites. They all have some common elements which I'd like to start with. In all cases the waste would remain in place. Groundwater monitoring would be conducted for at least 5 years, possibly 30 years, and there's a 5-year -- every 5-year review period where we would determine whether that needed to continue. In all cases we are assuming the DOE or its successor would control the INEL for the first 30 years. All of them assumed installation of one additional groundwater monitoring well over and above the network we already have. I say "assume" because these are included in the cost estimates, and -- but it's yet to be determined whether or not that will be needed.

That will be part of the development of the monitoring plan. Also all the cost figures you see here are current value of money to be spent over 30 years. It's not all to spend next year or something. Okay. Our first alternative, again it's the No Action

Alternative. Again, that's our basemark or benchmark. It's required by law to be evaluated. It assumes no access restrictions beyond that initial 30-year period where DOE controls the site, and it costs about a million dollars for monitoring and management.

Second alternative is the Institutional Controls with monitoring. Now, that's institutional controls, as I mentioned earlier.. In this case it would be building a fence and controlling access to the site even beyond that initial 30 years. And in this case the cost would be about $1.9 million, of which 500 is for -- $500,000 or half a million is for initial construction, and $1.4 million is for the ongoing monitoring and maintenance. Okay.

Alternative 3 is our Preferred Alternative and it's called the uniform containment with the native soil cover. Under this alternative we would use the existing soil cover and additional dirt as needed to ensure at least two foot thickness of soil over all the landfill wastes. And we would also compact the soil and do leveling and grading in order to ensure control of the water run-on and runoff, and to limit the permeability of the soil in order to limit water infiltration because infiltration can lead to potential migration of contaminants. Let's see.

Under this alternative we would also have deed restrictions, which would basically warn any potential future residents of the potential hazard and provide land use restriction, if you will, for the future. The cost of this alternative is about $3.5 million, of which two million is for the initial construction, et cetera, and one and a half million for the ongoing maintenance and monitoring. Okay.

Alternative 4 is similar to Alternative 3 except that the main difference is that it adds an impermeable layer which is basically either clay or a geomembrane layer designed to prevent infiltration of the water. This one has similar benefits to Alternative 3 except an even higher level of assurance that we would not have infiltration and subsequent potential migration of contaminants.

Unfortunately, it also introduces a higher short-term risk because of the additional transportation and construction activities. The cost of this alternative is about $15 million, of which about $12 million is for the initial construction, et cetera, and $3 million for the ongoing monitoring and maintenance. As I mentioned, our Preferred Alternative is Alternative 3. And in the proposed plan, if you look on page 14 there's a section called Summaries of

Preferred Alternatives, and that goes into a bit about why we prefer Alternative 3.

Here are some additional advantages. I guess the bottom line is basically that Alternative 3, given the regulatory framework in which we operate, provides the best protection. It's effective protection of human health and the environment. It's the best balance among these various evaluation criteria. The cost is somewhat reasonable, and, you know, the other alternatives, like Alternative 2, doesn't meet the threshold criteria and the evaluation control and compliance with ARARs. And Alternative 4 is much more extensive and has a higher short term risk.

So we prefer Alternative 3. And let's see if I missed anything here. Oh, yeah. And Alternative 3 does address the uncertainties with the contents. As I mentioned earlier, we're following the guideline of the Presumptive Remedy, and that's a proven technology for landfills. It does limit migration of contaminants, protects human health and the environment. And we do implement a monitoring plan under this alternative in order to make sure that it's effective.

Okay. That's it for the landfills. I'd like to go now on to the No Further Action sites. I'd like to tell you a little bit about the Track 1 process,

an overview of the sites, and the conclusion of our investigation which was that we recommend No Further Action. And that is deemed appropriate on each of them. Okay. The Track 1 process I won't go into too much because Alan Jines described it earlier.

An overview of the sites. Basically there are 19 sites. They're all underground storage tank sites with one or two tanks per site, and they're all located at the facilities area except for one which is about four miles north, up north of the Chemical Processing Plant. And that's at the Fire Department Training Area, and that's a gasoline tank that's still in use. Okay.

Sixteen of them have removal and sampling records where we have documentation that the tank was taken out recently, sampled underneath it, and we know what the residual is. Two are believed to be removed, and that's based on other information like interviews with the operator that removed it or survey results where we're unable to locate them where they were or where the records indicated they were, and they're believed to have been removed sometime after the 1950s when they were taken out of service.

One of them, as I mention, is still in use. That's the Fire Department Training Area tank.

They use that to supply fuel to set fires to practice putting them out. This one is evaluated based on any potential past releases. Because it's still an active tank, when it's taken out of service, any current release will be dealt with there. Okay. Basically at the conclusion of the investigations, all of these tanks were evaluated based on findings from the preliminary investigation, historical records and field sampling, and none of them show unacceptable risk to human health or the environment.

If you're interested in further details, they're provided in the proposed plan, and in the administrative record where -- or I could take any specific questions when we start that phase. And with that I'll turn it back to Reuel. Thank you very much.

Q/A AND PUBLIC COMMENT SESSION

MR. SMITH: Okay. Any questions of clarification on the presentation materials that you just heard, had an explanation on? Yes.

AUDIENCE MEMBER: Could you tell us what ARARs Alternative 2 doesn't meet but Alternative 3 does meet?

MR. DUDZIAK: It's basically the protection of groundwater because Alternative 2, it just

involves, basically, human access to the site. It doesn't take any measures to prevent ponding, and so there's still the potential for migration greater than if we did Alternative 3.

