ORIGINAL

PROPOSED PLAN - PUBLIC MEETING -)
GROUNDWATER CLEANUP FOR)
OPERABLE UNITS 1 AND 2A AT)
MARINE CORPS AIR STATION EL TORO)
)

Date and Time: Tuesday, November 13, 2001
6:00 p.m. - 9:00 p.m.

Presentation/Question Session: 7:00 p.m.

Held at: Irvine Ranch Water District

15600 Sand Canyon

Irvine, California

(Pages 1 through 61)

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I N D E X

IRVINE, CALIFORNIA; TUESDAY, NOVEMBER 13, 2001

7:02 p.m.

MR. GOULD: Good evening, and thank you all for coming. My name is Dean Gould. I am the BRAC Environmental Coordinator for Marine Corps Air Station El Toro.

Tonight we have the public meeting for the proposed plan for the groundwater cleanup for sites known as operable unit 1, which would be site 18, which is the off-station groundwater contamination, and operable unit 2A, site 24, somewhat informally known as the, quote, unquote, source area for that contamination.

I do sincerely thank you for being here this evening. I know there are a lot of competing interests. While we did hope the attendance would have been a little higher than what we have, I do see some faces I'm not accustomed to seeing in what we call restoration advisory board meetings, which is a meeting that we have every other month where we give an update on the environmental status of the base.

So I am encouraged to see the new faces, so thank you especially to you folks for coming.

Maybe one reason why folks did not come out in

greater numbers tonight is because due to the ad that ran in the paper. If you were to read it top to bottom, it pretty much says it all. So maybe we don't need to go on now.

It really is quite comprehensive. And in addition to that, with the information that's set up at the tables here and what we're going to give in the more formal presentation, I think you'll have literally as much information as you care to have on exactly what we're doing, what we're proposing.

And we want to hear back from you too. This is not meant to be strictly a one-way type of forum here.

Let me go ahead and go over what the format for tonight is. Believe it or not, we're actually one-third of the way through now that we're just getting into the more open-speaking portion.

The way this public meeting was set up and the format that we're still working with, but I think is probably the best for all concerned, at least as appealing to the widest spectrum of people, would be to have what we call a poster-board session where we have the various stations set up, and we have respective experts, if you will, for each of those stations.

We have regulatory agency representatives. We

have people from the Navy staff. We have, in this instance, water district representatives, community relation specialists. Just about anybody that you would need to go, to to get an answer to whatever you might have a question on with regards to these particular situation at El Toro are here tonight.

And so for that first hour, it was more of an informal question-and-answer period, going through the various phases of the program up to where we are tonight, which is the proposed plan proposal, if you will, to the community.

And this is what we're in right now which is called the public comment period where for 30 days, we sent out this proposed plan, and it is open for public comment. And this meeting is meant to both solicit interest as well as answer questions, get community feedback on the alternative that we, the Navy, in concert with the water districts, in this instance, are proposing.

So that was the first part of the meeting the informal poster-board session.

Now we're going to go into a little bit more of a prepared presentation, if you will. And I would ask if you please hold off on comments until we're completed with the presentation.

We're going to have a variety of speakers this

evening going through all the different phases that are on display here tonight. And then at the end, there will be the opportunity for the public to provide formal comments.

We have the good fortune of a formal court reporter here. As you can see, very detailed notes are being taken here this evening, and any comments that are provided or questions that are provided will be responded to. It is our job to respond in writing to them, so we want to make sure that we obtain your names, and we'll make sure that you get those responses in writing to any comments that are provided to us this evening.

And then the third portion would be after the formal presentation, if you will, if anybody would then like to still come forward and maybe privately go ahead and offer input to the court reporter, it's certainly your opportunity.

So you can either provide comments openly at the end of the presentations, or afterwards, once the presentation portion is concluded, feel free, by all means, to go ahead and come up and provide them to the court reporter in that manner.

We also have comment cards, if that's your preference. You can go ahead and just fill them out in

that manner. No shortage of opportunity to provide input to us this evening.

So we'll go ahead if -- I think we covered it all, to go ahead and kick it off.

The purpose, I think we touched on that. We want to present to you, the public, in a formal sense, what the proposed plan is for these particular sites in our overall CERCLA program.

Before we go too much farther, for those that would -- I think just about anybody would benefit from it, but for those -- especially the new members here tonight, I would suggest three documents that you should definitely have.

Hopefully everybody has a copy of the proposed plan itself. That would be this document here. It's very good because it really does say it all. In addition, it has a glossary of all of the terms in the back. That's one key document you should have.

Another would be an outline, really a copy of all the slides we're going to be giving this evening. I think we have those on a table. If anybody needs that, we can take a brief recess, and you can grab one of those to follow along and maybe take notes as we go through the presentation.

And a third would be I see a color handout of

the actual groundwater plume, over there. That would be nice just to take with you later on for reference purposes.

So definitely, if nothing else, I suggest that you take those three documents. But in addition to that, there is a whole table full of documents out there out front, plus at the various stations here. So please, by all means, help yourself. Plenty of information to go around.

Specifically, as we talked about a little bit, we're going to propose to you the remedial action for the volatile organic compounds that have found their way into the regional aquifer off-station at MCAS El Toro into the regional groundwater, as it mentions there.

We want community input. This is not just because it's a mandated requirement. We truly come up with a better product by getting community input. That's what we want and need this evening.

And then at the bottom there, opportunity for the community to learn about, and you can see the various bullet points. The contamination itself, how it got there, how it's going to be cleaned up, how long it's going it take, all those types of things.

Just to kind of summarize, tonight really is to focus on the CERCLA remedy for these two particular

sites. But we can't really go too much further without at least acknowledging that how we got here was by way of a settlement agreement that was just recently signed by the Department of Justice on behalf of the Navy, in addition to signatures by the local water districts, in this instance, Orange County Water District and Irvine Ranch Water District.

And certain people in the audience this evening may have a little bit bigger smiles on their face than others because that has been a very, very long time coming, and a great deal of effort has been put into it. And I'll give a little time line here in a minute to show you a portion of how long it's taken.

So we're very, very excited about that. It's a significant milestone in the program, and especially for the ultimate cleanup of the base and the affected off-station groundwater.

The settlement agreement that I mentioned is a very, very complex agreement, and it did take quite a bit of time to ultimately reach agreement on it.

And "agreement" really is the key word. It was agreed upon by the local water districts and the Department of Justice on behalf of the Navy, as I mentioned, to identify what we feel is the implementable remedy for this particular situation that we have, being

the contaminated groundwater.

So it's something that we have over years and extensive effort come to agreement on now, and we feel it's a very good product for the community, as well as for the agencies involved. So let's go ahead and get into the time line a little bit.

Okay. The first block there, the Federal Facilities Agreement was signed, it mentions, in February of 1990. Or I'm sorry. It was placed on the National Priorities list in February 1990.

The Federal Facilities Agreement is something I have in my hand. And what this means is this off-station groundwater was identified, and it was of a significant enough extent that the base was placed on something called a National Priorities list.

And once that is done, in this instance, the Navy was obligated to enter into something called a Federal Facilities Agreement, which was signed by a representative of the Navy, as well as what are now the Regional Water Quality Control Board, represented by Patricia Hannon this evening, Department of Toxic Substances Control with Triss Chesney here this evening, and U.S. EPA with Nicole Moutoux here this evening.

So those are the four parties that signed this agreement, and it's a legally binding document that says

the Navy is committed in a very structured sense to obtain a cleanup or complete follow-through through the CERCLA process of those sites that are identified in need of formal remediation.

And there's various schedules that needed to be adhered to with direct oversight by the three agencies I just mentioned. So for the first step, we're placed on the list, and then we enter into an agreement.

Okay. Now, once the agreement's been reached and we have a schedule to adhere to, the first step of that schedule would be the RI phase of remedial investigation. And you can see, looking at your handouts, what happens during that phase.

As the name implies, it's an investigation. We're trying to identify how much, where, when, how, those types of things. Very detailed investigation as to the source and the extent. And that was completed between the two different sites right around the 1996-1997 time frame.

The next step would be the feasibility study. And from the feasibility study stage, now we're looking at ways to remedy those problems that were identified in the RI phase. So we're looking at alternatives, and we're looking for the preferred alternative, which is what we're here presenting you tonight. And that two --

those -- those alternatives were published in the feasibility study also right around the '96-'97 time frame.

And then the publishing of proposed plan and the holding of the public comment period 2001. What happened? That's five years. What happened between then?

Well, what happened was very lengthy discussion and negotiation between the parties that I've mentioned just a little bit ago. Very complex, both technically, physically, all those types of things, but we have now reached agreement.

So it took a little bit longer than what we would have hoped. The key thing is that we all are here this evening with a signed agreement so we are now able to move forward or continue on forward with our CERCLA process, that being the public comment period of the proposed plan phase.

Once this phase has been closed out, we've solicited and responded to public comments, if, in fact, after that input we do have public acceptance, and that is one of the criteria that we need to consider, we can move forward then with the publication of a ROD with hopefully this still being the preferred alternative. That would be the next step in the normal CERCLA process.

And then with the agreement that we do have, we would continue to be move forward with the water districts, in this instance, with the remedial design of the remedy, and then move forward with the actual treatment of the groundwater itself over the long-term.

So that is the process-- I won't say a nutshell because that was kind of a big nutshell, wasn't it? But that is the process and how we've gotten to where we are today.

All right. Now, the reason why I asked to be sure that you have one of those color handouts that are over on the table there, because looking at this one, it's not quite as crisp, and plus, just to get it on this elongated sheet, it's a little distorted, and that handout is a little bit crisper. So if you like, feel free to pick this up.

But this does give a pretty good feel for the extent of the on- and off-station groundwater contamination that did take place that we are now responsible for providing a remedy for and ultimately making sure that it is cleaned up.

Tonight I'll be serving essentially as a facilitator for the discussion this evening. We do, as I mentioned, have a variety of speakers, each presenting a different portion of where we're at in the process.

I'll turn it over now to Ms. Content Arnold. She is the lead remedial project manager for El Toro. She's with the Navy staff, working out of San Diego. She's going to go ahead and start off with some of the more technical aspects of some of this, getting into the site descriptions and getting into the remedial investigation.

MS. ARNOLD: Thanks, Dean.

As Dean said, I'd like to start off by giving you a brief description of the two sites. Site 18 is the regional groundwater plume, and it includes the area of groundwater contamination in the principal aquifer extending off-station from the source area. The Source area is Site 24. The plume extends approximately three miles west near Culver Avenue in Irvine.

Now, the principal aquifer varies from approximately 200 to 450 feet below ground surface. The primary chemical of concern is trichloroethene, or TCE as I'll be referring to it this evening.

Site 24 is a VOC source area, and that encompasses approximately 200 acres in the southwest quadrant of the base. It also includes two large hangars, buildings 296 and 297. Now, this is where aircraft repair and maintenance took place on the base.

The footprint of site 24 includes the shallow groundwater unit contamination, as well as the soil contaminated within the area.

This evening we're not going to be focusing on the soil because that was addressed in an interim ROD back in 1997. We plan on having a final ROD for the soil cleanup in the year 2002. So, like I said, tonight we'll be focusing on the shallow groundwater contamination for site 24.

Additionally, the shallow groundwater unit varies from approximately 80 to 110 feet below ground surface. And once again, the primary contaminant of concern is TCE.

Now, I know this is difficult to see, so I hope you have your handouts with you. But basically, this is an aerial of site 24, and I'll be flipping back to that map to put it in perspective for you.

But these are the two hangars over here, which was the source of the contamination where the industrial activities took place on the base. And the contamination flowed off base in a westerly direction like this.

To put it into perspective: here is Site 24, shallow groundwater contamination here, and then we have just some landmarks that I'd like to point out:

I-5 right here, the 405 over here, and then Culver Drive over here. And you can see that the principal contamination area extends off base approximately 3 miles, like I said.

As Dean mentioned, as part of the CERCLA process, we completed a remedial investigation, or as we commonly refer to it, an RI.

So what is an RI? Well, the objective of the RI is to evaluate the presence, nature, and extent of contamination. It includes three components primarily, an initial investigation, an extensive field investigation, and also a base-line risk assessment.

So what are the components of the initial investigation? Well, this included document review, aerial photo reviews, personal interviews, and an initial soil gas investigation.

