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PUBLIC MEETING AND PUBLIC COMMENT PERIOD

JET PROPULSION LABORATORY

PASADENA, CALIFORNIA

MONDAY, MAY 14, 2001

6:00 P.M. to 9:00 P.M.

Reported by:

Vickie Blair

C.S.R. No. 8940, RPR-CRR

1 PASADENA, CALIFORNIA; MONDAY, MAY 14, 2001
2 6:00 P.M.
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5 MR. SAUNDERS: Good evening.

6 We're going to start a couple minutes
7 early. Welcome to the Jet Propulsion Laboratory. Thank
8 you for taking the time tonight to attend this meeting.

9 My name is Lee Saunders. I'm an
10 Environmental Public Affairs Officer for the U.S. Navy and
11 a facilitator for tonight's meeting about the proposed plan
12 to select a remedy to clean up soils at the National
13 Aeronautic Space Administration, Jet Propulsion Laboratory
14 located here in Pasadena.

15 During this portion of the meeting, you, the
16 community, can provide questions and comments to these
17 representatives and their agencies on the proposed plan.

18 Excuse me. Let me backtrack just a moment.

19 Prior to the meeting, you had the
20 opportunity to speak with NASA, federal, and local lead and
21 regulatory agency representatives on a one-to-one basis
22 about the proposed cleanup actions.

23 During this portion of meeting, you, the
24 community, can provide questions and comments to those
25 representatives and their agencies on the proposed plan.

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1 Once we've heard from all the presenters, we will open the
2 floor for questions and comments. You may want to use the
3 comment sheets that are in the back to write your questions
4 down during the formal comment session while we're waiting
5 for opportunity.

6 To assure that everyone that wishes to make
7 a comment or ask a question has a fair and equal
8 opportunity to do so, we ask that you limit your questions
9 or comments to two minutes. At the end of that time,
10 please take your seat. If you have not finished your
11 remarks, you may continue for another three-minute period
12 after we have heard from all the other speaks.

13 We have court reporters -- two of them --
14 here tonight, so we ask you to please state your first and
15 last name and spell your last name before you begin your
16 comments.

17 If you do not wish to provide verbal
18 comments or questions, you may also submit your comments
19 and questions in writing. There are comment sheets
20 available on the tables in the back for those of you in the
21 audience who would prefer to submit your input by this
22 method.

23 For those of you wondering why the U.S. Navy
24 is involved with the environmental cleanup of a NASA
25 facility, the explanation is fairly simple. In 1999, NASA

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1 These comments and questions will be included in a meeting
2 transcript and become part of the final decision for soil
3 cleanup at JPL. Representing the agencies responsible for
4 cleanup and talking to you the proposed plan and its
5 remedial alternatives are agency representatives who will
6 each introduce themselves.

7 To my left -- do you want to --

8 MR. ROBLES: Oh, Peter Robles of NASA representing
9 the SuperFund cleanup here.

10 MR. ZUROMSKI: Hi. I'm Richard Zuromski with the
11 Naval Facilities Engineering Command.

12 MR. GEBERT: I'm Richard Gebert with the State of
13 California Department of Toxic Substances Control.

14 MR. RIPPERDA: I'm Mark Ripperda with the
15 United States Environmental Protection Agency.

16 MR. YOUNG: I'm David Young with the Los Angeles
17 Water Regional Quality Control Board.

18 MR. SAUNDERS: Ground rules for today's meeting are
19 as follows: This evening's format will consist of
20 presentations by our representatives about the proposed
21 plan and remedial alternatives, followed by a formal
22 comment session where you, the community, can provide us
23 with your comments and questions.

24 I'm going to ask you to please hold your
25 questions until the presentations have been completed.

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1 and the Naval Facilities Engineering Command, most commonly
2 known by the acronym NAFAC reached a memorandum of
3 agreement establishing roles and responsibilities that
4 state NASA may procure environmental engineering and the
5 consultancy services from NAFAC and its subordinate
6 commands.

7 In late 1999, NAFAC became heavily involved
8 in providing environmental services to NASA and JPL. Peter
9 Robles, remedial property manager for NASA, is our first
10 presenter.

11 Peter.

12 MR. ROBLES: Good evening. What we're going to
13 present today is a site description to give a little
14 history of why this site is on the SuperFund list. Then
15 we're going to have Mark Ripperda talk about regulatory
16 framework, coming up with Richard Zuromski talking about
17 site assessment and investigation activities and the
18 remedial activities and the proposed remedial alternatives
19 for OU-2 soils.

20 We will, at a later date, talk about
21 groundwater. We'll have another public meeting in the near
22 future. But right now what we're focusing on are the soils
23 underneath JPL and how to remediate the contaminants in the
24 soil to minimize any migration into the groundwater. And
25 that's what we're going to do right now.

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1 The site that we call JPL has been active
2 since the late '30s, early '40s. It was owned by the Army
3 ordnance, and then it was owned by NASA in '59 to '60 when
4 we took it over.
5 During the 40s and '50s, seepage pits were
6 the main method to dispose of waste. At that time, it was
7 the most accepted practice. It was within the regulations,
8 no problem at all. We found out later that that was a
9 mistake, and we had to correct that. In the late '50s
10 early '60s, we, NASA, started programing to replace these
11 seepage pits with sewer lines.
12 Now, the indication and a question that came
13 in on Saturday was "So contaminants are going down the
14 sewer line." No, they're not. That's a good question.
15 Very little gets put into landfills. We usually destroy or
16 recycle the chemicals that we use today, or they are used
17 up in the operational processes. We do not do that. The
18 regulatory requirements require us to make sure of that, so
19 from the standpoint today, we are all within regulations.
20 But at the time, the main reason why the contaminants got
21 into the ground soil is because of these seepage pits.
22 In 1992, the site became a SuperFund site.
23 It was put on the national priorities list, and the EPA
24 will talk a little bit more about that.
25 We are talking about trying to remediate

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1 light.
2 So what's it mean to be a SuperFund site,
3 and for that matter, what's -- oh, I got a toy.
4 What's it mean to be a SuperFund site? For
5 that matter, what's SuperFund? About 20 years ago,
6 Congress passed a law, it's called CERCLA, and I'll talk
7 about what the acronym means, that authorize a tax on the
8 chemical industry. And that tax all went into a trust
9 fund, which is called the SuperFund, which EPA can spend to
10 clean up abandoned hazardous waste sites.
11 That same law passed by Congress also gave
12 EPA the authority to go to existing, ongoing sites such as
13 NASA/JPL that have contamination that might pose a serious
14 threat to public health, and we have the authority to force
15 them to clean it up.
16 In order for us to use that authority, we
17 have to rank how bad the potential hazard might be, and if
18 it scores high enough, the site is put on a national
19 priorities list also called an NPL. And like Peter said,
20 that happened with NASA/JPL in 1992.
21 So what was it that first got NASA/JPL on
22 the national priorities list? In the late, very late '80s,
23 the City of Pasadena found some chemicals in their drinking
24 water wells right here across the Arroyo just through their
25 standard compliance testing that they have to do for the

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1 Operable Unit 2, which is -- as I said, before currently
2 all operations meet federal, state, and local requirements.
3 We have a host of regulations that we have to follow, and
4 so, therefore, we are assured that we're doing what's
5 right. What we're dealing with is past practices that we
6 have to take care of.
7 Here is a conceptual model of what we're
8 talking about. What you have here is a VOC plume, volatile
9 organic carbons, that have gone through the soils because
10 of past practices from JPL. The area that we are most
11 concerned with is 50 feet below the surface to about 200
12 feet, which is the groundwater zone that we're talking
13 about.
14 In the soils, we're talking about
15 chlorinated solvents, and when we say "vadose zone," we
16 mean in a vapor state in the soil. NASA wants to address
17 this issue tonight, and we will be addressing groundwater
18 in the future.
19 Now we'll have the EPA talk about regulatory
20 framework.
21 MR. ZUROMSKI: I just want to ask the court
22 reporters really quick, can you hear me okay without having
23 to use the microphone? Okay. Mark and I are going to try
24 to do ours without the microphone then.
25 MR. RIPPERDA: That way I can stand out of the

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1 State of California. And that's what got us -- all of us
2 regulators, the State of California, Richard, and David and
3 myself -- well, actually our predecessors. But that got us
4 involved looking over their shoulders making sure that
5 they're doing the cleanup appropriately.
6 Right when the contamination was first
7 sound, City of Pasadena put treatment systems onto their
8 wells immediately, which means that anybody who is drinking
9 the water was protected right from the beginning.
10 But to cleanup the actual release, to
11 cleanup all the aquifer and the source here on the site is
12 a long, lengthy process. And the majority of that process
13 is called the remedial investigation feasibility study.
14 Which means they have to go out drill bore holes all over
15 the site, take soil samples, soil vapor samples. They have
16 to put in monitoring wells, take groundwater samples both
17 on the site, they also went out into the neighborhoods put
18 monitoring wells out there, and sampled them. They also
19 worked with the water purveyors to look at their water
20 analyses. And with all of that, they figured out where the
21 contamination is now, where it came from originally, and
22 they go through the process of deciding how best to clean
23 it up.
24 Usually you clean up groundwater
25 contamination by looking at the source where the

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1 contamination is coming from and at the aquifer itself in
2 two separate stages because you're using a different
3 physical mechanisms to cleanup the two. So what they're
4 working on now, and what this whole meeting is about, is
5 the actual cleanup of the source here on the site. So As
6 Peter said to keep it from going into the water, which
7 means that ultimately the water can be cleaned up faster.

