TRANSCRIPT OF PROCEEDINGS

JOINT PUBLIC MEETING

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ALBUQUERQUE, NEW MEXICO 87108

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A G E N D A

MS. VANOVER: Thank you. Good evening. Welcome to tonight's meeting. I will be the facilitator for this evening.

Each panel member will be given the opportunity to provide a two-minute opening statement. This will be followed by two presentations, one from the New Mexico Environment Department and one from Kirtland Air Force Base. After the presentations, we will open it up to questions. There is a microphone located there right in front of the panel members, and we ask that public

opinions step up to the microphone for any questions or comments.

To be fair to everyone here, there will be one question/comment per turn at the microphone. This will give everyone the opportunity to make a comment or ask a question that wants to do so.

Our panel members this evening include: Representing Kirtland Air Force Base, the Vice Commander, 377th Air Base Wing, Colonel David Hornyak; representing the New Mexico Environment Department, Dr. Jim Davis, the Director of Resource Protection Division; representing the Albuquerque/Bernalillo County Water Utility Authority, Mr. Rick Shean; representing the City of Albuquerque is Ms. Mary Lou Leonard, Director Environmental Health Department. The VA was unable to have a representative

here tonight.

And I'm sorry, sir, are you representing the State?

MR. WARD: Yes.

MS. VANOVER: And representing the Office of the State here is Mr. Jess Ward. Thank you.

Colonel Hornyak will now give a brief statement.

COLONEL HORNYAK: Thank you all for coming. I'm Colonel David Hornyak, Kirtland Air Force Base Vice Commander. I want to ensure we have plenty of time for the presentations and your questions, so I will keep my remarks brief.

Tonight we want to update you on the most recent information we have on the fuel plume to include our most recent efforts to expedite its remediation.

Our presentation this evening will explain what

we know, what we still need to determine, and what we are doing with the data we do have to implement more remediation of the contaminants present in the soil and ground waters.

I want to emphasize that testing of all wells, water utility authority wells, VA wells and Kirtland wells, continue to indicate that drinking water is safe, and our intent is to keep it that way.

As you may also be aware from our last public

meeting, Kirtland Air Force Base and the Air Force requested an independent health risk assessment of the fuel plume to be conducted by the agency for toxic presences in these registers. ADTSDR is what it is referred to as.

As for the Division of the Center for Disease Control, currently they are in the gathering phase of their assessment. And when they inform us they are prepared to make a presentation, we will ensure that there is a public meeting. We will arrange to do that.

I want to thank you, the agencies represented here tonight, for all they are doing to ensure we are able to move forward with our remediation efforts and our shared objective of remediating the contaminants as quickly, effectively, efficiently, and as safely as possible.

I also want to take a moment to thank the professor from the University of New Mexico's Water Resources and Pharmacy Departments for the very helpful public presentation made last week regarding various aspects of the local hydrology and geology, the plume

itself, the contaminants they constituted and to possibly remediate them. For those of you who had a chance to attend that session, I think found it very helpful in understanding what we intend to do, and why we have taken

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the action we have thus far.

We have posted the slides from that presentation on our website, www.kirtland.af.mil for your information.

I'll leave it at that now, so we get on with presentations and your questions. Thank you again for coming.

MS. VANOVER: Dr. Davis will now make a brief statement.

DR. DAVIS: Thank you. And it will be even briefer than the Colonel's. Again, in the interest of leaving as much time as we can for the presentations and the Q and A, I just want to say we're glad to be here tonight, and hopefully we can share some good and interesting information with all of you. So thank you.

UNIDENTIFIED FEMALE: Would you speak closer to the microphone or can you move it closer to you?

DR. DAVIS: I'm about as close to it as I can get. It may not be on.

UNIDENTIFIED FEMALE: Oh, okay.

MS. VANOVER: You can scoot it closer.

DR. DAVIS: It looks like it's on. I can talk really loud if you want me to.

MS. VANOVER: Mr. Rick Shean will now make a statement.

MR. SHEAN: Good evening. Thank you. And is

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this working?

UNIDENTIFIED FEMALE: Yes.

MR. SHEAN: I appreciate everyone showing up again for I don't know how many meetings it is now to hear about this site. It's a commitment by the community to see what's going on in their neighborhood and below the neighborhood very deep under ground.

The Water Authority is very encouraged by seeing the aggressive nature by which Kirtland is responding to the data that is coming from the ground and to put in remediation infrastructure to deal with the source of the plume. And we're encouraged to see what's going to be happening soon with this new pump test that's going to be happening with the extraction wells, and as well, the labor extraction wells, and encouraged to see what new information they have.

As far as the state of the ground water contamination, we still feel it's still been a safe distance from any of the water authority wells to be dealt with effectively before any threat to the city's drinking water supply can be had.

But I am open to any questions you ask, and certainly if you don't feel I don't answer your questions efficiently or effectively, I'd love to speak with you afterward. Thank you.

MS. VANOVER: Thank you, sir.

Ms. Leonard will now make a brief statement.

MS. LEONARD: Good evening. I'm going to keep it very short. I want to thank all of you for your participation. I want to recognize Councilor Gardino, who just stepped in the room.

Thank you for coming, sir.

And I want to let you know the Albuquerque Environmental Health Department has technical staff both ground water and air quality specialists, and we've been monitoring the plume very carefully, and we've been working very closely with Kirtland and its contractors on the air quality permitting issue. Thank you.

UNIDENTIFIED FEMALE: And Mr. Ward will now make a brief statement.

MR. WARD: I'm the District supervisor here in the Albuquerque area, and our involvement is the extraction of water. We issue permits for monitoring wells and the extraction wells. The Rio Grande is fully appropriated, so we're concerned with impairment, existing water applications that may be detrimental to the public welfare and monetary conservation water. And our process is that there is a public notice involved.

To this point, the monitoring wells that -- Kirtland and Shaw, have all filed the appropriate

applications. They're on record with the office at 5550 San Antonio, Northeast. They are available for public viewing.

It's kind of the end of the statement as far as our involvement.

MS. VANOVER: Thank you, sir.

And I believe Commissioner Hart-Stebbins just stepped into the room. Thank you for coming.

Would you like to join us up here? You're more than welcome to do so.

MS. VANOVER: Mr. Stephen Reuter, the geologist manager of the New Mexico Environment Department will now

give a presentation on behalf of NMED.

MR. REUTER: Good evening, ladies and gentlemen. I trust you can all hear me, I hope. And I've got a couple of business cards with me this evening, so I'm going to leave them up here at the table. Afterwards, if you'd like to come up and get my business cards, I entreat you all to contact me after hours or during workday hours. I'll be discussing this further if you have any other additional questions that we don't answer this evening. I will gladly discuss this at length with you at your leisure. So let me get my business cards.

My name is Steve Reuter. I'm the geologist manager with the Petroleum Storage Tank Bureau of the

New Mexico Environment Department. I'm a 35-year professional with 21 years of experience doing clean up of petroleum and petroleum hydrocarbons beneath the subsurface.

And I was asked to come tonight and talk to you all about the Kirtland Air Force Base bulk fuel facility, put it in the context of other sites in the state and other similar sites in the state that supplies with the consummate amount of work we're doing, and to introduce you to technology that is often used to address these contaminant plumes, and then to give you some sort of a sense of the time frame that is necessary that the corrective actions take as projects go along.

So that -- next slide -- real quickly, I'd like to just give you an overview of our program. Again, I'm with the Petroleum Storage Tank Bureau. Essentially, those are in two groups. The petroleum section group,

these are the fellows that go out and inspect every facility once every three years. They're funded by the feds, by our own tank fees, by corrective action funds. And there is the Remediation Action Technical Staff, which I'm a manager in. And again, we handle the corrective action and remediation once we release from a plume storage tank, and we are funded by the feds as well and as well with corrective action funds.