The extensive field investigation included first developing a workplan. And this workplan was reviewed by the BRAC Cleanup Team, and that includes U.S. EPA, DTSC, as well as the Regional Water Quality Control Board and the Navy.

And before going out into the field, we gained concurrence from that regulatory group prior to commencing field work. And once out in the field, we did extensive soil, groundwater, and soil gas sampling.

From this data that we gathered, we put it all into a risk assessment, which Dr. Temeshy will be touching on a little bit later on this evening.

This RI was conducted between 1992 and 1997, and the conclusions basically confirmed the following:

First of all, that VOCs in soil and groundwater originated at site 24, the source area. The highest concentrations of TCE were found beneath building 296, that is, one of the hangars that we previously looked at, and concentrations were 4,850 parts per billion.

TCE was also the predominant chemical of concern, as we discussed, in both soil and groundwater TCE is an industrial solvent that was used primarily for cleaning, degreasing, and paint stripping. Historically, it was common practice to use that.

VOCs have migrated from the soil at site 24 to the shallow groundwater unit and then finally to the principal aquifer. And also, as we've discussed, the VOC plume extended three miles west of the station in the principal aquifer near Culver Drive.

Within station boundaries, the TCE is limited to the shallow groundwater unit, not the principal Groundwater unit, and That's the shallower unit from 80 to 110 feet below

ground surface. Outside the station boundary, we have contamination in both the shallow and the principal aquifer. And in the shallow groundwater unit, water quality is better than the federal and state water quality standard of 5 parts per billion for TCE.

In the principal groundwater unit, the concentrations range generally from barely detectable up to 50 parts per billion.

Finally, TCE concentrations gradually decrease as you move away from the source area.

Now, this next figure here depicts the migration of VOCs released from the surface. Over here, if you can imagine, this is where the hangars are here. We have a release of TCE to the soil, and you can see it migrating to the shallow aquifer approximately 80 to 110 feet below ground surface.

As it travels downgradient, it eventually migrates to the regional groundwater plume, which is deeper, approximately 200 feet below ground surface.

MR. GOULD: Thank you, Content.

Okay. As I outlined just previously, the next step in the process would be the feasibility study portion where we look at alternatives.

But in order to help us determine those

alternatives, we need to know, with all the information that we just gathered from the remedial investigation, what threat is actually posed to human health and the environment.

So Dr. Andrea Temeshy is going to go ahead and speak to us tonight on that particular subject. She is an employee with Bechtel National, and she is outstanding in her field.

DR. TEMESHY: Well, thank you.

Before I go through what the results are on the risk assessment, I want to briefly introduce the concept of the risk assessment.

Basically, what the risk assessment does is estimate what the potential hazard to an individual exposed to the chemicals at a site are. That is, are we going to have a potential for some adverse health effect?

And when we talk about an adverse health effect, we're talking about could this person develop cancer, or chemicals also can elicit another type of effect like non-cancer effects, which could range anywhere from liver or kidney or systemic toxicity-type effects.

So when we talk about the risks, what we're doing is we are translating chemical concentrations into

an estimate of hazard to human health.

So on that, we'll move on to why do we do a risk assessment. As was stated before by Dean, it is an integral part of the remedial investigation concept. So as a first step, we have to be able to do it in order to be in compliance with guidelines.

And again, it's to determine if we have a problem as far as human health based on exposure to the chemicals at a site?

How are the results of this assessment used?, If we have a risk, then that will determine if cleanup is going to be necessary or not at the site.

How the risk assessment is done. I'm going to go through, the steps that I do in order to quantify risks so that we know all the components that are utilized.

And that is -- the first thing is we have the chemical contaminants, and those are at a certain concentration. For example, we have TCE. We've got concentrations of TCE, and we're going to be using that in the risk assessment.

The next thing is we are going to determine who's exposed. What is -- what are the potential receptors at a site? And looking into the future, could we have a residential receptor at the site? That would

be a very conservative scenario.

And how would exposure take place? What kind of pathways? Is this person going to be drinking the groundwater? And is he going to be using it as a drinking water source? It's going to be also used for bathing, so you have dermal contact.

And then you would also have the inhalation because volatile organic chemicals will basically be

So then we have the chemicals and the person exposed to them under different pathways. All of this information is integrated into a mathematical model. And within that mathematical model, we also look at how toxic is this chemical. The result of Integration would be the risk number.

When we talk about the risk number, we have two different end points. We would have the cancer end point, and we also have the non-cancer-type effect. And when we calculate the risk, we're going to address both end points.

Now, one thing to consider is when we're putting all of this information together, we are going to be very conservative in our assumptions. And I'm going to go through an example as to what I mean by "conservative" in the next slide.

We are not going to at any time underestimate the risk.

We're always going to be erring in the overestimation of it. That is, that way we are always protective of human health. Therefore, the actual risk is always going to be lower than the one that we are actually estimating.

Now, this is just a quick overhead as to showing that we've got several things that must occur in order to quantify the risk.

That is, (a), we have to have chemical contaminants, (b), we have to have a way to release the chemicals from the media to an area where humans are going to be exposed. If we have a residential receptor, then -- that person is going to be exposed to that groundwater via use of that groundwater as a drinking water source.

We need to have a person that is exposed to chemical contaminants. If you don't have a person exposed to, then you don't -- you cannot quantify the risk. And finally, you've got different exposure pathways for these contaminants; that is, by eating it, by drinking it, or by touching it. Now, we've said earlier that the risk estimates are very conservative and overestimate in the risk for protection of human health.

When we talk about residential exposure, these are some of the assumptions that I want to present

to you that show you how conservative these estimates are.

We are assuming that a resident is basically at a site exposed to groundwater, in this instance, for a period of 30 years. And that means this person never moves. It's there for 30 years, from birth to 30 years.

Also, basically, 24 hours a day for 350 days a year. Again, that means that this person does not leave the house except for 15 days over that year. So that's a very conservative assumption because this person does not work, does not leave the house, and that is very, very conservative.

Again, following this conservative scenario, as far as drinking water, two liters of water a day are consumed. All of these values, all of these assumptions, are established by EPA, and we basically implement them in our risk assessment.

So when we talk about the resultant risk numbers, keep in mind that these are numbers that are based on conservative assumptions.

Now, we've quantified risks, but what do they mean as far as are they acceptable? Are they unacceptable?

We've got established criteria by which to compare how acceptable or unacceptable these risk numbers

are. For cancer risks, we've got a criteria established by EPA, which means that if it's less than one in a million, that is, one times 10 to the minus 6 1x10-6 for cancer risk, then the risks are considered acceptable.

If they are within one in 10,000 to one in a million or 10 to the minus 4 to 10 to the minus 6, again, this is for the cancer risk, then it is within the risk-management range, and they're in the generally allowable risk range.

Now, what that means is that, at this point, the stakeholders and the regulatory agencies, will get together and will integrate with the results with other factors.

For example, are the concentrations at the site greater than drinking water standards? All of these factors will be taken into consideration to determine if remedial action has to be implemented at the site.

If risks are greater than one in 10,000 or greater than 10 to the minus 4, then that is considered unacceptable. And at that point, cleanup is warranted.

Now, for the non-cancer risks, there is a threshold of one. And if risks are less than one, again, that is considered allowable.

If they're greater than one, then there is a potential for adverse health effects to develop.

And at that point, then, again, considerations as to what the contaminant levels are like with respect to MCLs, in this instance, would be considered as far as the cleanup.

Now, I'm going to briefly show you what the risk results are under baseline conditions, that is, prior to any remedial action. These results are for an individual, that would be, in this case, a resident exposed to the groundwater at both Site 18 and Site 24.

Site 18 is the principal aquifer, and Site 24 is the shallow groundwater unit. And again, we've got two different end points. We have the cancer risk, and we have the non-cancer portion of it.

For the cancer risks, under residential conditions, the principal aquifer results are within the 10 to the minus 6 and 10 to the minus 4 risk range. And if you flip back to the previous slide, so they are in this area right here. That means that they're generally allowable. And at that point, you would integrate other criteria into whether cleanup is required or not.

Now, for the shallow groundwater, the risks are greater than 10 to the minus 4, and the 10 to the

minus 4 is the unacceptable risk range. Again, these are residential risk results, which means that you've got somebody exposed to the groundwater via drinking it, dermal contact, while showering, for example, and then through the inhalation portion of it while this groundwater is being used as a potable water source.

Finally, the non-cancer health effects, since we also have to address them. These results are greater than one. So there is a likelihood of potential adverse health effects for both the principal aquifer and the shallow groundwater unit.

Now, that we have this information, then the next step is what does it mean?

For human health risks that are in excess of 10 to the minus 4, those are not acceptable, which means that they warrant some sort of remedial action.

At the shallow groundwater unit, then, since the risks are in excess of 10 to the minus 4, again, these are residential risks, then a remedial action will be implemented.

Now, at the principal aquifer, the risks are in the 10 to the minus 4 (10-4), 10 to the minus 6 (10-6) risk range. So that is within the risk-management range.

However, the VOC concentrations exceed the federal and state water quality standards, and then that

leads towards remedial action.

So at both the shallow groundwater unit and the principal aquifer, you have remedial action based on the risk and also based on the exceedence of the VOCs for the MCLs.

MR. GOULD: Thank you very much, Doctor. Good. Good information.

Now, next step in the program I mentioned previously is the feasibility study. That will be -- that and an introduction into the preferred remedy will be briefed to you by Mr. Andy Piszkin, the former lead remedial project manager for El Toro, but prior to Content Arnold.

He was involved for some time through all the investigation stages for a number of years, so he has a great deal of technical knowledge and background on it. So I think he's probably perfectly suited to give this particular portion of the brief.

One clarification I want to point out. I mentioned the signators on the settlement agreement. There was one more representative on behalf of the Navy. Department of Justice had negotiated for the Navy, but we actually had a Navy signator on it. So there were four signators.

So Andy, if you would, please.

MR. PISZKIN: Good evening. My name is Andy Piszkin. And like Dean says, I've been around quite a while. I started as a remedial project manager in '91, on El Toro. I feel like this is kind of homecoming night for me.

I've been involved in a lot of the groundwater studies as well as some of the negotiations for the agreement that has been signed by the Department of Justice and the water districts, as well as the Navy.

We use the EPA guidance on doing a remedial investigation/feasibility study. This is what it is, guidance, but it's got some real good stuff in it. And that's where the objective of a feasibility study comes in. It's different than what I have. You've seen remedial investigation. That's "what's out there." A risk assessment is "what does that mean?" and "What does that matter?"

And if it matters, then some action has to be taken, the feasibility study is, "what can you do about it." And the preferred alternative that we're proposing tonight for public comment here is what we think is the best thing to be done because of the risk and because of what we found.

So the feasibility study is trying to combine a lot of the -- what's the objective of our remedial

action. RAOs Remedial Action Objectives is what I call them. And first, you have to define the problem, what kind of response actions you need, what kind of tools are out there in the environment and industry that will help you solve those.

Do you have to get the groundwater out?

What do you do when you have it? How can you treat it? Do you have to get it out? Can you treat it down in the groundwater where it is 200 feet, 400 feet below the ground surface?

How do you treat it? Do you heat it up? Do you take it off to a landfill? What do you do with it?

So you look at all those possible technologies, and you try to then piece them together in some kind of a treatment train.

Okay. Well, maybe I'll pump it out first. Then I have it, and I have to treat it somehow. And I've got A, B, C, D, E way to treat it, and then I have to do something -- then it has to go somewhere else. You know, what do you do with it?

So you -- you look at all those technologies, what are those process options, and you put them together. You do some initial screening, which we have done, and some things just don't fit for the scenario that -- of what we have found and what we have to do with it. So those get kind of screened out being

noneffective.

Then you conduct detailed analysis. And under -- it was ironic. Under the -- the last one, under the guidance, it says "Further define alternatives as necessary."

Well, we spent a lot of time further defining alternatives as necessary. Because one of the things that has to happen, you can have the greatest technology, but if it can't be implemented, it doesn't go anywhere.

So one of the things and the only thing this settlement agreement that has been signed by a bunch of parties is that it makes the alternatives that are being proposed as a joint project with the water districts as implementable.

It will not be implemented unless the Record of Decision selects Alternative 8A and 10B prime. If that Record of Decision doesn't get to that point, that agreement doesn't go any farther. It doesn't happen even though it's all signed, it allowed us to be here tonight to say we have a proposed plan that is actually doable.

