APPENDIX G

PUBLIC COMMENTS AND NASA RESPONSES

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Public meeting held on May 12, 2001)

Commenter	No.	Question or Comment	Response
Elaine S. Tutt	1	What I would like to ask is for the alternatives. There's alternative one and alternative two, and it seems like alternative one is not really an alternative, but it's just continuing not to do something.	EPA guidance requires that the feasibility study process include identification and evaluation of remedial options with respect to technical implementability, effectiveness, and cost. The EPA has developed a list of remedies that are presumed to be the most effective for sites with VOCs in soil based on the EPA's collective knowledge about site investigation and remedy selection for VOC-impacted soils. These presumptive remedies are soil vapor extraction (SVE), excavation/thermal desorption, and excavation /incineration. EPA encourages the use of one of these presumptive remedies at appropriate sites in order to expedite the remedy selection process. Each site must be evaluated to determine if using a presumptive remedy is appropriate. Both thermal desorption and incineration involve excavating and then treating the VOC-impacted soil. Due to the large extent (45 acres) and depth (up to 200 feet) of the VOC-impacted soil, as well as the placement of the existing surface structures, excavation is not feasible and therefore thermal desorption and incineration were discarded as remediation alternatives. SVE was chosen as the most suitable alternative for the JPL site based on the types of soil, the type of VOCs, and the likelihood of being able to effectively treat VOC waste in place and achieving the remedial action objective (RAO). The RAO for the JPL site is to prevent, to the extent practicable, migration of VOCs to groundwater to protect an existing drinking water source. Also, SVE is a feasible option for remediation of VOCs in soils at the JPL site based on the findings of the SVE pilot test, which removed more than 200 pounds of VOCs from the soil. *Continued on the next page.*

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Commenter	No.	Question or Comment	Response
		Question 1, continued.	Alternative 1, No Further Action (NFA), is considered an alternative at the JPL site because The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requires that the NFA alternative be evaluated to establish a baseline against which to compare and evaluate other alternatives. Alternative 2, soil vapor extraction (SVE), is the preferred remedy. Additional information on the selection of alternatives can be found in the Feasibility Study for Operable Unit 2 (OU-2) and the document titled *Presumptive Remedies: Site Characterization and Technology Selection for CERCLA Sites with Volatile Organic Compounds in Soils* (EPA, 1993), which are available in the information repositories.
Elaine S. Tutt	2	Commented on the short notice she received regarding the meeting date and time, and would like at least ten days advance notice in the future.	NASA apologizes for the short notice for the public meetings on May 12 and 14, 2001. The Proposed Plan was mailed on May 8, 2001, which did not provide enough time for the public to plan to attend. In response to these concerns, NASA held a third public meeting on June 20, 2001 to provide another opportunity for the public to comment on the Proposed Plan. The mailer for the public meeting held on June 20, 2001 was sent on May 31, 2001, hopefully providing adequate time to plan for attendance at the third public meeting. In addition, the public comment period was extended to July 11, 2001 to allow the public time to comment after the third public meeting. The public announcements for the June 20, 2001 meeting were published in the *Pasadena Star-News* from June 9 to June 15, 2001; in the *Glendale News-Press* on June 6, 9, 13, and 16, 2001; and in the *La Cañada Sun* on June 7 and 14, 2001. Announcements of the public meetings were broadcasted through KPCC radio on June 18 and 19, 2001. The public comment period ran from May 7 through July 11, 2001. Notices of future meetings will be sent out earlier to allow for better planning.

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Susan Blair	3	Once the gases come up through the pipe into the chamber where the carbon is and it absorbs the chemical, what happens to those carbons?	As VOCs are extracted from the soil, they are sent through a treatment system containing granular activated carbon (GAC). Once the carbon becomes full of the VOCs that are pulled from the soil vapor, that granular activated carbon canister is removed from the treatment system at JPL and either recycled or disposed of off site. New granular activated carbon is brought on site and the treatment process continues.
Cynthia Compton	4	In the '50s to the early '60s, a sewer system replaced the seepage pits. Does that mean the chemicals are now going into the sewer system, and where do they go from there?	NASA does not send hazardous waste down the sewer system. Chemicals used at the JPL site are recycled and reused where possible. If the chemicals are not recyclable, they are destroyed in the industrial process, or sent off site for disposal according to federal, state, and local regulations. Current regulations prevent the unauthorized disposal of hazardous waste into sewer systems. The hazardous waste produced at JPL is reported as part of the EPA's Biennial Reporting System (BRS), which is a national system that collects data on the generation, management, and minimization of hazardous waste. The generated waste and disposal methods used by JPL are reported to the EPA, where they are compiled and reported every other year as part of the BRS (EPA, 1997).
Cynthia Compton	5	Is there a record of what other alternatives were considered other than these one and two, and where can we read or find out about that?	Please see the response to Question 1 above regarding the presumptive remedy approach used at JPL.

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Cynthia Compton	6	The pilot system has removed 200 pounds of VOCs. Out of how many is predicted or known to be at the site?	Two methods were used during the Feasibility Study for OU-2 (FWEC, 1999a, 1999c) to estimate the mass of VOCs in the vadose zone soil at JPL. The first method used estimated soil parameters to calculate the approximate soil vapor volume and extent of the VOCs in the soil. Method 2 used guidelines presented in the California Regional Water Quality Control Board guidebook (RWQCB, 1996). Method 2 involved a more rigorous calculation of the VOC concentrations in the soil and used physical soil parameters specified in the RWQCB guidebook. Method 1 estimated approximately 2,250 pounds of VOCs in the soil. Method 2 estimated 5,040 pounds of VOCs in the soil. The variation between these amounts is due to the difference inherent in the two methodologies. It should be noted that the above methods are used to obtain estimates only, and are intended to provide an idea of the order of magnitude of the mass of VOCs, rather than an actual value.
Cynthia Compton	7	Is there some kind of record of when notices are sent out to the public and where they're at?	The Record of Decision (ROD) contains a listing of notices sent to the public, including the date on which they were sent. Please see the response to Question 2 for further information.
Cynthia Compton	8	What about sending the [public meeting] notice to the customers of the water companies that are involved?	NASA believes this is a very good suggestion and it will be taken into consideration when planning the public meeting regarding OU-1 and OU-3.
Cynthia Compton	9	Please provide a list of public meeting notices that have been advertised with locations, dates, and preferably a copy of them.	Please see the response to Questions 2 and 7.

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Commenter	No.	Question or Comment	Response
Cynthia Compton	10	I think what I'm hearing is that the VOCs are in the vapor or the pockets of the soil, so what about the soil itself, involving the VOCs in the soil particles, and once you remove it from the vapor, does it now migrate from the soil particles back into the vapors afterwards?	VOCs can exist in four phases in the vadose zone: in the soil vapor, in the soil moisture, on the soil grain surface due to adsorption, and as free product, which is the pure chemical in liquid form. During the SVE process, a vacuum is applied to withdraw the soil vapor containing VOCs. This process disturbs the equilibrium that existed between the four phases in the vadose zone, which in turn works to increase the natural tendency of the VOCs to volatilize into the vapor phase. As air flows through the soil, the free product and the VOCs in the soil moisture volatilize into the soil vapor and are withdrawn. VOCs also desorb from the soil grain surface, where they may either volatilize directly, or enter the soil moisture and then volatilize. This is the general process by which VOCs are removed from the vadose zone soil using SVE (Kuo, 1999).