So the remediation universe, I wanted you to know that Kirtland Air Force Base is not a unique situation, sadly, in New Mexico. Currently, there 976 active LUST storage tank sites in the state.

On average we close about 45 sites a year. We get them to the point where we've investigated them and remediated them. We got them to the point where they are below standards and no longer pose a threat to the public health and the environment, and we give them a "No further action letter."

Unfortunately, at the same time, we're opening about 20 new sites ever year. New gas stations have been sold, the older gas stations are investigated and our petroleum inspectors go do their work. They find problems. They find releases, and so we're still opening about 20 sites a year.

Again, we're closing 45 sites and opening 20, getting ahead of the curve, we're slowly working our way out of business. The cost -- average cost to clean up a typical gasoline spill is $350,000. That's the average. The larger sites can cost five million plus. Unfortunately, the gasoline goes into the soil a lot easier than it comes up, so it's a very costly issue.

Next slide. I'll give you a couple of case histories of sites that are similar to the Kirtland Air

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Force base problem. The first one is the Hobbs city well. This is a site down in Hobbs, obviously, the southeast portion of the state. And here's a comparison between Kirtland Air Force Base Bulk Fuel Facility and the Hobbs city wells. The ground water plume at the Air Force Base is about 120 acres, and at the Hobbs city wells, it's 25 acres. The gasoline floating on top of the water table at the Air Force base is about 55 acres. Historically, at the Hobbs city wells, about five acres. The depth to ground water, 490 feet at the Air Force Base, with 120 feet at Hobbs. The contamination for AV gas and jet fuel, and then gasoline and diesel.

Next slide. The remediation system that we put in at the Hobbs city wells consisted of 25 dual-phase and ground water recovery wells. That means that the wells were capable of recovering both vapor, any gasoline, oil gasoline visible in the ground water.

There are two independent soil vapor extraction systems which are wells put into the ground to suck air through the system to evaporate the gasoline and contaminates. There are 63 individual vapor extraction wells and a large air stripper tower and two 1,300-cubic-feet blowers. We probably will be using something larger out here at the Air Force base.

This is a map of the ground water contours at the

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Hobbs city wells, and it's interesting. It looks a lot like the Air Force base, here is the ground water, use and

distribution and monitoring wells. The source of the contamination is down here. And what's interesting is we see these wells, CW 10, CW 12, and CW 11. All these are pumping city water wells, and there's only 1400 feet from the source of this most distant well. These are actively pumping wells near the contamination in this direction.

I'll show you here shortly it impacted the Hobbs city wells, and unfortunately it closed a city well. One of the differences between this, because we're so close to the pumping well field, the ground water draining in this site is seven times faster than what we see at the Air Force base.

Next slide. This is the extent of contamination. Initially, when we first defined the problem about 25 acres dissolved. Here is City Well 12, this dotted line represents the extent of the free gasoline floating in the water well.

Next slide, after six year pumping and treating and soil vapor extraction, again, this is the extent of contamination literally after six years, we've gotten it down to this, a much smaller area.

Next slide. Two years later, we've gone down to 25 acres of free product down to half an acre and no free

product. Two years later, we've gone to really closing the site. Ten years; five-and-a-half million dollars.

Next slide. Case history, this is the Burrows Site in Milan. It's a little more timely. It's actually ongoing today. And again, it's west of Grants. In comparison, 120 acres, 55 acres, free product, 490 feet to ground water. Fairly simple geology by comparison. The Burrows site is smaller. Only four acres ground water

plume and two acres of NAPL free product, depth to ground water is 150 feet, extremely complex geology.

Next slide. This is what the extent that it looked like originally about 700 feet across the plume that was all free product. We had as much as 65 feet of gasoline from the water table on this site. And again, this is what it looked like initially after we defined the problem.

Next slide. After four years we had reached the plume and it was in all phases, free product plumes substantially.

Next slide. This is what the plume looks like today. There's no free product with removal in 60 feet of product from the water table. We have some dissolve remaining. We're 11 years into it. We've got another three to five years to go. Again, this is a very complex geological site.

Now, if you have no idea what it entails to install an SVE, Soil Extraction System, this is what a piping run looks like. All these pipes run into wells and there's a conveyance by taking the vapors from the subsurface and bringing them up to a -- we put the compounds that's being manifolded up here.

Next slide. This is a furnace that we bring on -- a water treatment tool that we put on the site. All those wells are manifolded in and vapors will go into the furnace for treatment before we discharge it into the atmosphere.

Next slide. And this is a slide that shows an air stripper that -- probably like the size we use at the

Air Force base. This is an air stripper that can handle 600 gallons per minute of contaminated water and clean it with 99 percent efficiency. It's about 8 feet tall and 6 feet long, so it's a pretty massive piece of equipment.

So in summary, so we can get on Tom's meaty discussion of the actual maker of the problems. Unfortunately, this is not a new problem for the state. The technologies are well established. And their scales, if there is a larger problem, you up-size your equipment to address the situation.

The remediation technology has improved over the last 10 years. It's continuing to improve over the life

of this project, and we will build and use innovative solutions at this site that, hopefully, will shorten the time frame so it will become manageable in the seven- to ten-year frame work.

With that, I'll throw it over to Tom for his presentation, and then we'll open it up for questions.

MS. VANOVER: Yes, sir. Thank you, Mr. Reuter.

Mr. Tom Cooper with Shawn Environment will now give a presentation.

MR. COOPER: Good evening. I'm Tom Cooper. I'm with Shaw Environmental. And what I'd like to present tonight is a brief -- well, we're calling it a "Contract update."

As some of you may know, Shaw's been involved a little over a year, about 13 months now. So I want to give an overview of what we need to accomplish, what we have accomplished, and what's in front of us still. I'm also going to provide a snapshot of the 2011 quarter three data. This is primarily going to be ground water data,

but there will also be some soil vapor data. And that's data from samples that were collected from the July to September time frames.

So the most current data we have right now, and we'll see some charts here and we have bigger pictures up on the screen, we'll talk a little bit about what we

called Phase Two Interim Measure, and that's just the terminology we're using for the next phase of the actual treatment. We're actually going to talk a lot about -- we've been talking a lot about investigation and things like that, and we're actually going to talk about some treatment we're going to get ready to start installing and actually start getting some fuel out of the ground and continue to get more fuel out of the ground, and then a bit of a path forward as far as the overall schedule and bigger picture.

So this is what we call a stoplight diagram, just to give an overall view of the schedule. Shawn has what's called a "Performance phase contract." That basically means our payment is tied to performance. We get paid to meet certain objectives. And the overall objective that we have to reach is called "remedy in place," and that's a term that we use essentially to complete the rigorous corrective action process. We go through the investigation phase. We go through the remedy evaluation phase working with New Mexico Environmental Department to get the final remedy selected and installed and operational. So essentially, the contract Shaw has is going to take us all the way through that, and that's going to take some number of years, through the end of

2014, 2015.

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You can see that the dots on the left are just basically showing where we are on schedule. Both the ground water and video investigations, the initial piece of that was all the wells we installed. All the drill rigs out in the neighborhood over the past year, we completed 78 monitoring wells, August 30th we had those done. We completed 35 soil vapor monitoring wells. July 29th those were completed.

Now, just because the wells are in place doesn't mean the investigation is done. We're sampling all these wells on a quarterly basis, and there will need to be, you know, some number of orders of data before we can submit the investigation and get that phase buttoned up. But while that orderly sampling program is going on, we're also moving forward with these interim measures.

One of the activities is called the "Phase One Interim Measure." The bulk of that is actually the evaluation and removal of the contaminated soil on base right at the bulk fuel facility. We're about 90 percent done with the characterization that we have to do. There's some construction going on that's got us a little bit behind schedule, and hence the yellow color to the dot. So we still anticipate that will -- at least will be done by the middle of 2012.