So the first thing is what's our objectives? One thing that's not on this slide is prevent exposure from nontreated water. That was actually our

third objective. We want to contain it. Don't let it go any farther, or at least minimize the migration of any contaminated groundwater above drinking water standards.

The second one is to reduce, you know, the concentrations to below drinking water standards. And the third, like I say, it's not on there, but it's to prevent anybody from coming into contact with something that's concentrated above the drinking water standard.

And, therefore, like the risk triangle, you need somebody to be exposed, you need a toxin or a concentration, and you need a pathway. If you can block the pathway, you block the risk.

On page 9 of the proposed plan, it gives you -- it's actually table 2, it's a good list of some of the alternatives that we considered early on like hydraulic containment.

You can put wells in, extraction wells. You can put in reinjection wells. You can put water into the ground so the groundwater doesn't flow any farther. You can install a slurry wall, but this technology. was screened out early because it has to be installed too deep. In such a large area, it would just be just impractical and not cost-effective. So that's one of the alternatives that this just doesn't fit with what we have to work with

here.

You have some of the removals. You can -- well, you can, you know -- extraction from groundwater wells. Vacuum-enhanced groundwater is kind of doable. That is,-- put a vacuum on the extraction well.

You have some of the treatment that you can do in place, and you have some of the treatment process that you can do once you bring the groundwater up.

So this is what we had at our disposal, and we went through some of these things, some of these technologies in the feasibility study. And with the scenario of how large and dilute the principal aquifer plume is and the area and the concentration and the flow of the shallow groundwater unit, we have a variety of alternatives.

And we'll go to that next slide.

I must say I remember discussing a lot of the discharge. What do you do with the water once it's treated? Do you put it in the washes? Do you put it in Agua Chinon or Bee Canyon Wash?

Do you just put it out in the middle of the runway surface impoundment?

Do you reinject it? Do you use it for irrigation or domestic use?

There's a lot of scenarios. There's probably

like, you know, 12 scenarios that we dreamed up of let's really think outside of the box. What can we do with the water after we treat it? And that was -- that was a main issue on what's implementable.

So here we have -- I believe this is page 14 in the proposed plan, and it really goes through the alternatives that kind of met the -- you know, passed the ha-ha test, the ones that are kind of doable, and they all go to kind of pump and treat.

Because of the environment, because there is an Irvine Desalter Project that in the late 1980s, during that decade it was on the books as a water supply project, and I know Richard Bell and Steve Conklin both, or one of them, will talk more about that after I sit down, but looking through the alternatives, like alternative 8 -- or I'm sorry -- 2A, that is a Navy stand-alone.

We looked at the Navy doing their own large groundwater pump-and-treat project without the Desalter, without the local water districts. If that -- if Irvine desalter project didn't happen, the Navy had to have some alternatives that they could do on their own, and that's what 2A is.

6A is a combination of using a joint project with the local water districts. 7A -- A and B are alternatives that incorporated monitored natural

attenuation and some of those results.

Well, let's go on to the next slide.

We took all those, and there are the nine criteria of EPA. The first two are critical. They're called threshold criteria. It's the protection of human health and the environment, and it has to meet the applicable laws. Those are the first two.

The next five, they're the balancing criteria. That's the meat of how to -- it's the majority of criteria to help select a proposed alternative.

The last two are modifying criteria. If there is -- you know, we -- we want state acceptance. We want public acceptance. And those actually come after this meeting today and the close of the public comment period where we take the response -- take the comments and in the Record of Decision provide a responsiveness summary to all the comments related to the proposed plan that the Navy's putting out.

So next slide.

This is page 19 of the proposed plan, as I term it, the meatball chart. And I'd have to look at the other page, page 18. It's nice that they're right together because page 18 goes through those nine criteria very specifically. You know, it has italicized font, which discusses what is looked at under that

criteria.

For instance, "Short-term effectiveness. Assesses how well human health and the environment will be protected from impacts due to construction implementation of a remedy. Also considers time to reach cleanup goals."

I must admit on the previous slides, two back, the alternative that we think is the best has one of the longest time frames when it comes to cleaning up the principal aquifer. It has 95-plus years. That's one reason we have this little plus here is it's a little bit of a misnomer. You have to look at the alternative that we're proposing as a combination of alternative 8A as well as 10B prime.

If you look at 10B, and prime is just a little bit of a reduction in the flow, and we look at the modeling -- the groundwater modeling, it didn't have a significant impact to the results.

10B cleans up the shallow groundwater in roughly 20 years. That's a big thing because that's the source of that large dilute regional plume. That's a big priority for the Navy to get rid of the source as soon as possible.

And so it's the combination of both 8A and 10B prime is what we're acting on for overall short-term

analysis. And like our little asterisks or our little plus sign says, there's a lot of optimization that's going to happen when we get into the design.

And the groundwater modeling is -- really, the main focus is comparative analysis. How does it compare to the other alternatives?

There is lots of opportunities to optimize well placement. And when you're running this thing for many, many years, as it will be used as an irrigation supply source, it's not going away, and it will be very beneficial.

So we look at this meatball chart. We don't have weighted averages. We don't have numbers. But you can see where it's a full closed-in circle, a good performance.

(Note to Readers: Recommend referring to the Comparative Analysis of Remedial Alternatives in the Proposed Plan or the public meeting presentation handout.)

You can see the preferred alternative has three -- actually, we have Navy state acceptance in there, which is nice -- nice as a full circle, best performance.

The big one, I have to say, is implementability. You see these other three alternatives. They are joint Navy/water district projects. But they just -- they did not make the cut,

and they did not meet the settlement agreement.

So the settlement agreement on the 8A, 10B prime is key to having something doable. So that's one of the main reasons we prefer it.

Cost-effective, it's got long-term effectiveness. It's great to be hooked up with a CERCLA remedy with a long-term local water district because they're here. They know how to run these things. You know, it's their business and they're experts and it's great to team up with them.

So here's some of the kudos or some of the things that are the real benefit of our preferred proposed remedy.

Optimal solution. Given all the factors, all the technical factors, all the nuances that we've had with the local water districts, with the regulatory agencies over quite a many number years, we think it's the best -- it really is the best solution.

It does resolve or satisfy our CERCLA requirements under the Navy and under our Federal Facilities Agreement. And the cleanup team, the BRAC cleanup team, they support it. They've been very diligent, very patient with the Navy and the local water districts on getting this settlement agreement that allows our preferred alternative to be implementable.

So next.

In the proposed plan, you do have some schematics. They all start looking the same after a while. But truly, this is different. And I do -- like Dean said, I would definitely support getting the handout version of the map that we see over here.

It says "Irvine Desalter Project," where in the kind of red -- I'm not sure if that's mauve or I don't know what color -- our proposed alternative is.

The light blue line is not what the Navy's proposing. That is the water district's drinking water, potable water system, that's outside of our VOC-contaminated plume.

So with that, I'm going to give it back to Dean.

MR. GOULD: Thank you, Andy. Terrific.

Well, the evening certainly wouldn't be balanced unless we had presentations by the water

districts that we're partnered with. And in just a moment, we'll have Mr. Steve Conklin from the Orange County Water District as well as Mr. Richard Bell from the Irvine Ranch Water District come up and give their perspective on the remedies being proposed and the historical perspective of what has transpired to date and offer a little more insight as far as the nuances to the implementation of the remedy we've been talking about so far.

If you would, Steve.

MR. CONKLIN: Thank you, Dean.

And good evening. My name is Steve Conklin with the Orange County Water District, and I'm very pleased to be here.

Andy said he started working on the project in 1991. I actually started working on it in 1989 when I started with the water district over 12 years ago.

Roy Herndon, our district hydrogeologist with the district, you started before I did.

MR. HERNDON: 1988.

MR. CONKLIN: 1988. So we have a long history with this project.

So Roy, myself, and the water district board

of directors are very pleased we've reached this point. We're very supportive of the project and very anxious to move forward with this very implementable and very technologically sound project that will meet the needs of ourselves, our partners, and the various regulatory agencies.

The water district is the groundwater guardian. We were created in 1933 by special action of the state legislature to protect and preserve the Orange County groundwater basin.

It's a very valuable resource. It's the water that's under our feet right here. It's the water that provides the needs of over 2 million people, that stretches from Los Alamitos all the way down to Irvine, from Anaheim and Fullerton.

That whole area there is -- about 70 percent of the water that those 2 million people use comes from the ground. This water has to be protected. It's an invaluable resource, and this project does protect this very important resource for us.

The water district is an independent monitoring authority. Our purpose is the groundwater basin. And with that, whatever -- whatever it takes, that's our purpose -- and our existence is to protect the groundwater basin.

The project, by treating the contaminants here at the site, it prevents the contaminants from moving farther downstream and potentially contaminating other groundwater. This water has its natural movement, more or less, from east to the west. It would be moving from the Irvine area actually on through Santa Ana and some of these other areas. And these areas are underlain by groundwater. If this contaminant continued to move it would contaminate that water as well.

So it's very important to pull the water out here, treat it, and then be able to use it.

This project is very valuable in that it's taking water, which is otherwise not usable, treating it, and making it into a very valuable resource. It's making us more water independent and not dependent so much on Metropolitan Water District and from water from out of the area. So it's making use of water right here and making the water available for us and for our children and for our children's children.

So with that, I'd like to turn it over to Richard Bell, my partner in the project, from Irvine Ranch Water District.

MR. BELL: Thank you, Steve.

It's a pleasure to be here tonight. I concur with the comments Steve made.

Both water districts' boards of directors back in June, after many years of effort, support the project. are very, Our districts are very enthusiastically behind the project, and we have been working very diligently on this project for many years.

I started with the district -- since we're giving a little history of each of our involvement with this project, I started here four years ago and got very involved with the project at that time. About half my time is devoted in one way or another to this project in negotiation and project development.

A little side note, 20 years ago, I was the regional manager for a Regional Water Quality Management Program for Southern California back in the late '70s when VOCs were first discovered in groundwater. At that time, we knew nothing about VOCs in the Irvine Area since this area was agricultural.

(Interruption by reporter.)

MR. BELL:

One of the things that I'd like to talk about is our perspective on the project and how we got here.

The first slide is titled "Two Projects in One." That's an important point to understand. The project is both a nonpotable system, which is a CERCLA remedy that Andy addressed, and we also have a potable system.

And I'll show you them in a minute on the maps.

The nonpotable system basically takes water from the VOC Contamination plume, which is extracted, treated, and then would be used in a recycled nondrinking-water system primarily for landscape irrigation, and other nonpotable uses.

It is part of the CERCLA remedy.

The potable system are wells which are located safely beyond the plume, outside the plume, and outside upgradient of the influence of pumping from the plume. This water will be treated to remove salts and nitrates, for use in our drinking water system.

And we need to note that the potable project, is separate and not part of the CERCLA remedy.

Next slide.

It was very important early on in the process to get our public involved. A few years ago, we actually conducted some very extensive focus groups with our customers and community leaders.

And what we found from that process was that our community and the leaders in the community very much supported the cleanup of the project, but they preferred that the treated water from the plume be used forlandscape irrigation. And that's how the project was basically configured. We developed the project into two components at that time.

One thing we do like to make clear is that the groundwater cleanup project and the groundwater supply project do not affect the ultimate use of MCAS El Toro. It really has no bearing on that decision at all.

The plume that Andy showed in his picture basically is the same as we show here in color. This is the source area site 24 or the origin of the VOCs. They spread basically in the shallow unit and then dropped down into the principal, deeper aquifers and have been detected out as far as Culver and Drive.

But we have designed a system that has two wells here in the major -- or the hottest spot of the plume for extraction.

We also maintain a well here at the toe of the plume to help provide containment of the plume so it doesn't get beyond this point. We want to protect this area downgradient of the plume. That's what Steve talked to earlier.

The water would be pumped from these wells, conveye by a pipeline to a central treatment plant here where the water will be cleaned and then from that point will be put into our nonpotable irrigation system.

We also have, which is separate from the -- the CERCLA remedy, is our potable system, which would be outside the plume, would be some wells located along the Southside of the Interstate 5 Freeway.

That water, as I mentioned earlier in this Part of the basin has higher salts from past agricultural activities and natural sources.