8 So in the feasibility study, they look at
9 various alternatives on how best to clean something up.
10 And in some cases, such as here at JPL, there's only one
11 real option. I don't know if you've read the proposed
12 plan, but it looks like you were given two choices, do
13 nothing or do what NASA wants to do. And that may look
14 like you don't really have a choice, but Congress says that
15 we also have to look at the do-nothing alternative because
16 they don't want EPA out there spending money willy-nilly
17 making faculties and industries spending money if doing
18 nothing might work. I don't know why they don't trust us
19 to be good stewards of public money, but they don't.

20 So in this case they had to look at the
21 do-nothing alternative. And the other alternative that
22 they show to you in the proposed plan which is called vapor
23 extraction system is something that EPA has found over the
24 20 years we've been doing SuperFund cleanups to be the one
25 system that really works in a case like this where you got

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1 how well they've involved the public. If you think they've
2 been hiding things from you or whatever, which they
3 haven't, but anything you might think, you can make comment
4 on that. It doesn't just have to be on their remedy.

5 They then have to respond to your comments.
6 They have to check with the regulators, make sure that the
7 State of California and EPA is happy with how they've
8 responded to the public. And, at that point, if we're all
9 happy with each other, they do the record of decision, and
10 then they go on to the remedy implementation. And
11 eventually, if a site gets completely cleaned up, they're
12 no longer a SuperFund site. They get delisted from the
13 national priorities list.

14 But even if that happens, there's still
15 always going to be long-term monitoring and review of what
16 the situation is here at JPL.

17 This is just kind of what we've already
18 said. This is a chance for you to ask us questions, and
19 also make comments on what you think about both the remedy
20 and the process, you know, everything that's going on right
21 now.

22 You can always call Peter. Peter's name and
23 number is in the documentation you got. I don't think my
24 phone number is there, but – it is? Good. And you can
25 also feel free to call me, and I'll even say feel free to

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1 all the organic compounds in the soil deep beneath the
2 site. You can't really dig up a site. You know, one
3 alternative might be dig up the whole site, take the soil
4 away. But, obviously, you can't do that here because you'd
5 be digging up all of JPL.

6 There are some other technologies such as
7 heating the soil with large electrical current, actually
8 what is called vitrify it. So you turn it into one solid
9 lump. You melt the soil. And you can't do that here.

10 So technologies like that which exist but
11 they don't really make sense for a site, we, the
12 government, don't make NASA do a detailed evaluation of.
13 So we essentially cut right to the chase is that what we're
14 proposing the one and only system that really works best
15 now. There might be something else that comes along in the
16 future, but for now, this is what makes sense.

17 So once they select a remedy, they have to
18 do a legal document, which is called a record of decision.
19 Before you get to that point – I forgot the most important
20 part, the yellow box, where we are now. We have to go out
21 to the public and say, "This is what we're proposing. What
22 do you think?"

23 So you can comment both on, you know, their
24 selection of a remedy, but you can also make whatever
25 comments you want on, you know, how they ran the process,

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1 call the State of California guys if you feel like you're
2 not getting appropriate responses from NASA.

3 MR. ZUROMSKI: Thank you, Mark.

4 Hi. My name is Richard Zuromski. I'm with
5 the Naval Facilities Engineering Command, and, as Lee
6 described earlier, I'm here to assist NASA in their cleanup
7 efforts here at JPL.

8 From 1994 through 1998, JPL conducted what's
9 called the remedial investigation, as Mark described
10 earlier. During the remediation investigation, in over
11 nine different sampling events, JPL took 45 soil vapor
12 wells, 35 soil borings, and three test pits throughout the
13 site to investigate where the chemicals may be found in
14 what we're calling Operable Unit 2. Further, over 37 – or
15 37 of those points were turned into permanent monitoring,
16 soil vapor monitoring points that is we must now monitor on
17 a regular basis to see how the contaminants are moving, or
18 not moving, in this case, within the subsurface.

19 Now, during the remedial investigation, the
20 samples identified the extent to which the chemicals were
21 in the soil, and the results showed that there were
22 elevated levels of four different volatile organic
23 compounds. They were carbon tetrachloride, trichloroethene,
24 Freon 113, and 1,1-dichloroethene.

25 Now, these chemicals were used back, as

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<p>1 Peter described earlier, in the '30s, '40s, and '50s to 2 clean out the inside of rocket motors that they were 3 testing back in those days, which they don't use here 4 anymore. And that's where the chemicals came from that are 5 now in OU-2.</p> <p>6 The OU-2 risk assessment, the human health 7 assessment, determined that there were no risks above 8 regulatory thresholds from exposure to soils or soil 9 vapor.</p> <p>10 Now, the primary reason that this risk was 11 so low was the fact that, as Peter described earlier, these 12 chemicals are now more than 50 feet below the ground 13 surface. So exposure to humans is very much unlikely.</p> <p>14 However, there is a risk that these 15 chemicals will continue to migrate through the soils and 16 eventually reach the groundwater, and that's the purpose of 17 the remedy that we're talking about here today, is to make 18 sure that those chemicals do not enter the groundwater and 19 pose a further problem in the groundwater.</p> <p>20 Now, we are currently studying how to remove 21 these chemicals from groundwater. And that is going to be 22 the subject of a meeting very similar to this probably 23 within a year from now. However, the groundwater and the 24 risk from chemicals in the groundwater, there's no risk 25 because the water purveyors, or those people who deliver</p> <p style="text-align: right;">14</p>	<p>1 they migrate to the groundwater.</p> <p>2 To meet this objective, kind of as Mark 3 talked about earlier, JPL evaluated several alternatives to 4 remove the chemicals. And of those alternatives, two were 5 selected for very detailed evaluation. And if you look in 6 your proposed plan, I think it's on the third or fourth 7 page, there's a list of nine criteria that we have to go 8 through when evaluating each technology in detail.</p> <p>9 The first is called no further action. As 10 Mark talked about earlier, this is a baseline that all 11 other technologies are compared to. Now, at this site, no 12 further action would entail continuing a regular soil vapor 13 monitoring program to see how the contaminants are behaving 14 in the subsurface.</p> <p>15 The second, and the proposed alternative, 16 for OU-2 is soil vapor extraction with granular activated 17 carbon treatment and also the continuation of our regular 18 monitoring program. To help evaluate these two 19 alternatives, JPL conducted a pilot test of the soil vapor 20 extraction technology. And this started back in 1998. In 21 over 14 months of operation of this pilot test, we removed 22 roughly 200 pounds of VOCs, of these chemicals, out of 23 roughly up to a maximum of 5,000 pounds that are throughout 24 the site. But within this area, we removed 200 pounds of 25 chemicals from the subsurface.</p> <p style="text-align: right;">16</p>
<p>1 the water to the public, have to meet very, very strict 2 regulatory requirements. So today's meeting is focused on 3 removing this source of contaminants, what we call source 4 reduction, from the soils before they reach the 5 groundwater. And that's the purpose of our meeting here 6 today.</p> <p>7 Now, this graphic shows the extent to which 8 any level of a volatile organic compound was detected here 9 at the site during the remedial investigation. Now, the 10 hottest or most – the highest levels of these chemicals 11 were found in the north central part of the site, right up 12 here where most of the laboratory activities took place. 13 And that's where we focused a lot of our efforts to date 14 doing some pilot studies which I'll talk about in just a 15 moment.</p> <p>16 Now, based on the results of the remedial 17 investigation and our ongoing monitoring program of the 18 soil vapor, we have found that the soil vapor and the 19 chemicals in the soil vapor have not migrated off the JPL 20 site boundary; but it does encompass roughly 45 acres on 21 the site.</p> <p>22 So based on the analysis in the remedial 23 investigation and also the continuing monitoring we do here 24 at the site, the remedial objective for Operable Unit 2 is 25 to remove the chemicals, the VOCs from the soils before</p> <p style="text-align: right;">15</p>	<p>1 Now, this was so successful, this system is 2 currently still operating here at the site, and then the 3 pilot study does go on and will continue throughout the 4 proposed plan stage and all the way through the record of 5 decision stage until we decide the final, full-scale size 6 of the technology that we'll put here at the site.</p> <p>7 This is a conceptual diagram of how soil 8 vapor extraction works. First you have here, as Peter 9 described earlier, the seepage pits which are no longer 10 existing here at the site. But this is where the chemicals 11 came from, and then the VOCs, chemicals, became deposited 12 here in the soil.</p> <p>13 Now, soil vapor extraction is fairly simple. 14 What we do is we apply a very strong vacuum, just like your 15 vacuum cleaner, to suck these VOCs, these chemicals, right 16 out of the soils and the soil vapor into this vapor 17 extraction well right here.</p> <p>18 Now, these vapors are – since we're talking 19 about volatile organic compound, the compound become in a 20 vapor phase when we pull a vacuum on the soils and the soil 21 vapor. So what you're extracting here is air and chemicals 22 in vapor, which comes above the surface through this pump 23 into a vapor treatment system.</p> <p>24 The vapor extraction system consists of 25 granular activated carbon. What it does is it captures the</p> <p style="text-align: right;">17</p>

1 chemicals and holds them within the vapor treatment system,
2 and then clean air is released from the system. What
3 happens every three to six months, depending on how much
4 chemicals we're removing from the system, we have to take
5 those carbon filters that are inside this vapor treatment
6 system and take them to either a recycling facility or
7 dispose of them in some type of legal, regulatory manner.
8 And then we take a new carbon treatment system and replace
9 it and continue the vapor extraction phase. And that's
10 generally how the vapor extraction system works.