The NAPL containment system, that's something we

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briefed at previous meetings. That's a system that we would like to install to actually start pumping ground water, primarily to contain the fuel plume from migrating, but it will also help -- be a tool to help with

the dissolve phase plume. It's yellow because we're behind schedule, but the good news is by working with NMED, we've got the approvals we need to get started, and as we sit here today, the extraction well, the drilling is essentially done. We're to 500 -- and I don't know the exact number of feet, and actually we're going to start building that well tomorrow. So that's actually -- we're making some progress there.

I'll talk a little bit about the Phase Two Measure. I'll spend more time on that, needless to say. We're actually going to start talking about some additional SVE treatments that we're going to install.

And then the final piece of the corrective measure is evaluation. And again, that's part of the rigorous corrective action process. That's where the final remedy gets selected. We certainly hope we're going to be in a position where the interim measures that we install as we expand them, you know, over the next year or so, will be most or all of the final remedy. Hopefully, we can all work together to make sure we get the right remedy put in as we go.

So we're going to move now to, you know, the next one which is essentially one of the main topics of this presentation, and this gives the third quarter ground water data. And I'm going to start showing the data from the shallow wells, and I'll describe the difference between the shallow, intermediate and deeper wells as we go.

So as we get started here, I want to point out a couple of features here. This line here is the Kirtland

Air Force Base boundary, so basically south of that is Kirtland Air Force Base. This is actually the bulk fields facility in here.

Essentially, these blue lines are representing the ground water flow. The ground water flows from the southwest to the northeast in this direction. These dots here that have the little dots with the dots inside, those are the wells where we're currently measuring fuel on the water table, okay? None of this area out here has any fuel on the water table. It's all -- you know, this is the fuel on the water table. This is the source of the dissolved phase plume as it goes in this direction.

So the main feature that I'd like to point out here, all of these dots represent the ground water wells, so we have data from all of these locations. And this is by far the most data plumes we've ever had to characterize

the plume.

So what you'll notice is, you know, previously, the plume was characterized moving a little bit more in this direction. Again, you have to draw your plume based on the data that you have, so the more wells we get, the better we'll define. And you can see we've got it much, much better defined. And what you'll see here is the shaded part represents ground water wells that have ethylene dibromide concentrations above the maximum contaminant level, essentially above the clean up standard. So if the dot is within the shaded area, it's above the clean up standard. If it's outside, it's below.

And so what you'll see is we've got quite a number of dots all along the outside edge of the plume all

along these areas here. So in these areas, we have the plume fairly well characterized. We understand it doesn't extend there. But what I do want to point out is this area here, as you'll see, there aren't many dots in this area. Okay. This represents the shallow wells of the 78 that we put in. Unfortunately, we still have a data gap in this area here. We don't have the downgrading extent defined by these ground water monitoring wells.

And we're currently evaluating what we need to do to fill that data gap. You know, we'll have to work with

the environment department on that, but likely, it's going to involve some additional wells. I don't think it's going to be 78 more wells. We don't know what that number is. We're trying to use all the information we have as smartly as we have in order to complete that data gap.

I would like to point out here, this is Kirtland supply well number three, and as I said, the ground water flow direction is there. That well was sampled on a monthly basis, and it has not found any detections of any constituents. So we do somewhat have it down here, but we certainly don't know the extent of it yet.

Now, I pointed out down here, these are where -- this is the area that the fuel has been currently measured in, so this is where the free product plume is. This is the ethylene dibromide plume, but understand that this fuel has other constituents in it, too, things like benzene and toluene.

So what we're going to do here is go through a series of -- we're going to superimpose the other constituents on this, so we can get a sense of where they

are relative to each other. It's going to be the same scale, same map. And that way, as we move forward, we can understand the DDT plume will have a different extent than the benzene plume, and we can start to see where these all fit in relation.

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The first one is what we call "Total petroleum hydrocarbons gasoline range organics, TPH GRO." This is a screen-level test that isn't a definitive compound, so it's a group of compounds. And so not everything that's being reported in this test is necessarily a hazardous constituent. It's a screening-level compound. It helps us understand the characterization of the site. And the real take-home message here is it's generally found within the extent of the EDT plume. There's certainly some detail where it isn't. But it's certainly no farther downgrading into the EDT plume, and this is as expected.

As we go through these, you'll see the anticipated EDT plume would be the farthest in extent. Because of the physical and tangible properties, it's going to the most. So if we go to the next one, this one is total petroleum hydrocarbons diesel range organics, "TPH DRO." It's a similar pattern. It hasn't moved as far as the GRO.

Again, as Mr. Reuter explained, this is behaving like a fuel plume. You know, unfortunately, there's a number of fuel plumes we have. There's nothing out of the ordinary in the way this is behaving. If we go to the next one, this is benzene. And again, if you'll go back, this is where the fuel is, so you'll see the extent of the benzene, it hasn't extended downgrading than from where

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the fuel was. And again, this is to be expected.

Benzene's a compound that's very readily microbial degraded. Essentially, the bacteria in the subsurface are happy right now. They're eating this. There's a lot of evidence that shows that's going on.

We measure other things like dissolved oxygen, and all the other signatures and microbial degradations are very robust right there. And again, the full data set will come on the third quarter report submitted at the end of this month. This is just kind of a highlight, so if you go under the toluene, similar pattern. It's hardly extended beyond where the fuel plume is. Again, this is another compound that readily biodegrades. So it's behaving exactly like you would think.

Naphthalene, again, it's even less of an extent, and then dimethyl benzene. So what we're seeing is pretty typical fuel plume dynamics. You've got a source in this area here, the fuel that's on the water table, the various constituents that -- dissolving into the water and moving with the water, and because of physical chemical properties, biological properties, the different constituents move at different speeds and different distances.

So we thought it would be important to put them all sort of on the same figure, and everything's on the

same scale so you can see it all in relationship to each other.

Now, previous figures that we're calling "shallow wells" -- the wells that were installed in what we call shallow, immediate, and deep depths, okay? It's the same

aquifer, you just have more streams at different depths.

The shallow are essentially in the water table at 15 feet below, the intermediate are 15 feet to 30 feet below, and then the deep ones are 40 to 85 feet below.

This is an attempt to help us understand the three-dimensional plume characteristics. Instead of just a slice of the water table, it gives us three slices.

UNIDENTIFIED FEMALE: Below the water table or below the surface?

MR. COOPER: I'm sorry?

UNIDENTIFIED FEMALE: Below the water table?

MR. COOPER: Water table.

UNIDENTIFIED FEMALE: Water table?

MR. COOPER: Yes.

Normally, the distance of the water table is at 500 feet so we're just basically talking 500 to 515, 515 to 30, and then closer to 600 feet.

The pattern in the intermediate aquifer is similar to the shallow -- or the intermediate is similar to the shallow, with the ethylene dibromide is the largest

extent of the plume. So this again is showing the extent of the ethylene dibromide from the intermediate wells again, with the fuel measured here.

The same situation here is we really don't have any dots right here that are downgrading wells. And then real quickly, this is the ethylene dibromide from the deep wells. We've only been at two deep wells. This one here and this one here. Again, this is our first attempt at sampling these wells. It's hard to draw conclusions from one sample point, but it's certainly looking like the plume is -- you know, it's mostly in the shallow and the

intermediate wells, and we're not seeing a lot of it in the deeper.

DR. HOLLEY: Excuse me. What's the depth of the deep wells, again?

MR. COOPER: The deep wells are approximately 600 feet. Some of them are different.

DR. HOLLEY: But they are below the water table?

MR. COOPER: Yeah. Some of them are screened at 45 feet below with 15 feet of screen. Some of them are screened at 85 feet, so they're a little bit different.