This water will be pumped from these wells to the same treatment plant location, but into a separate facility, where it will be desalted and disinfected it and pumped it in the potable system.
Not part of CERCLA remedy.

The treatment system that will be used for the nonpotable project will include primarily two types of treatment processes. One is reverse osmosis, which will desalt the water to levels where we can use it for irrigation supply, and the second would be a packed aeration tower for air stripping to remove the volatile organic contaminants.

Those -- processes are both the best available technology. They're proven technology and

been used in many different locations, and they're very reliable processes.

The air that will be stripped out, which will contain the VOCs will be further treated through a granular activated carbon unit, to absorb all the VOCs in the air. The treated air -- will be free of contaminants so there will be zero discharges from this facility to the environment.

And after this water is treated, it will be disinfected and put into our system.

This is the same chart that's on the proposed plan on page 16, I believe, that Andy showed.

As basically he said, the water from the shallow groundwater unit on base at site 24, contains the high concentrations of contaminants.

The shallow groundwater unit will be pumped by the Navy and conveyed to a pipeline, where we'll come over in a pipeline. We'll take custody of that water. That water will be treated by reverse osmosis and also go through the air stripper, the off-gases will go through carbon treatment, and the purified water will be disinfected and put it into our irrigation system.

The deeper, is off base, water which has lower concentrations of contaminants, will be partially desalted And all that water will also be air stripped,

and the vapor treated, and then the water will be disinfected and put into our system.

So that basically gives you a picture of how the flow streams are treated in the process.

One of the things that's very important is to explain how we ensure both public health and environment are protected And one of the key points is the extraction wells in the principal aquifer prevent the plume from being pulled towards the drinking water wells.

We went through excessive groundwater modeling studies to prove that point and to ensure ourselves that that would be the case.

And as I mentioned earlier, all the water, 100 percent air stripped will be. Then all the highly contaminated water will also receive reverse osmosis.

Again, there will be no air emissions from the project, and the wastewater brines from the treatment stages or steps will be disposed to a brine-line system. We'll convert a pipeline into a brine line that goes to the regional wastewater collection system so it doesn't

go into our reclamation system. Here, we reclaim our water. It is important we need to keep excess salts out of our reclaimed water sources and keep the water as pure as we can.

So the brine goes through a regional system. Ensuring protection for the drinking water project is done through several methods.

One, we will install an enhanced groundwater monitoring program and network in the project area so we can know in advance what's happening. Groundwater will be monitored and tested throughout the project life and in the plant on a continuous basis so we know exactly how the plant is operating at all times.

As I mentioned, reverse osmosis is a proven technology. It's used to purify bottled water. It's widely known, and it's a safe process.

And another thing we make clear is that we actually remove the salts and minerals for the drinking water side to better than what's required for drinking water standards. That's our goal, and that's what we plan to do.

The last slide.

In summary, the project benefits, from the perspective of a water supplier, can be summarized by four main points. One, it cleans and protects the groundwater basin that's been damaged over the years and is currently unusable for municipal uses.

Second, it basically provides a new, locally controlled drought-resistant high-quality groundwater supply for both our potable and our nonpotable systems. So we're getting the water supply that we need, and it developes unused local supplies and provides drought-protection benefits. By having our supply here, it reduces our reliance on imported water.

The third point is there will be no impact on our -- on our ratepayers. Funding by the Navy the nonpotable system and from the Metropolitan Water District on the potable system will make the project feasible side. This will keep our costs in line or less than what we would pay for imported water.

And fourth, the project is environmentally beneficial, as I mentioned earlier.

And that's basically all I have on -- from the Irvine Ranch Water District water perspective on the project.

MR. GOULD: Thank you very much, Steve and Richard. I appreciate it.

Before I provide closing remarks on this particular portion, I want to afford the regulatory representatives here tonight the opportunity to give their agency's perspective on the preferred alternative and the proposed plans that are being presented to you

tonight.

So I'll start off asking Ms. Nicole Moutoux, representing U.S. EPA, who is also the lead -- lead regulatory agency of what is known as the BRAC Cleanup Team, the BCT for El Toro, if you would like to make some comments.

MS. MOUTOUX: Yes.

My name is Nicole Moutoux. I work for the Environmental Protection Agency.

Basically, EPA is in support of the Navy's proposal for cleaning up the groundwater at sites 18 and 24 because it will be, once in place, protective of human health in the environment, as well as restore the beneficial uses of the groundwater.

And I've been on the team not as long as everyone else, but we believe that it's time for this cleanup to happen.

MR. GOULD: Thank you, Nicole.

Ms. Triss Chesney with DTSC.

MS. CHESNEY: My name is Triss Chesney, and I'm with the California Environmental Protection Agency, Department of Toxic Substances Control, also known at DTSC.

DTSC concurs with the proposed remedy because it addresses groundwater contamination by reducing the

VOC concentrations to meet water quality standards, controlling VOC migration, and preventing domestic use of contaminated groundwater until cleanup goals are achieved.

The proposed remedy is protective of human health and the environment and meets state regulatory requirements.

MR. GOULD: And the third regulatory agency representative would be Ms. Patricia Hannon of the Regional Water Quality Control Board.

MS. HANNON: My name is Patricia Hannon. I'm also with California EPA, Regional Water Quality Control Board, Santa Ana region. And we concur with the proposed remedy.

We've been waiting a long time for this to happen, and we're very thrilled that it's going to work. It hopefully will work and restore beneficial uses to this.

MR. GOULD: Thank you.

There's a couple of closing comments before we open it up for comments.

Next step, public comment period.

Okay. Well, certainly we're kicking that off here tonight. But the formal comment period, if you're

looking at page 2 in the proposed plan that's available, you see that it talks about the public meeting being tonight, November 13th. But there is a 30-day public comment period ranging November 7th to December 7th. That's an ominous day. During that period, we are gladly receiving public comments on this preferred alternative.

So I know there's a lot of information being put out tonight. Maybe you need to go home and review some of the documents or come up with some questions, develop some questions for us, or perhaps share what you've learned tonight with some people that you know, coworkers, people in the community, anybody that you would like to get their input on and bounce it off them. By all means, you can then submit the comments to me. I would be more than happy to receive those comments.

As I mentioned, anybody who responds to us with comments we'll gladly respond in writing formally giving you a detailed response to the questions that you may have. So I do encourage you to please take advantage of that. And anyone you know that would be interested in providing comment also, solicit them to do the same.

Once the comment period is ended, and assuming

that the proposed alternative that we've talked to you about this evening is, in fact, the preferred alternative that is ultimately selected, we'll go ahead and put that into a Record of Decision and publish that.

And once that is signed after review of the regulatory agencies and our partners, we'll go ahead and finalize that document, and then it becomes final. Then this remedy is the one that we'll go ahead and move forward with, and the remedial design will then take place.

This is a little bit of a unique instance in that remedial design will actually be produced by the water districts. And then once a design is complete, we'll move forward with the actual action, meaning the treatment of the contaminated groundwater.

So that is essentially it as far as the formal presentation goes.

So as I mentioned, I think you're going to get the idea that we want comments. Here's at least the second opportunity, aside from the informal session. Here's a second part for you to go ahead right now, go ahead and speak up, and we do have a microphone available for anybody who would like to provide comments.

Now, there's a couple different ways we can do this. You can go ahead and give them right now, if that's your preference, or you can come up afterwards and give them directly to the court reporter here. Or, as I mentioned, you can submit them in writing tonight, or you can just go home and think about it and submit them in writing. That way, there's a lot of different options.

We'll open it now. We can't provide responses right now unless it's an administrative issue. But if it's technical or things of that nature, we'll respond in writing to those.

So is there anybody who would like to provide a comment right now in this particular format?

MR. MILLER: I had a couple of questions.

MR. GOULD: Please state your name and spell it out so our court reporter can get that, please.

MR. MILLER: Okay. My name is Mark Miller, and I live in Mission Viejo. I got the notice in the paper and came to the meeting tonight.

MR. GOULD: Terrific.

MR. MILLER: And I was just looking at the proposed plan groundwater cleanup folder. And I notice on the bottom of page 16 where it says "Preferred Remedy Conceptual Design Alternatives 8A and 10B," on the

bottom, it says "During low periods" -- or "During periods of low recycled water demand, only shallow groundwater will be treated and either injected into an IDP injection well or stored in the IDP reservoir."

And I was wondering if the greatest contamination is in the -- the deep aquifers, why they wouldn't take the more contaminated water and treat it instead of the water out of the shallow well.

MR. GOULD: Okay. Thank you.

MR. MILLER: And one other question I had --

MR. GOULD: Please.

MR. MILLER: -- the plume is mapped out. And they -- they state there will be three deep extraction wells and then one shallow groundwater unit on-station, I guess, on the Marine base.

And I was curious with the scrubber that is being designed to be in place, will there be any design parameter if the plume should expand where other wells could be added on and the scrubber would work to a larger capacity or will be designed if -- on that contingency?

MR. GOULD: Very good. Thank you.

MR. MILLER: Thank you.

MR. GOULD: All right. Anyone else?

MR. STORIE: My name is Blake Storie. I'm a

resident of Laguna Niguel, and I'm sure my wife is as well in favor of any type of cleanup effort.

Just looking at table 3 on page 14 -- you have to understand we're very new to this this evening -- the estimated remedial time in shallow groundwater is the quickest of the options you have there, which is good news, I would think.

But the reverse on the estimated remediation time of the principal aquifer, much -- is the longest of all the options. I'm just curious as to why that would be, why you would select that.

MR. GOULD: That's a fair question. Thank you.

MRS. BOOT-STORIE: I had a couple questions.

My name is Carol Boot-Storie. I'm a resident. I want to make a statement.

MR. GOULD: If you could just spell your last name, please.

MRS. BOOT-STORIE: B-o-o-t, dash, S-t-o-r-i-e.

First of all, I just want to say thank you all for being here. Sometimes you don't realize how much people appreciate your efforts given the turnout here. But thank you all for all your hard work, many, many years of hard work put together here.

A couple of questions. On the 93 years, I know that there was a mention of greater than 4800 parts

per billion at one point. But in some of these cases, you mentioned greater than 500 parts per billion.

Is there a time estimated that would say in 20 years, you would have the source down to 250 parts per billion or down to 10 parts per billion? Is there a time line, and how does that time line play out so that 90 -- 90 percent is salt in 20 years, and the remainder goes down from there? So that question.

And is there a location where the cost associated with each of these alternatives is presented? And so we can sort of look at that and see if that's -- okay. That's probably in there already.

And then just a general question. Is there something that precipitated -- I know five years is a long time for the negotiations.

Is there something that precipitated a final date for that, whether it be political or whether it be a regulatory agency that made that determination? Could that have happened sooner? I know there are some smiles going on there. Is there something that said, "Here's the date, and here's why there's the date"? I'm interested in knowing that.

And I think that would probably do it for the moment. Thank you.

MR. GOULD: Great. Thanks.

Any others?

Okay. Well, certainly not the last opportunity to provide public comments. As I mentioned, please do speak to those perhaps in your neighborhood, those you work with, and encourage them to provide comments as well.

If that is it, then we'll go ahead and close out this portion. We will still stick around for a little bit just in case something else comes up in this meeting, you have some other informal questions, or you care to fill out one of the written forms here or you just want to pick up some additional information.

But short of doing all that, on behalf of all the speakers this evening, I definitely want to thank those community members that did come here this evening, especially the new faces.

It really is refreshing to see the new interested folks coming out and spending their evening here. Wish we would have had more. But short of that, at least you folks chose to be involved. And we really do appreciate that likewise.

So thank you very much for that. And let's go ahead and close that out. Thank you.

(Whereupon, the presentation/question session was concluded at 8:27 p.m.)

REPORTER'S CERTIFICATE

THE UNDERSIGNED SHORTHAND REPORTER DOES HEREBY DECLARE:

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IN WITNESS WHEREOF, I HAVE SUBSCRIBED MY NAME THIS 31st DAY OF December, 2001.

Janet M. Taylor, CSR #9463

11/13/01 MARINE CORPS AIR STATION EL TORO

HAHN & BOWERSOCK

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MARINE CORPS AIR STATION EL TORO

PROPOSED PLAN - PUBLIC MEETING -)
GROUNDWATER CLEANUP FOR)
OPERABLE UNITS 1 AND 2A AT)
MARINE CORPS AIR STATION EL TORO)
)

Date and Time: Tuesday, November 13, 2001
6:00 p.m. - 9:00 p.m.