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
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Commenter	No.	Question or Comment	Response
Edward Stork	11	Are the chemicals only within the boundaries of JPL?	Yes, soil vapor monitoring indicates that the entire soil vapor plume is located on-facility. However, the chemicals in the groundwater have migrated outside the boundaries of JPL.
Edward Stork	12	Can you tell me where the soil vapor extraction wells will actually be located?	The exact location of the wells will be determined during the remedial design phase. The remedial design phase begins after the Record of Decision is agreed upon and signed by the parties involved. The one SVE well that was operated as part of the pilot test is located in the parking lot between Buildings 18 and 79, in the area where the highest concentration of chemicals was found. There will not be any SVE wells located off-facility because all of the chemicals in the vadose zone soil are located within the confines of JPL. Workplans associated with remedial design will be made available to the public through the information repositories.
Edward Stork	13	How much area does one of these vapor extraction wells take up when you install it?	The installed SVE wells will be approximately 8 inches in diameter and up to 200 feet deep. The footprint of the SVE well around the wellhead at the ground surface will be up to 3 feet in diameter. The vapor extraction and treatment equipment will have a footprint of approximately 15 feet by 20 feet.

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Commenter	No.	Question or Comment	Response
Cynthia Compton	14	I'm still having a little trouble distinguishing the difference between contamination in particles of soil versus contamination in the vapors.	Please see the response to Question 10.
Cynthia Compton	15	I know that there was some testing done in Building 107, in the basement, for the air atmosphere, and I wonder if that has turned into one of the 37 permanent test points.	No. In June 1998, in response to concerns raised by the Agency of Toxic Substances and Disease Registry (ATSDR), NASA performed indoor air quality sampling at Building 107 (Foster Wheeler, 1999a). This sampling was undertaken because VOC vapors in soil at relatively shallow depths have the potential to collect in the lower levels of buildings where they may pose a health hazard. The sampling results indicated that VOC vapors were not present in the building (ATSDR, 1998).
Cynthia Compton	16	Two minutes is not enough time for my questions and my comments.	The time was extended to three minutes at the third public meeting with an additional comment time of two minutes after everyone wishing to make comments was given the opportunity to speak. This time constraint was made to ensure everyone's opportunity to speak within the comment time given.
Cynthia Compton	17	I'm interested in a record of the public notices that were sent out in the newspapers and the mailings.	Please see the response to Questions 2 and 7.
Cynthia Compton	18	I think, we, the public, deserve a little bit earlier notice.	Please see the response to Question 2.

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Commenter	No.	Question or Comment	Response
Terri Formico	19	Is there any intent to do an anonymous survey of La Cañada residents and employees at JPL of incidences of tumors, cancers, unusual cancers, deaths due to cancer over the last 20 years? Also employees of La Cañada as well. People who have worked here at least 10 years or so. The survey should be offered to all members of the community, all employees of the community of both JPL and La Cañada, not a random or public event to gather data.	The Agency for Toxic Substances and Disease Registry (ATSDR) conducted site visits in 1997 to assess the potential for public health hazards associated with this Superfund site. ATSDR identified two pathways where people could potentially be exposed to chemicals migrating from this location. The first pathway was exposure to impacted groundwater and the second pathway was exposure to impacted soils. ATSDR also identified two primary community concerns through their public surveys. The first concern was future groundwater and drinking water quality, and the second concern was increased incidence of Hodgkin's disease in the community. Following a careful evaluation of the available data, ATSDR determined that VOC-impacted groundwater migrating from this location does not present a past, present, or future public health risk to JPL employees or nearby residents. On-facility groundwater at JPL has never been used as a source of drinking water, and area water purveyors, who are aware of the presence of chemicals in the water basin, regularly monitor their municipal water and take steps (e.g., well water blending, VOC treatment, or well closure) to ensure that drinking water distributed to consumers meets applicable drinking water standards. ATSDR also determined that exposure, if any, to VOC-impacted soils associated with the JPL site is unlikely to cause either short-term or long-term adverse health effects to employees or the public due to low levels of VOCs, the depth of the VOCs, and/or infrequent or unlikely exposure. ATSDR has assigned this Superfund site a "No Apparent Public Health Hazard" category for past, present, and potential future human exposure to VOC-impacted groundwater processed for drinking water and surface soils or soil gases (ATSDR, 1998). In general, the process for reporting a suspected cancer cluster is for a concerned individual to contact their local health department. Epidemiologists can identify certain circumstances that would indicate a cancer cluster. These circumstances include a large number of cases of one type of cancer, rare cancers, or a certain cancer type occurring in an age group not usually affected by that type of cancer. The local health department will refer the caller to the state health department, if necessary (CIS, 1999).

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Commenter	No.	Question or Comment	Response
John Clairday	20	We already do have a groundwater problem, and I think that's been recognized.	NASA acknowledges and appreciates the feedback. Groundwater will be addressed in the Proposed Plan for OU-1 and OU-3.
John Clairday	21	I'm wondering about the effectiveness of the extraction program. Is it one hundred percent effective? If it's not one hundred percent effective, does that mean that a certain percentage will ultimately reach the groundwater and continue to contaminate it?	No technology is 100% effective. Soil vapor extraction was chosen because it is the most effective technology for the constituents of interest and for the types of soils found at JPL. The SVE system will be operated until the performance objectives provided in Section 11.4 of the ROD are achieved. The SVE system will be evaluated based on a reduction in the concentration of the VOCs, not total or percentage of VOC mass removed. Because the VOCs are permanently removed from the soil by the SVE process, existing and future risks to groundwater are reduced. The SVE system is expected to effectively remove the VOCs in soil to levels that are protective of the groundwater