11 So, based on our analysis, alternative one
12 does not meet our remedial objective of keeping the
13 chemicals from migrating to the groundwater; therefore,
14 we're proposing soil vapor extraction as our proposed
15 remedy.

16 There are several reasons why we're choosing
17 soil vapor extraction from our proposed remedy.

18 First, it permanently removes the chemicals
19 from the soil and soil vapor.

20 Secondly, it protects the groundwater from
21 further migration of the VOCs.

22 Third, it's fairly simple to operate and
23 fairly inexpensive to implement.

24 Fourth, the treatment period is relatively
25 short, probably from one to five years, depending on how

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1 from the public? Please feel free to come up to the mike,
2 and, again, state your first and last name and spell the
3 last name for the reporters, court reporters.

4 Thank you, sir.

5 MR. STORK: My name is Edward Stork, and my last
6 name is spelled S-t-o-r-k. And I actually am the president
7 of the Rose Bowl Riders, which is right next door. And so
8 I was interested to hear that the chemicals are apparently
9 only within the boundaries of JPL; correct? Can you tell
10 me where the soil vapor extraction wells will actually be
11 located?

12 MR. ZUROMSKI: Sure. I can tell you that at this
13 point in time, the one location that we are currently
14 operating the soil vapor extraction is right where I was
15 pointing at the highest levels of the chemicals that we
16 found in the site.

17 The other wells -- what we're doing right
18 now is we're doing continuing monitoring of the soil vapor
19 levels at the site, and that actually -- I think Mark
20 described the remedial design phase that occurs after we
21 sign our record of decision where we actually look, at that
22 point in time, where the highest levels of the chemicals
23 are and then we place the wells.

24 So, no, we don't know exactly where they
25 would be right now; but we would focus on where the highest

20

1 effective the system is here at the site. But based on
2 pilot-scale results, it should have been very expected that
3 the cleanup should not take very long.

4 And, finally, because this soil vapor
5 extraction technology has all those qualities of being very
6 effective in the type of soils here at JPL, in being very
7 effective in removing this type of chemical from the soil,
8 EPA says that this is what is called a presumptive remedy
9 where basically this is the best technology that you can
10 use at hundreds of other sites, including here at JPL,
11 throughout the country. And so we call it what is deemed a
12 presumptive remedy.

13 So based on our pilot study, and based on
14 our ongoing analysis of the site, NASA proposes soil vapor
15 extraction as the proposed remedy for OU-2.

16 MR. SAUNDERS: Thank you, Richard.

17 We are now available for comments and
18 questions from you, the public. As a quick reminder to
19 ensure that all participants providing comments or
20 questions provide equal treatment, please limit your
21 comments or questions to two minutes. We also ask you to
22 please state your first and last name, and spell your last
23 name for the court reporters.

24 Thank you.

25 Now, do we have any questions or comments

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1 levels of the chemicals are.

2 MR. RIPPERDA: But the level of contamination as
3 you move south -- you're here from the riding stables;
4 right?

5 MR. STORK: Yeah, just below here, yeah.

6 MR. RIPPERDA: As he said, the highest level of
7 contaminants -- and can you put that back up. But the
8 highest level of contaminants are up in the northern part,
9 and in itself, it's negligible.

10 MR. ZUROMSKI: Right. About there where my light
11 is shining is where the current vapor extraction pilot
12 study is operating, and that's where the highest levels of
13 the chemicals were found.

14 MR. STORK: Just out of curiosity, how much area
15 does one of these vapor extraction wells take up when you
16 install it?

17 MR. ZUROMSKI: The actual well itself is usually
18 probably from four to six inches just for the well itself;
19 however, the radius of influence from the vacuum at the
20 site can be anywhere from four to eight, seven or eight
21 hundred feet from the center of the well.

22 MR. STORK: Thank you.

23 MR. ROBLES: The size of the site, you also want to
24 know how big is that. It's about 45 acres. That yellow
25 spot. None of the wells that we're talking about for soil

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1 vapor will be off-site. It's all on-site because that's
2 where all the soils are at.
3 But understand also, everybody, that we
4 revisit this periodically. Every five years we go back and
5 revisit so we make sure we're doing the right thing with
6 the regulators.

7 Any other questions?

8 MR. RIPPERDA: Also something about --

9 MR. ROBLES: Because of the comments on Saturday, I
10 want to thank the young lady, we are planning to have a
11 third meeting. And we want to have it in Altadena. And
12 what we want to do is probably -- we're trying to set it up
13 ahead -- I haven't talked to anybody over there -- we'll
14 probably host it in the middle of June so that we can make
15 sure that the whole community has a chance.

16 I didn't know this, and this is one of the
17 reasons why we have public meetings, is that the folks in
18 Altadena can't make it over here at night because there's
19 no bus service. So we want to know if there are any
20 concerns out there.

21 So if you get another proposed plan in the
22 mail, please don't get angry at us. We're just announcing
23 that we're going to have a third meeting in Altadena so we
24 can make sure we have the public comments in there. We
25 want to solicit comments. We want to make sure that the

22

1 the effectiveness of this extraction program. Is it a
2 hundred percent effective? How do you know how well you're
3 doing, and does the testing continue throughout that term?
4 And, also, if it's not a hundred percent effective, does
5 that mean that a certain percentage will ultimately reach
6 groundwater and continue to contaminate it?

7 MR. ZUROMSKI: I'll answer your question.

8 First of all, every technology that we
9 attempt, we choose because it is the most effective.
10 Hundred percent effective, I don't think we could
11 guarantee. But it is the most effective technology for the
12 types of chemicals at the site and for the types of soils
13 that we have at the site.

14 Now, what we do to ensure that that is the
15 most effective technology for the site is, number one, we
16 conduct a regular monitoring program of the soil vapor
17 around the site to see -- and to actually watch, we've
18 actually seen some of the data is in the back of the room,
19 you can watch the chemicals that have been removed slowly
20 disappear from the soil. And we do that on a very regular
21 basis. And during our pilot study, we actually did it
22 monthly to see what the effect of the system is on the
23 chemicals in the soil.

24 Now, what we do for the long term is once
25 we've signed our record of decision, and once we've

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1 public is comfortable with this. They might have better
2 suggestions, so that's what we're going to shoot for. So I
3 want to thank the lady on Saturday, that was a good comment
4 that we had.

5 And we have talked to some water purveyors,
6 and they're willing to put it in their billing. So we're
7 going to work on that.

8 MR. SAUNDERS: All right. Quick feedback from
9 Saturday's meeting.

10 What other questions do we have, comments?
11 Please feel free to come up to the mike and express your
12 feelings your opinions, your comments, your questions at
13 this time.

14 MR. CLAIRDAY: Good evening. John Clairday, with
15 the -- and the last name spelled C-l-a-i-r-d-a-y. I'm a
16 board member with the Lincoln Avenue Water Company, which
17 is a neighbor, right next door. We appreciate the
18 opportunity to come over here for this meeting.

19 Just one statement, and then one question,
20 as well. And I don't think this is inconsistent with what
21 Mr. Robles said, but we already do have a groundwater
22 problem, and I think that's been recognized. But just
23 wanted to emphasize that since it's an area that we're
24 interested in.

25 And then a second one, I'm wondering about

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1 installed the system throughout the site, we do -- again,
2 we have a regular monitoring program to see how effective
3 it is. And then at least every five years, we do what is
4 called a five-year review where the regulatory agencies,
5 NASA, sits down, looks at the results, how well the
6 technology is looking. Looks at new possible innovative
7 technologies, if the technology we've chosen was not as
8 effective as we thought it would be, and basically says,
9 "Are we still doing the best thing that we can do to remove
10 the chemicals from the environment?"

