National Aeronautics and Space Administration

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ENVIRONMENTAL CLEANUP PROGRAM

COMMUNITY INVOLVEMENT PLAN
(Second Update)

for the CERCLA Site at the

JET PROPULSION LABORATORY

AUGUST 2006

NASA Management Office
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91109

Objectives of NASA's Community Involvement Program

NASA's Community Involvement Program at the Jet Propulsion Laboratory is committed to promoting communication between local residents and NASA. Active public involvement is crucial to the success of any public project. NASA's Community Involvement Program for the Environmental Cleanup Program at the Jet Propulsion Laboratory is designed to:

- Inform the public of the nature of the environmental issues associated with the site,
- Involve the public in the decision-making processes that may affect them,
- Involve the public in the responses under consideration to remedy the issues, and
- Inform the public of the progress being made to implement the remedy.

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1.1 OBJECTIVES

This document is the second update to the *Community Involvement Plan* (CIP, formerly the Community Relations Plan) for the *National Aeronautics and Space Administration (NASA) Jet Propulsion Laboratory (JPL) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Program* in Pasadena, California. The CIP was published in 1994 and updated in January 2003. This update is based on NASA's extensive public outreach conducted in 2004 and 2005 including a series of individual and group interviews held during that period.

The purpose of this updated CIP is to document the community involvement activities that recently informed and involved the public in activities related to the CERCLA remediation, or cleanup process, at JPL. The activities described here are consistent with federal guidance for implementing community involvement efforts at CERCLA sites and specifically, with the *U.S. Environmental Protection Agency (EPA)* guidance entitled Superfund Community Involvement Handbook, (EPA Directive 540-K-01-003, April 2002). The overall goal of the community involvement program is to facilitate two-way communication between citizens and NASA and to encourage meaningful involvement by the community in the cleanup process. A primary objective of this CIP is to enable community members to get information to better understand the remedial process, and make recommendations and provide input to NASA. NASA has successfully implemented the community involvement activities described in this plan and will continue to do so as required and as needed to respond to community information needs.

1.2 OVERVIEW

This plan has been prepared by NASA, the lead federal agency responsible for overall management and funding of the remedial activities at the JPL CERCLA site. As the lead agency, NASA also is responsible for all community involvement activities that support the CERCLA process at the site. Primary regulatory agencies include the U.S. Environmental Protection Agency (EPA), the *California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC),* and the *Regional Water Quality Control Board – Los Angeles Region (RWQCB).*

The updates to this Community Involvement Plan are based on experience gained from three *public meetings* and a meeting with JPL employees[2], a Community Information Session, and from information obtained

[1] Note: Italics have been used to identify words whose definitions can be found in the attached Acronyms and Abbreviations (Appendix B) and Glossary of Terms (Appendix C).

[2] All JPL employees are employed by the California Institute of Technology (Caltech). JPL is a division of Caltech. NASA employees, who run the CERCLA program, are federal employees.

in a series of interviews conducted in 2004 and 2005 with a wide range of interested parties. Those interviewed included employees at JPL, and residents from Altadena, Pasadena and La Cañada Flintridge. Representatives of various community groups were also interviewed including clergy, educators, local Latino, African American, Asian and Armenian community leaders, local government and health officials, environmental leaders, and others.

Based on the community involvement efforts conducted over the last two years (through 2005), community interest in the environmental cleanup process at JPL remains high among many in the segment of the general population that has been following the issue for a number of years. Interest by the remainder of the general population and some multicultural communities is lower. Community interviews indicate that while people had varying levels of awareness about environmental cleanup activities at JPL, they all recognized that NASA's effort in getting information out to the community has increased in recent years. They acknowledge observing and appreciating the increased outreach since NASA hired additional staff in December 2003 and moved forward with the construction and operation of treatment facilities.

This CIP update describes some of the various techniques and approaches NASA has used during the last two years to inform and involve the public and identifies ways that NASA will continue to do so in support of cleanup efforts at the JPL CERCLA site.

The CIP is divided into the following sections consistent with the current EPA guidance:

1.0 INTRODUCTION AND OVERVIEW
2.0 DESCRIPTION OF THE CERCLA PROCESS
3.0 COMMUNITY BACKGROUND
4.0 HIGHLIGHTS OF THE COMMUNITY INVOLVEMENT PROGRAM
5.0 REQUIRED AND DISCRETIONARY ACTIVITIES
6.0 APPENDICES

Appendices to this document include a list of key contacts and interested parties, acronyms and abbreviations, a glossary of terms, a list of locations of the Administrative Record and Information Repositories regarding NASA's environmental cleanup program at JPL, locations of public meetings, a list of questions used in the series of community interviews conducted as part of developing this plan, and examples of outreach materials and direct mailings. Two area maps are also included in the Appendix.

2.0 DESCRIPTION OF THE CERCLA PROCESS

In 1980, Congress established the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, Public Law 96-510), commonly known as "Superfund," to address risks to human health and the environment posed by hazardous waste sites. Modifications to CERCLA were enacted through the *Superfund Amendments and Reauthorization Act of 1986 (SARA, Public Law 99-499).* The *National Oil and Hazardous Substances Pollution Contingency Plan* (more commonly called the NCP), codified in the *Code of Federal Regulations (CFR)* 40 CFR Part 300, provides procedures that must be followed when implementing CERCLA. More information regarding the CERCLA process may be found at the NASA groundwater cleanup project website at JPL, http://jplwater.nasa.gov.

This section 2.0 provides an overview of the general CERCLA process to assist the public in its understanding of the major phases of work involved. Where appropriate, reference is made to actions that have occurred at the JPL site.

Site Discovery
SARA required federal facilities to have conducted investigations of historic waste management activities by April 1988. NASA had begun investigating the JPL site in the 1980s because of its historic waste disposal practices and the detection of chemicals in the down-gradient municipal water supply wells. NASA then proceeded to the subsequent steps in the CERCLA process. The CERCLA process is described below.

Preliminary Assessment and Site Investigation
The first step in the CERCLA process is to conduct two initial studies known as the *Preliminary Assessment* and *Site Investigation.* Both studies include collecting and reviewing available information to determine the magnitude of the problem posed by a site. At the conclusion of the site investigation, the site is scored using a standard system called the *Hazard Ranking System (HRS).* The HRS considers potential relative risks to public health and the environment from the release or threatened release of chemicals at a site.

