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PUBLIC MEETING

ON

THE UNITED STATES DEPARTMENT OF ENERGY

PROPOSED PLAN FOR REMEDIAL ACTION AT THE

QUARRY RESIDUALS OPERABLE UNIT OF THE

WELDON SPRING SITE

TRANSCRIPT OF PROCEEDINGS

APRIL 16, 1998

7:00 - 9:00 p.m.

THE WELDON SPRING SITE REMEDIAL ACTION PROJECT

7295 Highway 94 South

St. Charles, Missouri 63304

ORIGINAL

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THE UNITED STATES DEPARTMENT OF ENERGY

PROPOSED PLAN FOR REMEDIAL ACTION AT THE

QUARRY RESIDUALS OPERABLE UNIT OF THE

WELDON SPRING SITE

Be it remembered that on the 16th day of April, 1998, the above-entitled matter came up for public meeting at The Weldon Spring Remedial Action Project, 7295 Highway 94 South, in the County of St. Charles, State of Missouri, and the following is a transcript of the proceedings:

APPEARANCES

Cassandra R. Savage, Moderator

Panel Members:

Stephen H. McCracken, Project Manager

Dan Wall, Remedial Project Manager

Gene Valett, QROU Project Manager

Rebecca Cato, QROU Manager

Mary Picel, Argonne National Lab, Project Manager

TRANSCRIPT OF PROCEEDINGS:

MS. SAVAGE: Good evening. I am Cassandra Savage, community relations manager. And on behalf of the Weldon Springs site remedial action site, welcome to this evening's public meeting.

Now I've got a couple of things that Joe Enright wanted to make sure that I mentioned. First off, we have an exit there and there. Ladies' room and men's room is the main hallway to your right, and smoking is not prohibited -- well, is prohibited in the building.

The purpose of this evening's meeting is to give you, the residents, an opportunity to provide comments and input to proposed remedial action for the quarry residuals operable unit.

Now, I'm going to take just a couple minutes just to talk about what we plan to do this evening and how we plan to do it. But, first off, since this is a public meeting we must conform to specific federal regulations. One of which, the proceedings must be transcribed. Now in order to make sure that our transcription is accurate, we're also tape recording this evening's proceeding. Now, the sole purpose of the transcription will be just so that we have a record of what has occurred this evening, and we must have an official record of what has occurred. That's the only purpose for the

transcription.

Now, copies of the transcription will be available to the public upon request. And we'll give you those addresses and phone numbers with those of us that you can contact if you'd like to have a copy of the transcript of this evening's meeting.

The agenda for this meeting will consist of remarks from Steve McCracken. Steve, would you stand, please? For those of you who don't know Steve, Steve's the DOE project manager of Weldon Spring site. And Dan Wall. Dan, would you stand, please? Dan is remedial project manager with the EPA.

Gene Valett. Gene's up here in front all raring to go. Gene is the quarry residuals operable unit project manager here at Weldon Springs, and he's going to give you an overview of the proposed plan.

Now, I will ask that you hold your questions and comments until the appropriate time of the program and that will be following Gene's presentation and then a couple remarks from the Citizens Commission. I think Glenn Hachey, chairman of the Citizens Commission, is going to have a couple of remarks as well as Bob Geller with MD -- for the state, MDNR.

Following all remarks and presentations, then we will open the floor to questions and comments. Now,

there are a couple ways that you can submit questions and comments. One is that you can indicate to me. And if you haven't guessed yet, I'm your moderator for this evening. Let me know, indicate, preferably while your hand is being raised, that you have a question, and I will recognize you at that time.

Or we have two people, one waving yellow cards back there, and we also have another one sitting right next to Charlotte Wienski and Launa Danielson will have yellow comment cards, and you should have received those when you came in. Okay. Fill out those if you would like and return them to either Launa or Charlotte, and they will give them to me, and we will entertain or address your questions at that time.

Now, I must ask that, don't throw eggs at me, but you are limited to two minutes on questions and comments. And we must adhere to that time limitation due to the time that we are limited to this meeting this evening.

In the event that you have a question or comment that will require further clarification, we'll do our best to come back to your question later on in the meeting. So don't be disheartened if we have to cut you off, but we will try to do our best to come back to the question later on.

We should ask, too, when presenting your question,

please give us your full name and the organization that you're affiliated with, and then ask your question or present your comment or issue at that particular time. And that's primarily for transcribing purposes. We would also appreciate it if you would speak clearly and loud enough so that everyone can understand what you're trying to relay to us this evening.

Now, comments received this evening or written comments postmarked on or before May 21st -- and we've changed the comment period. We've extended it from April 21st to May 21st. We had a couple requests to do so, and we've complied to do that. So you have until May 21st. Any comments written or comments this evening will be considered in the decisionmaking process.

Now, information as to where you can send those written comments are in your blue brochure. And again, we will give you an address and tell you exactly who you can forward those comments to very shortly in the meeting.

Now, I'd like to take a minute and introduce to you our technical panel or our panel of technical experts that are going to address your questions and comments later on. We have, as I introduced to you, Dan Wall, Steve McCracken, and Gene Valett. In addition to those three, Mary Picel, project manager with Argonne National

Laboratory here; and Rebecca Cato, quarry residuals operables unit manager.

We're at a point in our program now where I will turn the floor over to Steve McCracken for his remarks and comments, and then we'll hear from Dan Rowell and Gene Valett.

STEVE McCracken: She meant Dan Wall. You said Dan Rowell. Dan Rowell retired a couple of weeks ago.

For the benefit of the person that's keeping track of all this, I'm Steve McCracken. I'm the project manager for the Department of Energy. I'm going to keep my comments very short. I think that Gene has the most to say as far as giving people information on what it is that we're proposing tonight.

In trying to think about what I thought would be of some value to say. I know most of the people here, whether they're people that work here or people that have just been associated with this work for many years. And many of you, most of you probably remember that we really came up with our plan for how we would proceed at Weldon Spring back in 1988. After a lot of effort on everybody's part to figure out how to agree, we agreed on a path forward, and we've stuck to that since then. And I think that that has contributed a lot to where we are

today.

That path forward consisted primarily of doing those things that we knew we could do right away that would stabilize the site. We knew that we would have to get back to making decisions on waste treatment and waste disposal, and then finally get to decisions about how to take care of the groundwater, both here at the site and down at the quarry.

And to get to those things, we agreed that there needed to be certain major decisions that had to be made. Basically those major decisions that we knew we needed to make were, and I'll do them in the order that they were made, the quarry bulk waste operable unit. And that was a decision to remove the waste from the quarry and put it into safe storage. We made that decision, I think, back in 1991 or so.

We needed to make a decision on how to finally clean up the chemical plant site and how to handle all the waste that we would generate over the years that we would do the cleanup activity. We called that the chemical plant operable unit. We made that decision back in 1993, I think. I guess if I get a date wrong, someone correct me.

And now today what we're trying to do is to get to those decisions related to groundwater. And I'll be

honest with you, my opinion is that we made some very good decisions. We, meaning us, the state, the EPA, the public, and DOE, made some pretty good decisions back in 1988. And that was to say let's get on with the work, and in doing that let's try to make decisions at a logical point in time that will allow to us to make good decisions. And that's why we put groundwater decisions off until we have.

And I think that we did a darn good job. And the fact that we've been able to stick with our plan kind of shows that we did a good job of planning and reaching agreements in those days.

I don't think, I know you can't see this. We can pass these out. We put this -- do you want to pass some of these things out?

I put together a story board about three or four months ago to submit, to use for the '99 budget submittal. Every year we have to submit to Congress what our needs are for money for the budget year coming up so that we'll be able to continue our work.

I put together what I called a story board to give everybody an idea in Washington about why we are a good place to spend money. And the reason we are a good place to spend money, at least in my view, was that we are what we call a closure project. We are very, very close to

being done.

And for that reason we are a very good opportunity project for spending money to get the work done. And what I did to show that is I just put together a time line beginning back in 1986 when we arrived at Weldon Spring to today, and from today until we plan to finish, which is in the year 2002.

And if you go down through the schedule or the time lines that I've shown, you can get a good idea of the work that we've done over time, the interim actions that we did to stabilize the site.

The decontamination/demolition of all the building structures on the site.

The remediation of the soil and concrete material on the site, the six hundred and forty thousand yards of that.

The quarry remediation, which was the removal of the hundred and twenty thousand cubic yards or so of the waste material that's in the quarry.

Cleaning up of numerous vicinity properties, with networks underway now. Some of them have been completed. I think Gene's going to talk about one of them at least.

Right now we are commissioning the plant to treat the two hundred and twenty -- I think that number is wrong. The hundred and sixty thousand or so cubic yards

of raffinate sludges that are in the waste pits out back. We expect to go operational with that plant in the next several weeks and do all of that work this year. That's our plan.