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Commenter	No.	Question or Comment	Response
John Clairday	22	How do you know how well you're doing, and does the testing continue throughout that term?	During operation of the soil vapor extraction system, regular monitoring is conducted around the site to evaluate VOC removal from the vadose zone. An operator checks on the SVE system periodically (weekly at a minimum) to ensure that the system is running properly. After the performance objectives for the SVE system are achieved the SVE system will be shut down. The proposed monitoring program consists of the collection and analysis of soil vapor samples from the soil vapor monitoring points on a periodic basis both during and after SVE system operation. The frequency and duration of the monitoring program will depend on the ongoing soil vapor monitoring results. Monitoring will be discontinued after the remedial action objective is achieved. The constituents of concern that are already present in the groundwater will be a part of a separate cleanup remedy.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
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Commenter	No.	Question or Comment	Response
Bob Crippen	23	My question relates to the topography at the site. How does the depth relate to the property? Do the VOCs come closer to the surface as you go down?	The JPL facility varies in elevation from approximately 1,070 to 1,550 feet above mean sea level. In general, in the western portion of the JPL site, the VOCs are not detected within the first 20 feet of the vadose zone as measured from the ground surface. As the surface elevation of the JPL site increases to the east, the VOCs are not detected in the first 40-50 feet of the vadose zone as measured from the ground surface. In general, the higher concentrations of VOCs are located over 50 feet below the ground surface. Topography maps and horizontal-vertical distribution diagrams of total VOCs may be found in the Feasibility Study and the Remedial Investigation documents (FWEC 1999a, 1999c, 2000).
Bob Crippen	24	Where were the pits and how deep were they? Were the pits more than 50 feet deep?	The identified 40 seepage pits, 5 waste pits, and 4 discharge points are located primarily in the northeastern portion of the JPL site. The exact locations may be found in Figure 5-1 of the ROD. The pits are estimated to be not more than 30 feet deep.
Bob Crippen	25	Your distribution map looks like the distribution went pretty far to the west of the map.	The VOC plume distribution map is an extrapolation of the results from the quarterly soil vapor monitoring program. The soil vapor monitoring reports can be found in the information repositories. In general, the VOCs are predominantly located in the northeast portion of the JPL site.
Bob Crippen	26	Recently the sewer system was put into the eastern part of La Cañada, and I'm in that area. They [the sewer installation crew] said …the water table was only about 10 feet below the surface. That's the part of La Cañada that's immediately adjacent to JPL, and you're saying the water table is 200 feet below the surface.	In general, the depth to groundwater over much of the JPL site averages approximately 200 feet. Shallow groundwater depths have been observed in areas near the mouth of the Arroyo Seco and in the vicinity of the spreading grounds, where groundwater mounding is known to occur. It is possible that the extremely shallow depth to groundwater observed by the sewer installation crew was due to the presence of water perched above a shallow, impermeable lens, which is not directly connected to the regional aquifer below.

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Commenter	No.	Question or Comment	Response
Bob Crippen	27	Toxic, hazardous materials are moved in and out of there [JPL] on a regular basis, just like they are at a gas station. This is nothing new. It must meet current policies, and whatever materials are going past the high school – there's lots of materials going past the high school on a regular basis. I just want you to keep that in mind.	NASA acknowledges and appreciates the feedback.
Bob Crippen	28	Is there an estimate of how much material has been dumped at the site?	The quantity of VOCs that was disposed into the seepage pits is unknown.
Bob Crippen	29	Of 2,000 to 5,000 pounds, what percent do you think is recoverable?	Cleanup levels are not based on the amount or percent of VOC mass recovered. The levels NASA must meet are based on reductions in the concentration of the VOCs in the vadose zone until they are no longer impacting the groundwater beneath the JPL. The cleanup levels, which are yet to be determined, will be agreed upon by NASA and the regulatory agencies involved with the JPL site.
Bob Crippen	30	Where is the currently operating extractor [pilot test SVE well]?	The one SVE well that was operated as part of the pilot test is located in the parking lot next to the fire station between Buildings 18 and 79, in the area where the highest concentration of chemicals was found. The pilot testing system was placed on standby in the summer of 2000 and then reactivated from January to May 2001.

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Commenter	No.	Question or Comment	Response
Bob Crippen	31	What if gases escape into the air? It raises the question: You recovered 200 pounds [of VOCs] in how many days? What is the rate? I mean, if the thing was wide open for a day, how much would escape?	To investigate the appropriateness of using SVE at JPL, a pilot test was conducted in a series of tests that lasted approximately 14 months. During that time, more than 200 pounds of VOCs were removed from the soils surrounding the pilot test area. A general decline in the rate of VOC removal over time was noted during all tests. In general, the rate of VOC mass removal will decrease as the amount of VOCs in the vadose zone decreases. Because the SVE system operates under a vacuum, air from the atmosphere would be drawn into the system if a leak in the pipeline developed while the system was operating. VOCs cannot escape into the atmosphere from a leak in the pipeline. In the event of a system malfunction, the SVE system would stop extracting VOCs and soil vapor from the ground. Safety controls are in place to prevent exposure to VOCs. There is minimal risk that the VOCs already sorbed to the granular activated carbon would desorb. The carbon must be subjected to very high temperatures (600-2,000 ºC) before VOCs begin to desorb from the carbon. There is very little threat of catastrophe associated with the soil vapor extraction system. As a presumptive remedy, SVE is a proven technology that presents minimal risks to workers, the public, or the environment. In addition, the levels of VOCs being treated are low and do not present an imminent danger to human health. The maximum soil vapor concentrations for the four primary constituents of interest (carbon tetrachloride, Freon™ 113, TCE, and DCE) that were recorded during seven soil vapor sampling events were found to be significantly lower than the acceptable maximum peak exposure levels set by these agencies: *Continued on the next page.*

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Commenter	No.	Question or Comment	Response
		Question 31, continued.	Occupational Safety and Health Administration (OSHA), American Conference of Governmental Industrial Hygienists (ACGIH), and the National Institute for Occupational Safety and Health (NIOSH) (Foster Wheeler, 1999a; OSHA, 2000). If any release of soil vapors were to occur before they were treated, they would not only be less than these acceptable safety limits, but they would be diluted immediately into the ambient air and not pose a threat. In addition, the South Coast Air Quality Management District (SCAQMD) requires that all discharges to the atmosphere meet certain standards to protect ambient air quality for the public health and welfare. Vapors extracted by the SVE process have been and will be treated as required by the South Coast Air Quality Management District.
Cynthia Compton	32	Is there a plan to go back and identify as many seepage pits as possible and maybe pulling them out?	No. The seepage pits were identified as part of the Remedial Investigation. Please refer to Question 24 for more information regarding the location of the seepage pits. There are no plans to remove the seepage pits because they are no longer functioning as a continuing source of VOCs to the vadose zone.
Cynthia Compton	33	When you talked about the vadose zone, is that the entire area from the surface to the groundwater? Is that the definition of the vadose zone?	The vadose zone soil consist of the soils from the ground surface to the water table.
Cynthia Compton	34	I just want to comment again that the Feasibility Study is not at the Altadena Library.	A copy of the Feasibility Study for OU-2 was placed in the Altadena Library on June 28, 2001.
Cynthia Compton	35	I'd like to get some quantification of what does that mean, long-term monitoring?	Please see the response to Question 22.
Cynthia Compton	36	About the EPA presumptive remedy, I'd like a clearer definition of what does that mean.	Please see the response to Question 1 regarding the presumptive remedy approach used at JPL.