NPL Listing
If the overall potential risks at a site are determined to be significant based on its Hazardous Ranking Score, the site is nominated for placement on the *National Priorities List (NPL).* This is a listing by the EPA of the top-priority sites for investigation and remediation under the federal CERCLA program. Typically, sites receive a score of at least 28.5 out of 100 to be included on the List. The JPL site received a score of 50.0 and was added to the NPL on October 23, 1992.

Remedial Investigation and Feasibility Study
After a site has been placed on the NPL, two related studies, a *Remedial Investigation (RI)* and a *Feasibility Study (FS)* are planned and conducted. This

stage may take several years to complete, depending on the size and scope of a site. Further, depending on its complexity, a site may be divided into smaller sections to aid in the administration of the CERCLA process. These small sections are referred to as Operable Units (OUs). The RI and FS can be prepared for an entire site or for each individual *Operable Unit*.

A community involvement plan is prepared at the onset of the remedial investigation to identify actions ensuring that the public is informed and involved throughout the investigation and remediation process.

During the Remedial Investigation, comprehensive sampling and data collection are done to evaluate the nature, extent, and magnitude of the contamination both on and off facility. As part of the RI, a *Risk Assessment* is performed to identify and quantify the potential risks that a site poses to public health, welfare, and the environment. The risk assessment evaluates present and future risks as though no remediation were to take place. At the same time, it helps determine the need for and extent of remediation required.

The Feasibility Study outlines and evaluates the various technical, engineering, and treatment options that might be available for the CERCLA site by 1) identifying remedial action objectives, 2) identifying potential treatment options to remove or contain unwanted chemicals that satisfy the objectives, 3) evaluating the effectiveness, implementability and cost of the various remedial options, 4) assembling the information into a set of remedial alternatives, and 5) evaluating the alternatives using a prescribed set of criteria, and then recommending a preferred technical or engineering alternative.

Response Actions and Removal Actions

A *Response Action* involves either a short-term or a long-term action taken in response to actual or potential health-threatening environmental events. A *Removal Action* can be conducted at any time during the CERCLA process, and is an immediate (short-term) measure, such as the implementation of a temporary alternative water supply, which is taken to safeguard public health or the environment. Generally, in cases where more than a six-month planning period exists before a removal action will begin, an *Engineering Evaluation/Cost Assessment (EE/CA)* is prepared to identify the removal action objectives and evaluate various alternatives with respect to cost, effectiveness, and implementability. After the removal action is completed, the environmental investigation or remediation process resumes according to the appropriate step in the CERCLA process.

Proposed Plan and Public Comment Period

The responsible lead agency publishes a *Proposed Plan* that summarizes the remedial alternatives evaluated in the feasibility study. It describes the preferred alternative/remedy proposed to remediate a site, and the rationale and any waivers to cleanup standards or documents that support the recommendation. The lead agency must publish a public notice of the availability of the Proposed Plan, a brief summary of the Proposed Plan and an

announcement in a local paper of a 30-day *Public Comment Period* (which may be extended an additional 30 days or more at the public's request). EPA maintains final approval authority for any Proposed Plan. The Proposed Plan and any supporting information become part of the *Administrative Record* and are placed in the *Information Repository*. A *public meeting* (or equivalent mechanism) is provided to solicit comments on each Proposed Plan. A transcript of the meeting held during the formal comment period is made available to the public via the administrative record.

Records of Decision

At the conclusion of the public comment period for each Proposed Plan and following consideration of all comments from the community, the lead agency, with regulatory approval, makes the final remedy selection. This final remedy selection is issued in a *Record of Decision (ROD),* a legal public document that sets forth and explains the remediation alternatives to be used at a CERCLA site. The ROD includes a *Responsiveness Summary* that contains the lead agency's responses to comments received during the public comment period on the Proposed Plan. The public is notified of the availability of the ROD via a public notice published in a major local newspaper. Following the publication of a record of decision, the lead agency also determines if any changes are needed in the Community Involvement Plan.

Remedy Design and Implementation

Following the remedy selection for a site, or *Operable Unit*, a *Remedial Design* phase is initiated during which all specific engineering aspects of the remedy are designed. If any *institutional controls* (non-engineering methods such as zoning or deed restrictions to prevent use or access to a site following remediation) will be a part of the remedy, these measures would be drafted during this phase for submittal to the appropriate legal authorities for review, approval, and implementation.

At the conclusion of the design phase, the *Remedial Action* or remedy is constructed and put into place. Long-term remedial actions typically take one to two years to construct, although the time it takes to complete actual cleanup can take much longer. Treatment of contaminated groundwater, for example, may take decades depending on the level and extent of chemicals in the groundwater.

NPL De-Listing

A site, or a portion of the site, may be removed (known as *de-listing* or deletion) from the NPL when EPA, under 40 CFR 300.425(e), determines that all appropriate response actions are completed and no further response is required to protect human health or the environment. Partial deletions are possible. For example, soil remediation may be completed and that *Operable Unit* de-listed before groundwater cleanup is finished at the same site.

The following community involvement activities are required in order to de-list a site: publish a *Notice of Intent*; hold a public comment period (minimum of 30 days), publish a notice of availability of the document and place supporting information of the proposed delisting in the information repository, respond to public comments, and place the

delisting package in the information repository.

Long-Term Monitoring/Review
After implementation of the remedy, CERCLA sites may undergo reviews every five years after implementation of the remedy to evaluate the continued protectiveness of the remedy.

2.1 SITE LOCATION

JPL is a Federally Funded Research and Development Center (FFRDC), located on 176 acres between La Cañada Flintridge and Pasadena, and west of Altadena, California. Figure 1 shows JPL with the Arroyo Seco, JPL parking lots, and residences to the East. The surrounding area is primarily residential with some light commercial operations. JPL is bordered by the San Gabriel Mountains to the north, an equestrian club to the southwest, a fire station to the south, residential neighborhoods to the west, and the Arroyo Seco and Hahamongna Park to the east, south and southeast. JPL is located in the Raymond Basin Watershed, which is an *adjudicated water basin* that serves as a source of drinking water for several communities in the area (see Figure 3).