11 And that's generally how we monitor how
12 effective the technology is over the long term.

13 Now, if you look in the back of the room, we
14 have an estimate, I think. I can't read from here, but it
15 looks like it's a little over \$3 million. That's a present
16 value cost of what it will take to operate the system from
17 our estimate one to five years and then monitor for another
18 25 years after that. So we do continuously monitor this
19 throughout the entire period to make sure that what we've
20 done is the best thing for the site.

21 As far as a level that we remove the
22 chemicals to, that level is determined during the record of
23 decision where we, as Mark said, we all sit down and agree
24 to a level that we will clean the site to. And that's
25 based on all the regulatory requirements that we're

25

1 required to meet.
2 MR. RIPPERDA: And on an ongoing -- you know, the
3 groundwater that they're also responsible for so over time
4 whatever the recommended decision for the groundwater
5 remedy has, that will include monitoring and clean up of
6 the aquifer. So they're removing the source to protect it
7 from going into the aquifer in the future, but for the
8 contaminants that have already gotten into the groundwater,
9 NASA will, of course, still be responsible for that in the
10 future.

11 MR. SAUNDERS: Thank you.
12 Any other questions, comments? Please feel
13 free to take this opportunity.

14 Thank you.
15 MS. COMPTON: My name is Cynthia Compton,
16 C-o-m-p-t-o-n. I'll try to be easier on you. I gave a lot
17 of comments on Saturday, and I appreciate your response to
18 my comments.

19 My first comment is that two minutes is not
20 enough time for my questions and my comments.

21 MR. RIPPERDA: Can we give her a little extension?

22 MR. SAUNDERS: Well, again, we can get her more
23 time after the other folks have responded, she can come
24 back up again.

25 MS. COMPTON: There you go. Quickly, I know that

26

1 next meeting, has right in the text of the E-mail that this
2 is a public meeting and when and where it will be.

3 Oh, and he wants me to talk about soil
4 particles, also.

5 MS. COMPTON: He's already tried of me.

6 MR. RIPPERDA: Yeah. So her question pertains to
7 the fact that in the slides it almost always says "soil
8 vapor." It didn't say "VOCs in the soil"; It always said,
9 "Soil vapor." And that's because the actual measurements
10 we take are of the soil vapor.

11 When the contaminants are 50 feet, a hundred
12 feet below the surface, you actually have to drill a bore
13 hole to get down to it, and the act of drilling that bore
14 hole, the heat and the air that you have to inject to bring
15 the cuttings, the dirt, back up out of the hole, basically
16 blow away all the VOCs that you're trying to sample for.
17 So you can't take a soil very well from a hundred feet deep
18 and analyze that soil for how much contamination it has in
19 it.

20 So instead what you do is you drill your
21 bore hole, and let it sit for a few weeks, reach
22 equilibrium, and then suck some air out. And because the
23 VOCs are attached to the soil particles and all the soil
24 around your bore hole, they evaporate naturally. And then
25 they'll fill the bore hole when you suck the air out you

28

1 there was some testing done in building 107 in the basement
2 for the air atmosphere, and I wonder if that has turned
3 into one of the 37 permanent test points.

4 Another question I have is: I'm interested
5 in a record of the public notices that were sent out in the
6 newspapers and the mailings. And I'm still having a little
7 trouble distinguishing the difference between contamination
8 in particles of soil versus contamination in the vapors,
9 and if maybe we could clarify that a little bit with me.

10 And the other thing is my same comments I
11 made Saturday, I think we, the public, deserve a little bit
12 earlier notice, and thank you for offering another
13 meeting. I'm going to put that in my official comments,
14 but a little earlier notice and something to the JPL
15 employees that says public meeting may be in the subject
16 title.

17 MR. RIPPERDA: I'm going to say one thing to the
18 last thing that Cindy said. She showed me a copy of the
19 E-mail that went out, and I don't know how many JPL
20 employees are here, but the actual E-mail didn't say
21 anything about the meeting. It just said, "The proposed
22 plan is available at a website," and she had a great
23 comment that the actual E-mail needs to announce when and
24 where the meetings are. So we'll make sure that NASA, in
25 the E-mail that goes out in the next week or two for the

27

1 see, "Oh, we have VOCs in the air that we're sucking out,"
2 so therefore we know that the VOCs in the soil in this
3 location.

4 So you can do kind of rough correlations
5 between the amount that's in the soil vapor you're
6 measuring to what actually in the soil.

7 So it's just the physics of not being able
8 to measure the actual particles in the soil; we have to do
9 a correlation between the soil vapor and the soil. So
10 we're always going to talk about soil vapor, even though
11 what we're really concerned about is what is attached to
12 the soil because what gets attached to the soil is what
13 gets dissolved in rainwater, and ultimately brings it on
14 the drinking water aquifer.

15 MS. COMPTON: But you're talking about cleaning --

16 MR. RIPPERDA: But when we're sucking, we're
17 sucking the vapor out, but as we suck the vapor out, the
18 particles of the chemicals that are attached to the soil
19 are always evaporating. As we suck more air, more
20 particles evaporate out of the soil, and relatively
21 quickly, you suck those particles of contamination out.

22 MR. ROBLES: You asked about the building. We're
23 not familiar with that, and I know --

24 MR. RIPPERDA: You have to talk louder in your
25 answer for the court reporter.

29

1 MR. ROBLES: Which building are you in?
2 THE WITNESS: Building 107.
3 MR. ROBLES: 107. It must be in our proposed plan.
4 I don't remember it exactly. I can get back to you with
5 that information.
6 MR. ZUROMSKI: We'll have to respond to that.
7 MR. ROBLES: Yeah, we'll have to respond to you.
8 Again, I appreciate that. It's not familiar to me after
9 looking at the document. I'll have to research it and get
10 back to you.
11 MR. SAUNDERS: Thank you.
12 What other questions, comments, do we have?
13 I'm sure there are plenty of other folks out there that
14 have some feedback for us. Please feel free to come up to
15 the mike and provide your comments, questions.
16 If there's no other comments or questions,
17 ma'am, if you'd like to come back up and get your next
18 three minutes in, you're welcome to come up at this time.
19 MS. COMPTON: I'm okay.
20 MR. SAUNDERS: Well, if there are no other
21 questions or comments, we're going to wrap this up in a
22 moment.
23 I want to thank you for attending. We
24 encourage you to review and comment on the proposed plan,
25 and there are copies on the back table of the proposed

30

1 And if you could put that slide back up.
2 It's already been mentioned, if there are any further
3 comments, questions, the last slide has Peter's address.
4 Feel free to send your comments, your questions, mail them,
5 E-mail them, to Richard at this address. It's also
6 included in the proposed plan fact sheet.
7 MR. ROBLES: Peter.
8 MR. SAUNDERS: And we look forward to any further
9 feedback you may have at this time. And before we close, I
10 will give you one other chance if there are any comments or
11 questions.
12 If not, thank you for coming and have a good
13 evening.
14 (Whereupon, at 9:00 P.M., the HEARING was
15 adjourned.)
16 —000—
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1 plan.
2 Final decisions regarding cleanup will be
3 made after public comments have been received and
4 considered. The public comment period started May 7 and
5 runs through June 11. Keep in mind the comments and
6 questions asked tonight, as well as responses, not only the
7 ones given here but further, more in-depth responsive
8 answers to your comments and questions included in a
9 responsiveness summary which will be included with a RoD
10 into the admin record.
11 Yes.
12 MR. ZUROMSKI: The comment period will be extended
13 in accordance with the new meeting.
14 MR. ROBLES: Okay. We're going to extend the
15 comment period, all right.
16 MR. ROBLES: We've extended the comment period past
17 the third meeting so, therefore, it's fair for everyone.
18 MR. SAUNDERS: So instead of waiting for the public
19 to request an extension, we've already extended the comment
20 period at this time.
21 Do we have a date as of yet?
22 MR. ROBLES: That will be in the mail.
23 MR. SAUNDERS: It will be in the information sent
24 out to the public as to how long the comment period has
25 been extended.