Presentation/Question Session: 7:00 p.m.

Held at: Irvine Ranch Water District
15600 Sand Canyon
Irvine, California

(Pages 1 through 61)

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PRESENTATIONS WERE MADE BY THE FOLLOWING SPEAKERS:

MR. DEAN GOULD
BRAC Environmental Coordinator, MCAS El Toro
Base Realignment and Closure
Southwest Division, Naval Facilities Engineering Command
MS. CONTENT ARNOLD
Remedial Project Manager
Southwest Division, Naval Facilities Engineering Command
DR. ANDREA TEMESHY
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MR. ANDY PISZKIN
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Southwest Division, Naval Facilities Engineering Command
MR. STEVE CONKLIN
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MR. RICHARD BELL
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MS. NICOLE MOUTOUX
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U.S. EPA Region IX
MS. TRISS CHESNEY
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Cal-EPA, Department of Toxic
Substances Control

MS. PATRICIA HANNON
Project Manager
Cal-EPA, Regional Water Quality
Control Board

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Page 4

IRVINE, CALIFORNIA; TUESDAY, NOVEMBER 13, 2001
7:02 p.m.

MR. GOULD: Good evening, and thank you all for coming. My name is Dean Gould. I am the BRAC Environmental Coordinator for Marine Corps Air Station El Toro.
Tonight we have the public meeting for the proposed plan for the groundwater cleanup for sites known as operable unit 1, which would be site 18, which is the off-station groundwater contamination, and operable unit 2A, site 24, somewhat informally known as the, quote, unquote, source area for that contamination.
I do sincerely thank you for being here this evening. I know there are a lot of competing interests. While we did hope the attendance would have been a little higher than what we have, I do see some faces I'm not accustomed to seeing in what we call restoration advisory board meetings, which is a meeting that we have every other month where we give an update on the environmental status of the base.
So I am encouraged to see the new faces, so thank you especially to you folks for coming.
Maybe one reason why folks did not come out in

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greater numbers tonight is because due to the ad that ran in the paper. If you were to read it top to bottom, it pretty much says it all. So maybe we don't need to go on now.
It really is quite comprehensive. And in addition to that, with the information that's set up at the tables here and what we're going to give in the more formal presentation, I think you'll have literally as much information as you care to have on exactly what we're doing, what we're proposing.
And we want to hear back from you too. This is not meant to be strictly a one-way type of forum here.
Let me go ahead and go over what the format for tonight is. Believe it or not, we're actually one-third of the way through now that we're just getting into the more open-speaking portion.
The way this public meeting was set up and the format that we're still working with, but I think is probably the best for all concerned, at least as appealing to the widest spectrum of people, would be to have what we call a poster-board session where we have the various stations set up, and we have respective experts, if you will, for each of those stations.
We have regulatory agency representatives. We

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have people from the Navy staff. We have, in this instance, water district representatives, community relation specialists. Just about anybody that you would need to go, to to get an answer to whatever you might have a question on with regards to these particular situation at El Toro are here tonight.
And so for that first hour, it was more of an informal question-and-answer period, going through the various phases of the program up to where we are tonight, which is the proposed plan proposal, if you will, to the community.
And this is what we're in right now which is called the public comment period where for 30 days, we sent out this proposed plan, and it is open for public comment.
And this meeting is meant to both solicit interest as well as answer questions, get community feedback on the alternative that we, the Navy, in concert with the water districts, in this instance, are proposing.
So that was the first part of the meeting the informal poster-board session.
Now we're going to go into a little bit more of a prepared presentation, if you will. And I would ask if you please hold off on comments until we're completed with the presentation.
We're going to have a variety of speakers this

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evening going through all the different phases that are on display here tonight. And then at the end, there will be the opportunity for the public to provide formal comments.
We have the good fortune of a formal court reporter here. As you can see, very detailed notes are being taken here this evening, and any comments that are provided or questions that are provided will be responded to. It is our job to respond in writing to them, so we want to make sure that we obtain your names, and we'll make sure that you get those responses in writing to any comments that are provided to us this evening.
And then the third portion would be after the formal presentation, if you will, if anybody would then like to still come forward and maybe privately go ahead and offer input to the court reporter, it's certainly your opportunity.
So you can either provide comments openly at the end of the presentations, or afterwards, once the presentation portion is concluded, feel free, by all means, to go ahead and come up and provide them to the court reporter in that manner.
We also have comment cards, if that's your preference. You can go ahead and just fill them out in

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that manner. No shortage of opportunity to provide input to us this evening.
So we'll go ahead if – I think we covered it all, to go ahead and kick it off.
The purpose, I think we touched on that. We want to present to you, the public, in a formal sense, what the proposed plan is for these particular sites in our overall CERCLA program.
Before we go too much farther, for those that would – I think just about anybody would benefit from it, but for those – especially the new members here tonight, I would suggest three documents that you should definitely have.
Hopefully everybody has a copy of the proposed plan itself. That would be this document here. It's very good because it really does say it all. In addition, it has a glossary of all of the terms in the back. That's one key document you should have.
Another would be an outline, really a copy of all the slides we're going to be giving this evening. I think we have those on a table. If anybody needs that, we can take a brief recess, and you can grab one of those to follow along and maybe take notes as we go through the presentation.
And a third would be I see a color handout of

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the actual groundwater plume, over there. That would be nice just to take with you later on for reference purposes.
So definitely, if nothing else, I suggest that you take those three documents. But in addition to that, there is a whole table full of documents out there out front, plus at the various stations here. So please, by all means, help yourself. Plenty of information to go around.
Specifically, as we talked about a little bit, we're going to propose to you the remedial action for the volatile organic compounds that have found their way into the regional aquifer off-station at MCAS El Toro into the regional groundwater, as it mentions there.
We want community input. This is not just because it's a mandated requirement. We truly come up with a better product by getting community input. That's what we want and need this evening.
And then at the bottom there, opportunity for the community to learn about, and you can see the various bullet points. The contamination itself, how it got there, how it's going to be cleaned up, how long it's going it take, all those types of things.
Just to kind of summarize, tonight really is to focus on the CERCLA remedy for these two particular

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sites. But we can't really go too much further without at least acknowledging that how we got here was by way of a settlement agreement that was just recently signed by the Department of Justice on behalf of the Navy, in addition to signatures by the local water districts, in this instance, Orange County Water District and Irvine Ranch Water District.
And certain people in the audience this evening may have a little bit bigger smiles on their face than others because that has been a very, very long time coming, and a great deal of effort has been put into it. And I'll give a little time line here in a minute to show you a portion of how long it's taken.
So we're very, very excited about that. It's a significant milestone in the program, and especially for the ultimate cleanup of the base and the affected off-station groundwater.
The settlement agreement that I mentioned is a very, very complex agreement, and it did take quite a bit of time to ultimately reach agreement on it.
And "agreement" really is the key word. It was agreed upon by the local water districts and the Department of Justice on behalf of the Navy, as I mentioned, to identify what we feel is the implementable remedy for this particular situation that we have, being

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the contaminated groundwater.
So it's something that we have over years and extensive effort come to agreement on now, and we feel it's a very good product for the community, as well as for the agencies involved. So let's go ahead and get into the time line a little bit.
Okay. The first block there, the Federal Facilities Agreement was signed, it mentions, in February of 1990. Or I'm sorry. It was placed on the National Priorities list in February 1990.
The Federal Facilities Agreement is something I have in my hand. And what this means is this off-station groundwater was identified, and it was of a significant enough extent that the base was placed on something called a National Priorities list.
And once that is done, in this instance, the Navy was obligated to enter into something called a Federal Facilities Agreement, which was signed by a representative of the Navy, as well as what are now the Regional Water Quality Control Board, represented by Patricia Hannon this evening, Department of Toxic Substances Control with Triss Chesney here this evening, and U.S. EPA with Nicole Moutoux here this evening.
So those are the four parties that signed this agreement, and it's a legally binding document that says

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the Navy is committed in a very structured sense to obtain a cleanup or complete follow-through through the CERCLA process of those sites that are identified in need of formal remediation.
And there's various schedules that needed to be adhered to with direct oversight by the three agencies I just mentioned. So for the first step, we're placed on the list, and then we enter into an agreement.
Okay. Now, once the agreement's been reached and we have a schedule to adhere to, the first step of that schedule would be the RI phase of remedial investigation. And you can see, looking at your handouts, what happens during that phase.
As the name implies, it's an investigation. We're trying to identify how much, where, when, how, those types of things. Very detailed investigation as to the source and the extent. And that was completed between the two different sites right around the 1996-1997 time frame.
The next step would be the feasibility study. And from the feasibility study stage, now we're looking at ways to remedy those problems that were identified in the RI phase. So we're looking at alternatives, and we're looking for the preferred alternative, which is what we're here presenting you tonight. And that two –

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those – those alternatives were published in the feasibility study also right around the '96-'97 time frame.
And then the publishing of proposed plan and the holding of the public comment period 2001. What happened? That's five years. What happened between then?
Well, what happened was very lengthy discussion and negotiation between the parties that I've mentioned just a little bit ago. Very complex, both technically, physically, all those types of things, but we have now reached agreement.
So it took a little bit longer than what we would have hoped. The key thing is that we all are here this evening with a signed agreement so we are now able to move forward or continue on forward with our CERCLA process, that being the public comment period of the proposed plan phase.
Once this phase has been closed out, we've solicited and responded to public comments, if, in fact, after that input we do have public acceptance, and that is one of the criteria that we need to consider, we can move forward then with the publication of a ROD with hopefully this still being the preferred alternative.
That would be the next step in the normal CERCLA process.

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And then with the agreement that we do have, we would continue to be move forward with the water districts, in this instance, with the remedial design of the remedy, and then move forward with the actual treatment of the groundwater itself over the long-term.
So that is the process-- I won't say a nutshell because that was kind of a big nutshell, wasn't it? But that is the process and how we've gotten to where we are today.
All right. Now, the reason why I asked to be sure that you have one of those color handouts that are over on the table there, because looking at this one, it's not quite as crisp, and plus, just to get it on this elongated sheet, it's a little distorted, and that handout is a little bit crisper. So if you like, feel free to pick this up.
But this does give a pretty good feel for the extent of the on- and off-station groundwater contamination that did take place that we are now responsible for providing a remedy for and ultimately making sure that it is cleaned up.
Tonight I'll be serving essentially as a facilitator for the discussion this evening. We do, as I mentioned, have a variety of speakers, each presenting a different portion of where we're at in the process.

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I'll turn it over now to Ms. Content Arnold.
She is the lead remedial project manager for El Toro.
She's with the Navy staff, working out of San Diego.
She's going to go ahead and start off with some of the more technical aspects of some of this, getting into the site descriptions and getting into the remedial investigation.
MS. ARNOLD: Thanks, Dean.
As Dean said, I'd like to start off by giving you a brief description of the two sites. Site 18 is the regional groundwater plume, and it includes the area of groundwater contamination in the principal aquifer extending off-station from the source area. The Source area is Site 24. The plume extends approximately three miles west near Culver Avenue in Irvine.
Now, the principal aquifer varies from approximately 200 to 450 feet below ground surface. The primary chemical of concern is trichloroethene, or TCE as I'll be referring to it this evening.
Site 24 is a VOC source area, and that encompasses approximately 200 acres in the southwest quadrant of the base. It also includes two large hangars, buildings 296 and 297. Now, this is where aircraft repair and maintenance took place on the base.

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The footprint of site 24 includes the shallow groundwater unit contamination, as well as the soil contaminated within the area.
This evening we're not going to be focusing on the soil because that was addressed in an interim ROD back in 1997. We plan on having a final ROD for the soil cleanup in the year 2002. So, like I said, tonight we'll be focusing on the shallow groundwater contamination for site 24.
Additionally, the shallow groundwater unit varies from approximately 80 to 110 feet below ground surface. And once again, the primary contaminant of concern is TCE.
Now, I know this is difficult to see, so I hope you have your handouts with you. But basically, this is an aerial of site 24, and I'll be flipping back to that map to put it in perspective for you.
But these are the two hangars over here, which was the source of the contamination where the industrial activities took place on the base. And the contamination flowed off base in a westerly direction like this.
To put it into perspective: here is Site 24, shallow groundwater contamination here, and then we have just some landmarks that I'd like to point out:

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I-5 right here, the 405 over here, and then Culver Drive over here. And you can see that the principal contamination area extends off base approximately 3 miles, like I said.