2.2 JPL HISTORY

Professor Theodore von Kármán and his graduate students of the Guggenheim Aeronautical Laboratory of the California Institute of Technology (Caltech) laid the foundations for the Jet Propulsion Laboratory in the late 1930s. By 1944, a permanent organization had evolved, and Caltech formally established the "Jet Propulsion Laboratory." During WWII and into the 1950s, JPL pioneered a series of advanced rocket vehicles, mostly for the U.S. Army Ordnance Corps. In December 1958, President Eisenhower transferred the responsibilities for JPL from the Army to the newly created NASA, together with the government-owned property used by JPL.

During historical operations at the JPL site, various chemicals and other materials were used. In the 1940s and 1950s, liquid wastes from materials used and produced at JPL, such as solvents, solid and liquid rocket propellants, cooling tower chemicals, and analytical laboratory chemicals, were disposed of into seepage pits, a disposal practice considered common at that time. Some of these chemicals, including *perchlorate* and chlorinated solvents containing *volatile organic compounds (VOCs),* have now reached groundwater hundreds of feet beneath JPL and beneath areas adjacent to JPL. In 1980, VOCs were first detected in some wells serving the City of Pasadena and in wells owned by *Lincoln Avenue Water Company (LAWC)*, which serves parts of Altadena. These wells were closed. By 1960**,** a sanitary sewage system was installed at JPL to handle sewage and wastewater, and the use of seepage pits for sanitary and chemical waste was discontinued.

Currently, all chemical wastes from JPL activities are recycled or safely sent offsite to regulated treatment and disposal sites.

On October 23, 1992, the JPL site was placed on the National Priorities List (NPL) by the EPA.

CERCLA requires a thorough and often lengthy process to fully investigate and

determine the best methods for cleanup. As the responsible agency, NASA has conducted a number of detailed investigations and studies on the site and adjacent areas since the early 1990s. All CERCLA documentation associated with the JPL site can be found at the *information repositories* listed on the last page of this summary and in the *Administrative Record* found at http://jplwater.nasa.gov.

These studies have helped NASA identify and understand the type and extent of chemicals in soil and groundwater. As part of this effort, NASA divided the site into three separate areas referred to as *Operable Units (OUs)*. Designated by numbers, OU-1 consists of on-facility groundwater (the *source area*), OU-2 consists of on-facility soils, and OU-3 consists of off-facility groundwater adjacent to JPL. Ultimately, NASA will look at the entire site to ensure that the remedies, taken together, achieve cleanup of the entire area.

In September 2002, NASA signed the Record of Decision for OU-2. *Soil vapor extraction (SVE)* was identified as the Preferred Alternative for OU-2 to remove VOCs from the soil and prevent migration of the chemicals to the groundwater. SVE has proven to be effective in removing the VOCs from on-facility soils, and the cleanup of soils is nearly complete.

As part of the site investigation activities for groundwater located on (OU-1) and off (OU-3) JPL, NASA:

- Conducted a *Remedial Investigation* from 1994 to 1998. The Remedial Investigation report, which characterized the nature and extent of the chemicals in the groundwater, was completed in the fall of 1999. The Remedial Investigation for OU-1 and OU-3 contained *human health* and *ecological risk assessments* which look at the possible effects to human health and the environment in the absence of any cleanup action (i.e., if no cleanup occurred).

- Initiated a groundwater monitoring program in August 1996 analyzing for VOCs and other chemicals, including perchlorate, metals, anions, cations, and other field parameters. Analytical results are summarized in quarterly reports and technical memoranda that are available in the Information Repositories and on the project website.

- Conducted modeling and aquifer testing at and adjacent to JPL to characterize the complex ground-water conditions and groundwater flow.

- Completed a draft Feasibility Study in January 2000 that identified and evaluated various groundwater cleanup alternatives for both the source area and in areas adjacent to the JPL facility.

In addition to these studies, NASA funded treatment facilities for Lincoln Avenue Water Company in Altadena and for the City of Pasadena in the early 1990s to remove VOCs from drinking water wells that were affected by chemicals from JPL. In July 2004, NASA implemented a Removal Action directed at the off-facility groundwater to achieve quick, protective results. For

that Removal Action, NASA funded additional treatment facilities at Lincoln Avenue Water Company to remove perchlorate in addition to VOCs. The perchlorate removal system uses an ion exchange technology that has worked well, successfully treating over one billion gallons of water since initiating operation. This removal action is one part of the current Preferred Alternative for OU-3.

NASA has also done a number of studies to determine the best technologies to use to treat groundwater. In the late 1990s and early 2000s, NASA conducted pilot testing of several technologies to address dissolved perchlorate in source area groundwater, including a study that evaluated the effectiveness of a biological reactor technology called a *fluidized bed reactor* (FBR). Based on these studies, NASA installed a demonstration treatment plant located on JPL in the source area in early 2005. This system, which consists of *liquid-phase granular activated carbon* (LGAC) treatment to remove VOCs and a fluidized bed reactor to remove perchlorate, has been successful in the demonstration phase. A Proposed Plan regarding the on-facility groundwater treatment plant was presented to the public on November 16, 2005. NASA is reviewing comments received from the public on the Proposed Plan and expects to present its responses to the public comments in a draft Record of Decision later in 2006.

2.3 PROGRESS MADE TO DATE

OU-1 On-Facility Groundwater

The goal for on-facility groundwater is treatment and containment of the groundwater "source area" – the area that contains the highest concentration of chemicals located in an eight-acre by 100-foot-thick portion of the aquifer beneath the north-central part of the JPL facility. Treating the groundwater source area will reduce the highest concentration of chemical mass in groundwater and decrease the time needed to treat groundwater in areas beyond the JPL boundaries.

From the late 1990s through 2001, NASA conducted six small-scale tests by pumping and treating small amounts of groundwater. These pilot tests were designed to compare different treatment technologies and how they worked under the specific conditions found at JPL. Treatment technologies tested include reverse osmosis, ion exchange, fluidized bed reactor, *packed bed reactor* and in-situ biodegradation. In early summer and fall of 2001, NASA, with U.S. Filter and Envirogen, conducted one of those pilot studies, a small six-gallons-per-minute test combining liquid-phase granular activated carbon (LGAC) and fluidized bed reactor (FBR) processes to remove volatile organic compounds (VOCs) and perchlorate, respectively, from the water. This combined system was judged to be the most promising of the technologies tested and was selected for an expanded on-site treatment facility.