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Commenter	No.	Question or Comment	Response
Cynthia Compton	37	Do we have to write up our spoken questions?	No. Questions that are asked during a public meeting are recorded by the court reporter and included in a transcript of the meeting. These questions, as well as any that are submitted in writing during the public comment period, will be responded to as part of the Responsiveness Summary. The Responsiveness Summary is part of the Record of Decision.
Cynthia Compton	38	Can you send the responses to everybody that attended the meeting?	Yes. Copies of the Responsiveness Summary were sent to the attendees of the public meetings held in regard to the Proposed Plan for OU-2 at the NASA JPL site on August 27, 2001.
Cynthia Compton	39	The soil vapor extraction operation, I heard you say that there will be an operator there daily. Does that mean he will be there continuously during the time of operation? So the concern about the gases leaking or anything like that, it won't necessarily be caught by a person that's there at the site at the time it's operating?	The operator checks on the system periodically (weekly at a minimum) to ensure that it is running properly and to take samples. The potential for leaks is low in this type of system because the SVE well operates under a vacuum. Please see the response to Question 31 for further information.
Cynthia Compton	40	Is the line item or the NASA budget that's for the Superfund cleanup efforts, is that limited to a certain percent and does that impact the overall NASA budget?	The budget to pay for NASA's cleanup is called the Environmental Compliance and Restoration Account (ECR). This account for Fiscal Year 2001 is approximately $40 million and includes funding for all of NASA's environmental programs. The JPL site receives a portion of the account every year.
Cynthia Gonzal	41	In terms of long-term, will JPL actually be monitoring the site [in terms of toxicity levels] or would it be an outside company or agency doing that?	NASA has contractors that perform the sampling at the JPL site. The documents that contain the sampling results are reviewed by regulatory agencies to ensure completeness.

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Cynthia Gonzal	42	In the printed material where you talk about the risks associated with exposures to chemicals, and you indicated that there were no risks by regulatory standards. The risk that usually is associated with that, will you be monitoring that aspect, also, as relates to the human element? What parameters are set for that?	No. There are no plans to continue monitoring for human health risks. The Human Health Risk Assessment (HHRA) conducted as part of the remedial investigation determined that the risks associated with vadose zone soil were negligible and below regulatory threshold guidelines. In addition, the VOCs detected in the soil vapor samples did not cause unacceptable risk to humans. Details from the Human Health Risk Assessment may be found in the Remedial Investigation report located in the information repositories (FWEC, 1999c). Regular monitoring is conducted around the JPL to evaluate VOC concentrations in the soil. After the Record of Decision is signed, a review is done by the regulatory agencies every five years to examine how well the SVE technology is doing at this site. If the 5-year reviews determine the remedy is not accomplishing the remedial action objective, then the Record of Decision may need to be amended through a document called an Explanation of Significant Differences (ESD). In addition, if the Applicable or Relevant and Appropriate Requirements (ARARs) pertaining to the JPL site are altered in the future, then the SVE remedial action alternative will be reviewed to ensure all related federal and state environmental statutes and requirements continue to be met. Correspondingly, the HHRA results will be reviewed to ensure human health continues to be protected under the new ARARs. *Continued on the next page.*

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Commenter	No.	Question or Comment	Response
		Question 42, continued.	The South Coast Air Quality Management District (SCAQMD) requires that all discharges to the atmosphere meet certain standards to protect ambient air quality for the public health and welfare. Vapors extracted by the SVE process have been and will be treated as required by the SCAQMD. NASA is currently working with the State of California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC), the California Regional Water Quality Control Board (RWQCB)-Los Angeles Region, and the EPA to finalize the cleanup goals for on-facility soil at the JPL.
Cynthia Gonzal	43	What timeline are we talking about in terms of getting approval for the budget? Specifically in terms of when you begin the work, to do the cleanup process. [Do you] know what date that is?	The budget is based on a five-year cycle plan. Planning for this year and the next five years is completed. Next year, fiscal year 2003 and the subsequent five years will be planned.
Cynthia Gonzal	44	What is the rate of migration or absorption in the soil to the groundwater without this situation?	Modeling will be used in part to conservatively estimate VOC transport in the vadose zone soil during the remedial design phase. Determination of the rate of migration is complicated by many variables, such as the depth to the groundwater table, and the physical and chemical properties of the soil and the VOCs.
Cynthia Gonzal	45	How public will this hearing be made to the community? How we responded to the concerns of the community that are present in the meeting? How about the local newspapers like "The Star News"?	The purpose of this Responsiveness Summary is to provide written responses to the comments received during the public comment period for the Proposed Plan for OU-2. In addition, the ROD will be made available at each of the information repositories. Media representatives were present at the public meetings.

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Commenter	No.	Question or Comment	Response
Scarlett Hibner	46	I think it would be helpful, and in the future when you are discussing the groundwater, if you specify that what you are talking about is the Raymond Basin. If there is such a setup by Lincoln Avenue Water that you mentioned or whatever you mentioned, those people that have to live in the area who are informed will be better able to understand exactly what it is you are saying.	NASA acknowledges and appreciates the feedback.
John O'Kene	47	What are the potential problems from a breakdown in the extraction system that permits the escape of any of these vapors into the atmosphere? What is the potential danger? What is the catastrophe level possible? What are the preventative actions?	Please see the response to Question 31.
Dick Fiedler	48	Is there Superfund money being expended for this meeting?	The Superfund is available to be used by EPA to investigate and remediate impacted sites. However, Superfund money may not be used to address properties owned by the federal government. Remediation of the JPL site and other related activities are being conducted using NASA money. NASA receives Congressional appropriations to pay for remediation at the JPL site. Please see Comment No. 40 for further information.

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Commenter	No.	Question or Comment	Response
Dick Fiedler	49	Where is the Superfund money in this cleanup?	NASA is currently paying for the cleanup of soil at JPL.
Dick Fiedler	50	There were two descriptions, alternative A and B up there. I'm just kind of wondering which one are we talking about, the first one that had the extraction and removing the VOCs before they go into the atmosphere or another one because I didn't see another one?	Soil vapor extraction is the proposed alternative for the cleanup of soil at the JPL site. Please see the response to Question 1 for more information.
Dick Fiedler	51	Does the VOC removal require heat?	No, the soil vapor extraction unit does not require heat to remove the volatile organic compounds from the soils at JPL.
Dick Fiedler	52	The VOCs that are underground basically live there until the pressure is such that they are volatilized? Are the VOCs in a liquid form until you apply the pressure?	Please see the response to Question 10 for more information.
Dick Fiedler	53	Is the Navy going to be in charge of this operation?	NASA sends money to the Navy and the Navy then contracts companies to do the work. The contractor who is actually doing the fieldwork for the soil vapor extraction system is Geofon Incorporated.
Dick Fiedler	54	What is the assumption that this soil remediation removing what's in the soil will have no effect on what has gone into the groundwater as of now? Increased VOCs into the groundwater could result from this vaporization process?	SVE does not increase VOCs in groundwater. Rather, soil vapor extraction removes the chemicals from the soil and pulls them above ground for treatment so that they do not reach the groundwater. Please see the response to Questions 10 and 21 for more information.
Dick Fiedler	55	Have you calculated just how many pounds of VOCs Pasadena and Lincoln has removed from the groundwater compared to what you were saying now remains in the groundwater?	No. This has not been evaluated. The VOCs in the groundwater are being studied as part of OU-1 and OU-3. Public meetings will be held to discuss the groundwater issues at a later date

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Public meeting held on June 20, 2001)