DR. HOLLEY: Thank you.

MR. COOPER: And again, all this data will be clearly -- all this information will be clearly in the report.

So now this is a figure -- I wanted to make it very clear that this is a different scale. Okay? So it looks like a plume, but it's not. It's just kind of a figure that shows a larger area. So if we go back here, we've got the Kirtland base boundary here, the bulks fuels area is here, this is where the fume plume is, and this is the extent of the EDT plume as we currently know it.

And a couple of things I want to point out here again, unfortunately, this is a plume that's been in existence for 40 or 50 years based on times and of the leaks that we know of. We know the leak has been stopped for ten years or so, so we're talking a fairly old situation here. And we currently have about a 6,000-foot plume.

Again, we don't have it fully characterized at the end here, but just as of an order of magnitude we're

approximately 6,000 feet. And this is showing that this is to -- this is Kirtland's supply well three, and these are some of the Ridgecrest wells, so you can see, you know, it took 50 years to get this far, and this is why we're saying that, you know, there likely is some time to keep moving forward with this.

All of these supply wells are sampled on a monthly basis, and nothing has been detected there, certainly no EDT that has been detected. So nothing in

the data that we've seen so far.

UNIDENTIFIED MALE: Most wells are screened much deeper?

MR. COOPER: The top of the screen is similar. The bottom of the screen is deeper. So yes, they're drawing water from a much larger supply.

UNIDENTIFIED MALE: The bottom of the screen is like 1,000 --

MR. COOPER: Right.

UNIDENTIFIED MALE: -- or 1,800 feet.

MR. COOPER: The supply wells typically have more -- you know, our monitoring wells have 50 feet of screen which is how much is open to the aquifer. Water supply wells have 500 or 1,000 feet and they're built for a different purpose.

So the next point I want to talk about is what we're calling the "Phase II Interim Measure." And part of the approach that Shaw brought forth to the Air Force in this contract was while we're doing the investigation phase that we have to do for the process and the evaluation, we're also going to move forward with treatment. We can't call it the final remedy because we

haven't completed the process, but the process does allow us to call it an interim measure.

And that's, basically, we know enough to get

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started doing it, and that's what we're going to talk about tonight.

The plan was -- all a long was to expand the soil vapor extraction units that were out there, more than likely install the wells that were for soil vapor extraction and use one of the centralized treatment systems so we could really get a lot of air movement that we need.

And initially the plan was to have that on schedule probably mid 2012. Well, recently New Mexico Environment Department and Kirtland have been working together, and working in a collaborative way, we've essentially realized that we've got enough data, and you'll see some of these vapor plumes that I have here in more detail up on the screen, to get started. We don't know everything. We're certainly not done with the characterization, but we certainly know enough now that we can get started with aggressively moving forward with additional treatment.

So we sat down and looked at the data and said, "Here's where it makes sense to do it. We're going to a design/build approach. We may not know everything, but we know enough to get started and we'll learn as we go."

We also talked about a bit of a fast-tracking approach with the administrative side. We submitted

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numerous work plans already that include well

installation, well build and things like that. So rather than have to reinvent the wheel and submit a giant work plan again, we're going to build on what's there and submit the work plan and addendums to the additional plans that will be much quicker to review and get things turned around, and we can actually get out in the field and start doing the work.

So the bottom line of this approach is that we're likely going to accelerate this next step of the treatment by about six months. We think we can be in the field in January starting to install the next series of the soil extraction wells.

Now, I'm going to go into more detail about what we're going to do next, but I want to be very clear that this isn't going to be the sum total of the treatment. We're going to get two more soil vapor extraction wells in. We're going to continue the investigation and evaluation process. Running these systems will actually help and form where we're going next. It will help us modify the design, expand the design. We may add some innovative technologies Mr. Reuter was talking about, so it's just the next step, but we're pretty excited that we're going to get going here in pretty short order.

So what we have here again, this is the ethylene

dibromide, and what we have on one, this is this dashed red line here. This is the historical extent of where fuel has been measured on the water table. We're not currently seeing it up on this area here. That's likely due to the rising water table. We discussed that in the last quarterly report.

The fuel is still there. It's just not floating

on the water table anymore. So that's one of the reasons why we've located our NAPL extraction well here. We want to make sure we downgrade from a historical standpoint where the fuel was. But more importantly are these two green dots is where we're going to plan on installing the first two of the next phase of the soil vapor extractions. And then it goes back to where -- this is where the source is. This is where the fuel is on the water table, and that's what's got to be removed before we start seeing what Mr. Reuter -- about when things start as to -- that's how we're going to start seeing that plume shrink.

Okay. What these figures are, we have horizontal and vertical slices of the Vadose Zone. And again, this is not ground water. We're shifting to 0 to 500 feet below ground surface. This is a volatile organic compounds measured in soil vapor, okay?

So this purple line here represents the cross-

section, different scale. And this is the base boundary right here. So this is a much smaller area. This is basically the Kirtland bulk fuels area. Here's where fuel rack was, the pipelines, and here's where the old tanks were. So again, this is a much smaller area. This is where the vapor is. This is the source of where things went into the ground.

And what this is, this is a horizontal slice represented by this green line, 50 feet below ground surface. And this up here is the vertical slice that goes right through here. And what we're going to do is we're going to step down. Everywhere there's a green dot here

is one of the 35 soil vapor monitoring wells we installed, and we've got six monitoring horizons in those wells, so we get soil vapor data from six different horizons in which there are steps down as we go through that.

So now we're at 150 feet. And you can see right now the hottest concentrations. This is right around the fuel rack, and, you know, that's more than likely where the leaks were found, and that's where it started going vertically down. And then we go to 250, similar pattern. We go to 350, and we start to see the pattern spread in this direction a little bit. That's likely due to subsurface geology, it may be due to the fact that the water table back in the day was some 800 feet higher than

it is now. So we're seeing some changes.

And then when we get to 450 feet, we've got the really hot spots sitting right here. And again, this is vapor concentration, and it actually corresponds to where we're currently measuring the thickest product on the water table.

So a picture is starting to come together. It's starting to make a pretty consistent picture. You know, more than likely the bulk of the leak is in this area here. It went down to some depth, moved a little bit, and now we've got a big share of it there.

UNIDENTIFIED MALE: Where is the current SVE extractions?

MR. COOPER: The current SVE, there's one over here, there's one over here. There's one -- and again, approximate locations, and there's one along this area here.

UNIDENTIFIED MALE: So there are four?

MR. COOPER: There are three that are deep at the water table, one that's started in some shallow wells.

UNIDENTIFIED MALE: Okay. Thank you.

MR. COOPER: So what I want to point out here is we didn't have this picture six months ago. We didn't have this picture three months ago. This is really the first time we had a complete round of this vapor data, and

so we didn't know if this really was the right spot without all these data. And you can see these two triangles here, we're going to install these first two soil vapor extraction wells.

And the cross-section of these lines here, so you can see we are targeting this area right here, and they're going to be screened 100 feet from about 400 to 500 feet. These are going to be purpose-filled soil vapor extraction wells, six-inch diameter, lots of open area in the screen. What that means is that these are designed specifically to be soil vapor extraction wells, not monitoring wells, not something else.

We are going to extend them into the water table so that at a future date if we feel we need to do some ground water extraction, as Mr. Reuter pointed out that that could be a useful technology, we have the ability to do that.

When you're drilling to 500 feet, that's the percentage, possibly a little bit more, and we may be able to use some of the innovative technologies that we're talking to the NMED about, some air well stripping, things like that.