The on-site treatment plant, located in a portion of a parking lot at JPL, extracts groundwater from two multilevel extraction wells at approximately 150 gallons per minute and treats that water using liquid-phase granular activated carbon to reduce VOC concentrations. Perchlorate in the groundwater is biologically broken down into chloride

and water using a fluidized bed reactor (FBR). Operation of this treatment system began in early 2005 and is being successful in removing the chemicals from the source area groundwater.

Due to the effectiveness of this system, NASA proposed an interim remedy and issued a Proposed Plan to expand the existing groundwater treatment system to more than double the amount of water being treated - to a rate of 350 gallons per minute**.** NASA issued a notice of its Proposed Plan and held a *public meeting* in November 2005 to facilitate public comment on the Proposed Plan.

OU-2 On-Facility Soil

The goal for cleaning on-facility soil (beneath JPL) is to minimize the amount of volatile organic compounds migrating from the soil into the underlying groundwater. This is done by removing those chemicals from the soil and soil vapor in the unsaturated soil zone (referred to as the *vadose zone*) beneath JPL.

NASA began investigating sources of VOCs at the site during the summer of 1993. These studies focused primarily on the former seepage pits, which had been previously used for sanitary and laboratory waste disposal. NASA collected numerous deep soil borings and subsurface gas samples to determine which seepage pits were sources of VOCs, and to determine the extent of the chemicals in the soil. In near surface soil (0 to 30 feet below ground surface), no elevated levels of VOCs were found, so no further action was necessary. The deeper soils (at approximately 200 feet) contained concentrations of VOCs at high enough levels to pose a continued threat to the underlying groundwater aquifer, and these soils were addressed further.

After detailed site investigations that determined the type and extent of chemicals present, NASA initiated a plan to clean up the chemicals in deeper soils. Removing the source of chemicals was an important first step to keep the chemicals from spreading to groundwater. In 1998, NASA ran a pilot test to evaluate the feasibility of using Soil Vapor Extraction (SVE) to reduce the concentration of VOCs in soil beneath JPL. This test was very successful, removing more than 200 pounds of the chemicals. NASA proposed and received public input on using this technology as the final cleanup remedy for the on-facility soils in 2002. In September 2002, NASA finalized a Record of Decision, identifying SVE as the remedial action for on-facility soil. Three additional SVE wells were installed in 2002 and operation of the SVE further reduced VOC concentrations to protect groundwater.

To date, the soil vapor extraction system has successfully removed approximately 300 pounds of chemicals that were contained in on-facility soils. Based on diminished volatile chemicals in extracted soil vapor, operation was stopped in September 2005. Rebound monitoring followed, and depending on those results, operation will likely be deemed complete. When it is verified that operation is complete, NASA will pursue de-listing of OU-2 from the cleanup project.

OU-3 Off-Facility Groundwater

In the late 1980s, two Lincoln Avenue Water Company (LAWC) wells and four

City of Pasadena wells were shut down for having VOC concentrations above drinking water standards. These chemicals were determined to originate from the JPL facility. In the early 1990s, treatment systems were installed to treat the groundwater extracted from the LAWC and City of Pasadena wells. A *carbon filtration system* was installed at LAWC, and an *air stripping system* was installed in the Arroyo Seco for four of the City of Pasadena wells, which are collectively referred to as the Windsor Reservoir wells.

NASA now (Spring, 2006) proposes to remove target chemicals from the aquifer at four City of Pasadena drinking water wells by adding a treatment facility to remove *perchlorate* and *volatile organic compounds (VOCs)*. This approach is referred to as centralized treatment because groundwater pumped from the wells is treated after the water is drawn from the wells and prior to use by the City of Pasadena and, in a similar system, for Lincoln Avenue Water Company customers.

In this approach, NASA would directly administer the work connected with designing, permitting, and construction of the new City of Pasadena treatment system. The City of Pasadena would be funded by NASA to lease treatment equipment and operate the system. Groundwater from four City of Pasadena drinking water wells – Arroyo Well, Well 52, Windsor Well, and Ventura Well – would be cleaned in this new treatment facility using a liquid-phase granular activated carbon (LGAC) system to remove VOCs, and an *ion exchange* system to remove perchlorate. The system is proposed to be located adjacent to the Windsor Reservoir. Operation of this new treatment system likely would be initiated in 2007.

NASA also would continue to fund the existing treatment system that was constructed in 2004 as a Removal Action at the Lincoln Avenue Water Company. This system also uses LGAC with ion exchange and has been operating very successfully since July 2004, treating over one billion gallons of water since initiating operation.

3.0 COMMUNITY BACKGROUND

This section profiles the communities surrounding JPL and discusses any information needs or questions these communities have regarding the JPL CERCLA site. Demographic data is from the U.S. Census 2000.[3]

3.1 COMMUNITY PROFILE

3.1.1 General Profile

The three communities immediately surrounding JPL are Pasadena, Altadena and La Cañada Flintridge. All three communities are in the Los Angeles County Board of Supervisors Fifth District. The Board of Supervisors has five members. Pasadena and La Cañada Flintridge are incorporated cities and Altadena is an unincorporated area within Los Angeles County.

Major sources of employment in the area are office, retail and service centers, primarily located in Pasadena. JPL maintains a workforce of almost 5,200 employees and on-site contractors. Residents of Altadena and La Cañada Flintridge generally are employed outside of their home community, except those conducting retail businesses or professional services for their respective communities. La Cañada Flintridge has the most college graduates (63%); Pasadena has 41% and Altadena 38% (U.S. Census, 2000). There are 42,011 individuals over five years of age who speak Spanish in these three communities - most residing in Pasadena (19,677).

Three major freeways provide access to the communities. The Pasadena Freeway (California Highway 110) connects Pasadena to Los Angeles. The Foothill Freeway (Interstate 210) links communities to the north and east of Pasadena. The Ventura Freeway (California State Route 134) leads west to Ventura County and beyond. Four airports serve the three communities (Bob Hope Airport in Burbank, Los Angeles International Airport, Ontario International Airport, and Long Beach Airport). Greyhound bus service is available in Pasadena. AmericaStar Trailways based in Pismo Beach, Pacific Trailways of Southern California based in Garden Grove, and Silver State Trailways based in Altadena, provide bus service to Los Angeles. Railroad transportation provided by Amtrak can be accessed in nearby Glendale or Los Angeles. Southern California Rapid Transit provides public transportation for all three communities. In addition, the Pasadena Gold Line, a new light rail line, links downtown Los Angeles with East Pasadena.