Commenter	No.	Question or Comment	Response
Dick Fiedler	56	With all the questions that have been asked tonight, I presume that on the record – there are going to be some answers?	The answers to all comments made during the public comment period for the Proposed Plan for OU-2 are addressed in this Responsiveness Summary.
Randy Strapazon	57	Are any of the four chemicals that you mentioned, is it possible in the event, say, of an earthquake when monitoring the leaks would no longer be a leak, it would be a crack, would these four chemicals come together and produce something like when a train has a crash and they have the cloud of smoke and they have [to] evacuate an area?	No. Chemicals will not escape the system at any level that could pose a threat, even during a catastrophic failure. Also, the chemicals do not react with each other and therefore would not create any additional hazards if they were combined. Please see the response to Question 31 for more information.
Randy Strapazon	58	When a carbon filter is removed, you said it's recycled. How? What's that process?	Reactivation is a process designed to remove the VOCs and restore the adsorption capacity of granular activated carbon (GAC) using a special furnace operating at over 800ºC. This process is conducted at licensed facilities away from JPL.
Randy Strapazon	59	Maybe with all that in La Cañada they should have some kind of contingency plan here, knowing a truck with chemicals will be traveling by the school.	The Department of Transportation and other agencies have regulations that govern the transportation of hazardous materials or hazardous waste. NASA and its contractors adhere to these regulations. Transfer of the granular activated carbon canisters will likely only occur a few times a year. There is minimal risk that the VOCs sorbed to the granular activated carbon would desorb. Granular activated carbon must be subjected to very high temperatures (600-2,000ºC) before VOCs begin to desorb from the carbon.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Public meeting held on June 20, 2001)

Commenter	No.	Question or Comment	Response
Terry Shoptsberger	60	What is Superfund for if NASA is paying the bill?	Please see the response to Question 48.
Terry Shoptsberger	61	With the current environmentally unfriendly administration in Washington, how can you begin and how do you guarantee that it's going to continue?	Funding for environmental cleanup has been consistent and independent of the political climate in Washington. Please refer to Comment No. 40 for more information.
Barbara Swain	62	I just want to say I absolutely feel that we need to remove this material from the earth and set an example for the entire country and for private industry. And do it and get it rolling so that it becomes a doable process for any old gas station and anybody who owns property. So I just want to express my own concern that we make this possible and to do it the best way we possibly can. And if we find more stuff than we thought – every project that the steam extraction has taken on, at least each of these reports I've read—Livermore Lab, the Edison site, the Naval Air Station in Alameda, which the Navy people probably know all about – it seems like there's more stuff than anybody ever expected no matter who was doing the estimate.	NASA acknowledges and appreciates the feedback.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Public meeting held on June 20, 2001)

Commenter	No.	Question or Comment	Response
Nancy L. Underwood	63	I'd like to make a comment, responding to the question regarding hazardous waste transportation. It is done under a controlled environment. The Department of Transportation has hazardous regulations that any hazardous waste contract must apply to before transporting on any local streets. So all the plans are made in advance, you know. The director has to write a whole plan and all the regulatory requirements have to be in line with that so it's safely done.	NASA acknowledges and appreciates the feedback.
Visha Sutlaff	64	This is just a comment just to let you guys know, I am a reporter with the "Pasadena Star News." And I may or may not write a story from today's, but I did write a story for Sunday's paper. And I just wanted to tell people about it just – you can get it off the web, and I encourage you to buy the "Star News." But it is a concise explanation of what they're planning to do, and it gives a little history. So our website is www.Pasadenastarnews.com. And they did place advertisements for this as well. So I wrote that article so that people in the community would know about the meeting.	NASA acknowledges and appreciates the feedback.
Cynthia Compton	65	*Written Comment:* I would like to see answers to all the public questions. Would you please send me a copy of the Responsiveness Summary?	Yes. Also, please see the response to Question 38.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Public meeting held on June 20, 2001)

Commenter	No.	Question or Comment	Response
Cynthia Compton	66	*Written Comment:* Please make sure Feasibility Study (and any other missing documents) are available in Altadena Library.	Please see the response to Question 34.
Cynthia Compton	67	*Written Comment:* Please send me a copy of these question cards.	All questions that were sent to NASA in the mail, or via e-mail, and all questions received at the public meeting (either verbal or written) are included in this Responsiveness Summary.
Cynthia Compton	68	*Written Comment:* Please provide a list of public meeting notices that have been advertised with locations, dates and preferably a copy of them.	Please see the response to Questions 2 and 7.
Scarlett Hibner	69	*Written Comment:* It is incorrect and misleading to say "NASA JPL is located between the city of La Cañada-Flintridge [sic-there is no hyphen in city name] and the unincorporated city of Altadena…" Nearly ALL of JPL lies within the boundaries of La Cañada Flintridge. This failure to acknowledge the true geographical location of JPL has been a political sore point with La Cañadans ever since incorporation of the city in 1976. We lost the battle to Cal Tech/Pasadena on JPL's mailing address-but this kind of geographical mis-use is ridiculous. The Planning Dept. in the city offices can provide further info.	NASA acknowledges and appreciates the feedback.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Public meeting held on June 20, 2001)

Commenter	No.	Question or Comment	Response
Randy Strapazon	70	*Written Comment:* What provisions have been made in the event of – say an earthquake – to evacuate the surrounding population (H.S. students and staff) if a chemical cloud becomes present and is a threat.	Please see the response to Questions 31 for more information.
James Hunt (A copy of the comment was provided by Barbara Swain)	71	*Written Comment:* Extracted from Proposed Plan mailer- "During characterization studies of JPL, the following four VOCs were detected frequently at elevated concentrations in soil vapor samples: CCl_4, Freon 113, TCE, and DCE. These compounds are generally located beneath the north-central part of JPL and were detected in soil vapors at depths extending to the water table, which ranges up to 200 feet or more below ground surface. The total mass of these VOCs in vadose zone soil as estimated to be no greater than 5,040 pounds". *These compounds were likely released into the soil from a leaking tank, pipeline, or waste collection system. If they were released as pure organic solvents, then the compounds will exist initially as non-aqueous phase liquids, NAPLs (like the gasoline in your car). These liquids move into the soils and volatilize since they have a high vapor pressure (like gasoline).* Continued on the next page.	NASA acknowledges and appreciates your feedback.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Public meeting held on June 20, 2001)

Commenter	No.	Question or Comment	Response
		Question 71, continued: *If enough are released, the liquids can migrate to the water table where they continue to sink since they are denser than water. If the pure phase liquids were released, then most of the compounds will be found within the gas phase due to their volatility. However, it is highly likely that these solvents were used to clean machines or electronics equipment. These waste solvents probably had a lot of oily materials dissolved in them and were not missed when they were "lost" after use, unlike the original clean solvents. In this case, the combination of the oil and the volatile solvents lowers the volatility of the solvents, and less of the material is found within the gas phase and more is within the liquid. Without seeing anything more than the above paragraph, I am guessing that the estimate of 5000 pounds is unreasonably low.* Continued on the next page.	