As Dean mentioned, as part of the CERCLA process, we completed a remedial investigation, or as we commonly refer to it, an RI.

So what is an RI? Well, the objective of the RI is to evaluate the presence, nature, and extent of contamination. It includes three components primarily, an initial investigation, an extensive field investigation, and also a base-line risk assessment.

So what are the components of the initial investigation? Well, this included document review, aerial photo reviews, personal interviews, and an initial soil gas investigation.

The extensive field investigation included first developing a workplan. And this workplan was reviewed by the BRAC Cleanup Team, and that includes U.S. EPA, DTSC, as well as the Regional Water Quality Control Board and the Navy.

And before going out into the field, we gained concurrence from that regulatory group prior to commencing field work. And once out in the field, we did extensive soil, groundwater, and soil gas sampling.

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From this data that we gathered, we put it all into a risk assessment, which Dr. Temeshy will be touching on a little bit later on this evening.

This RI was conducted between 1992 and 1997, and the conclusions basically confirmed the following:

First of all, that VOCs in soil and groundwater originated at site 24, the source area. The highest concentrations of TCE were found beneath building 296, that is, one of the hangars that we previously looked at, and concentrations were 4,850 parts per billion.

TCE was also the predominant chemical of concern, as we discussed, in both soil and groundwater

TCE is an industrial solvent that was used primarily for cleaning, degreasing, and paint stripping.

Historically, it was common practice to use that.

VOCs have migrated from the soil at site 24 to the shallow groundwater unit and then finally to the principal aquifer. And also, as we've discussed, the VOC plume extended three miles west of the station in the principal aquifer near Culver Drive.

Within station boundaries, the TCE is limited to the shallow groundwater unit, not the principal Groundwater unit, and That's the shallower unit from 80 to 110 feet below

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ground surface. Outside the station boundary, we have contamination in both the shallow and the principal aquifer. And in the shallow groundwater unit, water quality is better than the federal and state water quality standard of 5 parts per billion for TCE.

In the principal groundwater unit, the concentrations range generally from barely detectable up to 50 parts per billion.

Finally, TCE concentrations gradually decrease as you move away from the source area.

Now, this next figure here depicts the migration of VOCs released from the surface. Over here, if you can imagine, this is where the hangars are here. We have a release of TCE to the soil, and you can see it migrating to the shallow aquifer approximately 80 to 110 feet below ground surface.

As it travels downgradient, it eventually migrates to the regional groundwater plume, which is deeper, approximately 200 feet below ground surface.

MR. GOULD: Thank you, Content.

Okay. As I outlined just previously, the next step in the process would be the feasibility study portion where we look at alternatives.

But in order to help us determine those

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alternatives, we need to know, with all the information that we just gathered from the remedial investigation, what threat is actually posed to human health and the environment.

So Dr. Andrea Temeshy is going to go ahead and speak to us tonight on that particular subject. She is an employee with Bechtel National, and she is outstanding in her field.

DR. TEMESHY: Well, thank you.

Before I go through what the results are on the risk assessment, I want to briefly introduce the concept of the risk assessment.

Basically, what the risk assessment does is estimate what the potential hazard to an individual exposed to the chemicals at a site are. That is, are we going to have a potential for some adverse health effect?

And when we talk about an adverse health effect, we're talking about could this person develop cancer, or chemicals also can elicit another type of effect like non-cancer effects, which could range anywhere from liver or kidney or systemic toxicity-type effects.

So when we talk about the risks, what we're doing is we are translating chemical concentrations into

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an estimate of hazard to human health.
So on that, we'll move on to why do we do a risk assessment. As was stated before by Dean, it is an integral part of the remedial investigation concept. So as a first step, we have to be able to do it in order to be in compliance with guidelines.
And again, it's to determine if we have a problem as far as human health based on exposure to the chemicals at a site?
How are the results of this assessment used?, If we have a risk, then that will determine if cleanup is going to be necessary or not at the site.
How the risk assessment is done. I'm going to go through, the steps that I do in order to quantify risks so that we know all the components that are utilized.
And that is – the first thing is we have the chemical contaminants, and those are at a certain concentration. For example, we have TCE. We've got concentrations of TCE, and we're going to be using that in the risk assessment.
The next thing is we are going to determine who's exposed. What is – what are the potential receptors at a site? And looking into the future, could we have a residential receptor at the site? That would

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be a very conservative scenario.
And how would exposure take place? What kind of pathways? Is this person going to be drinking the groundwater? And is he going to be using it as a drinking water source? It's going to be also used for bathing, so you have dermal contact.
And then you would also have the inhalation because volatile organic chemicals will basically be
So then we have the chemicals and the person exposed to them under different pathways.
All of this information is integrated into a mathematical model. And within that mathematical model, we also look at how toxic is this chemical. The result of Integration would be the risk number.
When we talk about the risk number, we have two different end points. We would have the cancer end point, and we also have the non-cancer-type effect. And when we calculate the risk, we're going to address both end points.
Now, one thing to consider is when we're putting all of this information together, we are going to be very conservative in our assumptions. And I'm going to go through an example as to what I mean by "conservative" in the next slide.
We are not going to at any time underestimate the risk.

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We're always going to be erring in the overestimation of it. That is, that way we are always protective of human health. Therefore, the actual risk is always going to be lower than the one that we are actually estimating.
Now, this is just a quick overhead as to showing that we've got several things that must occur in order to quantify the risk.
That is, (a), we have to have chemical contaminants, (b), we have to have a way to release the chemicals from the media to an area where humans are going to be exposed. If we have a residential receptor, then – that person is going to be exposed to that groundwater via use of that groundwater as a drinking water source.
We need to have a person that is exposed to chemical contaminants. If you don't have a person exposed to, then you don't – you cannot quantify the risk.
And finally, you've got different exposure pathways for these contaminants; that is, by eating it, by drinking it, or by touching it. Now, we've said earlier that the risk estimates are very conservative and overestimate in the risk for protection of human health.
When we talk about residential exposure, these are some of the assumptions that I want to present

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to you that show you how conservative these estimates are.
We are assuming that a resident is basically at a site exposed to groundwater, in this instance, for a period of 30 years. And that means this person never moves. It's there for 30 years, from birth to 30 years.
Also, basically, 24 hours a day for 350 days a year. Again, that means that this person does not leave the house except for 15 days over that year. So that's a very conservative assumption because this person does not work, does not leave the house, and that is very, very conservative.
Again, following this conservative scenario, as far as drinking water, two liters of water a day are consumed. All of these values, all of these assumptions, are established by EPA, and we basically implement them in our risk assessment.
So when we talk about the resultant risk numbers, keep in mind that these are numbers that are based on conservative assumptions.
Now, we've quantified risks, but what do they mean as far as are they acceptable? Are they unacceptable?
We've got established criteria by which to compare how acceptable or unacceptable these risk numbers

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are. For cancer risks, we've got a criteria established by EPA, which means that if it's less than one in a million, that is, one times 10 to the minus 6 1x10-6 for cancer risk, then the risks are considered acceptable.
If they are within one in 10,000 to one in a million or 10 to the minus 4 to 10 to the minus 6, again, this is for the cancer risk, then it is within the risk-management range, and they're in the generally allowable risk range.
Now, what that means is that, at this point, the stakeholders and the regulatory agencies, will get together and will integrate with the results with other factors.
For example, are the concentrations at the site greater than drinking water standards?
All of these factors will be taken into consideration to determine if remedial action has to be implemented at the site.
If risks are greater than one in 10,000 or greater than 10 to the minus 4, then that is considered unacceptable. And at that point, cleanup is warranted.
Now, for the non-cancer risks, there is a threshold of one. And if risks are less than one, again, that is considered allowable.

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If they're greater than one, then there is a potential for adverse health effects to develop.
And at that point, then, again, considerations as to what the contaminant levels are like with respect to MCLs, in this instance, would be considered as far as the cleanup.
Now, I'm going to briefly show you what the risk results are under baseline conditions, that is, prior to any remedial action. These results are for an individual, that would be, in this case, a resident exposed to the groundwater at both Site 18 and Site 24.
Site 18 is the principal aquifer, and Site 24 is the shallow groundwater unit. And again, we've got two different end points. We have the cancer risk, and we have the non-cancer portion of it.
For the cancer risks, under residential conditions, the principal aquifer results are within the 10 to the minus 6 and 10 to the minus 4 risk range. And if you flip back to the previous slide, so they are in this area right here. That means that they're generally allowable. And at that point, you would integrate other criteria into whether cleanup is required or not.
Now, for the shallow groundwater, the risks are greater than 10 to the minus 4, and the 10 to the

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minus 4 is the unacceptable risk range. Again, these are residential risk results, which means that you've got somebody exposed to the groundwater via drinking it, dermal contact, while showering, for example, and then through the inhalation portion of it while this groundwater is being used as a potable water source.
Finally, the non-cancer health effects, since we also have to address them. These results are greater than one. So there is a likelihood of potential adverse health effects for both the principal aquifer and the shallow groundwater unit.
Now, that we have this information, then the next step is what does it mean?
For human health risks that are in excess of 10 to the minus 4, those are not acceptable, which means that they warrant some sort of remedial action.
At the shallow groundwater unit, then, since the risks are in excess of 10 to the minus 4, again, these are residential risks, then a remedial action will be implemented.
Now, at the principal aquifer, the risks are in the 10 to the minus 4 (10-4), 10 to the minus 6 (10-6) risk range. So that is within the risk-management range.
However, the VOC concentrations exceed the federal and state water quality standards, and then that

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leads towards remedial action.
So at both the shallow groundwater unit and the principal aquifer, you have remedial action based on the risk and also based on the exceedence of the VOCs for the MCLs.
MR. GOULD: Thank you very much, Doctor. Good. Good information.
Now, next step in the program I mentioned previously is the feasibility study. That will be – that and an introduction into the preferred remedy will be briefed to you by Mr. Andy Piszkin, the former lead remedial project manager for El Toro, but prior to Content Arnold.
He was involved for some time through all the investigation stages for a number of years, so he has a great deal of technical knowledge and background on it.
So I think he's probably perfectly suited to give this particular portion of the brief.
One clarification I want to point out. I mentioned the signators on the settlement agreement. There was one more representative on behalf of the Navy. Department of Justice had negotiated for the Navy, but we actually had a Navy signator on it. So there were four signators.
So Andy, if you would, please.

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MR. PISZKIN: Good evening. My name is Andy Piszkin. And like Dean says, I've been around quite a while. I started as a remedial project manager in '91, on El Toro. I feel like this is kind of homecoming night for me.

I've been involved in a lot of the groundwater studies as well as some of the negotiations for the agreement that has been signed by the Department of Justice and the water districts, as well as the Navy.

We use the EPA guidance on doing a remedial investigation/feasibility study. This is what it is, guidance, but it's got some real good stuff in it. And that's where the objective of a feasibility study comes in. It's different than what I have. You've seen remedial investigation. That's "what's out there." A risk assessment is "what does that mean?" and "What does that matter?"

And if it matters, then some action has to be taken, the feasibility study is, "what can you do about it." And the preferred alternative that we're proposing tonight for public comment here is what we think is the best thing to be done because of the risk and because of what we found.

So the feasibility study is trying to combine a lot of the – what's the objective of our remedial

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action. RAOs Remedial Action Objectives is what I call them.

And first, you have to define the problem, what kind of response actions you need, what kind of tools are out there in the environment and industry that will help you solve those.

Do you have to get the groundwater out?

What do you do when you have it? How can you treat it? Do you have to get it out? Can you treat it down in the groundwater where it is 200 feet, 400 feet below the ground surface?

How do you treat it? Do you heat it up? Do you take it off to a landfill? What do you do with it?

So you look at all those possible technologies, and you try to then piece them together in some kind of a treatment train.

Okay. Well, maybe I'll pump it out first.

Then I have it, and I have to treat it somehow. And I've got A, B, C, D, E way to treat it, and then I have to do something – then it has to go somewhere else. You know, what do you do with it?

So you – you look at all those technologies, what are those process options, and you put them together. You do some initial screening, which we have done, and some things just don't fit for the scenario that – of what we have found and what we have to do with it. So those get kind of screened out being

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noneffective.