We have also constructed a large disposal cell on-site, and we're in the process of moving the waste into that cell. Our plan is, our work plan is to put about forty percent of the waste material in that cell this year. And if we can stick with it, we'll have as much as ninety-five or ninety-nine percent of the waste in the cell by the end of next year. Very aggressive schedule.

But the point is after all this time we're down to the last few things that need to be done and be able to say that we're finished here at Weldon Spring with our job. And, of course, coupled with that is these two decisions that we need to make about groundwater and whatever work would go along with that.

And the one tonight is called the quarry residuals operable unit. It is that decision that we're making to go from the end point, which was the excavation of all the material from the quarry. And once we had accomplished that, then we have to make a decision that we have, what additional work we need to do in order to say we're finally done, with the groundwater being the

focus of that.

So with that, that's all I've got to say. I'm going to turn it over to Gene and let him bring you up to date on what the proposed plan is.

MR. VALETT: Good evening. My name is Gene Valett, and I'm the project manager for the quarry operations here at Weldon Spring. And it is my pleasure to be up here tonight and let you know about some of the work that we have completed at the quarry in the past and also some work that we propose to do in the future.

I'm going to use overheads for the presentation. I also have copies of overheads up here in case we want to pass them around. They're convenient to take notes on and things like that. So if you want to pass them around, fine.

Steve mentioned that we're here tonight to talk about the quarry residuals operable unit.

This is work that we propose to do in the future. But I'd like to take just a few moments to step backwards and fill you in on some work that we performed at the quarry to get to this point.

Back in 1993, about May of 1993, we started excavation of the bulk waste in the quarry. We completed that job October of 1995. As Steve said, we took out approximately a hundred and twenty thousand cubic yards

of bulk waste in the quarry. Now that consisted of soils, railroad ties, drums, structural steel, rubble, rebar, you name it. It was basically what was ever, whatever was put in the quarry. Our primary contaminants were thorium, uranium, and also nitroaromatics. We completed that job at the end of 1995.

To give you an idea of what the quarry looked like before we began our excavation, can you see that or can you turn that off?

To give you an idea of what the quarry looked like before we began our excavation. I don't know if you can see in your papers that I handed out, but there was a lot of soils dumped in here. You can see some drums. There are a lot of metals. And there was a pond of about three million gallons of water that we had to treat to get the quarry bulk waste out.

If you're not familiar with the quarry, it's about four miles south of here. Here's Highway 94 running on the north edge of the quarry.

As the work progressed on the quarry, again we were successful in getting the bulk waste out. So here's a picture of a typical day of operations at the quarry and taking out the soils and whatever we encountered down there.

The real purpose of the quarry bulk waste excavation

was to take the waste in the quarry and take them from an uncontrolled state to a controlled state. So what we did was we sorted and segregated the waste at the quarry and hauled all the waste up to the chemical plant site to a facility we called the temporary storage area.

So what you can see in this picture is, this is the fine grain soil pile. And around the fine grain soil pile is rubble that we took out of the quarry. Here's some metals, some drums. And also we had separated some soils out that we thought might be contaminated with nitroaromatics that we may have to do some special testing and treatment.

Along with the work at the quarry, we also took advantage of having a project team and subcontractors in the area to clean up a small area along the Katy Trail. This is the Katy Trail right here. The small area was called Vicinity Property No. 9. It was an area that was contaminated with uranium. We took out approximately three thousand cubic yards.

Let me just point out for geography purposes real quick. Again, this is the Katy Trail. This is the slough that you'll be hearing a lot about tonight. This was our water treatment plant and ponds that we had in the quarry. The area of excavation for bulk waste was on the other side of this bluff, out in this area.

If you were to fly over the quarry today, this is what you'd see. I don't know how many of you people have had that opportunity to visit the quarry, but it's quite a sight now that the bulk waste is out of there.

You can see, again, this is Highway 94 running north, right in here. You can see the exposed limestone from the quarry. The fracture patterns that are in the quarry, we spent quite a bit of time at the end of our bulk waste operation flushing those fractures out.

There is, it's difficult to see on this picture, but if you want to get around a little later, I can show you on some of the pictures we have on the walls. There's some benches and high walls that we exposed in the quarry also. You can also see that there is water in this picture.

Now, we took out the pond that was initially down at the quarry and also the interstitial water within the bulk waste. But we allowed the sump in the quarry to fill up with water as part of our remedial investigations for the quarry residuals operable unit. We wanted to see if water was flowing in from formations or flowing out from formations, or where water was coming from. Actually what we found out was most of the water, if not all, basically comes from rainfall. It's a very tight formation.

Throw this up here real quick.

This really is the end point of the bulk waste operable unit and the starting of the quarry residuals operable unit. So there certainly are some things that we still need to investigate, even though the bulk waste was out of the quarry.

And some of them are, there are some soils that are in the quarry that remain to be characterized because they're inaccessible. There is a small area up in this area that we suspect may have some radium contaminated soils. And also as Steve mentioned, the groundwater in the area. And what we did was, for the residuals, that really expanded our study area from the quarry to the surrounding areas, the groundwater, the slough, and whatnot.

So the boundary for the quarry residuals operable unit is much larger than our quarry that we took our bulk waste out of. The quarry we took the bulk waste out of is here. The boundary for the quarry residuals operable unit basically follows this red line.

And that study area was determined by the presence of contamination found during the preliminary sampling that we did for our RI.

And some of the geography that you need to be familiar with in this slide is, again, the Katy Trail,

Highway 94, the Missouri River, the slough, Little Femme Osage Creek down through here, and the St. Charles County Wellfield is located in this area.

Now, there's a process that we use, the CERCLA process, that we use to evaluate remedial decisions here on the project. Not only do we sample to characterize during this process but we also perform risk calculations based upon that data and also perform alternative analysis. So as I go forward you are going to see some summaries of this process that we use here on-site.

Now where are we at in this process now? We've worked our way through the characterization, remedial investigation, and baseline risk, feasibility study, and proposed plan. I believe I saw copies of the proposed plan outside in the hallway. The public meeting is where we're at now and heading for Record of Decision for this operable unit.

Okay. Now, as part of the CERCLA process, we complete a baseline risk, risk calculations, and use the recreational scenario that we consider to be appropriate for the study area. And this scenario follows EPA procedures.

I wanted to make a slide up real quick and give you an idea of what this scenario consists of. If you were to spend time in the quarry residuals operable unit study

area, four hours, say you visited, say, two weeks every month, about twenty visits per year. Spend about four hours per visit, and you went back for thirty years. Okay. And while you were there you ingested a hundred and twenty milligrams of soil or sediment, you ingested about twenty milliliters of water and fifty-five grams of fish. So you can see that's a pretty conservative scenario for calculating exposure factors for the quarry residuals operable unit.

Now, as far as quarry groundwater goes, we consider that it has no access because this is a recreational scenario. Under this scenario there is no access to the groundwater.

Now, as a result of sampling and risk assessment, uranium and nitroaromatics were considered for further evaluation. And I might say that as far as nitroaromatic compounds go, we've seen levels in the groundwater go down dramatically since we have excavated the bulk waste out of the quarry. Because you've got to remember, the bulk waste in the quarry was really the source of the contamination in the area. But still, that leaves uranium in the groundwater. And we came to the conclusion, using this recreational scenario, that the focus of additional work should be centered upon the uranium in the groundwater, particularly that groundwater

north of the slough area.

Now, the extent of that groundwater, we throw this air photo back up. Remember, I showed you where the quarry residuals study area was at. It was a larger area here. The extent of the uranium groundwater in the quarry is north of the slough, between the slough and the quarry proper we call it. Okay. This area right here. Again, that's the red circle in there.

This is based upon over ten years of sampling and characterization information. We know that we have high uranium levels consistent north of the slough. We know that. We also know that south of the slough levels of uranium are similar to naturally occurring levels. So that's the reason why we decided to focus our study on that part of the groundwater.

So we made some conclusions. We decided to have remediation to reduce, remediation to reduce human health in the environment. The studies that we did with the RI and baseline risk assessment indicated that we didn't have -- let me say this one more time. I'm glad Mary's here tonight. Remediation to reduce human health and environmental risk was not indicated in the studies that we did. Okay. Thankfully, we have good people like Mary that do these kind of studies so guys like me can stand up here and at least stumble over it. Okay.

We considered it prudent though to identify an option that could reduce uranium from that quarry groundwater. And we figured that would reduce the amount of uranium that could potentially migrate to the wellfield. Okay. So we started taking a look at some alternatives.

These are alternatives that are in the feasibility study. And we looked at actually over thirty-six applicable technologies to reduce uranium in this area but boiled it down to six alternatives that we decided to carry forward in the evaluation.

Alternative No. 1 is no action. That's basically an action you have that compares with other alternatives.

No. 2 was monitoring with no active remediation. That's simply continuing sampling and analysis of groundwater in the wellfield area north of the slough.

No. 3, groundwater removal with on-site treatment. That's basically installing trenches in the slough area. And the problem we had with that was that it took over a hundred years to capture that groundwater and remediate.