And so kind of wrapping it all together, this

first step in this next phase of the interim measures, again, this is the ethylene dibromide plume, the Kirtland

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base boundary. Here's the fuel plume. The idea is get started, continuing with the source area treatment here in that hot spot with the two soil vapor extraction wells. We'll have a centralized unit, most likely a thermal occupation unit. We're in the process of inspecting that right now, which will really get started with the source area. That again, it's going to prevent the fuel plume from moving. It's also going to be a tool that will help us isolate the mass that's moving in the dissolve phase. That's all going to be all brought back on base, but this is common in treatment systems, so that's the big picture of this next phase of what we're going to do.

Again, this isn't going to be the total final remedy. This isn't going to be the end product, but this is what we expect to roll out here. So the path forward, we'll put some dates to these things. As I mentioned, we're almost done with the drilling well. That should start tomorrow.

Obviously, the water treatment portion of that, spring of 2012. We've had some permitting issues. We've got some additional issues we need to work through. And as a general time frame, if we can have that in by the spring of 2012 -- if all goes well, the installing soil vapor monitoring wells next month in January, and the soil vapor -- the actual treatment unit again, spring 2012.

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That's got some permitting issues and some design-build issues, but again we're really trying to accelerate that ahead of where we originally had it.

And then I did mention the soil excavation on base near the plume. We're a little behind schedule, but spring of 2012. And that again is an interim measure. So take-home message is we're still doing all the investigation and all the evaluation that we're required to do by the process, but we're also moving forward with treatment as we can do so with interim measures and really trying to get going as fast as we can on getting fuel out of the ground.

MS. VANOVER: Thank you, Mr. Cooper.

At this time we will go ahead and open the floor to questions. We'd like to remind you to please step up to the microphone and state your name for the record.

Does anyone want to go first?

UNIDENTIFIED MALE: Yeah. My name's Eric Nuttal. And my question is for Mr. Reuter.

In the examples which you've given, you did not show the closure that we've had EDP, and as a follow-up to that, at what level in terms of the concentration of benzene and EDP will you issue a "No Further Action Notice" to this site?

MR. REUTER: I think the question is more of the

need, although it's not the example, do not necessarily be associated with them. We do have sites that we have closed. And typically we close them where the air system and the EDB starts specifically, and so it is treatable by the same techniques we treated with benzene regarding the contamination.

UNIDENTIFIED MALE: (Inaudible.)

COURT REPORTER: Please speak into the

microphone.

MS. VANOVER: Please speak into the mic.

UNIDENTIFIED MALE: We can't hear you.

MR. NUTTAL: Is that better? I'm sorry.

All right. So the question is what levels could we get that we start to close sites at and the WQCC sets the water standards, and EDP and other contaminants concerned?

MR. REUTER: And so we will ideally -- we have no detection at all in the ground water, but we can only administratively enforce on owner/operators to contaminants below those WQCC standards, which I believe EDB is 50 parts per trillion, if I'm correct.

MR. NUTTAL: What about your benzene?

MR. REUTER: Our benzene is 5 parts per billion.

MR. NUTTAL: That's what you require?

MR. REUTER: That's what we require at the site,

yes, sir.

UNIDENTIFIED MALE: Thank you. I know it's not good to ask multiple questions, but I would like to ask two if it's possible. My name is Senator Tim Kellar. I'm a state senator from this area. Thank you all for coming, and thank you for cooperating also on this problem.

My question is -- the first one is, you know, I think the original ballpark and just to manage expectations was for a plume this size, it's going to take, you know, 20 to 40 years. And I just want to see if that has changed at all.

And then my second question is our state legislature is going into session here next month. Is there anything we can do to enable legislation or

regulations or something to that effect where we can help to expedite the process?

COLONEL HORNYAK: Steve, go ahead and answer the first question, and I'll answer the second one.

MR. REUTER: This work -- okay. The first question on the 20- to 40-year time frame, you know, because of the unique geologic situation, one of the aspects is that the contamination is so deep that actually helps us in some aspects of the remediation. And it's hard to tell at this point. We won't know until we actually start treating the subsurface and see how the

subsurface responds. And I'm hopeful that we can probably get this done in the seven- to 12-year time frame.

Again, just because of the unique situation there and the technologies we can use to shorten the time frame, but I think 20 to 40 is woefully pessimistic in that given the experience we've had elsewhere in New Mexico we can probably expect seven to 12-year time frame.

COLONEL HORNYAK: Is this on now?

Okay. I don't know what it tastes like, but I'm pretty close to it.

Thank you for the question. And I think -- I think fundamentally the Environment Department and State in general has all the authority they need, both under enabling legislation as well as regulation.

So in terms of legislative action at this point, no, I don't think there's anything that's required. And the Air Force has a budget to clean this up. It's important to understand this is not costing the State anything in terms of direct remediation costs. And so we

are cooperating with our professional time, but that's a normal activity to do, whether it's Air Force or anyone else. So I appreciate the thought, but I think at this point, we have all the authority we need.

SENATOR KELLAR: Thank you. Thank you very much.

MS. VANOVER: Thank you.

DR. HOLLEY: My name is John Holley. I'm the consulting geologist. I had the opportunity about 25 years ago to start working with the City Public Works Department. Then a guy named Kelly Summer and I was present when Ridgecrest 5 was drilled. I was present when Kirtland Air Force Base -- 16 and 15 were drilled. And I have a question to the Shaw representative in a minute, but we -- over the last 28 years, New Mexico Tech has been primarily mineral geology crew in cooperation with the City of Albuquerque, now the Water Utility Authority, U.S. Geological Survey, and just doing kind of a generic study.

And I really appreciate the graphic up here that Shaw has prepared because it confirms something that we have suspected over many years and published more papers over the last 20 years including the model that the City of Albuquerque and the USGS use for the model.

What we're seeing is the tract of the ancestral channel of the Rio Grands. It's not a -- when you look at below 200 feet, all the trail cuttings come up sand or clay. The fragments are -- they include mostly diagnostic material from the Jemez mountain streams, humus, obsidian, things like that.

So we're tracking a river about the size of the present Rio Grande. That's coming south to north, and

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then the plume originally by and large was going the other way. But now the city has created this big sucking sound out in the center.

I've done -- I think -- I hope that many people were at the teaching that UNM sponsored last week. And they were just getting into the geology part of it. And then over the weekend, there was another workshop -- another -- I would call it a teach-in the city sponsored concerning the diversion of water at the water diversion plant just south of Alameda. And people were concerned about how that impacted their water there.

And what I've observed in all these meetings is that there needs to be some kind of another expanded teach-in to allay people's fears of what's what. You've done an awesome job here in characterizing the environment, and then the people need to know that this system is not in any way connected with the diversion on the river at the other end of the system.

So my final question -- specific question to you, are the samples from these -- all these test holes being kept for future study, so that we can look at the minerals? Because when I, as a geologist, log a hole here, I go down a hundred feet, 200 feet, and then all of a sudden, some limestone fragments, just crap that comes out of there, junk that comes down -- washes out of the

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Terrace Arroyo out of the Sandia Mountains.

But then when I get down below that, it's geology that's washed out of some kind of river channel, and that's very easily verified if somebody can just look at

the sample.

MR. COOPER: To answer your question, yes. We actually -- when these wells are installed we have our field geologists log the cuttings at five-foot intervals and there's actually a chip tray where we log cuttings at five-foot intervals from all the wells we install. And those are currently being housed out at our site trailer at Kirtland, but certainly the intention is to keep those archived for as long as they need to be archived.

DR. HOLLEY: When I headed up the New Mexico Tech team, we -- as to this day, there is an archive at New Mexico Tech at the Bureau of Mines for drill cuttings. And we have drill cuttings for all the city wells drilled back to the '60s archived at New Mexico Tech in chip trays.

MR. COOPER: Okay.

UNIDENTIFIED MALE: So that includes the Ridgecrest wells. And if anything -- if I was asking somebody from the state legislature, I would say, "Do not cut the budget out for those archiving programs."