Then you conduct detailed analysis. And under – it was ironic. Under the – the last one, under the guidance, it says "Further define alternatives as necessary."

Well, we spent a lot of time further defining alternatives as necessary. Because one of the things that has to happen, you can have the greatest technology, but if it can't be implemented, it doesn't go anywhere.

So one of the things and the only thing this settlement agreement that has been signed by a bunch of parties is that it makes the alternatives that are being proposed as a joint project with the water districts as implementable.

It will not be implemented unless the Record of Decision selects Alternative 8A and 10B prime. If that Record of Decision doesn't get to that point, that agreement doesn't go any farther. It doesn't happen even though it's all signed, it allowed us to be here tonight to say we have a proposed plan that is actually doable.

So the first thing is what's our objectives?

One thing that's not on this slide is prevent exposure from nontreated water. That was actually our

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third objective. We want to contain it.

Don't let it go any farther, or at least minimize the migration of any contaminated groundwater above drinking water standards.

The second one is to reduce, you know, the concentrations to below drinking water standards. And the third, like I say, it's not on there, but it's to prevent anybody from coming into contact with something that's concentrated above the drinking water standard.

And, therefore, like the risk triangle, you need somebody to be exposed, you need a toxin or a concentration, and you need a pathway. If you can block the pathway, you block the risk.

On page 9 of the proposed plan, it gives you – it's actually table 2, it's a good list of some of the alternatives that we considered early on like hydraulic containment.

You can put wells in, extraction wells. You can put in reinjection wells. You can put water into the ground so the groundwater doesn't flow any farther. You can install a slurry wall, but this technology. was screened out early because it has to be installed too deep. In such a large area, it would just be just impractical and not cost-effective. So that's one of the alternatives that this just doesn't fit with what we have to work with

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here.
You have some of the removals. You can –
well, you can, you know – extraction from groundwater
wells. Vacuum-enhanced groundwater is kind of doable.
That is,– put a vacuum on the extraction well.
You have some of the treatment that you can do
in place, and you have some of the treatment process
that you can do once you bring the groundwater up.
So this is what we had at our disposal, and we
went through some of these things, some of these
technologies in the feasibility study. And with the
scenario of how large and dilute the principal aquifer
plume is and the area and the concentration and the flow
of the shallow groundwater unit, we have a variety of
alternatives.
And we'll go to that next slide.
I must say I remember discussing a lot of the
discharge. What do you do with the water once it's
treated? Do you put it in the washes? Do you put it
in Agua Chinon or Bee Canyon Wash?
Do you just put it out in the middle of the
runway surface impoundment?
Do you reinject it? Do you use it for irrigation or
domestic use?
There's a lot of scenarios. There's probably

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like, you know, 12 scenarios that we dreamed up of let's
really think outside of the box. What can we do with
the water after we treat it? And that was – that was a
main issue on what's implementable.
So here we have – I believe this is page 14
in the proposed plan, and it really goes through the
alternatives that kind of met the – you know, passed
the ha-ha test, the ones that are kind of doable, and
they all go to kind of pump and treat.
Because of the environment, because there is
an Irvine Desalter Project that in the late 1980s, during
that decade it was on the books as a water supply project,
and I know Richard Bell and Steve Conklin both, or one of
them, will talk more about that after I sit down, but
looking through the alternatives, like alternative 8 –
or I'm sorry – 2A, that is a Navy stand-alone.
We looked at the Navy doing their own large
groundwater pump-and-treat project without the Desalter,
without the local water districts. If that – if Irvine
desalter project didn't happen, the Navy had to have
some alternatives that they could do on their own, and
that's what 2A is.
6A is a combination of using a joint project
with the local water districts. 7A – A and B are
alternatives that incorporated monitored natural

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attenuation and some of those results.
Well, let's go on to the next slide.
We took all those, and there are the nine
criteria of EPA. The first two are critical. They're
called threshold criteria. It's the protection of human
health and the environment, and it has to meet the
applicable laws. Those are the first two.
The next five, they're the balancing criteria.
That's the meat of how to – it's the majority of
criteria to help select a proposed alternative.
The last two are modifying criteria. If there
is – you know, we – we want state acceptance. We want
public acceptance. And those actually come after this
meeting today and the close of the public comment period
where we take the response – take the comments and in
the Record of Decision provide a responsiveness summary
to all the comments related to the proposed plan that
the Navy's putting out.
So next slide.
This is page 19 of the proposed plan, as I
term it, the meatball chart. And I'd have to look at
the other page, page 18. It's nice that they're right
together because page 18 goes through those nine
criteria very specifically. You know, it has italicized
font, which discusses what is looked at under that

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criteria.
For instance, "Short-term effectiveness.
Assesses how well human health and the environment will
be protected from impacts due to construction
implementation of a remedy. Also considers time to
reach cleanup goals."
I must admit on the previous slides, two back,
the alternative that we think is the best has one of the
longest time frames when it comes to cleaning up the
principal aquifer. It has 95-plus years. That's one
reason we have this little plus here is it's a little
bit of a misnomer. You have to look at the alternative
that we're proposing as a combination of alternative 8A
as well as 10B prime.
If you look at 10B, and prime is just a little
bit of a reduction in the flow, and we look at the
modeling – the groundwater modeling, it didn't have a
significant impact to the results.
10B cleans up the shallow groundwater in
roughly 20 years. That's a big thing because that's the
source of that large dilute regional plume. That's a
big priority for the Navy to get rid of the source as
soon as possible.
And so it's the combination of both 8A and 10B
prime is what we're acting on for overall short-term

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analysis. And like our little asterisks or our little plus sign says, there's a lot of optimization that's going to happen when we get into the design.
And the groundwater modeling is – really, the main focus is comparative analysis. How does it compare to the other alternatives?
There is lots of opportunities to optimize well placement. And when you're running this thing for many, many years, as it will be used as an irrigation supply source, it's not going away, and it will be very beneficial.
So we look at this meatball chart. We don't have weighted averages. We don't have numbers. But you can see where it's a full closed-in circle, a good performance.
(Note to Readers: Recommend referring to the Comparative Analysis of Remedial Alternatives in the Proposed Plan or the public meeting presentation handout.)
You can see the preferred alternative has three – actually, we have Navy state acceptance in there, which is nice – nice as a full circle, best performance.
The big one, I have to say, is implementability. You see these other three alternatives. They are joint Navy/water district projects. But they just – they did not make the cut,

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and they did not meet the settlement agreement.
So the settlement agreement on the 8A, 10B prime is key to having something doable. So that's one of the main reasons we prefer it.
Cost-effective, it's got long-term effectiveness. It's great to be hooked up with a CERCLA remedy with a long-term local water district because they're here. They know how to run these things. You know, it's their business and they're experts and it's great to team up with them.
So here's some of the kudos or some of the things that are the real benefit of our preferred proposed remedy.
Optimal solution. Given all the factors, all the technical factors, all the nuances that we've had with the local water districts, with the regulatory agencies over quite a many number years, we think it's the best – it really is the best solution.
It does resolve or satisfy our CERCLA requirements under the Navy and under our Federal Facilities Agreement. And the cleanup team, the BRAC cleanup team, they support it. They've been very diligent, very patient with the Navy and the local water districts on getting this settlement agreement that allows our preferred alternative to be implementable.

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So next.
In the proposed plan, you do have some schematics. They all start looking the same after a while. But truly, this is different. And I do – like Dean said, I would definitely support getting the handout version of the map that we see over here. It says "Irvine Desalter Project," where in the kind of red – I'm not sure if that's mauve or I don't know what color – our proposed alternative is. The light blue line is not what the Navy's proposing. That is the water district's drinking water, potable water system, that's outside of our VOC-contaminated plume.
So with that, I'm going to give it back to Dean.
MR. GOULD: Thank you, Andy. Terrific. Well, the evening certainly wouldn't be balanced unless we had presentations by the water

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districts that we're partnered with. And in just a moment, we'll have Mr. Steve Conklin from the Orange County Water District as well as Mr. Richard Bell from the Irvine Ranch Water District come up and give their perspective on the remedies being proposed and the historical perspective of what has transpired to date and offer a little more insight as far as the nuances to the implementation of the remedy we've been talking about so far.
If you would, Steve.
MR. CONKLIN: Thank you, Dean. And good evening. My name is Steve Conklin with the Orange County Water District, and I'm very pleased to be here.
Andy said he started working on the project in 1991. I actually started working on it in 1989 when I started with the water district over 12 years ago.
Roy Herndon, our district hydrogeologist with the district, you started before I did.
MR. HERNDON: 1988.
MR. CONKLIN: 1988. So we have a long history with this project.
So Roy, myself, and the water district board

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of directors are very pleased we've reached this point. We're very supportive of the project and very anxious to move forward with this very implementable and very technologically sound project that will meet the needs of ourselves, our partners, and the various regulatory agencies.

The water district is the groundwater guardian. We were created in 1933 by special action of the state legislature to protect and preserve the Orange County groundwater basin.

It's a very valuable resource. It's the water that's under our feet right here. It's the water that provides the needs of over 2 million people, that stretches from Los Alamitos all the way down to Irvine, from Anaheim and Fullerton.

That whole area there is – about 70 percent of the water that those 2 million people use comes from the ground. This water has to be protected. It's an invaluable resource, and this project does protect this very important resource for us.

The water district is an independent monitoring authority. Our purpose is the groundwater basin. And with that, whatever – whatever it takes, that's our purpose – and our existence is to protect the groundwater basin.

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The project, by treating the contaminants here at the site, it prevents the contaminants from moving farther downstream and potentially contaminating other groundwater. This water has its natural movement, more or less, from east to the west. It would be moving from the Irvine area actually on through Santa Ana and some of these other areas. And these areas are underlain by groundwater. If this contaminant continued to move it would contaminate that water as well.

So it's very important to pull the water out here, treat it, and then be able to use it.

This project is very valuable in that it's taking water, which is otherwise not usable, treating it, and making it into a very valuable resource. It's making us more water independent and not dependent so much on Metropolitan Water District and from water from out of the area. So it's making use of water right here and making the water available for us and for our children and for our children's children.

So with that, I'd like to turn it over to Richard Bell, my partner in the project, from Irvine Ranch Water District.

MR. BELL: Thank you, Steve.

It's a pleasure to be here tonight. I concur with the comments Steve made.

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Both water districts' boards of directors back in June, after many years of effort, support the project. are very, Our districts are very enthusiastically behind the project, and we have been working very diligently on this project for many years.

I started with the district – since we're giving a little history of each of our involvement with this project, I started here four years ago and got very involved with the project at that time. About half my time is devoted in one way or another to this project in negotiation and project development.

A little side note, 20 years ago, I was the regional manager for a Regional Water Quality Management Program for Southern California back in the late '70s when VOCs were first discovered in groundwater. At that time, we knew nothing about VOCs in the Irvine Area since this area was agricultural.

(Interruption by reporter.)

MR. BELL:

One of the things that I'd like to talk about is our perspective on the project and how we got here.

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The first slide is titled "Two Projects in One." That's an important point to understand. The project is both a nonpotable system, which is a CERCLA remedy that Andy addressed, and we also have a potable system.

And I'll show you them in a minute on the maps.

The nonpotable system basically takes water from the VOC Contamination plume, which is extracted, treated, and then would be used in a recycled nondrinking-water system primarily for landscape irrigation, and other nonpotable uses.

It is part of the CERCLA remedy.

The potable system are wells which are located safely beyond the plume, outside the plume, and outside upgradient of the influence of pumping from the plume. This water will be treated to remove salts and nitrates, for use in our drinking water system.

And we need to note that the potable project, is separate and not part of the CERCLA remedy.

Next slide.

It was very important early on in the process to get our public involved. A few years ago, we actually conducted some very extensive focus groups with our customers and community leaders.

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And what we found from that process was that our community and the leaders in the community very much supported the cleanup of the project, but they preferred that the treated water from the plume be used forlandscape irrigation. And that's how the project was basically configured. We developed the project into two components at that time.
One thing we do like to make clear is that the groundwater cleanup project and the groundwater supply project do not affect the ultimate use of MCAS El Toro. It really has no bearing on that decision at all.
The plume that Andy showed in his picture basically is the same as we show here in color.
This is the source area site 24 or the origin of the VOCs. They spread basically in the shallow unit and then dropped down into the principal, deeper aquifers and have been detected out as far as Culver and Drive.
But we have designed a system that has two wells here in the major – or the hottest spot of the plume for extraction.
We also maintain a well here at the toe of the plume to help provide containment of the plume so it doesn't get beyond this point. We want to protect this area downgradient of the plume. That's what Steve talked to earlier.