Commenter	No.	Question or Comment	Response
		Question 71, continued. Extracted from Proposed Plan mailer- "Although perchlorate has been identified as a potential chemical of concern (COC) in groundwater, it is not a COC for vadose zone soil at JPL. Perchlorate moves through the vadose zone quickly until it reaches groundwater, making it unlikely to be found in the vadose zone soil. Therefore, issues relating to perchlorate will be addressed in the remedial action documentation for groundwater at JPL." *This is an area a graduate student and I are actively studying. What they say is conventional wisdom based on hope more than data. Perchlorate is a very soluble anion that moves as fast or faster than water. If water is introduced into dry soil, it tends to wet the soils and get pulled into the finer materials just as water is taken up by a paper towel. A spill of dissolved perchlorate at the land surface will then move downward through the soils. As it migrates it tends to get absorbed into the finer soils. This is just the opposite of groundwater flow where the water will move quickly through the gravels and very slowly in the fine sands and clays.* Continued on the next page.	NASA acknowledges and appreciates the feedback.

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Commenter	No.	Question or Comment	Response
		Question 71, continued. *Since they have perchlorate in their groundwater, they will have it in the soils above groundwater and there might be a long-term source of perchlorate from the soils to the aquifers. If they clean up all the groundwater now, in a few years it could be a problem again if the soils continue to leach out this material. It does not degrade under these conditions.*	

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Commenter	No.	Question or Comment	Response
James Hunt (A copy of the comment was provided by Barbara Swain)	72	*Written Comment:* -Extracted from Proposed Plan mailer- "The PREFERRED REMEDIAL ALTERNATIVE for soils located between the ground surface and the groundwater table (vadose zone soil) at the JPL site is based on an evaluation of results from sampling and analyzing soils and soil vapors at the site. Analytical results showed no risks to humans or plant and animal life from the chemicals known as volatile organic compounds (VOCs) present in soils. However, the VOCs were detected elevated concentrations in soil vapor samples beneath the north-central part of the site at depths extending to the water table. These VOCs have the potential to migrate to the groundwater at the site. Therefore, soil vapor extraction (SVE) is the preferred remedial alternative to remove the VOCs and prevent them from migrating to groundwater." "SVE is a two-step treatment process. In the first step, VOCs are removed from soil vapors by a vacuum applied to an underground well. In the second step, the VOC vapors are treated to prevent their release to the atmosphere. The EPA has identified SVE as a presumptive remedy for sites with VOCs present in soil. *Continued on the next page.*	Total petroleum hydrocarbons (TPHs) believed to consist of lubricating or mineral oils were detected in 13 soil borings. The concentrations ranged from less than 1 mg/kg to 150 mg/kg. An anomalous sample contained 6,500 mg/kg due to the presence of asphalt granules used to backfill one of the seepage pits. The types of petroleum compounds believed to be present in JPL soil are generally considered relatively insoluble and strongly sorbing to soil particles, which limits their mobility in the soils. Analysis of the groundwater quality indicated that total petroleum hydrocarbons were not present at concentrations exceeding state and federal interim action levels. In light of this, total petroleum hydrocarbons were not identified as a constituent of concern for OU-2. Information regarding the exact concentrations of total petroleum hydrocarbons and the location of the samples may be found in the Feasibility Study. The presence of significant amounts of free-phase petroleum hydrocarbons may affect the efficiency of the SVE technique by lowering the rate of removal of other VOCs also present. This could potentially result in longer remediation times. However, it is not anticipated at this time that conventional SVE will be negatively affected by the presence of the low levels of total petroleum hydrocarbons found in the vadose zone at OU-2. This issue will be taken into consideration during the remedial design phase and actual operation of the SVE treatment system.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
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Commenter	No.	Question or Comment	Response
		Question 72, continued. A presumptive remedy is a technology that is commonly used to clean up sites similar to JPL and has been given a special status by EPA. Moreover, SVE was shown to be effective in a pilot study at JPL." Soil vapor extraction is a very good method for the removal of volatile compounds since they are present in the gas phase. It is widely used and appropriate for the compounds found at JPL. Two issues ought to be of concern: 1) If the solvents were disposed of as part of a waste solvent tank leakage, then there is lots of oil also present, and the liquid oil will lower the amount of solvents in the gas phase compared to the liquid. The existence of the oil would require longer soil vapor extraction treatment times. This is OK since it would stop any release to the atmosphere and pick up the gases before they contaminate any more groundwater. You might want to ask two questions: a) What levels of petroleum hydrocarbons have been found in the soils where the solvent spills occurred? (Their response may that they were not required to look for petroleum hydrocarbons since they are not part of the Superfund remediation. Chances are their consultants spent lots of money analyzing for everything.) *Continued on the next page.*	

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
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Commenter	No.	Question or Comment	Response
		Question 72, continued. If the concentration is greater than 10 to 100 mg of hydrocarbons per kilogram of soil, then there is a very good chance that liquid oil phase exists where the contaminants of interest reside. This means a long clean up time and groundwater contamination. b) How well do they understand the location of the contamination and the flow paths of the air during soil vapor extraction? We really do not understand what the subsurface looks like, in spite of having hundreds of borings. It is likely that the oils and solvents will not be found where the air is moving, and thus there is some inefficiency in this process, but it is a reasonable approach. Steam injection is not an obvious solution to their problem from the data presented. If there is a lot of oil present, it could be mobilized by the steam, and in the process, remove the contaminants. There has been some concern with using steam in the vadose zone since some liquid water is produced when the steam condenses, and this water and associated contaminants might tend to sink down to make things worse. For any remedial scheme to work, it is essential to understand the source term, but that is pretty hard.	

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Public meeting held on June 20, 2001)