The fourth one we had was containment. Basically that's a vertical barrier that would contain the groundwater in the area north of the slough.

Number 5, in situ treatment using permeable barriers. Basically that's an underground structure much

like an interceptor trench that's filled with a media like iron where the groundwater passes through the iron and the uranium stays behind.

And then the final one was groundwater removal in selected areas with on-site treatment. That's much like Alternative No. 3, except it focuses on the area that has the highest amount of contamination.

Let me just say real quick that No. 5, permeable barriers, that's really a new technology. And because of that, that alternative is not considered any further.

No. 4, containment, there's a lot of uncertainty in containment. If the structure breaks down, then you either have to replace the structure or you have groundwater flow that's not contained like you wanted it to have.

Again, I mentioned No. 3, about the time, well over a hundred years to capture the groundwater in the larger area of the plume. And to be honest with you, there is levels of uranium in that large area of the plume that just doesn't make any sense to be capturing it.

So with that in mind, we boiled that down to our proposed alternative, and that was No. 6. And this alternative would involve the removal of groundwater in those selected areas, those areas that have high groundwater concentrations. And this would be with an

interceptor trench that would be built underground. And water meeting discharged limits would be released at an appropriate discharge point.

Let me show a real simple schematic. And you have to understand that this is simply a proposal. We haven't completed it in any detail, design work at all. So what we would do, is that area of higher uranium concentration is basically in this area, north of the slough, between monitoring Wells 1014 and 1016. The trench would be installed to bedrock. And we would also have a piping system within this trench that we could pump, pump the groundwater that came into the trench and then transport that water to treatment, if treatment would be necessary, and then again released to an approved area.

Now, what we intend to do is operate this facility for a two-year period and compare our actual results that we get from the trench with the expected performance. And if you're interested in expected performance that we've calculated through models, the feasibility study has a graph in there that you can take a look at.

Now, there is other work that needs to be done at the quarry also. And I apologize for the, you're not being able to see this well. I brought in the picture with me that the slide was made off that hung on the wall. We had one of our people in our engineering

department, who's obviously better at art than I am, come up with a conceptual picture, a vision, if you will, of what the quarry could look like under a backfill situation.

We intend to backfill the quarry basically to reduce physical hazards in the quarry. You can see from the picture I showed you before, high walls, and benches. And there's large cracks and fissures that are open in the quarry as a result of the flushing that we did in the bulk waste project.

Also by backfilling we have no more ponding in the quarry. And this is also effective to prevent residual contamination in the cracks and fissures from mobilizing to the surface. So that only further enhances the low potential risk associated with external gamma and ingestion.

So, when do we propose to do this work? We propose to do our engineering work and have that completed by May of '99. Go through a procurement phase, and that's basically where we hire a subcontractor to do the interceptor trench construction and also the quarry backfilling construction. That construction, or those two items, would take place from July '99 to September of 2000. The operation of the interceptor trench, like I mentioned before, would operate for two years.

So what would happen is, we would be working in the quarry and also in the interceptor trench area at the same time so we could get the trench in operation by May of 2000. The cost of all this work would be around 8.7 million dollars and that would be construction and operations costs.

Finally, I wanted to put a slide up to tell you just a little bit about an additional element of protection that we have the groundwater in the slough area. In 1992, we prepared a wellfield contingency plan. Now, that plan was intended to supplement our bulk waste removal project. If for some reason during bulk waste the St. Charles County Wellfield would have been affected, we had the plan in place. Again, this plan is also based upon over ten years with the sampling and characterization.

And the reason that we prepared the plan is that in the unlikely event that one or more of the production wells became threatened, and the production wells again are in this area. And we have monitoring wells in this area. But if one or more of those production wells became threatened due to migration of uranium, we had appropriate levels of response. And those levels run from sampling, monitoring, even to well replacement.

So I just wanted to take a minute to let you know

about the contingency plan that we do have on the books. And with that, I am finished. And Cassandra.

MS. SAVAGE: Here I am.

MR. VALETT: It belongs to you. Next phase. Thank you very much. I appreciate it.

MS. SAVAGE: I now would like to invite Bob Geller. He has a few comments.

MR. GELLER: Did the EPA want to speak first?

MR. WALL: You can go first.

MS. SAVAGE: I'm sorry. Dan Wall.

MR. McCRACKEN: Come on, Dan, you go first.

MS. SAVAGE: I'm sorry, Dan, I apologize.

MR. WALL: Well, my name is Dan Wall. I work for the EPA out of the Kansas City Region 7 office and I've been involved in this project since 1985. Guess that's, you know, most of my adult life.

And my job is to become involved with and to review what it is the DOE is proposing to do out here, not just on this, but over the entire scope of the project. And, you know, I offer technical input where I can and work to assure that what we're doing out here complies with the environmental laws and is technically appropriate.

I'm here tonight just to let you know that I've been pretty heavily involved in the ongoing study that's gone down at the quarry and involved in the conceptualization

of the activity that Gene proposed or the proposal that Gene explained.

I guess my primary purpose here tonight is just to be available in case anybody has any specific questions of EPA. I guess that there is a couple of things that I would hope that people would get out of reading the feasibility study and get out of what they may hear here tonight.

Number one, I think I agree, or we agree, that there has been substantial data collected down there over a decade or so. That data indicates that we're not seeing measureable impacts in the alluvial well, the larger alluvial wellfields at the slough. That's good news in that we don't have immediate threats to the wellfield. And on the flip side of that, the natural factors that make it, that prevent that sort of, that are minimizing that sort of migration also make it very difficult to recover these materials.

Gene didn't talk much about our predictions regarding the success of extracting this material. But I think you can, if you look at the feasibility study you will see some of that. We still think it's prudent to do what we can to recover as much of that material as we can, even if we can't get it all.

And I guess the success or the level of success or

failure we achieve will remain to be seen assuming that we go ahead with this proposal. I think we think that the option as proposed gives us our best opportunity to recover as much of that uranium as possible. But I think the bottom line is that, as I said first, that we're not seeing measureable impacts in the larger alluvial aquifer and so I guess with that, I'll just finish.

MS. SAVAGE: Thank you. Bob?

MR. GELLER: Since I'm not quite as old as Dan, I'll go ahead and read some prepared remarks here.

Once again, my name is Robert Geller. I'm with the Missouri Department of Natural Resources, and I will provide you with a copy of these comments when I get done in case you have a hard time understanding me.

I'm in the Hazardous Waste Program, and I work in Jefferson City. In the role that I play, as far as chief of the Federal Facilities Section, I'm responsible for overseeing the cleanup of the federal government's actions as they relate to cleanup of Department of Energy or Department of Defense sites throughout the state of Missouri that are essentially contaminated with either radioactive or hazardous waste.

For several years our agency, the Missouri Department of Natural Resources, has focused considerable effort on the cleanup of Weldon Spring. Our engineers

and environmental specialists oversee all phases of the site activities from the initial planning of remedial investigations to the final design, including implementation and confirmation of cleanup actions.

Weldon Spring field staff and our field office is staffed full time to provide daily onscene oversight activities of the Weldon Spring site, primarily to assure that the cleanup complies with the applicable laws and regulations, and the activities are performed in a manner which is protective of the public and for the environment.

As some of the information was presented earlier, in the 1940s the Army used the quarry to burn -- I don't know if you're familiar with this, but they did use the quarry to burn and dump waste from its manufacture of explosives. That was followed in the 1960s with the Atomic Energy's Commission activities, the predecessor to the Department of Energy, when they use the quarry to dump waste from the processing of the uranium and thorium ores, including waste from uranium and thorium concentrates, uranium- and radium-contaminated rubble, and thorium residues.

While we acknowledge that the circumstances in the state-of-the-art public purpose of the past activities, we do affirm DOE's agreement to ensure that the

environmental impacts of the Weldon Spring site are thoroughly investigated and appropriate remedial actions are taken which are necessary to protect the public health, welfare, and the environment.

Our primary concern at the Weldon Spring quarry has been, and continues to be, the protection of the St. Charles County Public Wellfield, which is located just a half mile, as Gene has shown on the photos, south of the quarry along the Missouri River.

Chemical and radioactive contamination from the quarry have migrated from the quarry and has contaminated the groundwater in the alluvial aquifer which serves as a drinking water source to over seventy thousand residents in St. Charles County. No contamination of the public water supply has been detected that we are aware of, but the ultimate fate and the long-term risk to the public and the environment and the best method to clean up the contamination from the quarry remains uncertain.

Much of the radioactive and hazardous waste in the quarry was removed under the quarry bulk waste, as previously described, and transported to the chemical plant site for placement in the ultimate final disposal cell currently under construction. The removal of the quarry bulk waste and its temporary storage at the chemical plant eliminate a significant source of

radioactive and chemical contamination to the environment and was a major milestone in the cleanup of this site.

However, the quarry bulk waste constituted only the waste which could reasonably be removed using standard construction equipment and activities.