MR. COOPER: You know, it's not probably a

discussion we need to have tonight, but the long-term home for these archived cuttings is probably something eventually we're going to want to discuss because that will probably outlive the time that this is an active correction site, so we can have that discussion another time, but we don't want to lose them.

MS. VANOVER: Thank you.

Go ahead.

MR. MCCOY: I'm David McCoy. One of the things I wanted to comment on is you mentioned you were going to

have six-inch diameter wells, and my understanding is that when you're doing soil vapor extraction you can have two-inch, four-inch diameter wells, and they're a lot less expensive to drill. You're not bringing up so much junk that has to be dealt with. And also, you don't have as much air that you have to be treating, so that's one question.

Another question is on that water treatment well that you're going to have now, is that going to involve reinjection of the water? And where are you planning on the reinjections if that is the case? And also it would seem like if you're going to put some -- you haven't been running these soil vapor extraction wells, I guess, for the last 60 days or so, and maybe you've been doing some testing, but it would seem that some of these engines are

getting pretty old, around seven years. So why not buy some new equipment that has a catalytic oxidation equipment associated with it? Because if you're going to be lowering the vapor concentrations in some of these wells -- and it's going to get expensive if you keep using propane to get those concentrations down, but you could use a combination task extractor to put on the wells, so you've have to lower levels. So those are some of my interests.

UNIDENTIFIED FEMALE: Thank you.

Do you want to answer that question?

MR. COOPER: The first question is in regard to the well diameter. What we know now is that -- as I showed on this, and if we go back to the figure that shows the vapor plume, we have high concentrations of vapor.

And what we need we need to get a lot of air out of the ground because that's what's getting the fuel and the vapor out of the ground.

So when we're going to be screening this area here, we want to get as much air out as we can, and a six-inch well gets more air out than a four-inch well. And it's essentially a matter of, you know, one six-inch well costs less than two four-inch wells, and so given the concentration that we have now, we want more air, because that's what's going to actually -- it's going to get the

vapor, the fuel vapor, out of the Vados Zone here, and it's going to allow more of that fuel in a liquid phase to go into a vapor phase and get out of the ground. And so that's what we want to do.

And if I remember the next question, the internal combustion engines are -- you know, they're ineffective soil vapor extraction technology; however, we're in a situation now where those units, they run at about 50 cubic feet per minute of air, that's the measurement of air that they're pulling out of the ground. We need to be in the thousands of cubic feet. And so it's just not a technology that's designed to be moving those quantities of air.

And so we're going to phase away from those. We actually got to the point where one of the units was burning almost nine gallons of propane to get one gallon of fuel out of the ground, and that's just not a very efficient technology. So we're going to phase those out and manifold all the wells into a centralized unit.

And then with respect to a catalytic oxidizer, we're more than likely going to use a thermal oxidizer to

start with because the concentrations are going to be too high for a catalytic oxidizer. And we don't anticipate those going down for the near future.

Eventually, yes. They'll have to be some

switching from thermal oxidizer to catalytic oxidizer or some blend thereof. And as I said, we're going to roll this out in an interim fashion. That centralized treatment area that we're talking about will likely be a combination of several different things as we move forward in the future.

Did I -- did I get all of them?

MR. MCCOY: The water being extracted?

MR. COOPER: Oh. Currently, the plan is not to reinject. We're looking for surface water options. Not to say that in the future that might be an option, but as of now we're not actively pursuing that option. We're working some surface water options, permitting issues, things like that. We don't have the final discharge option nailed down yet, but as of now, the plan is not to reinject.

MR. HERNANDEZ: My name is Danny Hernandez. I'm here on behalf of Marty Chavez. He was unable to be here today.

My question is simple. Thermal oxidizing, that's burning, right?

MR. COOPER: Uh-huh.

MR. HERNANDEZ: I just wanted to get that right. So what's your cost?

MR. COOPER: Sir?

MR. HERNANDEZ: What are the exhaust gases that are out of this?

MR. REUTER: Mr. Hernandez, thermal oxidizer is essentially the premise. And what happens is you take the gasoline vapors and pull the vapors from the ground and burn them just like it would a furnace, and so typically 99 percent or more destruction rates, and so your off-gases and carbon dioxide and gas and carbon monoxide in minor amounts, just like you would from a -- if you burn your furnace at the home -- so which you have here.

Catalytic oxidizer, just for your information, is that the concentration, your oil cast concentration is low enough instead of burning you can put it through just like a catalytic on your car, so it's taken care of by the oxidizer. So again, it's a lower temperature and less fuels requirement to make it run.

MR. HERNANDEZ: None of the benzene rates have helix in them?

MR. REUTER: I'm sorry?

MR. HERNANDEZ: None of these benzene rates have helix in them?

MR. REUTER: I don't think there's any carbonated solvents out there.

MR. HERNANDEZ: Okay.

MR. COOPER: And the one point I would like to

add is that this soil vapor -- the treatment unit is something that needs to be permitted, and we're currently working with the City to do that. So we have to meet all of their permitting requirements, testing requirements, et cetera. So it's being -- it will be operating by the rule book, so --

COUNCILMAN GARDINO: Thank you. I also wanted to thank you very much. I think Senator Kellar opened himself up by asking about legislation. And his legislation was not offering funding.

Ray Gardino, councilor from this area. Again, thank you all for, you know, putting yourself through this. You know, it's hard, but -- is it established since that we know the exact amount or at least a close amount?

Two years ago we were talking about one million gallons, and eight million gallons. Where are we today that leaked into the ground?

MR. COOPER: We're certainly refining those calculations, and unfortunately, I didn't come tonight with the latest number in my head. The quarterly we submitted at the end of this month will have some refined calculations.

What I will say is that again, we're looking at -- even though we put a lot of wells in, you're looking at still, you know, pins in an orange, so to speak. So

whatever calculations we come up with are going to be estimates. And there's going to be assumptions that go into those. So unfortunately, I didn't come prepared tonight to tell you what the new estimate is. It will be in the report. But it will get refined. There will be less and less error in it, but there's always going to be some amount of assumptions that are going into it and some amount of air bar.

At the end of the day, we know what the concentrations are and we know what the benchmarks are that we need to get to. So that's probably less of a

critical piece than the actual concentration that we're measuring, because if the air is plus or minus or something, we still know the concentrations that we have to get to in order to achieve what we're working toward.

UNIDENTIFIED MALE: And I appreciate that. However, three years ago, they came up with that number. I think it's a disservice to the community to tell them such varied estimates of one million and eight million. That's eight to one amount.

So I want you to be careful that you don't come out with information that is not vettable, that is not fair and concise. Because I get questions, and I don't have the answers when somebody asks me, "Well, when are they going to be removed, those eight million gallons of

fuel"?

So I would just caution us to be real cautious about that and not throw out numbers and hope to reel them back in, because they don't get reeled in very easily.

And you had a slide here a second ago where you talked about the ground water. It was the last one you showed, actually. I also understand that the concentrations where the point of discharge, I guess, or leak occurred -- but I noticed that you only go to a certain depth. Do we know that that is the depth, or is there more?

MR. COOPER: This figure here is actually soil vapor. Okay. So this is from the ground surface down to 500 feet --

COUNCILMAN GARDINO: Right.

MR. COOPER: -- approximately. So this is where the soil vapor stops because below that is the water table

and it's saturated. So that -- if we were to have the picture below here, that would be the ground water plume that we've shown. So there is no vapor contamination below this because there's not vapor phase. It's the water phase. That's --

UNIDENTIFIED MALE: But the water is contaminated?

MR. COOPER: Absolutely. That's what we're

showing in this figure here. Those cross-sections -- if we can back up -- those cross-sections are drawn right around this area here. And you can see we're depicting ground water contamination there. And that's where I'm saying it fits together. That highest vapor concentration sits right above where we measured the most free product on the water table as a result where you're going to see the highest ground water concentrations.