Commenter	No.	Question or Comment	Response
James Hunt (A copy of the comment was provided by Barbara Swain)	73	*Written Comment:* How well do [you] understand the location of the contamination and the flow paths of the air during soil vapor extraction?	The location of the VOCs in the vadose zone were extensively identified and characterized as part of the remedial investigation at OU-2. The airflow paths that are created during operation of the SVE system are observed by measuring the vacuum created at nearby soil vapor monitoring points. The vacuum measurements allow determinations of the radius of influence of the SVE system.
John Holt	74	*Written Comment:* I'm sorry, but I don't understand all the fuss over this issue. If based on the assessments presented, there is no danger to human or animal life, why are we going to the time and expense?	As stated in the Proposed Plan for OU-2, the remedial action objective (RAO) for the cleanup of on-facility soils is to prevent, to the extent practicable, the migration of VOCs to groundwater to protect an existing drinking water source. Since migration may continue if the source is not removed, NASA is working to prevent, to the extent practicable, that migration. Alternative 1, No Further Action, does not meet chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs) because the VOCs are left in place, which does not protect the groundwater at JPL and therefore could not achieve the RAO. Alternative 2, SVE, complies with all identified applicable and appropriate requirements and reduces migration of soil vapors containing VOCs into the groundwater. Therefore SVE is the preferred alternative for remediating the vadose zone soil at JPL.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
John Holt	75	*Written Comment:* The area in question is relatively remote from any residential structures and the natural cleansing action of soil will in time, solve the problem. I'm of the opinion that "alternative No 1" is the preferable choice. This "making the world safe" from every possible contamination is a hysterical absurdity.	NASA acknowledges and appreciates your feedback. Please see the response to Question 74 for more information.
Lauren Oakes	76	*Written Comment:* How long did it take for demo well to recover 200# VOCs?	Please see the response to Question 31 for further information.
Lauren Oakes	77	*Written Comment:* How did 5 wells get decided?	NASA is currently in the process of gathering data for the remedial design phase. As stated in the Proposed Plan for OU-2, the remedial action will include the installation and operation of up to five extraction wells; the final number has not yet been determined. Five were chosen based on the number of wells that would be needed to provide areal coverage of the VOC plume.
Lauren Oakes	78	*Written Comment:* Where is the 45-acre plume exactly? Reference using helipad, stables, Oak Grove Ave. entrance, kiosk, etc., for non-JPL people.	The 45-acre plume is depicted in Figure 5-2 of the ROD. The plume is primarily located in the northeast portion of the JPL site, near the eastern gate and central part of the site. It is located northeast of the Oak Grove Avenue entrance and southeast from the heliport.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
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Commenter	No.	Question or Comment	Response
Lauren Oakes	79	*Written Comment:* How much VOCs will be recovered, from what depths?	In general, VOCs have been detected in the vadose zone soil at depths ranging from 50 feet below ground surface to the groundwater table, which is approximately 200 feet below the ground surface. The SVE system will be operated until the performance objectives are achieved. The criteria by which the SVE performance is evaluated are based on a reduction in the concentration of the VOCs, not total or percentage of VOC mass removed.
Lauren Oakes	80	*Written Comment:* How long will it take?	As stated in the Proposed Plan for OU-2, "when operation of the SVE system is no longer cost-effective and/or necessary to reduce the potential migration of VOCs to groundwater, vapor monitoring would be implemented for a period of time to evaluate compliance with the remedial action objective." NASA's expectation is that it should take from one to five years to achieve the SVE performance objectives. Please see the response to Question 22 for more information regarding monitoring of the vadose zone soil.
Lauren Oakes	81	*Written Comment:* Could LCF (La Cañada Flintridge) get more clean up bang for these $3.75 million by getting EPA to use them to assist LCF in say, covering 210 FWY and cleaning that exhaust instead? Which would provide greater protection (and other benefits) to the community?	The Superfund program goal is to meet the challenge of protecting human health and the environment from the dangers of hazardous waste. Congress mandates that when a site is on the National Priorities List, the money allocated for that site must be spent on the cleanup and on nothing else.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
Lauren Oakes	82	*Written Comment:* Received this SAT 05/13. Read MON 14th. Not enough notice to make meetings on 12th, presence required at another mtg. on the 14th. More time next mailing. Please.	Please see the response to Question 2.
Mary Ann and Joe DeBriyn	83	*Written Comment:* My husband and I are strongly in favor of Alternative 2, SVE, because it will help protect the water in La Cañada and is the best long-term solution.	NASA acknowledges and appreciates the feedback.
Tony Schwarz	84	*Written Comment:* Meeting notification did not arrive until five days before the public meeting – does this meet legal and reasonable requirements?	Please see the response to Question 2.
Tony Schwarz	85	*Written Comment:* There is no mention in the information brochure regarding the significant aquifer adjacent to and below JPL. This aquifer is used for drinking water. If it is not currently impacted by the VOCs as defined by the ARARs, what assurance is there that it will not be impacted in the future?	The aquifer beneath and adjacent to JPL has been found to contain VOCs that have migrated from, among other sources, sources located within the boundaries of JPL. All groundwater withdrawn from the basin is tested and treated, if necessary, to remove these chemicals before the water is distributed. The preferred alternative for OU-2 is designed to achieve the remedial action objective for the vadose zone. A separate remedy for groundwater is being handled as part of OU-1 and OU-3, and will be the subject of future public meetings.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
Samuel E. Hooker	86	*Written Comment:* Your SVE proposal appears to be a valid alternative and I agree; however, it only mildly guarantees significant removal of contaminants on their way to the ground water, my question is what is significant?	Soil vapor extraction is called a presumptive remedy by the EPA because of its effectiveness in removing these types of chemicals from soil similar to those found at JPL. NASA also proved the effectiveness of this technology on the soils at JPL during pilot testing of the technology at the site. Therefore, there is no reason to expect this technology will not be very effective in removing VOCs from the soil. However, if soil vapor extraction is ineffective, the EPA and NASA will reassess the situation with the goal of identifying a more effective remedy for the VOC-impacted soil. Please see the response to Questions 1, 21, and 22 for more information.
Samuel E. Hooker	87	*Written Comment:* Will there be subsequent efforts to increase that "significant amount" and if so how many attempts will be made to increase eradication so that the bottom line is zero?	No. When operation of the SVE system is no longer cost-effective and/or necessary to reduce the potential migration of VOCs to groundwater, vapor monitoring would be implemented for a period of time to evaluate compliance with the remedial action objective. This should take from one to five years, with periodic soil vapor monitoring during and after remediation. Please see the response to Question 22 for more information.
Samuel E. Hooker	88	*Written Comment:* Also, in your "reduction of toxicity…" you mention "can be" is there a "will" in the equation, seems like a hope is there but not a surety.	The extent to which VOC removal by SVE "can be" or "will be" significant cannot be evaluated until the SVE system has been installed and is operating. Please see the response to Questions 1, 21, and 22 for more information.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
Samuel E. Hooker	89	*Written Comment:* Another concern is that the focus seems to be cancer. Are there any other health concerns, primarily short-term effects in health especially birth defects, etc.?	Section 6.0 of the Remedial Investigation for OU-2 contains the baseline Human Health Risk Assessment (HHRA) prepared for OU-2 at JPL (FWEC, 1999c). The purpose of the HHRA is to define the magnitude and probability of threats to the public health posed by chemicals in soils at the JPL site. The HHRA evaluates all potentially relevant current and future conditions at the site. Both cancer and noncancer health concerns are considered in the HHRA. The HHRA determined that direct exposure to soils at JPL does not pose risks to humans. The HHRA was conducted in accordance with State of California Environmental Protection Agency Department of Toxic Substances Control (DTSC) guidance provided in the *Preliminary Endangerment Assessment Guidance Manual* (DTSC, 1994) and standard EPA guidance, including *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A)* (EPA, 1989a), and *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part D)* (EPA, 1989b). Please see the response to Question 19 for further information.
Samuel E. Hooker	90	*Written Comment:* Thank you for your information, I appreciate your notification and updates.	NASA acknowledges and appreciates the feedback.
Anonymous Citizen	91	*Written Comment:* What are the VOC concentration levels for regulation (MCL)?	Maximum Contaminant Level (MCL) refers to the highest level of a contaminant that is allowed in drinking water. Thus, there are no MCLs specified for vadose zone soil. MCLs for the VOCs at JPL apply only to groundwater, which will be discussed as part of OU-1 and OU-3.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
Anonymous Citizen	92	*Written Comment:* What are the VOC concentration levels for the "negotiated" goals of clean up?	EPA issued the Soil Screening Guidance as a tool to help standardize and accelerate the evaluation and cleanup of impacted soils at sites on the National Priorities List, which includes JPL. NASA is currently working with the State of California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC), the California Regional Water Quality Control Board (RWQCB) – Los Angeles Region, and the EPA to determine the cleanup goals for the vadose zone at the JPL site.
Anonymous Citizen	93	*Written Comment:* What are the VOC concentration levels in the test site soil before and after test clean up?	The purpose of the pilot test was to determine the feasibility of using SVE at the JPL site. Concentrations for each of the four target VOCs in the soil vapor at JPL can be found in the Remedial Investigation Report and Feasibility Study for OU-2, which is located in the information repositories. For example, the maximum soil vapor concentration near the extraction well was 284 µg/L for carbon tetrachloride and 51 µg/L for Freon™ 113 prior to the start of the pilot test in May 1998. After the system was placed on standby in August 2000, both compounds were no longer detectable in the soil vapor. Please see the response to Question 10 for information regarding the use of soil vapor as a surrogate for soil VOC concentrations.
Anonymous Citizen	94	*Written Comment:* Does the 200 lbs of VOC extracted include the weight of the charcoal or is it pure VOC?	The mass of extracted VOCs does not include the weight of the granular activated carbon.
Cynthia Compton	95	*Written Comment:* I would like to recommend: earlier notice of public meeting to the public and JPL employees.	Please see the response to Question 2 for further information.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
Cynthia Compton	96	*Written Comment:* Would you consider another public meeting on this OU-2 Proposed Plan after appropriate earlier notice, but prior to the end of the public comment period?	Please see the response to Question 2 for further information.
Cynthia Compton	97	*Written Comment:* For public meetings notice for ground water OUs, include customers of water purveyors on mailings.	Please see the response to Question 8 for further information.
Cynthia Compton	98	*Written Comment:* Since Alternative 1 is do nothing the Alternative 2 is really the only option being offered. What other alternatives were considered and why were they rejected? Is there a list of these somewhere?	Please see the response to Question 1 for further information.
Cynthia Compton	99	*Written Comment:* Where is a list of the notices of these public meetings?	Please see the response to Question 7 for further information.
Cynthia Compton	100	*Written Comment:* Please modify notices sent to JPL employees via e-mail to say 'Public Meeting' in the subject title along with 'Superfund Plan Proposed'.	NASA acknowledges and appreciates the feedback.
Cynthia Compton	101	*Written Comment:* Two minutes for my public comments and questions is too restrictive, especially when there are not many public people here.	Please see the response to Question 16 for further information.
Cynthia Compton	102	*Written Comment:* Samples for measurements in basement of building 107? Are these part of the permanent test points? What are the findings from these measurements?	Please see the response to Question 15 for further information.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
Dorothy and Carl Thorman	103	*Written Comment:* At Lincoln Avenue, Water Co. Annual Meeting 5 or more years ago we were told by the Board Members of Lincoln Ave. Water Co. that at that time JPL would not share with them the analysis of water tests done by JPL. My husband worked at JPL and I felt ashamed of the arrogant attitude of JPL.	NASA is not aware of the circumstances surrounding the incident you describe. Information is made available to the public through the information repositories after it is reviewed and approved for public release by the agencies involved with the JPL site. The public may also request information under the Freedom of Information Act for information not found in the information repositories. OU-2 covers the vadose zone soil at the JPL site. Any information regarding water analysis is handled through OU-1 and OU-3. NASA is not aware of any instance in which Lincoln Avenue Water Company made a request for such information and it was not provided.
Dorothy and Carl Thorman	104	*Written Comment:* As shareholders of Lincoln Avenue Water Company, we are dependent on that company for our water supply. The VOCs in the groundwater supply have been a severe problem. When do you expect to address the "adjacent groundwater problems" or to reimburse the company for the remedial costs we have already incurred?	Groundwater from the Lincoln Avenue well is treated before being distributed to the public. The treatment system was installed and operating by 1992. NASA and the Lincoln Avenue Water Company recently reached a settlement covering cost reimbursement for that treatment system. The final remedy for groundwater will be determined as part of the remedial activities of OU-1 and OU-3.
Mary K. Fairbanks	105	*Written Comment:* What will be done to verify that the air vented during the SVE process is truly clean?	The air will be treated as part of the SVE process before it is released to the atmosphere. The discharges from the SVE system will be monitored to confirm that the discharged air is within permitted limits. These discharges must meet standards set by the South Coast Air Quality Management District (SCAQMD), which requires that all discharges to the atmosphere meet certain standards to protect ambient air quality for the public health and welfare. Vapors extracted by the SVE process have been and will be treated as required by the SCAQMD.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
Mary K. Fairbanks	106	*Written Comment:* What will be done with the treated VOCs?	Please see the response to Question 3 for further information.
Forest Fisher	107	*Written Comment:* Is this the reason the well drilling crew outside of bldg. 126 is drilling a hole in the ground?	No. The NASA Superfund program is not doing any work in the vicinity of Building 126.
Forest Fisher	108	*Written Comment:* What are the risks/side effects to having one of these SVE wells so close to a building (where we work, walk, breathe, have doors that allow air flow from the well area into the building…)	Soil vapor extraction presents minimal risks to workers, the public, or the environment. Systems are designed so that extraction wells and associated piping are under vacuum. The VOCs in the extracted air will be removed by the aboveground treatment system in accordance with state and local regulations. The South Coast Air Quality Management District (SCAQMD) requires that all discharges to the atmosphere meet certain standards to protect ambient air quality for the public health and welfare. Vapors extracted by the SVE process have been and will be treated as required by the SCAQMD.