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1 STATE OF CALIFORNIA)
2) ss
3 COUNTY OF LOS ANGELES)
4 I, Vickie Blair, Certified Shorthand Reporter,
5 number 8940, RPR-CRR, for the State of California, do
6 hereby certify;
7 That the foregoing transcript is a true record
8 of the proceedings.
9 I hereby certify that I am not interested in
10 the event of the action.
11 IN WITNESS WHEREOF, I have subscribed my name
12 this 4th day of June, 2001.
13
14 _____
15 Certified Shorthand Reporter for
16 the State of California
17
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19
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21
22
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25

33

<p>A</p> <p>abandoned 8:10 able 29:7 about 2:11,22 3:20 5:15 5:16,20 6:24,25 7:8 7:11,13,14,19 8:5,7 10:4 12:19 14:17 15:14 16:3,10 17:19 21:10,24,25 22:8 23:25 27:21 28:3 29:10,11,15,22 above 14:7 17:22 accepted 6:7 accordance 31:13 acres 15:20 21:24 acronym 5:2 8:7 across 8:24 act 28:13 action 16:9,12 33:10 actions 2:22 activated 16:16 17:25 active 6:1 activities 5:17,18 15:12 actual 9:10 10:5 21:17 27:20,23 28:9 29:8 actually 9:3 11:7 20:6 20:10,19,21 24:17,18 24:21 28:12 29:6 address 7:16 32:3,5 addressing 7:17 adjourned 32:15 admin 31:10 Administration 2:13 Aeronautic 2:13 Affairs 2:10 after 4:12 20:20 25:18 26:23 30:8 31:3 again 20:2 25:1 26:22 26:24 30:8 agencies 2:17,25 3:3 25:4 agency 2:21 3:5,15 ago 8:5 agree 25:23 agreement 5:3 ahead 22:13 air 17:21 18:2 27:2 28:14,22,25 29:1,19 almost 28:7 along 11:15 already 12:17 23:21 26:8 28:5 31:19 32:2 Altadena 22:11,18,23 alternative 10:15,21,21 11:3 16:15 18:11 alternatives 3:5,21 5:18 10:9 16:3,4,19 always 12:15,22 28:7,8 29:10,19 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PUBLIC MEETING AND PUBLIC COMMENT PERIOD

JET PROPULSION LABORATORY

PASADENA, CALIFORNIA

MONDAY, MAY 14, 2001

6:00 P.M. to 9:00 P.M.

Reported by:

Vickie Blair

C.S.R. No. 8940, RPR-CRR

WISHNOW . TEARNEY . KILLION
A LEGALINK COMPANY

1 PASADENA, CALIFORNIA; MONDAY, MAY 14, 2001

2 6:00 P.M.

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5 MR. SAUNDERS: Good evening.

6 We're going to start a couple minutes
7 early. Welcome to the Jet Propulsion Laboratory. Thank
8 you for taking the time tonight to attend this meeting.

9 My name is Lee Saunders. I'm an
10 Environmental Public Affairs Officer for the U.S. Navy and
11 a facilitator for tonight's meeting about the proposed plan
12 to select a remedy to clean up soils at the National
13 Aeronautic Space Administration, Jet Propulsion Laboratory
14 located here in Pasadena.

15 During this portion of the meeting, you, the
16 community, can provide questions and comments to these
17 representatives and their agencies on the proposed plan.

18 Excuse me. Let me backtrack just a moment.

19 Prior to the meeting, you had the
20 opportunity to speak with NASA, federal, and local lead and
21 regulatory agency representatives on a one-to-one basis
22 about the proposed cleanup actions.

23 During this portion of meeting, you, the
24 community, can provide questions and comments to those
25 representatives and their agencies on the proposed plan.

1 These comments and questions will be included in a meeting
2 transcript and become part of the final decision for soil
3 cleanup at JPL. Representing the agencies responsible for
4 cleanup and talking to you the proposed plan and its
5 remedial alternatives are agency representatives who will
6 each introduce themselves.

7 To my left -- do you want to --

8 MR. ROBLES: Oh, Peter Robles of NASA representing
9 the SuperFund cleanup here.

10 MR. ZUROMSKI: Hi. I'm Richard Zuromski with the
11 Naval Facilities Engineering Command.

12 MR. GEBERT: I'm Richard Gebert with the State of
13 California Department of Toxic Substances Control.

14 MR. RIPPERDA: I'm Mark Ripperda with the
15 United States Environmental Protection Agency.

16 MR. YOUNG: I'm David Young with the Los Angeles
17 Water Regional Quality Control Board.

18 MR. SAUNDERS: Ground rules for today's meeting are
19 as follows: This evening's format will consist of
20 presentations by our representatives about the proposed
21 plan and remedial alternatives, followed by a formal
22 comment session where you, the community, can provide us
23 with your comments and questions.

24 I'm going to ask you to please hold your
25 questions until the presentations have been completed.

1 Once we've heard from all the presenters, we will open the
2 floor for questions and comments. You may want to use the
3 comment sheets that are in the back to write your questions
4 down during the formal comment session while we're waiting
5 for opportunity.

6 To assure that everyone that wishes to make
7 a comment or ask a question has a fair and equal
8 opportunity to do so, we ask that you limit your questions
9 or comments to two minutes. At the end of that time,
10 please take your seat. If you have not finished your
11 remarks, you may continue for another three-minute period
12 after we have heard from all the other speaks.

13 We have court reporters -- two of them --
14 here tonight, so we ask you to please state your first and
15 last name and spell your last name before you begin your
16 comments.

17 If you do not wish to provide verbal
18 comments or questions, you may also submit your comments
19 and questions in writing. There are comment sheets
20 available on the tables in the back for those of you in the
21 audience who would prefer to submit your input by this
22 method.

23 For those of you wondering why the U.S. Navy
24 is involved with the environmental cleanup of a NASA
25 facility, the explanation is fairly simple. In 1999, NASA

1 and the Naval Facilities Engineering Command, most commonly
2 known by the acronym NAFAC reached a memorandum of
3 agreement establishing roles and responsibilities that
4 state NASA may procure environmental engineering and the
5 consultancy services from NAFAC and its subordinate
6 commands.

7 In late 1999, NAFAC became heavily involved
8 in providing environmental services to NASA and JPL. Peter
9 Robles, remedial property manager for NASA, is our first
10 presenter.

11 Peter.

12 MR. ROBLES: Good evening. What we're going to
13 present today is a site description to give a little
14 history of why this site is on the SuperFund list. Then
15 we're going to have Mark Ripperda talk about regulatory
16 framework, coming up with Richard Zuromski talking about
17 site assessment and investigation activities and the
18 remedial activities and the proposed remedial alternatives
19 for OU-2 soils.

20 We will, at a later date, talk about
21 groundwater. We'll have another public meeting in the near
22 future. But right now what we're focusing on are the soils
23 underneath JPL and how to remediate the contaminants in the
24 soil to minimize any migration into the groundwater. And
25 that's what we're going to do right now.

1 The site that we call JPL has been active
2 since the late '30s, early '40s. It was owned by the Army
3 ordnance, and then it was owned by NASA in '59 to '60 when
4 we took it over.

5 During the 40s and '50s, seepage pits were
6 the main method to dispose of waste. At that time, it was
7 the most accepted practice. It was within the regulations,
8 no problem at all. We found out later that that was a
9 mistake, and we had to correct that. In the late '50s
10 early '60s, we, NASA, started programing to replace these
11 seepage pits with sewer lines.

12 Now, the indication and a question that came
13 in on Saturday was "So contaminants are going down the
14 sewer line." No, they're not. That's a good question.
15 Very little gets put into landfills. We usually destroy or
16 recycle the chemicals that we use today, or they are used
17 up in the operational processes. We do not do that. The
18 regulatory requirements require us to make sure of that, so
19 from the standpoint today, we are all within regulations.
20 But at the time, the main reason why the contaminants got
21 into the ground soil is because of these seepage pits.

22 In 1992, the site became a SuperFund site.
23 It was put on the national priorities list, and the EPA
24 will talk a little bit more about that.

25 We are talking about trying to remediate

1 Operable Unit 2, which is -- as I said, before currently
2 all operations meet federal, state, and local requirements.
3 We have a host of regulations that we have to follow, and
4 so, therefore, we are assured that we're doing what's
5 right. What we're dealing with is past practices that we
6 have to take care of.

7 Here is a conceptual model of what we're
8 talking about. What you have here is a VOC plume, volatile
9 organic carbons, that have gone through the soils because
10 of past practices from JPL. The area that we are most
11 concerned with is 50 feet below the surface to about 200
12 feet, which is the groundwater zone that we're talking
13 about.

14 In the soils, we're talking about
15 chlorinated solvents, and when we say "vadose zone," we
16 mean in a vapor state in the soil. NASA wants to address
17 this issue tonight, and we will be addressing groundwater
18 in the future.

19 Now we'll have the EPA talk about regulatory
20 framework.

21 MR. ZUROMSKI: I just want to ask the court
22 reporters really quick, can you hear me okay without having
23 to use the microphone? Okay. Mark and I are going to try
24 to do ours without the microphone then.

25 MR. RIPPERDA: That way I can stand out of the

1 light.

2 So what's it mean to be a SuperFund site,
3 and for that matter, what's -- oh, I got a toy.

4 What's it mean to be a SuperFund site? For
5 that matter, what's SuperFund? About 20 years ago,
6 Congress passed a law, it's called CERCLA, and I'll talk
7 about what the acronym means, that authorize a tax on the
8 chemical industry. And that tax all went into a trust
9 fund, which is called the SuperFund, which EPA can spend to
10 clean up abandoned hazardous waste sites.

11 That same law passed by Congress also gave
12 EPA the authority to go to existing, ongoing sites such as
13 NASA/JPL that have contamination that might pose a serious
14 threat to public health, and we have the authority to force
15 them to clean it up.

16 In order for us to use that authority, we
17 have to rank how bad the potential hazard might be, and if
18 it scores high enough, the site is put on a national
19 priorities list also called an NPL. And like Peter said,
20 that happened with NASA/JPL in 1992.