Contamination, including flakes of the yellowcake, the uranium ore concentrate, remains in the cracks and crevices of the quarry, quarry floor, and the walls as well as along, contamination along the rim of the high walls.

The quarry residuals operable unit is designed or was designed to address any remaining radioactive and hazardous contamination that was left in those cracks, fissures, soil sediments, and/or along the perimeter of the high walls as well as the groundwater contamination.

The Department of Energy's proposed plan to construct an interceptor trench to extract and treat on-site contaminated groundwater from selected areas and long-time monitoring of the groundwater is what we understand to be the preferred alternative that's being proposed tonight. While there remains significant concerns regarding the details of the proposed plan, at this point we do strongly support DOE's decision to actively clean up the groundwater instead of relying on the wait-and-see approach of monitoring only.

Our agency continues to review the proposed plan and will make our final comments after reviewing comments from the public as well as the Department of Energy's responses to those comments.

Among some of the specific concerns we have of the proposed plan are that the Department of Energy's proposed remedy does not appear to have as its ultimate goal achieving the groundwater cleanup standards that are already established. The interceptor trench appears intended to provide necessary data to demonstrate what is considered technical impracticability and waive the groundwater cleanup standards. We do not object to the proposed plan, including as an additional goal the collection of data intended to demonstrate this effort. However, the proposed remedy should have as its goal attainment of groundwater cleanup standards, and the remedy will continue to operate until cleanup standards are attained or waived.

In addition, no cleanup criteria are provided for the remaining contamination in the cracks. We don't see in the proposed plan an approach to clean up the contamination in the cracks, crevices, and/or along the perimeter areas of the quarry proper or for the Femme Osage Slough. Any contamination left in the quarry is a concern because it is still a source and can remain a

source of contamination to groundwater because it currently involves a risk from direct exposure. At a minimum, the cleanup criteria should be at least as protective as those criteria established for other areas of the Weldon Spring site.

The proposed interceptor trench does not include containment as a remediation goal. Including plume containment with groundwater extraction as a remediation goal is appropriate because the proposed plan would leave residual contamination in the quarry, which is a source of further groundwater contamination which may ultimately enter the alluvial aquifer and cannot leave except through the public wells.

The proposed plan as described this evening takes credit for the Wellfield Contingency Plan, which ultimately describes groundwater monitoring, action levels, and planned responses to ensure the safety of the drinking water supplied to the residents of St. Charles County from this wellfield. In addition to whether the action levels and plan responses are appropriate, it remains unclear to us who will be ultimately responsible for implementing any response.

Since the proposed plan would leave contaminated groundwater as described, which may continue to threaten the St. Charles County Wellfield, it may limit the

appreciates the opportunity to comment on this proposed plan. We look forward to working with the Department of Energy and the public to clean up any residual contamination at the Weldon Spring Quarry effectively and in a manner which adequately protects public health, welfare, and the environment. Thank you.

MS. SAVAGE: Now comments from Glenn Hachey.

DR. HACHEY: My name is Glenn Hachey. I'm chairman of the Weldon Spring Citizens Commission. We are a group of volunteers that were formed in 1995. We're appointed members, and we've been tracking the progress in this project approximately two and a half years now.

What I would encourage all of you who are residents here or have an active interest in following this project in which to make comments, is the Citizens Commission will basically be formulating some comments as the regulatory people are doing as well and will be submitting written comments. And if any of you have any concerns, questions, or what have you, we will be more than happy to listen to them and incorporate them into our comments, our written comments.

We have monthly meetings. Coffee meetings, I guess is what they are. We sit around and we do not hold our meetings in a formal fashion. We hold them in a

relatively informal fashion. We would be more than happy to have any of you attend. Once a month, I think they're the third Thursday of every month. You can call our office in the old courthouse in St. Charles at 949-7545, and we can help you arrange to meet with us at one of our monthly meetings.

If you have any questions tonight, Larry Sharp is another member. Larry stand up, you can't hide.

Larry and I represent the commission. Grab us, tell us what your concerns are, introduce yourself, and we would be happy to talk to you.

Have any other individuals that would like to make comments tonight, like I said, feel free to comment, tug us on the shirt and let us know who you are. Thank you.

MS. SAVAGE: I would now like to invite the panel, Steve McCracken, Gene Valett, Mary Picel from Argonne National Laboratory, Dan Wall, and Rebecca Cato to convene up front, please.

If you have question cards completed, would you please pass them to the end of the row, and we can collect those. If not, we will entertain verbal comments and questions.

We are ready now for questions and comments.

Yes.

MR. MCQUEEN: John McQueen, technical

consultant for Francis Howell School District.

Gene, have you made any estimates of the amount of sludge you'd generate from treatment and how you'd handle the sludge?

MR. VALETT: No. We haven't made any estimates of the sludge yet, but certainly it would be a lot less than our current plant generates. And how we would handle that, if the cell were open at the time of the sludge generation I'm sure that we would transport that up to the site and put it in the cell. And quite obviously, if the cell's not open we'd have to find other means off-site to handle that.

MR. MCQUEEN: I was leading up to that. This process is not going to affect the schedule of completion of the cell then, I take it?

MR. VALETT: No, not at all.

MS. SAVAGE: Any other questions?

MR. GARVEY: Mike Garvey.

There was some discussion that the slough was some form of barrier to the migration of the contaminants. And is there, I realize it's a difficult thing to try to remediate that slough, but what, other than a plume of contaminants that entered into alluvium, I guess my question is, where did it go from there? Did it go into the slough? Did it go in large bedrock cracks, fractures

under the slough, and is it being dissipated across the whole alluvium? And what is the reason for not attempting to remediate the slough itself?

MS. CATO: The best I can answer the question is regarding fate and transport with -- Rebecca Cato, with the PMC. We've done some, through our testing we've modeled, not modeled, but monitored the geochemical processes that are occurring and got into the adsorption that can occur under the soils. And what we found is occurring, is uranium-contaminated groundwater was seeping from the quarry through the bedrock into the alluvium. And a combination of the tight soils and the uranium binding onto the soils, binding onto the organics that are down there, having reactions with the geochemistry of the groundwater, was causing uranium to precipitate out, is one of the major reasons that the uranium has not migrated south of the slough. And then also you have the large dilutional effect of the wellfield itself of any others that would possibly go through.

But it's not migrating through the bedrock under the slough. It's entering the alluvium, and it's going through many reactions in that area. And it's one of reasons that we haven't seen it south of the slough.

So I don't know about the, you talk about the

remediation, remediation of the slough itself. Our characterization has shown that the uranium levels in the sediments of the slough are within background ranges. So the slough sediments aren't contaminated, and the surface water is -- I can't give you the number -- is low. It shows some impact, but mainly the area next to where the groundwater impact has occurred there's some seepage of groundwater into the slough. But Mary can discuss the risk assessments that were associated with those results. Does that answer your question?

MR. GARVEY: What is the concentration of uranium in the slough water?

MS. CATO: Presently fifty picocuries has been about the maximum picocuries.

MR. GARVEY: That's the lower or the upper? Lower slough?

MS. CATO: The upper slough. The lower slough is significantly less.

MS. SAVAGE: Does that answer your question, sir?

MR. GARVEY: Clear as mud.

MR. McCRACKEN: I want to go back to Don McQueen's question on affecting the schedule.

The slough, this action will not affect the restoration if we get it done within the time frame that

we have the cell open. And if we generate contaminated material prior to, subsequent to closing the cell, then obviously that contaminated material is going to have to go somewhere else.

All that hinges on getting a decision made for those things that would generate contaminated materials down. And it's not just the water treatment itself, it would also be any cleanup along the rim and things like that, which can only be done after we restore the quarry. So all those things have got to get done in order to get access to that material and remediate it while the cell is open. Or else it will either impact the schedule for the workup here, or else we'll have to find another place to take this stuff.

So it is not nontime critical. It is time critical.

MS. DREY: Kay Drey.

Is somebody going to explain why you're not, you're not cleaning up the slough? Because you say the levels are not significant enough; is that what you're saying?

MS. PICEL: Yeah. The levels that we have found in the surface water and the sediment and the fish, there were some levels of uranium but they're low. They're just, I think Becky mentioned for the sediment, just almost background, close to background. Surface

water, we found as high as fifty picocuries per liter in the upper part of the slough and that's because it's nearer the groundwater discharge area. And then the fish, we also had samples where we got some concentrations and plugged it into a calculation, that's per EPA procedures, and found that those risk levels are within, below actually, below the acceptable levels that EPA has given us as guideline.

MS. DREY: Permissible levels. I don't think they're acceptable.

MS. PICEL: Yes. Acceptable levels, right.

MS. DREY: Do you know what the highest level was in the fish per gram?

MS. PICEL: Do you have --

MS. CATO: I do. It's point two one picocuries per gram.

MS. PICEL: Of uranium.

MS. CATO: Of uranium.

MS. DREY: Was that in the edible part of the fish or the whole fish?

MS. CATO: No, it was a whole fish sample.