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The water would be pumped from these wells, conveye by a pipeline to a central treatment plant here where the water will be cleaned and then from that point will be put into our nonpotable irrigation system.
We also have, which is separate from the – the CERCLA remedy, is our potable system, which would be outside the plume, would be some wells located along the Southside of the Interstate 5 Freeway.
That water, as I mentioned earlier in this Part of the basin has higher salts from past agricultural activities and natural sources.
This water will be pumped from these wells to the same treatment plant location, but into a separate facility, where it will be desalted and disinfected it and pumped it in the potable system.
Not part of CERCLA remedy.
The treatment system that will be used for the nonpotable project will include primarily two types of treatment processes. One is reverse osmosis, which will desalt the water to levels where we can use it for irrigation supply, and the second would be a packed aeration tower for air stripping to remove the volatile organic contaminants.
Those – processes are both the best available technology. They're proven technology and

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been used in many different locations, and they're very reliable processes.
The air that will be stripped out, which will contain the VOCs will be further treated through a granular activated carbon unit, to absorb all the VOCs in the air.
The treated air – will be free of contaminants so there will be zero discharges from this facility to the environment.
And after this water is treated, it will be disinfected and put into our system.
This is the same chart that's on the proposed plan on page 16, I believe, that Andy showed.
As basically he said, the water from the shallow groundwater unit on base at site 24, contains the high concentrations of contaminants.
The shallow groundwater unit will be pumped by the Navy and conveyed to a pipeline, where we'll come over in a pipeline. We'll take custody of that water. That water will be treated by reverse osmosis and also go through the air stripper, the off-gases will go through carbon treatment, and the purified water will be disinfected and put it into our irrigation system.
The deeper, is off base, water which has lower concentrations of contaminants, will be partially desalted And all that water will also be air stripped,

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and the vapor treated, and then the water will be disinfected and put into our system.
So that basically gives you a picture of how the flow streams are treated in the process.
One of the things that's very important is to explain how we ensure both public health and environment are protected And one of the key points is the extraction wells in the principal aquifer prevent the plume from being pulled towards the drinking water wells.
We went through excessive groundwater modeling studies to prove that point and to ensure ourselves that that would be the case.
And as I mentioned earlier, all the water, 100 percent air stripped will be.
Then all the highly contaminated water will also receive reverse osmosis.
Again, there will be no air emissions from the project, and the wastewater brines from the treatment stages or steps will be disposed to a brine-line system. We'll convert a pipeline into a brine line that goes to the regional wastewater collection system so it doesn't

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go into our reclamation system. Here, we reclaim our water. It is important we need to keep excess salts out of our reclaimed water sources and keep the water as pure as we can. So the brine goes through a regional system. Ensuring protection for the drinking water project is done through several methods. One, we will install an enhanced groundwater monitoring program and network in the project area so we can know in advance what's happening. Groundwater will be monitored and tested throughout the project life and in the plant on a continuous basis so we know exactly how the plant is operating at all times. As I mentioned, reverse osmosis is a proven technology. It's used to purify bottled water. It's widely known, and it's a safe process. And another thing we make clear is that we actually remove the salts and minerals for the drinking water side to better than what's required for drinking water standards. That's our goal, and that's what we plan to do. The last slide. In summary, the project benefits, from the perspective of a water supplier, can be summarized by four main points. One, it cleans and protects the groundwater basin that's been damaged over the years and is currently unusable for municipal uses.

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Second, it basically provides a new, locally controlled drought-resistant high-quality groundwater supply for both our potable and our nonpotable systems. So we're getting the water supply that we need, and it developes unused local supplies and provides drought-protection benefits. By having our supply here, it reduces our reliance on imported water. The third point is there will be no impact on our – on our ratepayers. Funding by the Navy the nonpotable system and from the Metropolitan Water District on the potable system will make the project feasible side. This will keep our costs in line or less than what we would pay for imported water. And fourth, the project is environmentally beneficial, as I mentioned earlier. And that's basically all I have on – from the Irvine Ranch Water District water perspective on the project.

MR. GOULD: Thank you very much, Steve and Richard. I appreciate it. Before I provide closing remarks on this particular portion, I want to afford the regulatory representatives here tonight the opportunity to give their agency's perspective on the preferred alternative and the proposed plans that are being presented to you

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tonight. So I'll start off asking Ms. Nicole Moutoux, representing U.S. EPA, who is also the lead – lead regulatory agency of what is known as the BRAC Cleanup Team, the BCT for El Toro, if you would like to make some comments.

MS. MOUTOUX: Yes. My name is Nicole Moutoux. I work for the Environmental Protection Agency. Basically, EPA is in support of the Navy's proposal for cleaning up the groundwater at sites 18 and 24 because it will be, once in place, protective of human health in the environment, as well as restore the beneficial uses of the groundwater. And I've been on the team not as long as everyone else, but we believe that it's time for this cleanup to happen.

MR. GOULD: Thank you, Nicole. Ms. Triss Chesney with DTSC.

MS. CHESNEY: My name is Triss Chesney, and I'm with the California Environmental Protection Agency, Department of Toxic Substances Control, also known at DTSC. DTSC concurs with the proposed remedy because it addresses groundwater contamination by reducing the

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VOC concentrations to meet water quality standards, controlling VOC migration, and preventing domestic use of contaminated groundwater until cleanup goals are achieved. The proposed remedy is protective of human health and the environment and meets state regulatory requirements.

MR. GOULD: And the third regulatory agency representative would be Ms. Patricia Hannon of the Regional Water Quality Control Board.

MS. HANNON: My name is Patricia Hannon. I'm also with California EPA, Regional Water Quality Control Board, Santa Ana region. And we concur with the proposed remedy. We've been waiting a long time for this to happen, and we're very thrilled that it's going to work. It hopefully will work and restore beneficial uses to this.

MR. GOULD: Thank you. There's a couple of closing comments before we open it up for comments. Next step, public comment period. Okay. Well, certainly we're kicking that off here tonight. But the formal comment period, if you're

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looking at page 2 in the proposed plan that's available, you see that it talks about the public meeting being tonight, November 13th. But there is a 30-day public comment period ranging November 7th to December 7th. That's an ominous day. During that period, we are gladly receiving public comments on this preferred alternative.
So I know there's a lot of information being put out tonight. Maybe you need to go home and review some of the documents or come up with some questions, develop some questions for us, or perhaps share what you've learned tonight with some people that you know, coworkers, people in the community, anybody that you would like to get their input on and bounce it off them. By all means, you can then submit the comments to me. I would be more than happy to receive those comments.
As I mentioned, anybody who responds to us with comments we'll gladly respond in writing formally giving you a detailed response to the questions that you may have. So I do encourage you to please take advantage of that. And anyone you know that would be interested in providing comment also, solicit them to do the same.
Once the comment period is ended, and assuming

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that the proposed alternative that we've talked to you about this evening is, in fact, the preferred alternative that is ultimately selected, we'll go ahead and put that into a Record of Decision and publish that.
And once that is signed after review of the regulatory agencies and our partners, we'll go ahead and finalize that document, and then it becomes final. Then this remedy is the one that we'll go ahead and move forward with, and the remedial design will then take place.
This is a little bit of a unique instance in that remedial design will actually be produced by the water districts. And then once a design is complete, we'll move forward with the actual action, meaning the treatment of the contaminated groundwater.
So that is essentially it as far as the formal presentation goes.
So as I mentioned, I think you're going to get the idea that we want comments. Here's at least the second opportunity, aside from the informal session. Here's a second part for you to go ahead right now, go ahead and speak up, and we do have a microphone available for anybody who would like to provide comments.

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Now, there's a couple different ways we can do this. You can go ahead and give them right now, if that's your preference, or you can come up afterwards and give them directly to the court reporter here. Or, as I mentioned, you can submit them in writing tonight, or you can just go home and think about it and submit them in writing. That way, there's a lot of different options.
We'll open it now. We can't provide responses right now unless it's an administrative issue. But if it's technical or things of that nature, we'll respond in writing to those.
So is there anybody who would like to provide a comment right now in this particular format?
MR. MILLER: I had a couple of questions.
MR. GOULD: Please state your name and spell it out so our court reporter can get that, please.
MR. MILLER: Okay. My name is Mark Miller, and I live in Mission Viejo. I got the notice in the paper and came to the meeting tonight.
MR. GOULD: Terrific.
MR. MILLER: And I was just looking at the proposed plan groundwater cleanup folder. And I notice on the bottom of page 16 where it says "Preferred Remedy Conceptual Design Alternatives 8A and 10B," on the

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bottom, it says "During low periods" – or "During periods of low recycled water demand, only shallow groundwater will be treated and either injected into an IDP injection well or stored in the IDP reservoir."
And I was wondering if the greatest contamination is in the – the deep aquifers, why they wouldn't take the more contaminated water and treat it instead of the water out of the shallow well.
MR. GOULD: Okay. Thank you.
MR. MILLER: And one other question I had –
MR. GOULD: Please.
MR. MILLER: – the plume is mapped out. And they – they state there will be three deep extraction wells and then one shallow groundwater unit on-station, I guess, on the Marine base.
And I was curious with the scrubber that is being designed to be in place, will there be any design parameter if the plume should expand where other wells could be added on and the scrubber would work to a larger capacity or will be designed if – on that contingency?
MR. GOULD: Very good. Thank you.
MR. MILLER: Thank you.
MR. GOULD: All right. Anyone else?
MR. STORIE: My name is Blake Storie. I'm a

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resident of Laguna Niguel, and I'm sure my wife is as well in favor of any type of cleanup effort.
Just looking at table 3 on page 14 – you have to understand we're very new to this this evening – the estimated remedial time in shallow groundwater is the quickest of the options you have there, which is good news, I would think.
But the reverse on the estimated remediation time of the principal aquifer, much – is the longest of all the options. I'm just curious as to why that would be, why you would select that.
MR. GOULD: That's a fair question. Thank you.
MRS. BOOT-STORIE: I had a couple questions. My name is Carol Boot-Storie. I'm a resident. I want to make a statement.
MR. GOULD: If you could just spell your last name, please.
MRS. BOOT-STORIE: B-o-o-t, dash, S-t-o-r-i-e.
First of all, I just want to say thank you all for being here. Sometimes you don't realize how much people appreciate your efforts given the turnout here. But thank you all for all your hard work, many, many years of hard work put together here.
A couple of questions. On the 93 years, I know that there was a mention of greater than 4800 parts

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per billion at one point. But in some of these cases, you mentioned greater than 500 parts per billion.
Is there a time estimated that would say in 20 years, you would have the source down to 250 parts per billion or down to 10 parts per billion? Is there a time line, and how does that time line play out so that 90 – 90 percent is salt in 20 years, and the remainder goes down from there? So that question.
And is there a location where the cost associated with each of these alternatives is presented? And so we can sort of look at that and see if that's – okay. That's probably in there already.
And then just a general question. Is there something that precipitated – I know five years is a long time for the negotiations.
Is there something that precipitated a final date for that, whether it be political or whether it be a regulatory agency that made that determination? Could that have happened sooner? I know there are some smiles going on there. Is there something that said, "Here's the date, and here's why there's the date"? I'm interested in knowing that.
And I think that would probably do it for the moment. Thank you.
MR. GOULD: Great. Thanks.

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Any others?
Okay. Well, certainly not the last opportunity to provide public comments. As I mentioned, please do speak to those perhaps in your neighborhood, those you work with, and encourage them to provide comments as well.
If that is it, then we'll go ahead and close out this portion. We will still stick around for a little bit just in case something else comes up in this meeting, you have some other informal questions, or you care to fill out one of the written forms here or you just want to pick up some additional information.
But short of doing all that, on behalf of all the speakers this evening, I definitely want to thank those community members that did come here this evening, especially the new faces.
It really is refreshing to see the new interested folks coming out and spending their evening here. Wish we would have had more. But short of that, at least you folks chose to be involved. And we really do appreciate that likewise.
So thank you very much for that. And let's go ahead and close that out. Thank you.
(Whereupon, the presentation/question session was concluded at 8:27 p.m.)

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