Approximately seven healthcare facilities (hospitals and medical centers) serve the Pasadena, Altadena, and La Cañada Flintridge communities. Four are located in Pasadena (one hospital, three medical/healthcare centers) and

[3] Due to changes in the Census 2000, people had a new option to identify their Latino origin outside of the context of race. According to the Census Bureau, people of Latino origin may be of any race and should have indicated their origin in the Latino origin question, not in the race question. In the Federal Statistical system, ethnic origin was considered to be a concept separate from race.

two are located in Altadena (medical centers). The seventh (a hospital) has a Glendale address but is located closest to JPL, approximately five miles to the southwest. There are approximately 60 paramedic squads/rescue teams in Los Angeles County including JPL's Urban Search and Rescue Team. The County maintains 12 fire stations (eight in Pasadena, two in Altadena, and two in La Cañada Flintridge). JPL has its own fire department.

3.1.2 Pasadena

As of Census 2000, the population of Pasadena was 133,936 comprising the following demographics: 71,469 Caucasian; 19,319 African-American; 13,399 Asian-American; 953 Native-American; 132 Native-Hawaiian or other Pacific Islander; 21,444 some other race and 7,221 two or more races. The number of people of Latino origin (of any race) was 44,734 and 89,202 were non-Latino (Census 2000). Fifty-five percent of the "population over five years of age" spoke English and 45% spoke a language other than English. The median income level in Pasadena in 1999 was $46,012 (household) and $53,639 (family) (Census 2000). The owner/renter ratio was 0.84 to 1, and the median home value was $286,400. Approximately 66% of the adult population attended college (41% college graduates). Forty-eight percent of the population in Pasadena held professional and managerial positions.

The Pasadena Unified School District consists of 32 public schools (24 elementary, three middle schools, and five high schools) and 24 private schools. There are nine colleges and universities in the City of Pasadena. Additional community services within Pasadena include 48 day-care centers and 20 nursing homes. There are several agencies that serve low income/underserved community members.

The City of Pasadena has a city council-city manager form of government. The mayor of Pasadena is selected in a citywide election for a four-year term. The vice mayor is a councilmember elected by members of the city council. Pasadena has seven city council districts, each of which elects a councilmember every four years. Several city departments have a role in environmental issues including the Departments of Public Health, Public Works, Transportation, Water and Power, Planning and Development and Human Services and Recreation.

While not an exhaustive list, a number of environmental organizations are located in the Pasadena area and are listed below. The missions are summarized as defined by their respective websites in 2006. Environmental groups are considered a proxy to gauge community interest in water cleanup, although we recognize that interest in groundwater cleanup spans a spectrum of stakeholders and representatives, including homeowner associations and other special interest groups.

- **Eaton Canyon Nature Center Associates (ECNCA),** a non-profit support group whose primary mission is to develop in children and adults an appreciation of the natural world and to preserve Eaton Canyon as a natural area for future generations.

- **California Native Plants Society, San Gabriel Mountains Chapter,** the mission of which is to increase understanding and appreciation of California's native plants and conserve them and their natural habitats, through education, science, advocacy, horticulture and land stewardship.

- **Pasadena Audubon Society** is an organization that serves the Altadena, Pasadena and La Cañada Flintridge areas and whose purpose is "to bring the excitement of birds to our community through birding, education and conservation of bird habitats."

- **Sierra Club, Pasadena Group of the Los Angeles Chapter**, is a membership organization with members from Altadena, Pasadena and nearby areas. The national mission is "to explore, enjoy, and protect the wild places of the earth, to practice and promote the responsible use of the earth's ecosystems and resources, to educate and enlist humanity to protect and restore the quality of the natural and human environment, and to use all lawful means to carry out these objectives."

- **Arroyo Seco Foundation**, whose mission is to restore and reforest the Arroyo Seco from the San Gabriel Mountains to the Los Angeles River and to promote environmental awareness and education.

- **CASO, the Council of Arroyo Seco Organizations**, whose purpose is to promote communication and cooperation between community-based organizations working to improve and enhance the Arroyo Seco region from the San Gabriel Mountains to the confluence with the Los Angeles River.

- **North East Trees**, an environmental group whose purpose is to design and construct greening projects in Northeast Los Angeles.

- **Spirit of the Sage Council** is a non-profit organization located in Pasadena and dedicated to the protection and conservation of America's natural and cultural resources. Membership averages about 1,000 individual members dispersed among 30 groups throughout the country.

There are five water purveyors in Pasadena:

Pasadena Water and Power (PWP)
Sunny Slope Water Company
Kinneloa Irrigation District
East Pasadena Water Company
California-American Water Company

Many neighborhood associations exist in Pasadena. One section, referred to as District 7 of the City, has fourteen homeowners/neighborhood associations (the size of these groups ranges from 12 households to 1,500), and another section of the City (District 6) has seven homeowners/neighborhood associations (group size ranges from 18 households to 1,400).

3.1.3 Altadena

According to Census 2000, the population of Altadena was 42,610 comprising the following demographics: 20,156 Caucasian, 13,388 African-

American, 1,807 Asian-American, 247 Native-American, 56 Native-Hawaiian or Other Pacific Islander, 4,340 some other race and 2,616 two or more races. The number of people of Latino origin (of any race) was 8,690 and 33,920 were non-Latino (Census 2000). Seventy-two percent of the "population over five years of age" spoke English and 27.5% speak a language other than English (Spanish, other Indo-European Languages, Asian and Pacific Island languages).

The median income level in Altadena was $60,549 (household) and $66,800 (family) (Census 2000). The owner/renter ratio was 2.8 to 1 and the median value for homes was $261,000. Approximately 69% of the adult population attended some college (38% college graduates). Thirty percent of the population of Altadena held managerial and professional jobs.

Altadena is included in the Pasadena Unified School District. Of the 32 public schools in the Pasadena Unified School District, nine are located in Altadena (eight elementary, one middle school). There are also four private schools within the borders of Altadena. Additional community services within Altadena include 12 day-care centers and two nursing homes.