MS. DREY: So you put everything in together? And you said fifty picocuries per liter was the upper slough?

MS. CATO: That was the upper.

MS. DREY: Was that average or the highest?

MS. CATO: That was the max.

MS. DREY: That was the maximum? It's very, it's really very perplexing because, that you don't find higher levels in the sediment and in the fish and in the water. Because all these years they've said the reason the highly contaminated groundwater in the quarry didn't get to the wellfield is because it all got stopped by the slough. Somehow miraculously it never went beyond the slough. And yet the slough you're saying -- I mean, fifty picocuries per liter is a lot, a lot higher than natural background.

MR. McCRACKEN: I would like to comment. My name's Steve McCracken.

Actually fifty picocuries per liter is not a lot.

MS. DREY: What is it in nature, Steve?

MR. McCRACKEN: The drinking water standard being proposed by EPA is twenty. So it's about two times drinking water standard. It may be perplexing that there isn't contaminants in the sediments of the slough, but there isn't because we've characterized the slough and they're not there.

And so my question to you would be, are you suggesting that perhaps we just haven't looked and haven't found it, or are we just -- or, I mean, are you

questioning our studies would be what I'm asking you. You're suggesting that it ought to be there but we're not finding it. But we have not found it.

MS. DREY: I think it's in the wellfield.

MR. McCRACKEN: I see. And what --

MS. DREY: And the reason I say that is because it had -- Mike was trying to ask you, where is it? Where is the groundwater that's the highly contaminated groundwater that has been leaving the quarry all these years that you all have said, the Department of Energy has said it's all in the slough, that's why it's not in the wellfield. I'm asking just as Mike did, where is it?

MR. McCRACKEN: And my question again would be, on what basis do you make that statement? There's no data that would indicate it.

MS. DREY: Where did the groundwater go?

MR. McCRACKEN: The groundwater is in, the groundwater is the groundwater. What we're saying is the contaminants are in the groundwater north of the slough. That's where we find them. And our data is very capable of detecting them there. But the same, the same methods that we use to find the contaminants north of the slough, we applied to groundwater south of the slough, and it's not there. Therefore, if the science is correct that it shows that it's north of the slough, then the science

must be correct that it shows it's not south of the slough.

MS. DREY: Maybe you read the article in the New York Times on March 23rd. It starts out, well, the headline is: Admitting Error at a Weapons Plant. "For almost fifty years, managers at the nuclear weapons plant with the nation's largest concentration of radioactive waste in Hanford, Washington, steadfastly maintain that leaks from underground tanks were insignificant because the radioactive material would be trapped by the surrounding soil. But they now admit that were wrong. And" --

MR. McCRACKEN: What's your point, Kay? What's your point?

MS. DREY: I want to know, where did the contaminated groundwater go? We have been told all these years --

MR. McCRACKEN: -- It hasn't gone anywhere. It's still there. The contaminated groundwater is right where it's always been.

MS. DREY: Oh, it just doesn't move? Then how do you keep -- you thought there would be three million gallons of water in the quarry and you've dumped what, fifty million?

MR. McCRACKEN: Let me comment on that. You've

tried very many times to twist our words.

The sump in the quarry, that when we started the work, was about a three-million-gallon sump. We also knew that the interstitial pores of the quarry waste material would probably add up to another eleven million gallons. We also knew that during the course of the cleanup of the quarry, it would probably rain, which it did, because it took about two years to do the work. So that would generate more water. So, ultimately, I think we've treated around thirty million gallons of water down there. Frankly, I don't see --

MS. DREY: -- I think it's more than thirty. Isn't it fifty --

MR. McCRACKEN: Pardon me. When I get done, you can have a turn.

Frankly, I don't see the issue. The reason I don't see any issue is because every bit of water we have ever treated down there, we have treated it far better than the criteria necessary to release it. So what difference does it make how many gallons that we have treated? Whether it's three million or thirty million gallons, what is the difference; what difference does it make?

MS. DREY: I am curious -- okay. So fifty million gallons have accumulated --

MR. McCRACKEN: -- No, no.

MS. DREY: As I understand it, they have just dumped batch number fifty something from the quarry.

MR. McCRACKEN: I'm not sure.

MS. DREY: And I don't know whether it's one million per batch or two million. Somebody here should know.

MR. McCRACKEN: Before we're done it will be that many.

MS. DREY: I think it's already that. But the point is, there is groundwater that leaves the quarry.

MR. McCRACKEN: True.

MS. DREY: And it's contaminated. I don't mean right now because you -- I mean, it's still contaminated but it's less contaminated because you've taken most of the solids away. But I'm asking about what's happened over the years to the slough, and I have a report that shows contaminated fish in the slough. But if you all have been saying all these years that contaminated water from the quarry has gone to the slough and stopped there, how come the slough isn't more contaminated?

MR. WALL: I'll just take a shot at it. It's a function of the geochemical reactions that she is trying to explain. Where you have an environment with low flow, tight soils, lots of clays, heavy organics, you have a situation that's conducive to absorption of the uranium

as it moves through the contaminants --

MS. DREY: -- stone, which is what they had trouble with out in Hanford?

MR. WALL: As you move beyond that -- I don't think anyone's saying that no uranium has migrated into the wellfield. But as you move into the, farther out into the wellfield, or out into the alluvial regime, the flow becomes greater and has a diluting effect. The concentration of uranium in the ground, in the groundwater becomes less due to the absorptive effects, and you just don't see a measurable significant, if you will, impact in the alluvial aquifer. No one's, I mean, it's not -- there is no magical boundary that prevents uranium from going past the slough. It's just a function of those natural processes that are occurring that make it hard to detect.

MS. SAVAGE: With that, I think we've reached our time limit, and we will come back, Kay, if we have time.

Are there any other questions or comments? Then we can continue with this discussion, if not.

MR. McCRACKEN: So you can get another two minutes, Kay.

MS. SAVAGE: I have one from Mary Halliday.

MS. HALLIDAY: What will happen if the

untreated water is still showing high levels of uranium in May of 2002?

MR. McCRACKEN: Let me try that one, Kay -- Mary. What we would plan to do, what we would do during the course of the work that we're proposing to do is evaluate how good we're doing. And if we find that there is a substantial benefit to continuing the work, then that's what we would do.

But what we're looking to do -- but during the course of trying to put this trench into the most contaminated area and try to make, and try to achieve a remedial action that achieves some benefit, we would also be collecting data to determine whether or not proceeding would have a substantial benefit.

And that would mean that if we find, for instance, that our extraction works better than we think that it would right now, then we've agreed in our discussions with the state and the EPA that we would be compelled to reconsider based on these, the fact that we're finding that it's achieving much more than we would anticipate.

Having said that, though, we feel as though we would be looking to be able to determine that it would achieve something substantially beneficial in order to continue, but we're certainly not ruling it out.

MS. HALLIDAY: So at this time it's really

unknown as to --

MR. McCRACKEN: Well, it depends on who you talk to. There's a lot of people that think this trench, we know exactly what's going to happen. But it will be an unknown by the time we get to the year -- it will not be an -- for those people that are optimistic perhaps that it will do better than the studies that we have done so far would indicate that it would do, we will certainly know that by the year 2002. Yeah, if we start in 2000, then in 2002.

MS. SAVAGE: Mr. Garvey, do you have a question?

MR. GARVEY: When you look at the characterization of what we've got in the last ten years, it seems as if RMW 2 is picking up something slightly higher than any of the other monitoring wells and it's screened all the way down. Granted it's not picking up, you know, contaminants where it's a health risk at this point in time, but it indicates a plume of some form.

And I guess my question is, what's going to happen with DOE's monitoring of that wellfield after DOE is gone? At what point, I don't know that you can ever say it's a closed deal, because you've got contamination in the wellfield. So what's the long-term monitoring, I guess, of the situation?

And is there any consideration to, I know we've talked about, you know, whether there is more contaminants at a lower level where there is a more transport potential because of the size of the granules, etc. Is there any consideration of trying to do a staged well before the whole thing is said and done in addition to the wells that are already out there?

MR. McCRACKEN: I'll start and somebody else will have to finish when it gets to the more technical part.

But clearly long-term monitoring is a given. I mean, that -- let's assume that our models are correct and it would take a hundred -- regardless of how long you're having to pump and treat, as long as there is substantial contamination down there that we're not confident wouldn't migrate into the wellfield, we're going to have to monitor. And that's going to require long-term monitoring. That's a given.

What's not a given is whether we -- how long it's beneficial to really try and pump and treat down there if you're really not getting anywhere. That's what's not a given. The other part is. There is just no question about it.

MR. MCQUEEN: Yeah, Don McQueen again.

I notice you've got eight months there for

engineering. Are you doing additional investigation for that engineering during that time?

MR. McCRACKEN: Yeah. Certainly we plan on doing some geotechnical tests along the access of the proposed trench area. And Becky I think is planning on doing some characterization on that also.

MR. MCQUEEN: Will there be another public hearing prior to implementation of this remediation?