21 So what was it that first got NASA/JPL on
22 the national priorities list? In the late, very late '80s,
23 the City of Pasadena found some chemicals in their drinking
24 water wells right here across the Arroyo just through their
25 standard compliance testing that they have to do for the

1 State of California. And that's what got us -- all of us
2 regulators, the State of California, Richard, and David and
3 myself -- well, actually our predecessors. But that got us
4 involved looking over their shoulders making sure that
5 they're doing the cleanup appropriately.

6 Right when the contamination was first
7 sound, City of Pasadena put treatment systems onto their
8 wells immediately, which means that anybody who is drinking
9 the water was protected right from the beginning.

10 But to cleanup the actual release, to
11 cleanup all the aquifer and the source here on the site is
12 a long, lengthy process. And the majority of that process
13 is called the remedial investigation feasibility study.
14 Which means they have to go out drill bore holes all over
15 the site, take soil samples, soil vapor samples. They have
16 to put in monitoring wells, take groundwater samples both
17 on the site, they also went out into the neighborhoods put
18 monitoring wells out there, and sampled them. They also
19 worked with the water purveyors to look at their water
20 analyses. And with all of that, they figured out where the
21 contamination is now, where it came from originally, and
22 they go through the process of deciding how best to clean
23 it up.

24 Usually you clean up groundwater
25 contamination by looking at the source where the

1 contamination is coming from and at the aquifer itself in
2 two separate stages because you're using a different
3 physical mechanisms to cleanup the two. So what they're
4 working on now, and what this whole meeting is about, is
5 the actual cleanup of the source here on the site. So As
6 Peter said to keep it from going into the water, which
7 means that ultimately the water can be cleaned up faster.

8 So in the feasibility study, they look at
9 various alternatives on how best to clean something up.
10 And in some cases, such as here at JPL, there's only one
11 real option. I don't know if you've read the proposed
12 plan, but it looks like you were given two choices, do
13 nothing or do what NASA wants to do. And that may look
14 like you don't really have a choice, but Congress says that
15 we also have to look at the do-nothing alternative because
16 they don't want EPA out there spending money willy-nilly
17 making faculties and industries spending money if doing
18 nothing might work. I don't know why they don't trust us
19 to be good stewards of public money, but they don't.

20 So in this case they had to look at the
21 do-nothing alternative. And the other alternative that
22 they show to you in the proposed plan which is called vapor
23 extraction system is something that EPA has found over the
24 20 years we've been doing SuperFund cleanups to be the one
25 system that really works in a case like this where you got

1 all the organic compounds in the soil deep beneath the
2 site. You can't really dig up a site. You know, one
3 alternative might be dig up the whole site, take the soil
4 away. But, obviously, you can't do that here because you'd
5 be digging up all of JPL.

6 There are some other technologies such as
7 heating the soil with large electrical current, actually
8 what is called vitrify it. So you turn it into one solid
9 lump. You melt the soil. And you can't do that here.

10 So technologies like that which exist but
11 they don't really make sense for a site, we, the
12 government, don't make NASA do a detailed evaluation of.
13 So we essentially cut right to the chase is that what we're
14 proposing the one and only system that really works best
15 now. There might be something else that comes along in the
16 future, but for now, this is what makes sense.

17 So once they select a remedy, they have to
18 do a legal document, which is called a record of decision.
19 Before you get to that point -- I forgot the most important
20 part, the yellow box, where we are now. We have to go out
21 to the public and say, "This is what we're proposing. What
22 do you think?"

23 So you can comment both on, you know, their
24 selection of a remedy, but you can also make whatever
25 comments you want on, you know, how they ran the process,

1 how well they've involved the public. If you think they've
2 been hiding things from you or whatever, which they
3 haven't, but anything you might think, you can make comment
4 on that. It doesn't just have to be on their remedy.

5 They then have to respond to your comments.
6 They have to check with the regulators, make sure that the
7 State of California and EPA is happy with how they've
8 responded to the public. And, at that point, if we're all
9 happy with each other, they do the record of decision, and
10 then they go on to the remedy implementation. And
11 eventually, if a site gets completely cleaned up, they're
12 no longer a SuperFund site. They get delisted from the
13 national priorities list.

14 But even if that happens, there's still
15 always going to be long-term monitoring and review of what
16 the situation is here at JPL.

17 This is just kind of what we've already
18 said. This is a chance for you to ask us questions, and
19 also make comments on what you think about both the remedy
20 and the process, you know, everything that's going on right
21 now.

22 You can always call Peter. Peter's name and
23 number is in the documentation you got. I don't think my
24 phone number is there, but -- it is? Good. And you can
25 also feel free to call me, and I'll even say feel free to

1 call the State of California guys if you feel like you're
2 not getting appropriate responses from NASA.

3 MR. ZUROMSKI: Thank you, Mark.

4 Hi. My name is Richard Zuromski. I'm with
5 the Naval Facilities Engineering Command, and, as Lee
6 described earlier, I'm here to assist NASA in their cleanup
7 efforts here at JPL.

8 From 1994 through 1998, JPL conducted what's
9 called the remedial investigation, as Mark described
10 earlier. During the remediation investigation, in over
11 nine different sampling events, JPL took 45 soil vapor
12 wells, 35 soil borings, and three test pits throughout the
13 site to investigate where the chemicals may be found in
14 what we're calling Operable Unit 2. Further, over 37 -- or
15 37 of those points were turned into permanent monitoring,
16 soil vapor monitoring points that is we must now monitor on
17 a regular basis to see how the contaminants are moving, or
18 not moving, in this case, within the subsurface.

19 Now, during the remedial investigation, the
20 samples identified the extent to which the chemicals were
21 in the soil, and the results showed that there were
22 elevated levels of four different volatile organic
23 compounds. They were carbon tetrachloride, trichloethene,
24 Freon 113, and 1,1-dichloroethene.

25 Now, these chemicals were used back, as

1 Peter described earlier, in the '30s, '40s, and '50s to
2 clean out the inside of rocket motors that they were
3 testing back in those days, which they don't use here
4 anymore. And that's where the chemicals came from that are
5 now in OU-2.

6 The OU-2 risk assessment, the human health
7 assessment, determined that there were no risks above
8 regulatory thresholds from exposure to soils or soil
9 vapor.

10 Now, the primary reason that this risk was
11 so low was the fact that, as Peter described earlier, these
12 chemicals are now more than 50 feet below the ground
13 surface. So exposure to humans is very much unlikely.

14 However, there is a risk that these
15 chemicals will continue to migrate through the soils and
16 eventually reach the groundwater, and that's the purpose of
17 the remedy that we're talking about here today, is to make
18 sure that those chemicals do not enter the groundwater and
19 pose a further problem in the groundwater.

20 Now, we are currently studying how to remove
21 these chemicals from groundwater. And that is going to be
22 the subject of a meeting very similar to this probably
23 within a year from now. However, the groundwater and the
24 risk from chemicals in the groundwater, there's no risk
25 because the water purveyors, or those people who deliver

1 the water to the public, have to meet very, very strict
2 regulatory requirements. So today's meeting is focused on
3 removing this source of contaminants, what we call source
4 reduction, from the soils before they reach the
5 groundwater. And that's the purpose of our meeting here
6 today.

7 Now, this graphic shows the extent to which
8 any level of a volatile organic compound was detected here
9 at the site during the remedial investigation. Now, the
10 hottest or most -- the highest levels of these chemicals
11 were found in the north central part of the site, right up
12 here where most of the laboratory activities took place.
13 And that's where we focused a lot of our efforts to date
14 doing some pilot studies which I'll talk about in just a
15 moment.

16 Now, based on the results of the remedial
17 investigation and our ongoing monitoring program of the
18 soil vapor, we have found that the soil vapor and the
19 chemicals in the soil vapor have not migrated off the JPL
20 site boundary; but it does encompass roughly 45 acres on
21 the site.

22 So based on the analysis in the remedial
23 investigation and also the continuing monitoring we do here
24 at the site, the remedial objective for Operable Unit 2 is
25 to remove the chemicals, the VOCs from the soils before

1 they migrate to the groundwater.

2 To meet this objective, kind of as Mark
3 talked about earlier, JPL evaluated several alternatives to
4 remove the chemicals. And of those alternatives, two were
5 selected for very detailed evaluation. And if you look in
6 your proposed plan, I think it's on the third or fourth
7 page, there's a list of nine criteria that we have to go
8 through when evaluating each technology in detail.

9 The first is called no further action. As
10 Mark talked about earlier, this is a baseline that all
11 other technologies are compared to. Now, at this site, no
12 further action would entail continuing a regular soil vapor
13 monitoring program to see how the contaminants are behaving
14 in the subsurface.

15 The second, and the proposed alternative,
16 for OU-2 is soil vapor extraction with granular activated
17 carbon treatment and also the continuation of our regular
18 monitoring program. To help evaluate these two
19 alternatives, JPL conducted a pilot test of the soil vapor
20 extraction technology. And this started back in 1998. In
21 over 14 months of operation of this pilot test, we removed
22 roughly 200 pounds of VOCs, of these chemicals, out of
23 roughly up to a maximum of 5,000 pounds that are throughout
24 the site. But within this area, we removed 200 pounds of
25 chemicals from the subsurface.