Altadena, in unincorporated Los Angeles County, elects an advisory Altadena Town Council of 16 representatives and eight alternates representing eight census tracks. The town council elects a chair and a vice-chair from among its members. The following committees may have an interest in environmental issues: Land Use (a committee of the town council), Altadena Beautiful, Traffic/Roads, Water Services, Devil's Gate and Parks and Recreation.

Two environmental groups are most prominent and active in water issues in Altadena:

- The **Altadena Foothills Conservancy** is a non-profit organization whose purpose is to promote preservation and restoration of open land and associated historic structures for ecological, educational, cultural and scenic purposes.

- **Altadena Watershed** is an ad hoc committee affiliated with the Altadena Town Council. The mission of the group is to educate the public on watershed and water conservation issues.

There are three water purveyors in Altadena:

Lincoln Avenue Water Company
Las Flores Water Company
Rubio Cañon Land and Water Association

3.1.4 La Cañada Flintridge

According to the Census 2000, the population of La Cañada Flintridge was 20,318 comprising the following demographics: 15,142 Caucasian; 73 African-American; 4,180 Asian-American; 36 Native-American; 9 Native Hawaiian or other Pacific Islander; 206 some other race and 672 two or more races. The number of people of Latino (of any race) origin was 976 and 19,342 were non-Latino (Census 2000). Seventy-two percent of the "population over five years of age" spoke English and 28% spoke a language other than English (Spanish, other Indo-European

Languages, Asian and Pacific Island languages).

The median income level in La Cañada Flintridge was $109,989 (household) and $122,779 (family) (Census 2000). The owner/renter ratio was 9 to 1, and the median home value was $587,800. Forty-eight percent of the homes were in the $500,000- $1,000,000 range and 13.6% were above $1,000,000. Approximately 87% of adult residents attended college (more than 63% college graduates). According to the Census 2000, executives and professionals comprised 66% of area employees. The white collar to blue collar ratio was 11.3 to 1.

The La Cañada Flintridge Unified School District consists of seven public schools (three elementary, one middle school and three high schools, including one for special needs students) and 11 private schools. The city's public school system consistently ranks in the top 5% of California schools. Additional community services within La Cañada Flintridge include eight day-care centers.

La Cañada Flintridge operates with a city council-city manager form of government. Five members of the community are elected at large to four-year overlapping terms. Every year the council selects one of them to serve as mayor. The city manager is appointed by the city council. There are five citizens' commissions to advise the council on matters within specific areas of responsibility. Of these, the Public Safety, Public Works, and Parks and Recreation Commissions may have an interest in environmental issues. The Departments of Public Works and Planning/Community Development also may have an interest in environmental issues.

There are three water purveyors located in La Cañada Flintridge:

Valley Water Company
Mesa-Crest Water Company
La Cañada Irrigation District

While the environmental groups of Altadena and Pasadena also serve the interests of La Cañada Flintridge, a local entity is the La Cañada Flintridge Trails Council. It is dedicated to developing, preserving, promoting, and maintaining local and regional trail systems.

3.2 CHRONOLOGY OF NASA JPL COMMUNITY OUTREACH

NASA has initiated several community involvement activities since December 2003 pertaining to the JPL CERCLA site.

3.2.1 CERCLA Community Involvement Program Activities

Over the past two years, NASA has increased efforts to communicate with residents of the surrounding communities including initiating multicultural outreach regarding its environmental cleanup activities. Specifically, NASA conducted the following activities to inform and involve the public:

PUBLIC MEETINGS

Meetings with the Public, January 2004

In January 2004, NASA held two public meetings to update the community on cleanup efforts and involve them in NASA's cleanup project. The Deputy Administrator of NASA, Fred Gregory,

made opening remarks at both evening meetings. In addition to those from NASA, several agency representatives and water officials were present. These included: Phyllis Currie, General Manager, Pasadena Water & Power; Robert J. Hayward, General Manager, Lincoln Avenue Water Company; Mark Ripperda, Remedial Project Manager, U.S. Environmental Agency; Michel Iskarous, California Department of Toxic Substances Control; Mohammad Zaidi, California Regional Water Quality Control Board; Jeff O'Keefe; and Vera Melnyk-Vecchio of California Department of Health Services; Pasadena Water and Power staff; and members of the Pasadena City Council, the Pasadena Utility Advisory Committee and the Altadena Town Council.

The meetings for the general public were held at the Charles W. Eliot Middle School in Altadena and at John Muir High School in Pasadena. At both public meetings, NASA provided a Spanish-speaking translator. Each meeting had nearly 100 attendees, not including NASA staff, contractors and regulators. The NASA project manager made a presentation and attendees were given an opportunity to ask questions and comment. In addition to questions regarding the proposed technologies, several members of the public asked questions related to possible health effects of chemicals known to be in the groundwater. Several members of the public cited occurrences of cancer in their neighborhoods and they asked whether the chemicals in groundwater might be linked to those cancers. To address those questions, NASA offered to hold a Community Meeting on Health (see description below), which was held on April 21, 2004.

Four standing displays were prepared for the meeting, and Spanish language versions of those displays were available as 8 X 11-inch handouts. Those displays covered:

- A site history
- Details on the *Expanded Treatability Study,* describing the pilot tests to treat water beneath JPL, the source of highest concentration of chemicals.
- The cleanup processes (two displays) then under consideration by NASA for use in cleaning up groundwater near JPL
    - ion exchange process, and
    - a fluidized bed reactor process

Printed materials distributed at the meetings included:

- A four-page newsletter update with a Spanish-language insert. The newsletter included an article on the history of the site, an explanation of the CERCLA process, an update of site cleanup activities to date, and a listing of public information sources including the location of public document information repositories, and the cleanup project website. Also provided were names and a phone number for the project's cleanup outreach manager and the remedial project manager.

- A two-sided fact sheet on the treatment options that were being considered for perchlorate cleanup in groundwater beyond the JPL fence line: ion exchange technology and the use of a fluidized bed reactor.

Extensive research was done to alert the multicultural communities to the upcoming public meetings. Efforts included Spanish-language advertising in an African American-owned newspaper that targets an ethnically diverse community and distribution of bilingual flyers to key community organizations and merchants in targeted communities.