AUDIENCE MEMBER: So you ran models with different moisture flux based on ponding or something to make that decision?

MR. DUDZIAK: No, we did not.

MR. McCORMICK: I'm sorry. We're just assuming that a designed cover is going to inhabit -- not inhibit or enhance runoff, so therefore reduce infiltration, given what's there now.

MR. DUDZIAK: Bonding occurs under current conditions. Part of the Alternative 3, part of it would be the grading in order to provide good runoff and prevent ponding.

AUDIENCE MEMBER: Okay.

MR. ORLEAN: There are also some regulations under the Resource Conservation Recovery Act specific to landfills, municipal waste landfills, these type of waste landfills that Alternative 2 would not meet but Alternative 3 would meet those.

AUDIENCE MEMBER: So you're considering -- what? -- subtitle D landfill regulations?

MR. ORLEAN: Uh-huh, as one that's

relevant and appropriate.

AUDIENCE MEMBER: Relevant and appropriate. Okay. So your closure has to meet those substantive requirements of --

MR. ORLEAN: Right.

AUDIENCE MEMBER: Okay.

MR. SMITH: Okay. Other questions? Okay. That being the case, we'll move to the -- Alan? Okay. Let's move into the next part of the presentation, then, or the next session would be a public comment. Do we have anyone that is prepared to offer comments? Okay. And the same thing will apply to that one that applied to this one.

MR. WADKINS: Robert Wadkins. Last name is W-a-d-k-i-n-s. My comments before somewhat apply, and I've got some additional ones. The risk here seems to be again for a residential scenario, and it's beryllium, two in 10,000. Let's get the land use for these things before we go off and spend a big bunch of money.

What are we going to do? Is this thing going to be industrial? Is this going to be farming? What's it going to be, so we really know what the risk is? I heard Alan say no risk, but due to the uncertainty we're going to spend $2 million more a year

plus 60k a year more, I like action No. 1, which is No Action or Alternative No. 1, which happens to be No Action if we've got models and codes that can predict what's going on and have been benchmarked and validated.

Why spend the money if we've got the confidence? If we're just trying to cover ourselves because of uncertainties so we throw in this Alternative 3 here, it doesn't seem like the right thing, and I don't believe we're protecting the public.

This has been DOE's credibility problem from day one. Let's get it down to where we got confidence in what we're doing. And if it takes computer codes that are benchmarked and validated, let's do it. My suggestion is let's get the National Academy of Sciences out here. They were out here looking at some of this stuff before.

Let's specifically have them look at some of these codes and the way we're doing things so that we've got some confidence in it. If the risk is really less than one in 10,000, then let's go with the No Action on it. There's no need to go with the Alternative 3 and spend the additional money. If it's needed and warranted, certainly we want to do it. But let's get the risk down to where we really know what it is. And my suggestion is let's get an independent

reviewer in here, and perhaps the National Academy of Sciences is the way to start.

MR. SMITH: Okay. Thank you. Any other comments for the record?

Again, a transcript of the presentation and the exchange of comments here will be in the transcripts of tonight's meetings and will be available in the administrative record. The comment period for the Landfill Project began on April 26th and will close on May 26th, so we would encourage you or other acquaintances that you may know of that would be interested in this project to turn in comments by that time.

The Record of Decision on both of the projects that we've talked about tonight are expected later this year or early next year -- November of this year for landfills, and the SL-1 Borax project will be January of 1996. So you can expect to get a Record of Decision in the mail at that time.

That officially closes this portion of this meeting. Bob, I see you may have -- I see you have a --

AUDIENCE MEMBER: Well, again a Record of Decision. And you're saying, hey, we're going to go ahead with this. This is going to be the Record of

Decision but, you know, I'm saying you can do a lot of code validation for $2 million, and an additional 60k a year over 30 years adds up. Let's find out where we really are on these things. Are we going to use science or are we going to using black magic? Let's try and use some science. And the comment -- Dr. Hall's comment on these things -- have you run these codes? Did you get the ponding? What did you do? What infiltration can we put in conservative numbers? Everybody knows that. There's conservative numbers been run. The code may not be any good. Let's benchmark it against some other codes and find out -- Oak Ridge, Oil Codes, whatever they happen to be. But let's do that.

MR. SMITH: Okay. And I appreciate the clarification on this. This was an anticipated or an expected schedule. Depending on the agencies' decision given public comment, that could be affected.

But with that, we thank you on behalf of the agencies for your participation and attendance, and appreciate your comments and the time you put into your thoughts and suggestions. So we hope you have a good evening, and thank you again for attending.

(The hearing concluded at 9:10 p.m.)

REPORTER'S CERTIFICATE

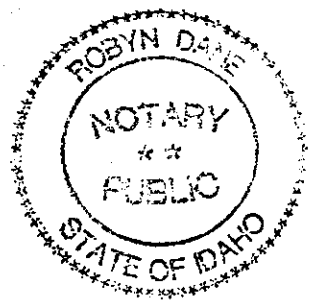
STATE OF IDAHO)
)
COUNTY OF ADA)

I, ROBYN DANE, CSR, a Notary Public in and for the State of Idaho, do hereby certify:

That said hearing was taken down by me in shorthand at the time and place therein named and thereafter reduced to computer type, and that the foregoing transcript contains a full, true and verbatim record of the said hearing.

I further certify that I have no interest in the event of the action.

WITNESS my hand and seal this 30th day of May, 1995.



ROBYN DANE, CSR
Notary Public in and
for the State of Idaho.

My Commission Expires 5/9/97.