1 Now, this was so successful, this system is
2 currently still operating here at the site, and then the
3 pilot study does go on and will continue throughout the
4 proposed plan stage and all the way through the record of
5 decision stage until we decide the final, full-scale size
6 of the technology that we'll put here at the site.

7 This is a conceptual diagram of how soil
8 vapor extraction works. First you have here, as Peter
9 described earlier, the seepage pits which are no longer
10 existing here at the site. But this is where the chemicals
11 came from, and then the VOCs, chemicals, became deposited
12 here in the soil.

13 Now, soil vapor extraction is fairly simple.
14 What we do is we apply a very strong vacuum, just like your
15 vacuum cleaner, to suck these VOCs, these chemicals, right
16 out of the soils and the soil vapor into this vapor
17 extraction well right here.

18 Now, these vapors are -- since we're talking
19 about volatile organic compound, the compound become in a
20 vapor phase when we pull a vacuum on the soils and the soil
21 vapor. So what you're extracting here is air and chemicals
22 in vapor, which comes above the surface through this pump
23 into a vapor treatment system.

24 The vapor extraction system consists of
25 granular activated carbon. What it does is it captures the

1 chemicals and holds them within the vapor treatment system,
2 and then clean air is released from the system. What
3 happens every three to six months, depending on how much
4 chemicals we're removing from the system, we have to take
5 those carbon filters that are inside this vapor treatment
6 system and take them to either a recycling facility or
7 dispose of them in some type of legal, regulatory manner.
8 And then we take a new carbon treatment system and replace
9 it and continue the vapor extraction phase. And that's
10 generally how the vapor extraction system works.

11 So, based on our analysis, alternative one
12 does not meet our remedial objective of keeping the
13 chemicals from migrating to the groundwater; therefore,
14 we're proposing soil vapor extraction as our proposed
15 remedy.

16 There are several reasons why we're choosing
17 soil vapor extraction from our proposed remedy.

18 First, it permanently removes the chemicals
19 from the soil and soil vapor.

20 Secondly, it protects the groundwater from
21 further migration of the VOCs.

22 Third, it's fairly simple to operate and
23 fairly inexpensive to implement.

24 Fourth, the treatment period is relatively
25 short, probably from one to five years, depending on how

1 effective the system is here at the site. But based our on
2 pilot-scale results, it should have been very expected that
3 the cleanup should not take very long.

4 And, finally, because this soil vapor
5 extraction technology has all those qualities of being very
6 effective in the type of soils here at JPL, in being very
7 effective in removing this type of chemical from the soil,
8 EPA says that this is what is called a presumptive remedy
9 where basically this is the best technology that you can
10 use at hundreds of other sites, including here at JPL,
11 throughout the country. And so we call it what is deemed a
12 presumptive remedy.

13 So based on our pilot study, and based on
14 our ongoing analysis of the site, NASA proposes soil vapor
15 extraction as the proposed remedy for OU-2.

16 MR. SAUNDERS: Thank you, Richard.

17 We are now available for comments and
18 questions from you, the public. As a quick reminder to
19 ensure that all participants providing comments or
20 questions provide equal treatment, please limit your
21 comments or questions to two minutes. We also ask you to
22 please state your first and last name, and spell your last
23 name for the court reporters.

24 Thank you.

25 Now, do we have any questions or comments

1 from the public? Please feel free to come up to the mike,
2 and, again, state your first and last name and spell the
3 last name for the reporters, court reporters.

4 Thank you, sir.

5 MR. STORK: My name is Edward Stork, and my last
6 name is spelled S-t-o-r-k. And I actually am the president
7 of the Rose Bowl Riders, which is right next door. And so
8 I was interested to hear that the chemicals are apparently
9 only within the boundaries of JPL; correct? Can you tell
10 me where the soil vapor extraction wells will actually be
11 located?

12 MR. ZUROMSKI: Sure. I can tell you that at this
13 point in time, the one location that we are currently
14 operating the soil vapor extraction is right where I was
15 pointing at the highest levels of the chemicals that we
16 found in the site.

17 The other wells -- what we're doing right
18 now is we're doing continuing monitoring of the soil vapor
19 levels at the site, and that actually -- I think Mark
20 described the remedial design phase that occurs after we
21 sign our record of decision where we actually look, at that
22 point in time, where the highest levels of the chemicals
23 are and then we place the wells.

24 So, no, we don't know exactly where they
25 would be right now; but we would focus on where the highest

1 levels of the chemicals are.

2 MR. RIPPERDA: But the level of contamination as
3 you move south -- you're here from the riding stables;
4 right?

5 MR. STORK: Yeah, just below here, yeah.

6 MR. RIPPERDA: As he said, the highest level of
7 contaminants -- and can you put that back up. But the
8 highest level of contaminants are up in the northern part,
9 and in itself, it's negligible.

10 MR. ZUROMSKI: Right. About there where my light
11 is shining is where the current vapor extraction pilot
12 study is operating, and that's where the highest levels of
13 the chemicals were found.

14 MR. STORK: Just out of curiosity, how much area
15 does one of these vapor extraction wells take up when you
16 install it?

17 MR. ZUROMSKI: The actual well itself is usually
18 probably from four to six inches just for the well itself;
19 however, the radius of influence from the vacuum at the
20 site can be anywhere from four to eight, seven or eight
21 hundred feet from the center of the well.

22 MR. STORK: Thank you.

23 MR. ROBLES: The size of the site, you also want to
24 know how big is that. It's about 45 acres. That yellow
25 spot. None of the wells that we're talking about for soil

1 vapor will be off-site. It's all on-site because that's
2 where all the soils are at.

3 But understand also, everybody, that we
4 revisit this periodically. Every five years we go back and
5 revisit so we make sure we're doing the right thing with
6 the regulators.

7 Any other questions?

8 MR. RIPPERDA: Also something about --

9 MR. ROBLES: Because of the comments on Saturday, I
10 want to thank the young lady, we are planning to have a
11 third meeting. And we want to have it in Altadena. And
12 what we want to do is probably -- we're trying to set it up
13 ahead -- I haven't talked to anybody over there -- we'll
14 probably host it in the middle of June so that we can make
15 sure that the whole community has a chance.

16 I didn't know this, and this is one of the
17 reasons why we have public meetings, is that the folks in
18 Altadena can't make it over here at night because there's
19 no bus service. So we want to know if there are any
20 concerns out there.

21 So if you get another proposed plan in the
22 mail, please don't get angry at us. We're just announcing
23 that we're going to have a third meeting in Altadena so we
24 can make sure we have the public comments in there. We
25 want to solicit comments. We want to make sure that the

1 public is comfortable with this. They might have better
2 suggestions, so that's what we're going to shoot for. So I
3 want to thank the lady on Saturday, that was a good comment
4 that we had.

5 And we have talked to some water purveyors,
6 and they're willing to put it in their billing. So we're
7 going to work on that.

8 MR. SAUNDERS: All right. Quick feedback from
9 Saturday's meeting.

10 What other questions do we have, comments?
11 Please feel free to come up to the mike and express your
12 feelings your opinions, your comments, your questions at
13 this time.

14 MR. CLAIRDAY: Good evening. John Clairday, with
15 the -- and the last name spelled C-l-a-i-r-d-a-y. I'm a
16 board member with the Lincoln Avenue Water Company, which
17 is a neighbor, right next door. We appreciate the
18 opportunity to come over here for this meeting.

19 Just one statement, and then one question,
20 as well. And I don't think this is inconsistent with what
21 Mr. Robles said, but we already do have a groundwater
22 problem, and I think that's been recognized. But just
23 wanted to emphasize that since it's an area that we're
24 interested in.

25 And then a second one, I'm wondering about

1 the effectiveness of this extraction program. Is it a
2 hundred percent effective? How do you know how well you're
3 doing, and does the testing continue throughout that term?
4 And, also, if it's not a hundred percent effective, does
5 that mean that a certain percentage will ultimately reach
6 groundwater and continue to contaminate it?

7 MR. ZUROMSKI: I'll answer your question.

8 First of all, every technology that we
9 attempt, we choose because it is the most effective.
10 Hundred percent effective, I don't think we could
11 guarantee. But it is the most effective technology for the
12 types of chemicals at the site and for the types of soils
13 that we have at the site.

14 Now, what we do to ensure that that is the
15 most effective technology for the site is, number one, we
16 conduct a regular monitoring program of the soil vapor
17 around the site to see -- and to actually watch, we've
18 actually seen some of the data is in the back of the room,
19 you can watch the chemicals that have been removed slowly
20 disappear from the soil. And we do that on a very regular
21 basis. And during our pilot study, we actually did it
22 monthly to see what the effect of the system is on the
23 chemicals in the soil.