Transcripts of the two public meetings were placed on the project website.

Meeting with JPL Employees[4], January 2004

About 30 JPL employees, some NASA staff and contractors working on the cleanup project, and representatives of the interested regulatory agencies attended the *public meeting* held for JPL personnel at JPL on January 21, 2004. Questions asked by employees centered on the technical aspects of proposed on-site and off-site treatment facilities, on the location and extent of the chemicals in groundwater, and on the two treatment technologies under consideration to remove perchlorate from groundwater beneath the JPL facility.

Community Meeting on Health, April 21, 2004

About 90 members of the public attended a Community Meeting on Health, co-hosted by the City of Pasadena Public Health Department, the California Department of Health Services, and the U.S. EPA. NASA's Groundwater Cleanup Project's Manager for Community Involvement, Merrilee Fellows, introduced the panel of medical and public health experts gathered to address questions from the public:

- Jerome M. Hershman, MD, MS, Distinguished Professor of Medicine at the UCLA Medical School and Associate Chief of the Endocrinology and Diabetes Division of the Endocrine Clinic at the West Los Angeles VA Medical Center.

- Daniel Stralka, Ph.D, U.S. EPA, Region 9 Toxicologist.

- Thomas M. Mack, MD, MPH, Chief, Division of Epidemiology, USC Norris Cancer Center and the Department of Preventive Medicine, USC Keck School of Medicine.

- Marilyn Underwood, Ph.D., Toxicologist, California Department of Health Services

- Cyrus Rangan, M.D., Director, Toxics Epidemiology Program, Los Angeles County Department of Health Services

- Takashi Wada, M.D., MPH, Health Officer for the City of Pasadena Public Health Department

A sign-in area, displays and handouts (newsletter, fact sheets, etc.) were available to the public in the anteroom both before and after the meeting.

Community Information Session, March 29, 2005

NASA held a Community Information Session (CIS) on March 29, 2005 at the Charles W. Eliot Middle School in Altadena. Local residents met in an informal setting with members of NASA's environmental cleanup team, local water purveyors, and health and

[4] See footnote 2.

technical experts to learn about the progress NASA has made in cleaning up groundwater beneath the Jet Propulsion Laboratory and areas adjacent to it. A total of 53 people signed in at the Community Information Session. Also present at the CIS were staff members of the California Department of Health Services (DHS), Pasadena Water and Power (PWP), Lincoln Avenue Water Company (LAWC), and the Remedial Project Managers from the U.S. Environmental Protection Agency (EPA), the California Regional Water Quality Control Board, and the California Department of Toxic Substances.

A series of standing displays highlighting aspects of the cleanup project were set up around the room and staffed by NASA personnel and other team members who conversed with and responded to questions from the public. The displays depicted the site history as well as NASA's efforts over the past year to study and clean up groundwater affected by historic chemical waste disposal practices of the 1940s and 1950s. NASA provided information on the treatment facility it is funding to remove volatile organics compounds and perchlorate from drinking water at two LAWC production wells. In addition, displays described NASA's on-site treatment plant that is removing chemicals from source area groundwater, where the highest concentrations of the chemicals are located.

A display provided information on the extensive groundwater-monitoring program that NASA has been operating to examine the extent and direction of chemicals in groundwater flow. Another display included health information relating to the chemicals, and NASA's community involvement and public outreach activities, including ways NASA provides updates to the public.

Fact sheets, copies of NASA's latest cleanup project newsletter and a list of *Frequently Asked Questions (FAQ)* in both English and Spanish were distributed at the event, as were LAWC materials. NASA personnel and other project team members were on hand to answer questions. When exiting the session, people were asked to complete evaluation forms. One person noted, "I prefer previous format of presentation and questions asked by area residents – that everyone can share." Feedback was otherwise very positive. Some people liked talking with cleanup team members while others said they liked the displays and the handouts. Comments on the evaluation forms included: "Excellent program," "Very informative," "This was a great forum," "This is the way informational meetings should be," and "Glad you are being upfront with the public." One comment read, "Would love a little more detail (I am in environmental field)."

Public Meeting on Proposed Plan, November 16, 2005

NASA held a *public meeting* on November 16, 2005 at the Altadena Community Center on the Proposed Plan for NASA's interim remedial activity to address on-facility source area groundwater by expanding the existing demonstration groundwater treatment plant located at JPL. NASA distributed written materials (e.g., newsletters and FAQs described above) and provided a fact sheet, which briefly described the proposed cleanup action and explained

how people could submit comments on the Proposed Plan.

MEETINGS WITH LOCAL OFFICIALS, CONCERNED INDIVIDUALS

During the past two years, the NASA Groundwater Cleanup Manager for Community Involvement has met with local officials and concerned individuals in an effort to provide a consistent and direct exchange of information about community concerns and the status of CERCLA-related environmental activities. Local government agency representatives and individuals who met with NASA included: JPL employees[5], the Pasadena City Manager, representatives of the Pasadena Unified School District, members of the La Cañada Flintridge City Council, its City Manager and Director of the Department of Public Works, the Mayor and members of the Pasadena City Council, members of the City Council's Municipal Services Committee, the General Manager and staff of Pasadena Water and Power, the General Manager and members of the Board of Directors of Lincoln Avenue Water Company, Directors of the Raymond Basin Management Board and Foothill Municipal Water District, the Pasadena Department of Public Health, the Pasadena Utility Advisory Committee, members of the Altadena Town Council, representatives of the Pasadena Audubon Society, Sierra Club, Arroyo Seco Foundation, Tom Sawyer Camps, Pasadena's Director of the Metropolitan Water District Board, local equestrians, and numerous interested neighbors from Altadena, Pasadena and La Cañada Flintridge. NASA presented a report to the La Cañada Flintridge City Council in May 2004, detailing progress on groundwater cleanup activities**.** Meetings were also held with multicultural stakeholders, discussed at Section 3.3.2.

Meeting With Neighbors, April 5, 2006

NASA held a meeting with residents surrounding the Windsor Reservoir on April 5, 2006 at the Five Acres Auditorium in Altadena. Local residents met in an informal setting with members of NASA's environmental cleanup team to discuss how NASA would pay for design and construction of a treatment plant in Pasadena to remove chemicals in a groundwater aquifer used by the City. A series of displays including one specifically describing the proposed Pasadena treatment plant, were set up in the room. A fact sheet was distributed that explained this proposed cleanup activity. Other handouts (newsletters, other fact sheets) were available.