MR. VALETT: Not that I know.

MR. McCRACKEN: There is not one planned.

That brings up an interesting point though. One of the things we have discussed is what happens in the year 2002 when you have carried out this proposed plan, assuming that this is the decision we've made.

And, frankly, there was a question raised by the state. Their interest is what public involvement there would be. And we have discussed that. We would certainly expect there to be public involved at that time, irrespective of what you would do at that time. So that we would commit to, plan to commit to so that we don't let that fall in a crack anywhere.

But no, Don, to your point, there are no plans to have additional public meetings. Certainly, we're willing to meet with anybody at any time to talk about where we are and what we're doing. You know that.

MS. DREY: I'm surprised at the finding that the water in the quarry accumulated from rain. So that means that, you know, why didn't the three million gallons in the sump keep getting more and more if there was no way for it to get out because it was so tight as you've describe it?

MR. McCRACKEN: Well, again, I'm not -- I'll defer to someone else. But one, you get up to a certain level in a quarry, clearly there are cracks and fissures that are connected to the groundwater. I mean, we know that. And I think that what Gene was getting at is that that very bottom portion of the quarry is a very tight formation, but once you get up a little bit higher, we know that there are many cracks from the quarry. At least in my opinion, that's what explains the significant reduction in nitroaromatics perhaps, because we were getting those right there in the rim wells. And as soon as we removed the waste, the levels in the rim wells in the nitroaromatics went down dramatically. So we know there is a connection once you get up high enough in the quarry.

Now, do you want to add to that?

MS. CATO: I think you answered it.

MS. DREY: I mean, in a limestone quarry you'd think there'd be -- limestone is porous.

MS. CATO: What there is, we've done characterization. There's three bedrock units. There's the Kimmswick, which is the upper one; the Decorah, which is what the base the quarry is located in; and then the Plattin, which wasn't encountered during quarrying activities.

And the Kimmswick is highly fractured and weathered. And as you look in the photos of the quarry, you can see one of the side shot, and you'll see that the fractures pinch out into the Decorah. And part of that is because it's a less fractured formation and the higher shale content of it, which the majority of the water in the quarry right now has gone up to that level more or less of what we're calling the Kimmswick-Decorah contact. Below that it doesn't leave from the quarry. Above that it will go through some of the fractures that are in the quarry wall.

MS. DREY: Can you remember what the levels of uranium were before the exhumation began? What were they?

MR. McCRACKEN: In the water?

MS. DREY: In the water.

MR. McCRACKEN: It ranged up to 2000. Not that high?

MS. CATO: Nine hundred.

MR. McCRACKEN: It was up to 2000 at times in the sump. 2000 picocuries per liter.

MS. DREY: Do you remember what the gross alpha was?

MR. McCRACKEN: No.

MS. DREY: Do you know what it is now, the gross alpha? In the slough, I should say, forgetting the quarry question. In the slough?

MR. McCRACKEN: (Shakes head.)

MS. CATO: I have an upper concentration, upper concentration of about thirty-seven.

MS. DREY: Less than uranium is what you're saying?

MS. CATO: Correct.

MS. DREY: Can you explain that?

MS. CATO: It's not present.

MS. DREY: Why would it be less than the uranium which gives off alpha particles?

MS. BLUNT: Well, the uranium was the maximum number.

MS. DREY: Which was fifty?

MS. BLUNT: But she's saying the maximum --

MS. SAVAGE: What's your name?

MS. BLUNT: Deb Blunt.

MS. SAVAGE: Deb Blunt.

MR. McCRACKEN: Kay, we'll get you an answer to that. I don't know what the answer is. We know that the uranium that we're seeing in the water now is running around fifty picocuries per liter. We also know that in the past it's been higher than that. That's my recollection.

MS. SAVAGE: Another two-minute warning here, Kay.

MS. DREY: What is the schedule for tonight? Can you explain it?

MR. McCRACKEN: We've got till nine o'clock.

MS. DREY: Okay. But what happens? I mean, I don't know when all of a sudden we're going to be told we can't talk anymore. I mean, I'm trying not to interrupt anyone else.

MS. SAVAGE: Right, right. Well, probably about ten till nine or five till we'll start trying to wrap up it up. Right now we're just trying to make sure everyone has an opportunity to ask questions and to give comments.

Steve, did you want to say something?

MR. McCRACKEN: The only thing, normally we just have a dialogue in these things as small as they've become.

I'm amazed at how you're keeping up with us. But

trying to keep her, I mean, we just keep talking and you just go like this again as soon as a new person pitches in that you don't know their name. And we can go from there.

Other than that, Kay, we're here until nine o'clock, and I would suggest that we just keep panning the crowd. And if there is someone else that wants to talk, fine. But we're here that long.

MS. SAVAGE: Anyone? Dr. Hachey?

DR. HACHEY: Glenn Hachey.

I've heard terms in commentary on trying to assess how beneficial your preferred alternative is. And I guess one of the questions I have is, trying to get back to some standard of benefit to whoever says in the public, has any risk assessment translation been done since the initial baseline risk assessment to try and put some sort of quantification on what the preferred alternative, the interceptor trench, might do eventually to either reduce risk or maintain it or what have you? Or has that been done or is it even contemplated so that we have some benchmark of which to measure this. Because it sounds as though, you know, the best expectation is we're going to get some remedial, you know, contamination collected.

But what I'm trying to do is assess, what, how does

that affect the ultimate risk? The risks are already low. How much more risk or reduction are we likely to see, or is that possible even to come up with?

MS. PICEL: Mary Picel.

Your question has to do with can we estimate the risk that we would reduce if we removed some of the uranium. And the way I would answer that is that right now from our evaluations that we have already documented in the BRA, the RI/BRA, and also the FS, to determine that the quarry area groundwater we're talking about tonight is contaminated with uranium and because under the recreational scenario, right now there is no access to that water.

So when you don't have access, you don't really have risk, you can't get exposed to. We recognize that the water in the wellfield is being used by residents of St. Charles County. The data that we collect there basically say it's similar to background. So if you plug those numbers you collect from the wellfields into the risk calculation, you would not get a risk. You would fall within an acceptable risk range.

So in answer, a long answer to your question, we tried to remove some uranium where we are now at the quarry, if we could get a concentration. And the final concentration that we'd end up with in an area after we

remove some water, we could plug that concentration in the calculation. We could find that out. But we have to postulate some sort of use of that water at that time, okay?

But in our evaluations we also determined that, because we're talking about volumes of water, we're not sure that when we finally get in the trench that we could really equate that volume or mass to concentration. So that remains to be seen to us. We talked about some of our uncertainties that we want to verify out there.

Did that answer your question?

DR. HACHEY: I think there was an answer there. I think you answered my question. I didn't use up my whole two minutes. Can I ask a follow-up question?

MS. SAVAGE: Sure.

DR. HACHEY: One of the other speakers, I believe it was Mr. Geller, commented that the current preferred option still does not meet or will not meet cleanup standards. I believe that was his comment; is that correct?

MR. GELLER: That's correct.

DR. HACHEY: I don't want to misquote you.

MR. GELLER: Okay.

DR. HACHEY: What are those standards?

MR. McCRACKEN: I don't know.

DR. HACHEY: That's not good.

MR. McCRACKEN: Oh, I know what he --

MR. GELLER: -- There are several standards that we're referring to. I referenced standards related to soils and sediment in the cracks and fissures. There is no proposal to address any of that contamination in their proposed plan. There is currently contamination that exists along the high wall, as we understand it, in some of the cracks and fissures.

DR. HACHEY: Okay. So your comments were directed towards the quarry proper?

MR. GELLER: There are also standards that we consider as far as the groundwater.

DR. HACHEY: Which are?

MR. CARLSON: Glenn Carlson. The UMTRA groundwater standards, thirty picocuries per liter.

MR. McCRACKEN: What law is that? Can you help us out?

MR. CARLSON: That's the Uranium Mine Tailing.

MS. PICEL: Mill Tailing. Remedial action.

MR. GELLER: I think we answered the question. It was the Uranium Act is what we were referencing instead of groundwater standards that were references under the UMTRA regulations.

DR. HACHEY: Those are standards the state

recognizes.

MR. GELLER: At this point those are the ones we are referring to as far as the uranium.

MS. DREY: And that was the thirty picocuries per liter; is that right?

MR. GELLER: That's right.

DR. HACHEY: Is that a state law or --

MR. GELLER: Federal.

DR. HACHEY: That's a federal law.

MS. DREY: And you all are aiming for what?

MR. WALL: Dan Wall.

We recognize, or I do and we do, that those standards are out there. They're -- specifically the one he mentioned. They're applicable to situations other than what we have. But they are appropriate to consider as relevant health based standards in this case perhaps. But what we're saying here is not that we don't have significant levels of uranium in the effected area. We do. What we're saying is that we're perhaps limited, technologically limited in our ability to get all of that out, get all of that uranium out. And the evidence is that we won't be able to achieve such health based standards through any, through application of any available technology.