24 Now, what we do for the long term is once
25 we've signed our record of decision, and once we've

1 installed the system throughout the site, we do -- again,
2 we have a regular monitoring program to see how effective
3 it is. And then at least every five years, we do what is
4 called a five-year review where the regulatory agencies,
5 NASA, sits down, looks at the results, how well the
6 technology is looking. Looks at new possible innovative
7 technologies, if the technology we've chosen was not as
8 effective as we thought it would be, and basically says,
9 "Are we still doing the best thing that we can do to remove
10 the chemicals from the environment?"

11 And that's generally how we monitor how
12 effective the technology is over the long term.

13 Now, if you look in the back of the room, we
14 have an estimate, I think. I can't read from here, but it
15 looks like it's a little over \$3 million. That's a present
16 value cost of what it will take to operate the system from
17 our estimate one to five years and then monitor for another
18 25 years after that. So we do continuously monitor this
19 throughout the entire period to make sure that what we've
20 done is the best thing for the site.

21 As far as a level that we remove the
22 chemicals to, that level is determined during the record of
23 decision where we, as Mark said, we all sit down and agree
24 to a level that we will clean the site to. And that's
25 based on all the regulatory requirements that we're

1 required to meet.

2 MR. RIPPERDA: And on an ongoing -- you know, the
3 groundwater that they're also responsible for so over time
4 whatever the recommended decision for the groundwater
5 remedy has, that will include monitoring and clean up of
6 the aquifer. So they're removing the source to protect it
7 from going into the aquifer in the future, but for the
8 contaminants that have already gotten into the groundwater,
9 NASA will, of course, still be responsible for that in the
10 future.

11 MR. SAUNDERS: Thank you.

12 Any other questions, comments? Please feel
13 free to take this opportunity.

14 Thank you.

15 MS. COMPTON: My name is Cynthia Compton,
16 C-o-m-p-t-o-n. I'll try to be easier on you. I gave a lot
17 of comments on Saturday, and I appreciate your response to
18 my comments.

19 My first comment is that two minutes is not
20 enough time for my questions and my comments.

21 MR. RIPPERDA: Can we give her a little extension?

22 MR. SAUNDERS: Well, again, we can get her more
23 time after the other folks have responded, she can come
24 back up again.

25 MS. COMPTON: There you go. Quickly, I know that

1 there was some testing done in building 107 in the basement
2 for the air atmosphere, and I wonder if that has turned
3 into one of the 37 permanent test points.

4 Another question I have is: I'm interested
5 in a record of the public notices that were sent out in the
6 newspapers and the mailings. And I'm still having a little
7 trouble distinguishing the difference between contamination
8 in particles of soil versus contamination in the vapors,
9 and if maybe we could clarify that a little bit with me.

10 And the other thing is my same comments I
11 made Saturday, I think we, the public, deserve a little bit
12 earlier notice, and thank you for offering another
13 meeting. I'm going to put that in my official comments,
14 but a little earlier notice and something to the JPL
15 employees that says public meeting may be in the subject
16 title.

17 MR. RIPPERDA: I'm going to say one thing to the
18 last thing that Cindy said. She showed me a copy of the
19 E-mail that went out, and I don't know how many JPL
20 employees are here, but the actual E-mail didn't say
21 anything about the meeting. It just said, "The proposed
22 plan is available at a website," and she had a great
23 comment that the actual E-mail needs to announce when and
24 where the meetings are. So we'll make sure that NASA, in
25 the E-mail that goes out in the next week or two for the

1 next meeting, has right in the text of the E-mail that this
2 is a public meeting and when and where it will be.

3 Oh, and he wants me to talk about soil
4 particles, also.

5 MS. COMPTON: He's already tried of me.

6 MR. RIPPERDA: Yeah. So her question pertains to
7 the fact that in the slides it almost always says "soil
8 vapor." It didn't say "VOCs in the soil"; It always said,
9 "Soil vapor." And that's because the actual measurements
10 we take are of the soil vapor.

11 When the contaminants are 50 feet, a hundred
12 feet below the surface, you actually have to drill a bore
13 hole to get down to it, and the act of drilling that bore
14 hole, the heat and the air that you have to inject to bring
15 the cuttings, the dirt, back up out of the hole, basically
16 blow away all the VOCs that you're trying to sample for.
17 So you can't take a soil very well from a hundred feet deep
18 and analyze that soil for how much contamination it has in
19 it.

20 So instead what you do is you drill your
21 bore hole, and let it sit for a few weeks, reach
22 equilibrium, and then suck some air out. And because the
23 VOCs are attached to the soil particles and all the soil
24 around your bore hole, they evaporate naturally. And then
25 they'll fill the bore hole when you suck the air out you

1 see, "Oh, we have VOCs in the air that we're sucking out,"
2 so therefore we know that the VOCs in the soil in this
3 location.

4 So you can do kind of rough correlations
5 between the amount that's in the soil vapor you're
6 measuring to what actually in the soil.

7 So it's just the physics of not being able
8 to measure the actual particles in the soil; we have to do
9 a correlation between the soil vapor and the soil. So
10 we're always going to talk about soil vapor, even though
11 what we're really concerned about is what is attached to
12 the soil because what gets attached to the soil is what
13 gets dissolved in rainwater, and ultimately brings it on
14 the drinking water aquifer.

15 MS. COMPTON: But you're talking about cleaning --

16 MR. RIPPERDA: But when we're sucking, we're
17 sucking the vapor out, but as we suck the vapor out, the
18 particles of the chemicals that are attached to the soil
19 are always evaporating. As we suck more air, more
20 particles evaporate out of the soil, and relatively
21 quickly, you suck those particles of contamination out.

22 MR. ROBLES: You asked about the building. We're
23 not familiar with that, and I know --

24 MR. RIPPERDA: You have to talk louder in your
25 answer for the court reporter.

1 MR. ROBLES: Which building are you in?

2 THE WITNESS: Building 107.

3 MR. ROBLES: 107. It must be in our proposed plan.
4 I don't remember it exactly. I can get back to you with
5 that information.

6 MR. ZUROMSKI: We'll have to respond to that.

7 MR. ROBLES: Yeah, we'll have to respond to you.
8 Again, I appreciate that. It's not familiar to me after
9 looking at the document. I'll have to research it and get
10 back to you.

11 MR. SAUNDERS: Thank you.

12 What other questions, comments, do we have?
13 I'm sure there are plenty of other folks out there that
14 have some feedback for us. Please feel free to come up to
15 the mike and provide your comments, questions.

16 If there's no other comments or questions,
17 ma'am, if you'd like to come back up and get your next
18 three minutes in, you're welcome to come up at this time.

19 MS. COMPTON: I'm okay.

20 MR. SAUNDERS: Well, if there are no other
21 questions or comments, we're going to wrap this up in a
22 moment.

23 I want to thank you for attending. We
24 encourage you to review and comment on the proposed plan,
25 and there are copies on the back table of the proposed

1 plan.

2 Final decisions regarding cleanup will be
3 made after public comments have been received and
4 considered. The public comment period started May 7 and
5 runs through June 11. Keep in mind the comments and
6 questions asked tonight, as well as responses, not only the
7 ones given here but further, more in-depth responsive
8 answers to your comments and questions included in a
9 responsiveness summary which will be included with a RoD
10 into the admin record.

11 Yes.

12 MR. ZUROMSKI: The comment period will be extended
13 in accordance with the new meeting.

14 MR. ROBLES: Okay. We're going to extend the
15 comment period, all right.

16 MR. ROBLES: We've extended the comment period past
17 the third meeting so, therefore, it's fair for everyone.

18 MR. SAUNDERS: So instead of waiting for the public
19 to request an extension, we've already extended the comment
20 period at this time.

21 Do we have a date as of yet?

22 MR. ROBLES: That will be in the mail.

23 MR. SAUNDERS: It will be in the information sent
24 out to the public as to how long the comment period has
25 been extended.

1 And if you could put that slide back up.
2 It's already been mentioned, if there are any further
3 comments, questions, the last slide has Peter's address.
4 Feel free to send your comments, your questions, mail them,
5 E-mail them, to Richard at this address. It's also
6 included in the proposed plan fact sheet.

7 MR. ROBLES: Peter.

8 MR. SAUNDERS: And we look forward to any further
9 feedback you may have at this time. And before we close, I
10 will give you one other chance if there are any comments or
11 questions.

12 If not, thank you for coming and have a good
13 evening.

14 (Whereupon, at 9:00 P.M., the HEARING was
15 adjourned.)

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STATE OF CALIFORNIA)
) ss
COUNTY OF LOS ANGELES)

I, Vickie Blair, Certified Shorthand Reporter,
number 8940, RPR-CRR, for the State of California, do
hereby certify;

That the foregoing transcript is a true record
of the proceedings.

I hereby certify that I am not interested in
the event of the action.

IN WITNESS WHEREOF, I have subscribed my name
this 4th day of June, 2001.

Vickie Blair.....

Certified Shorthand Reporter for
the State of California