COUNCILMAN GARDINO: Last question. Is it still true that we have -- or the federal government has committed $50 million to this project, and is that enough?

COLONEL HORNYAK: That is absolutely true, yes, sir. And we've already disbursed a large amount of that towards this, and the money -- that will not be an issue, okay? And we're committed to it. And that's not a cap. That is an amount that is committed now, but if it's required 100 million or 500, that's a commitment. The United States Air Force is committed to get this thing cleaned up regardless of the cost.

COUNCILMAN GARDINO: Okay. Thank you.

MS. VANOVER: Next question, sir?

MR. STROMBERG: I'm Pete Stromberg in the

neighborhood. I live right across the street from the Kirtland wells. I do appreciate the records. I have a question on vapor extraction. Do EDB benzenes, are they

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properly burned in the catalytic oxidizer you were talking about in the extraction units?

MR. REUTER: Yes, sir. Benzene burns very easily. It's one of the oxygen -- it's one of the enhanced fuels. And EDB is a scavenger to help burn lead out of the gasoline, so it also burns very effectively.

MR. STROMBERG: So it burns both thermal and the catalytic?

MR. REUTER: Yes, sir.

MR. BENNETT: Hi, my name is Charlie Bennett. I'm with the La Mesa Committee Improvement Association.

I just wanted to check -- throughout the past few years, you've been bringing these maps, and as they change, you know, we see this thing, particularly EDB plume expanding. As you're cleaning up the mess, will it be possible for you to keep us informed at least twice a year as to how far, particularly, the EDP plume is progressing?

COLONEL HORNYAK: Sir, I would like to answer that if that's okay.

Sir, we have stakeholders that are involved, seven stakeholders. And we are all committed to following this thing through to completion. So every quarter as we are gathering data and putting out those reports, the groups are coming together and they're working, analyzing

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what is going on with the data, developing what it is that -- if they need a change in course of action in order

to facilitate a quicker and more safe remediation.

And then we follow all of that up with what we're doing right now, tonight. We are doing a public meeting. And every single time we do that, we will be doing a public meeting to ensure that you have the opportunity to ask questions and see where we're at with the results of the plume.

MR. BENNETT: Excuse me. Perhaps we'll be continuing to monitor and you telling us that throughout the cleanup process?

COLONEL HORNYAK: Absolutely.

MR. BENNETT: Okay. Thank you.

MS. JORDAN: My name is Marianne Jordan. I'm the president of the Elder Home Neighborhood Association, which is right across the street. And now, I don't know that much about science and all these other things that you're -- you know, that you're speaking about, but what I would like, to have you speak in layman terms, so that we know exactly what you're saying or what you're talking about.

MS. VANOVER: Thank you.

Yes, sir.

MR. MCCOY: Yeah. I have an additional

question. Ray Gardino kind of touched on it, was this $50 million commitment at present. Several of us have wanted to see the original proposal and the contract that was issued by the Army Corps of Engineers to Shaw, and we have not seen that yet. And tonight I sent the Air Force base a FOYA on that question. And we think that it's unprecedented that a contract like that would -- that the

taxpayers are paying for has not been put on your website. It hasn't been made available. We'd like to see what -- in the public sector anyhow, we'd like to see exactly what the remediation aspect of the proposal was and compare it with the contract that was issued, things like that.

So we would appreciate it if you would send that information to us, by the way, and also post it on your website.

The last FOYA I filed was many months in receiving regarding your technical committee task force meetings, and so we would hope that the information is a lot more forthcoming in a much more rapid form than that. Thank you.

MS. VANOVER: Thank you, sir. I believe we do have a representative here from the Corps that can answer your question.

UNIDENTIFIED CORPS REPRESENTATIVE: My name is Walt with the Corps of Engineers, and if we could speak

afterwards? Do you have a business card?

MR. MCCOY: I need your e-mail address.

UNIDENTIFIED CORPS REPRESENTATIVE: The way the proposal is written at the performance-based contract and proposal, and the steps forward for the contract, that the way the contract is written, the proposal is not included in the contract. In the contract are the steps, the way we move forward, are documented in the work plans which are all available to the public. So the path forward is the contract has the base requirements, the basic milestones, and the path forward is in the work plans that were approved by the NMED.

So we can speak afterwards and I'll provide you

with my e-mail address.

MS. VANOVER: Thank you, Walt.

Are there any other questions?

Go ahead, sir. Step up to the mic.

MR. SIGDA: My name is John Sigda. I'm a New Mexican hydrogeologist. I was lucky enough to get some training under John Holley and some of your staff.

My question for you, Mr. Cooper, in following up with something that Dr. Holley had pointed out regarding the interim containment for the exhaust and fuel phase, the current work plan, as you presented tonight, I just want to reconcile what has gone before and presented

tonight and some of the information as depicted here, this being the ancestral Rio Grande. You -- in the original work plan, you had two extraction wells, and now you're down to one.

MR. COOPER: Correct.

UNIDENTIFIED MALE: And I'm just curious how you reconcile achieving the containment described in the work plans that you put out with one well, and then now you have some information saying that this is actually fairly and this is good aquifer material by the ancestral Rio Grande, so why the justification for how you're going to achieve containment with one instead of two?

MR. COOPER: We -- Shaw, when I say "we" -- all along believed that a single well would provide the containment of the NAPL, which is the primary goal of that containment system. Again, it's not designed for 100 percent containment of the dissolved plume. We don't believe the dissolved plume is very dynamic.

And so the idea is if we can simply cut off most of the mass that's going in that direction, we can begin the process of the dissolved phase plume.

So all along, our model, we thought a single well would do it. We came forward with two wells as essentially a factor of safety.

There is a lot more information that we've done.

We're continually updating our model -- and with that we've gotten pumping rates from all of the Albuquerque/Bernalillo wells -- we're really expanding our model and getting -- expanding pumping rates and things like that. So we have a much better -- we have a more refined model.

In addition to that, I mentioned that these two soil vapor extraction wells down here are going to be built such that they'll have the ability to do ground water extraction wells, too. We're clearly going to get much more mass dissolve phase contaminate mass out here than we have here, and if we pump here, expand our capture zone.

So the combination of more data, better refined model, combined with the fact that we are going to have the ability to do pumping back here if we need to, we believe a single containment level will be adequate for the purpose that we're putting it in.

Certainly it doesn't mean that at a later date when we have more information there won't be another one. This is -- again, this is not intended to be the final picture of the final product.

MR. SIGDA: I thought you were presenting a huge amount of information. It is my recollection from the

work plan that it clearly states both dissolve phases.

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Not complete, as said, and not over the long term.

MR. COOPER: Right. We can't contain NAPLE without creating a permanent compression. You have to pump water to do that. So clearly we're going to be containing both. But the primary goal of the plan was the NAPLE containment. It had a secondary benefit of removing dissolve phase mass. Again, it's not a long-term solution, and we know that. It's just a piece to give us a tool to be able to have a tool to start addressing that dissolve phase plume. Getting the source back here is what is going to solve the problem. So --

MR. SIGDA: Okay.

MS. VANOVER: Go ahead, sir.

MR. EENTILLA: My name is Roland Eentilla in the Southeast Heights. My question was: I heard you say you were going to abandon the process of reinjection and that you have some surface water ideas. Can you go into some detail about that?

MR. COOPER: At this time we don't have our final option fully vetted and pinned down. There are two options we're looking at. It's either a surface water discharge that would have to be done through a NPDES permit -- and I apologize, I'm not sure what that acronym stands for. Essentially, something --

MR. EENTILLA: National Pollution Discharge

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Elimination System.

MR. COOPER: Yeah. So it would either be a NPDES permit or working with the Water Utility Authority

essentially for a discharge into the sanitary sewer now. The intent is the water will be treated to drinking water standards before it goes anywhere.