This proposal, the purpose of this proposal is to do

the best we can do. It's to apply what we think will work best and see how well it works. We can't predict at this point that we're going to be able to achieve a drinking-water-like health based standard. We just don't think that's achievable down there, which you know. So, I mean, that's understood going in.

So what he said is correct. Based on the information we have we probably won't be able to achieve that standard.

MS. PICEL: To add something to that feasibility study report, when we did our evaluations for the alternative to find out if there is something that we could do to reduce, to remove some of that uranium, we did use thirty as our end point. Because you have to have an end point to do your calculations. Like how many years would it take for this water to go through the cycle and all that stuff. So we did use thirty as the number to attain.

And our conclusions are that it takes a long time to get to that point. Because of the conditions that you have at the site, you have -- I think Becky talked about, or Gene did, about the soils in the area, it absorbs the uranium. And there is also some other geochemistry in the area that tends to bind these uranium, grabs it from the groundwater and keeps it.

So, Kay, you were talking about flow to the wellfield. I think Dan said there is some flow to the wellfield but that flow is very slow, and the uranium that goes with that flow is very small because of this binding effect. That seemed to be north of the slough. That's based on our RI investigations, the soil in the area, the geochemical data that we collected, including Kd values, if you're familiar with those. We got some of those too. Found out that there is this binding effect in that area for uranium.

MS. SAVAGE: Do you have a question?

MR. SHARP: Larry Sharp.

Do you have the total dimensions on this interceptor trench right now?

MR. VALETT: It's obvious that this trench hasn't been designed yet. What we're looking at is something in the realm of one thousand to fifteen hundred feet long, perhaps sixteen feet deep, and about three foot wide.

MR. SHARP: What, if any, impact would it have on that if we had some flooding in that area?

MR. VALETT: In our design basis for that facility, we intend to put a requirement for like a clay cap over that, so that if it were to flood we could continue operations.

MS. SAVAGE: Any other questions?

MR. GARVEY: Mike Garvey.

Let's talk a little bit about flooding. We're in a flood plain. And we've had some floods and you've got, you know, this water that's bound in this slough. It's like local water that has between fifty to maybe as high as ninety picocuries per liter of uranium.

Now, if it's adhering to soil, clay, it certainly has the clay there in the slough. So what is the end effect of flooding in this whole scenario? Because nobody talks about that a lot and I think it's a real advantage to remove this at this, you know, and how is it that this water, if it is, if it adheres to clay and it's in a slough, it's not adhering to the clay? It just doesn't make sense.

MS. CATO: I want to make a clarification on the binding on the slough. What it is is it's the soils between the bluff and the slough have these characteristics. It's almost acting as like the reactive wall alternative that we discussed as a remedial alternative. It's the materials themselves, and then some of the geochemistry in the area that's having the uranium contaminated water, it flows through and the uranium is pulled out of the groundwater and then the groundwater moves on into the wellfield area. But what

it is is the uranium is pulled off and held onto the soils. The organics are precipitated out into the soils.

So it's not in the slough. It's in the soils between the bluff and the slough.

MR. GARVEY: I'm talking about specifically the slough.

MS. CATO: The slough sediments themselves are at background levels. So any sediments that were to be caught up in the flood aren't contaminated and wouldn't be disbursed. And then any surface soils that were there were remediated during the VP-9, during the -- under the Chem Plant ROD. And so there's no surface contamination available to be picked up anymore.

MR. WALL: The water in the slough itself would be flushed out.

MS. CATO: Yeah. The water in the slough itself is flushed out.

MR. MCCRACKEN: Yeah. That's happened several times over the last several years.

MS. CATO: But also it's, it's cycled in and out due to Conservation usage of the area anyway. So it's not a stagnant body of water.

MR. GARVEY: Right.

MS. CATO: Did that clarify?

MR. GARVEY: How did flooding help the whole

picture?

MS. CATO: Flooding?

MR. GARVEY: Yes.

MS. CATO: Based on our groundwater data, flooding really had no impact, positive or negative, on the uranium levels in the groundwater.

MR. GARVEY: What was the consideration or the opinion of the Department of Energy and others about the possibility for Department of Conservation using it as a controlled wetland area, and whether that would hurt or possibly help in the contaminate slough?

MR. MCCRACKEN: Let me try that one. We tried to be, I'm not sure what we -- you know, the idea of turning the wellfield area into a wetland came up, and there was a lot of concern raised by several groups of people. And those concerns centered on, as it related to us, what would it mean to our cleanup activity. As it related to the wellfield, there was questions how would it impact the drinking water quality down there.

And about all I can really recall is that those concerns together, I think, discouraged the Corps from going on with that, proceeding with that idea. I don't even remember what the position of the state was. I think that we were -- I don't -- we tried to remain mostly neutral. But I think there was enough concerns

out there that the Corps decided to back off, and it wasn't just because of the impact to what we would be doing.

As far as the impact to us, the things that were on our mind at the time where we had that VP-9 that we had to get cleaned up. It's done now. I don't know how we would design around -- I'm not even -- were they even going to flood the north side of the slough with that wetland? So it wouldn't even affect what we're proposing to do right now.

I think all the area they were going to flood was south of the slough, I think. So I don't know that we really thought that it would impact us all that much, Mike. Except, well, I don't think we thought it would affect us all that much.

I think the Corps, after seeing what the concerns were, decided that it would be less hassle to do it in other places. And for the duck hunters around here, they were pretty discouraged by that.

MS. DREY: I'll let him talk.

MR. SHARP: How difficult would it be to move the three wells that are closest to the contamination?

MS. PICEL: Production wells?

MR. SHARP: Uh-huh.

MR. MCCRACKEN: Actually the contingency plan

that we developed, that's exactly what it would do. I don't know if it's the three, but what we looked at doing was acquiring land upstream, just across the Femme Osage Creek. There's a farm there, and we looked at acquiring land there to buy those wells, to install those wells.

And I don't remember what the cost was right offhand, but it seems to me that it was in the low millions. I can get that number for you.

But that's exactly what we -- back in '92 when there was a lot of concern about the wellfield and we developed that contingency plan, that's exactly what we would have done if we had started to see any indication that it was going to impact the water quality down there. We were going to move upstream with some wells and take some of those off line that were nearest the slough.

So I can get that cost if you'd like. I don't know where it is offhand. Unless somebody else here does, I'll get it for you Larry.

MS. SAVAGE: Kay Drey?

MS. DREY: Can you please describe the interceptor trench again, please? You would do pump and treat; is that right? You'd pump and treat the groundwater? Or would this just be for water that might happen to end up in the trench or is it treated?

MR. VALETT: Well, again, we anticipate the

design would be such that there would be a piping system and a series of collector wells within the trench. That we would capture water that would enter the trench and that water would be pumped to perhaps a holding tank or a pond. And then we would have to see if it required treatment or not.

And if so, we're looking into a couple of options, of the existing water treatment plant or a package plant, and then it would be discharged according to the permits that we would have.

MR. MCCRACKEN: What we're doing is studying now what's the best approach. Is it to use the existing water treatment plant or to drag a little one in there? Because they only anticipate generating about twenty gallons per minute out of this trench, which is four times less than the capacity of the plant. We have five times less than the maximum capacity of the plant we have right now. So we have to look at it to see what would be the best approach.

MS. DREY: Are you thinking of just dismantling the existing plant?

MR. MCCRACKEN: We are definitely going to dismantle the existing plant. I just don't know when.

MS. DREY: The question is before or after the trench?

MR. MCCRACKEN: Right.

MR. VALETT: Actually there's an option where we would hybrid the plant also, where we would keep parts of that plant and dismantle part and keep part. So that option is also being looked at.

MS. DREY: Okay. So for the water after it goes either into this holding pond or tank and then after treatment, if you treat it, and then does it, is it piped, would it be piped to the Missouri River?

MR. VALETT: We would certainly take advantage of the existing pipeline that's part of the current system. But we'd also take a look at other discharge points if it made sense.

MS. DREY: I guess I would like to ask that the state consider, not just the people who drink water from the wellfield, but those of us who are nine miles downstream from a discharge pipe.

MR. McCRACKEN: Well, I feel like, Kay, we always have considered people downstream. That's the reason we have done such a good job of treating that water. In fact, the amount of uranium that's in it when we put it in the river is less than what's in the river naturally.

MS. DREY: I have to say, because I say it all the time and I haven't changed, I'm still not comfortable

with the amount of thorium that's in the water. And I'm not, also I'm sorry that I'm not hearing more about the levels of thorium in the sediment and so forth.

I'm still very confused about this zone between the quarry and the slough. Apparently that soil must then be very hot because it has absorbed all the contaminants that have come out of the quarry water, is that right, because it never has gotten to the slough?

MR. McCRACKEN: That's true. There is a --

MS. DREY: -- It must be really hot stuff where the Katy Trail is.

MR. McCRACKEN: No. The conversion of taking picocuries per liter out of water to picocuries per gram in soil, it takes a lot of picocuries.