Questions and Comments Received During the Public Comment Period on the Proposed Plan for OU-2, NASA JPL
(Written Comments Received During the Public Comment Period)

Commenter	No.	Question or Comment	Response
Laura Simonek Metropolitan Water District of Southern California	109	*Written Comment:* *Excerpted from a letter dated July 10, 2001:* Our review of the project indicates that Metropolitan's Arroyo Seco Property, Parcel 1602-1-1 in the City of Pasadena, is located directly south of the site proposed for cleanup. Due to the proximity of Metropolitan's property to the proposed cleanup site and the proximity of the Arroyo Seco River to both properties, there is concern that VOCs or other contaminants may have migrated from JPL property to Metropolitan property via groundwater flows or vapor migration. Therefore Metropolitan is requesting the locations of all of the test borings conducted for this project and their soil and water results before completion of the Plan. Metropolitan also requests that the Plan evaluate the potential impacts of the cleanup of the JPL site and the JPL site, itself, to Metropolitan property.	VOCs in the vadose zone soil underlying JPL have not migrated beyond the boundaries of JPL. Therefore the VOC-impacted soils in the vadose zone and the remediation of those soils are not expected to impact Metropolitan property. However, VOCs in groundwater have migrated beyond the boundaries of JPL. The groundwater is part of a separate investigation that is currently being conducted. The final remedy for groundwater will be described in the OU-1 and OU-3 Proposed Plan. The location of the soil vapor monitoring wells and the results of soil vapor analyses may be found in the Remedial Investigation and Feasibility Study documents for OU-2, which are located in the information repositories described in the Proposed Plan. The location of the groundwater monitoring wells and the results of groundwater analyses may be found in the Remedial Investigation report for OU-1 and OU-3. Any potential impact the groundwater remediation may have on adjacent properties would be addressed as part of the Feasibility Study for OU-1 and OU-3.