So which of those, we're not sure. We're looking at a lot of options. There are a lot of potential gray use options out there at Kirtland. They have a system now they're using the water to water the golf course. I think they're working on a system that may be some other turf irrigations, and we want to be as useful as we can with this water.

One of the things is some of those systems aren't built yet, and we need to get in now. Another thing is once we start pumping, we need something that will take the water 24-7, 365, and some of the gray water, we just don't have that demand.

As we move forward, it may be a combination of a lot of these steps. I mean, we're going to obviously try to find the best use for this water that we can, but the bottom line is we need to move forward now.

MR. EENTILLA: I would just ask that you don't just dump it into the City's storm water system because --

MR. COOPER: Sure.

MR. EENTILLA: -- it goes directly into the Rio Grande, and even though it's drinking water standards, I'd have to have -- I'd want to have that monitored on a day-to-day basis.

MR. COOPER: Anything we do would have to be permitted by the appropriate agency, whether it is a city or a state or whatever. Anything that's done will be fully monitored, permitted, you know, fully transparent, et cetera, so --

MR. EENTILLA: Well, I'm the Storm Water Manager for the City of Albuquerque so I'd like to see any of your surface discharge plans before you go through them.

MR. COOPER: Sure.

MR. MCCORKAL: I'm Sherman McCorkal with Sandia Science and Technology. I think it's appropriate to recognize the effectiveness of the seven-member working group and commend the leadership and everybody that's been involved in this over the last couple of years for the way that you've come together. You're apparently working together, respecting each other's opinions, looking at the objective of cleaning it up without exciting the community. And I think that the community needs to commend everybody involved in these efforts.

Thank you very much.

MS. VANOVER: Thank you.

Are there any other questions?

MR. MCCOY: I'd like to ask one, if that's permitted.

MS. VANOVER: I think so.

MR. MCCOY: I would like to ask both Tom and Steve to address a little bit -- you mentioned this in your presentation about advance or enhanced technologies. But you didn't go into any detail about what you might be thinking about, realizing that none of these things are currently being implemented, but nevertheless just to share with everyone here some of the thoughts that you might have that might, in fact, make this cleanup go a little faster than it otherwise would.

MR. REUTER: Who invited that guy?

Two thoughts that come to my mind right off the top, two things we're considering and we're evaluating now for efficacy, efficiencies, how well it can apply to this situation, is taking the exhaust from the Thermox, the furnace, using that to seep into the air some hot temperature, and then reinjecting that hot air into the subsurface into the plume, and by keeping the soil up there, just like gasoline evaporates quicker, so the idea is to help mobilize the contaminants in the subsurface by cleaning it up using the heat.

This is then generated by the destruction of the

vapors of the surface anyway, so it's kind of a new approach for, you know, maximizing our energy use, and hopefully has something that would be potential technology we'd use to shorten the time frame for the remediation.

The second innovative technology is something called in-well air stripping, and the Air Force situation is unique for this in that the water is almost 500 feet below the ground surface. So essentially you have a tube that's 500 feet above the water table. And the idea is instead of taking the water out of the surface, having to treat it at the surface and discharge it somewhere, we could keep it right here in New Mexico in the subsurface by bringing it up to the top of the well, disbursing essentially back into the well while we have a blower blowing air. So you are stripping the contaminants in the well, deflecting the air at the top of the well. As it goes into the ground, the water is cleaned, comes back into the aquifer.

Those are the technologies we're evaluating presently, and it's why we're installing the wells the

way, the designs, where they are. It's to give us maximum flexibility so that we can do any or all or none of those options.

MR. MCCOY: And Steve, are we currently doing any of these kinds of things at other sights around the

state?

MR. REUTER: Yes. The hot reinjection, we had successes with the two sites, the Santa Fe Courthouse in Santa Fe, and Mike's Auto site down in Belen. It's been phenomenally successful.

Now, the in-well air stripping, we have not done in New Mexico yet, because we haven't had a site that we could run efficiencies proper. But that technique has been used nationally at other Air Force bases, actually, it's been used quite successfully, so we're hopeful that it will work here.

MS. VANOVER: Thank you.

Are there any other questions or comments?

Yes, Councilman.

COUNCILMAN GARDINO: I also want to thank the community for being so patient in understanding that this does take time, but they would like to have some resolve, so I want to thank the community for that.

MS. VANOVER: Thank you. Thank you for that.

MS. JORDAN: Well, I just want to say that we do want to thank you for the work you're doing. It's like I said, I do live in the community, and I am the president of my current association. And people are coming up and asking me, "What's being done? What can be done," and all the -- you know, that sort of thing. So I'm really glad

you're working on it, and we're very concerned.

MS. VANOVER: Thank you. Any other comments or questions?

Yes, Mr. McCoy.

MR. MCCOY: I just want -- regarding the possible use of gray water, we would hope that you would carefully consider any existing contamination that may be in the areas where you would put gray water or where that water would travel, if there's contamination, of which there's plenty out there. And this whole aspect of gray water -- now I understand, for example, that Sandia's been using the City sewage system to dispose of over a million gallons a day, that's from their EIS, and this whole aspect of water usage out there at both Sandia and Kirtland is of interest to us. We'd like to know, you know, how much water are you guys using? How much are you disposing of on a daily basis? Where is it going? Could it be utilized more effectively? What are you doing to reduce that water consumption?

I mean, we're in a period of drought and then it may become a super drought. So we'd like to see some information in thinking about this and water usage in relation to the contamination that's out there, and more consideration and clean up of existing contamination that's out there, particularly Tech Area 5 and the Tijeras

Arroyo ground water, waste landfill, and some of the dumps that exist at Kirtland and also at Sandia.

It seems like, you know, you're really engaged in clean up here with this Kirtland fuel spill, and we applaud that. We want to see this effort extended

throughout the base and throughout Sandia Laboratories. And we've seen some uncooperative aspects, at least from Sandia Laboratories in the past.

And so efforts just recently by Kirtland to clean up a low-level radioactive waste dump, so, you know, we'd like to see more of this thinking about clean up on a area-wide basis. Because our water and aquifer is being affected by this. Thank you.

MS. VANOVER: Thank you, Mr. McCoy.

I think there's one more question.

UNIDENTIFIED MALE: I want to thank you. Every parade has an observer, and it's nice to have somebody stand up that says the emperor doesn't really have any clothes on.

And as a technical person, I am one who ran the environmental program, the off-state geologist down in Tech for 20 years. The pain of life for any technical person, scientist, or engineer is to know when you're educating with irridition versus battling with BS.

And you -- it's a real -- you appreciate all the

other ordinary human beings in the room who don't know everything but who are willing to come up and put up with us technocrats.

And we need more just, I think, round table things where people from the scientific and geotechnical community just sit down in a nonadversarial way and just talk, and try to explain in ordinary language what they're talking about. Thank you.

MS. VANOVER: Thank you, sir.

If there are no other questions or comments, we

will go ahead and conclude this evening's meeting. Both presentations tonight will be on the Kirtland website. Again, that's www.kirtland.af.mil. A transcript of tonight's meeting will also be posted on the public website once we receive it from the court reporter.

Thank you all for attending.

(The proceedings concluded at 7:30 p.m.)

STATE OF NEW MEXICO)
)
COUNTY OF BERNALILLO)

I, MICHELE NELSON, New Mexico Provisional Reporter, working under the direction and direct supervision of Debra L. Williams, New Mexico CCR License Number 92, hereby certify that I reported the attached proceedings; that pages 1-67, inclusive, are a true and correct transcript of my stenographic notes. On the date I reported these proceedings, I was the holder of Provisional License Number #P-401.

Dated at Albuquerque, New Mexico, this ___ day of December, 2011.

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