MS. CATO: About a thousand to one.

MR. McCRACKEN: About a thousand to one. Take about a thousand picocuries per liter in water to equal picocuries per gram. So it's a significant, significantly less is what you would see as far as contamination absorbed in the soil.

In other words, it's a very small number.

MR. WALL: And the reason you see uranium out there and not thorium is the relatively higher solubility that uranium has.

MS. DREY: That's where we have some

differences of opinion, okay. I realize uranium is more soluble, but I also think that thorium is also soluble in certain conditions.

DR. HACHEY: Glenn Hachey.

What is the perceived impact of the reclamation of the alternative being considered for the quarry and how that will affect any potential migration of the plume as it stands now or even the effectiveness of the proposed alternative, the trench? Does that have any impact at all with regard to filling up the quarry with any number of different materials that are being considered right now? What was the likely impact of that? Is there a timing aspect that is important as far as getting that in place first ahead of this other project with regard to the trench? Or how are those two connected?

MS. CATO: Rebecca Cato.

I can answer the question on the materials. We're doing some evaluations right now. In some of the predesign phase on different backfill scenarios, material types, and the impacts they will have on groundwater flow into the area south of the quarry or in the north of slough area, that is being evaluated. So schedules, I guess I would pass on.

MR. McCRACKEN: To me?

MS. CATO: Yeah, you get the schedule.

MR. McCRACKEN: We talked about this about a week ago, Glenn. And the reason we talked about it, we were trying to decide, does there need to be a sequencing of restoration in the quarry and this trench in order to really understand what the trench can achieve. And the choices being, do we do the restoration first and then do the trench? Do we do the trench first and then do we do the restoration? Or do we just disconnect them and do them independently?

And the discussion we had led us to the conclusion for a number of reasons to just go at your own pace with both of them. Because we didn't feel as though it was going to be, it was going to be -- first of all, the feeling of most people was that backfilling the quarry would probably benefit from the standpoint of what it would do to groundwater migration. But irrespective of that, we felt as though disconnecting them and letting them both go at their own pace was the right thing to do. And that's kind of where we landed the other day.

And there's a lot of reasons for that, not just -- well, there's a lot of reasons for it. It gets to Don's point over there. We're working to try to close out up here. We're trying to make sure we get everything in this cell up here as soon as we can.

DR. HACHEY: Follow-up question, very quickly.

The baseline risk assessment that was done, did it assume a scenario where the quarry was restored or did it assume an open quarry?

MS. PICEL: An open quarry. The way it is now.

DR. HACHEY: What would you predict the -- that may be unfair. You don't have --

MS. PICEL: I can predict anything.

DR. HACHEY: Would your best guess be that it would probably, those risk scenarios would at least stay the same or would that be the same, or go lower possibly with a restoration with your understanding right now?

MS. PICEL: I think baseline calculation said it would be a benefit. Because based on the pathways we've looked at, the most -- the pathway that gives you the most risk is the gamma. So if you covered some of those areas, the gamma -- and the gamma is low. It's within acceptable limits right now. But I think with that cover, it would make it even lower.

MR. MCCRACKEN: The other thing is that I promised Mary Halliday back in 1993 I would fill that quarry up. Because she asked me if I was going to do it, and I said I would and I'm going to, I hope.

MS. DREY: Are you all still doing radon monitoring at the quarry?

MR. MCCRACKEN: I don't know, Kay.

MS. CATO: Yes.

MS. DREY: And what are the levels compared to what they were?

MS. CATO: Bulk waste levels have gone to background, except in an area upon the -- on the northeast corner that we know where we have some residual contamination, and they're slightly above background.

MS. DREY: What?

MS. CATO: I couldn't tell at this moment. They're just reported to be slightly above background.

MS. PICEL: Those numbers are in the RI, in the documents.

MS. CATO: They're summarized in the remedial investigation report.

MR. McCRACKEN: And we're going to get you a copy of that.

MS. PICEL: I could also help you find it if you want us to.

MR. GARVEY: Where are you going to get the soil to fill in the quarry?

MR. McCRACKEN: As it looks --

MS. DREY: From a temporary storage area?

MR. VALETT: We've done, we've done some preliminary looks at where our borrow sources might be.

And we have a couple of hillsides adjacent to the inner quarry that provides us some volume of soil. And interestingly enough, we also have some soils that are underneath the existing water treatment plant, between inner quarry and the water treatment plant, that gives us a significant volume. Which is another reason why I'm interested in getting the water treatment plant out of there as soon as possible, to get to that soil.

But we also know that even with all of this volume available to us, we'll have to import a certain amount of soil. And we've been successful working with the Department of Conservation in the past with some borrow areas. And we have a borrow area of our own that you passed coming down to the site tonight. We also know that there's a surplus of material here on the site in some of the clean areas that we have. So finding the volume shouldn't be a problem.

As a matter of fact, we've even been approached by the Corps to see if we're interested in the old water treatment plant as some backfilled volumes. We're not interested in that. I'm not.

MR. VALETT: My personal opinion is that, like to backfill that quarry with clean natural material so we don't have to dig it back up again.

MR. MCCRACKEN: Kay, we've got a good water

treatment plant we'll give you guys to use down at the FUSRAP site if you want it.

MS. DREY: Thanks.

MR. MCCRACKEN: Send the Corps on over and we'll give it to them.

MS. DREY: We can give you some fill material from the airport site.

MR. MCCRACKEN: Let's agree not to have any exchanges, what do you think?

MS. SAVAGE: Additional questions, comments?

MR. GARVEY: Is there any consideration for any of the St. Louis waste to come into the disposal cell here?

MR. MCCRACKEN: No.

MR. GARVEY: At this time or just no?

MR. MCCRACKEN: Mike, that question has been asked many, many times. And it was asked before we ever agreed to on-site disposal. And the request of the St. Charles countians was that, in general it was they agreed to go along with on-site disposal with the condition they didn't want to accept off-site waste. And we said okay. And we memorialized that in the Record of Decision, which is, I mean, a legal document.

So even if it were technically feasible, which I'm not sure it is, there are those things that would have to

occur just to reopen the Record of Decision to decide that you could do it. And my opinion is and my attitude is that we're not, we are not going to propose to do that. Nor have I, do I know of anybody in the DOE that's suggesting that. And --

MR. WALL: Plus, it's someone else's problem now from the DOE's standpoint. The Corps of Engineers has been given the responsibility for the St. Louis FUSRAP.

MR. MCCRACKEN: There are a lot of people that think it's a good idea, including some people that work here. My feeling is we made a commitment not to do it. And we'll -- and we formalized it by putting it in the Record of Decision. We did it so it wouldn't be easy to change that commitment and that's where we're at.

MS. DREY: I realize you have to make decisions, but I do want to recommend one publication to people here tonight, which is a General Accounting Office publication called Nuclear Waste, Understanding of Waste Migration at Hanford is Inadequate for Key Decisions. And it talks about some of the mistakes that were made by the Department of Energy out at Hanford, Washington.

And some of it is very relevant, like about whether soils absorb radioactive materials or not. So if anyone wants to know how to get the report, and it's free, they

can ask me after the meeting.

MS. SAVAGE: Okay. Inside, I just want to remind you that inside your blue brochure is the address and Steve McCracken's name and address. However, you can also contact Community Relations if there are additional questions or comments you would like to forward to us, especially during this comment period, public comment period which will end May 21st.

Steve, I'll turn it over to you for closing remarks at this time.

MR. MCCRACKEN: One thing that I don't think that we have mentioned, or if we did I missed it, because I was thinking about Kay and trying to get her those documents so I may have missed it when it was said. And that is that we're extending the end date for the comment period. Did we say that?

MS. SAVAGE: Yes, it was.

MR. MCCRACKEN: Well, I was so worried about not having sent those documents to Kay, I just didn't think. I'll remind everybody again that the comment period is extended to May 21st. And so that will give Kay plenty of time to get these documents and read them.

MS. DREY: Do you want to admit publicly about the fact that you visited my basement with all its high radon?

MR. MCCRACKEN: I did and I had a headache. But fortunately, I don't have to go in Kay's basement anymore, because she has elevated Weldon Spring to the upstairs bedroom. So now I get to go upstairs to the, I get to go upstairs if I want to see the Weldon Spring files, which I can tell you are substantial. If there is any question on our part about what happened to something, we've just got to go see Kay because she's got it.

MS. SAVAGE: If that's the end of your closing remarks, that's the end of our public meeting this evening. We thank you very much for joining us, and if there are any questions, a few of us will hang around.

Thank you.

CERTIFICATE

I, Sandra McGraw, Certified Shorthand Reporter, do hereby certify that on the 16th day of April, 1998, I was present at the Public Meeting held at 7295 Highway 94 South, in the County of St. Charles, State of Missouri. I further certify that I reported all of the proceedings had and that the foregoing pages contain an accurate transcription of my shorthand notes of said proceedings.

Sandra McGraw, CSR