Additional Public Meetings

Note that some public meetings have been held with local residents since the April 2006 closing date for this version of the Community Involvement Plan. These will be summarized in the 2007 update to this plan.

ACTION MEMORANDUM

Groundwater Treatment Plant Action Memorandum and Summary, July 2004

On July 28, 2004, Lincoln Avenue Water Company inaugurated a NASA-funded Ion Exchange System to remove perchlorate from the water extracted from two LAWC drinking water wells. NASA's decision to fund the treatment system was detailed in a document

[5] See footnote 2.

called an *Action Memorandum,* which was also made available for public comment. A summary of the document was available in English and Spanish. The comment period for the Action Memorandum ran from August 23 through October 1, 2004. No comments were received.

DIRECT MAILINGS

Direct mailings have included bilingual newsletters and *public meeting* announcements in the form of postcards. Direct mailings were sent to groups and individuals on NASA's cleanup project mailing list. This list includes all persons and community groups who have signed up for such mailings since 1991. The mailing list includes all residences and businesses within the boundary of the San Gabriel Mountains to the north, Gould Avenue to the west, I-210 to the southwest and south, and Lake Avenue to the east. The mailing list continues to be updated and includes the sign-in rosters of the January 2004 public meetings, the April 2004 health meeting, the March 2005 Community Information Session, the JPL Open Houses held in 2004 and 2005, the November 2005 *public meeting* for the on-site treatment plant, and those who have requested being added to the mailing list at smaller meetings, through their questions or requests by email at watercleanup@nmo.jpl.nasa.gov or by phone at (818) 393-0754.

NEWSLETTER and SPANISH INSERT, January 2004

A newsletter with a Spanish insert was published in January 2004 to inform the public of the two meetings to be held later that month and give a general update on cleanup activities at JPL. This newsletter also had stories on the following:

- A review of the site history from 1936 to today
- A story about how NASA is addressing the cleanup, placement of the site on the National Priorities List (NPL) in 1992, and regulation of the cleanup pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
- A description of the chemicals found in the groundwater: volatile organic compounds (VOCs) and perchlorate
- The steps in the CERCLA process. CERCLA requires that rigorous investigations and evaluations be carried out before cleanup work can begin.
- A story about the progress on the cleanup and other activities at each of the Operating Units
- Contact information for the NASA Cleanup Outreach Manager and the Remedial Project Manager

BILINGUAL NEWSLETTERS

A bilingual newsletter (English and Spanish), *Boletín Bilingüe*, continues to be published to update the public on the cleanup project.

An August 2004 newsletter, Boletín Bilingüe, featured stories and Spanish-language summaries on the following:

- A project update about the inauguration of a new NASA-funded Lincoln Avenue Water Company

treatment plant including notice that an ion exchange process had been selected for removal of perchlorate.

- A notice seeking public comment on NASA's funding of the Removal Action at the Lincoln Avenue Water Company plant.

- A story on the construction of an on-site groundwater treatment plant to remove chemicals from groundwater at the source area beneath JPL. This plant would be removing perchlorate from groundwater using the fluidized bed reactor process and a liquid-activated granular carbon process for removal of VOCs.

- A story on key NASA managers involved in the cleanup project: Remedial Project Manager Steve Slaten and Cleanup Outreach Manager Merrilee Fellows.

- A story on the groundwater monitoring wells network that NASA has in place to help determine the size of the chemical plume in the groundwater, and on NASA's plans to construct two additional monitoring wells.

The March 2005 bilingual newsletter, Boletín Bilingüe, had stories in English with Spanish-language summaries on the following:

- The nearly completed on-site groundwater treatment plant including a technical diagram of how it would work.

- A story on the then-upcoming Community Information Session.

- A story on how information repositories and the cleanup project website had been updated for ease of use.

- A story on *isotopic analysis* NASA is planning to use to evaluate the type and sources of perchlorate in groundwater.

- The November 2005 bilingual newsletter, Boletín Bilingüe, featured articles on the following:

- A description of the proposed expansion of the on-site treatment plant and how the public could participate in the *public meeting* and provide public comment on the Proposed Plan for the on-site plant.

- A story on how NASA's Environmental Management Division in Washington, D.C. is helping NASA's groundwater cleanup team at JPL and other environment efforts at NASA centers across the nation.

- A story describing NASA's groundwater monitoring program.

An April 2006 bilingual newsletter, Boletín Bilingüe, featured articles on the following:

- A guide to understanding the terminology used in formal documents related to the CERCLA process.

- A story on Caltech's agreement with the City of Pasadena for NASA to build and pay for a new treatment plant to remove chemicals from a groundwater aquifer used by the City.

- A summary of NASA's Proposed Plan to fund a new groundwater treatment plant for four closed City of Pasadena drinking wells and continued funding of a treatment plant for two Lincoln Avenue Water Company wells.

- Information on ways the public can provide input on the Proposed Plan.

PUBLIC MEETING ANNOUNCEMENTS

NASA prepared bilingual (English and Spanish) flyers to announce the January 27 and 28, 2004 public meetings that took place at the Charles W. Eliot Middle School in Altadena and at John Muir High School in Pasadena, and the Community Information Session that took place at Charles W. Eliot Middle School in Altadena on March 29, 2005. NASA also prepared a bilingual (English and Spanish) postcard to announce the Community Meeting on Health that took place at the Altadena Community Center in Altadena on April 21, 2004 and the *public meeting* on November 16, 2005 at the Altadena Community Center.

Examples of direct mailings are included in Appendix G (copies of the bilingual flyers from the January 2004 public meetings, a copy of the Spanish - language handout, and a copy of the bilingual postcard for the Community Meeting on Health).

HANDOUTS

FACT SHEETS

NASA has prepared several fact sheets since January 2004 including reprints of five displays, and four two-page project updates (brief summaries of technical information needed to understand current and proposed activities). NASA has distributed one Spanish language handout entitled "Sobre su Agua de la Llave", and "Frequently Asked Questions" handouts in both English and Spanish. In addition to the displays reprint handout, copies of the identical displays have been provided with Spanish translation.

TWO-PAGE FACT SHEETS

January 2004 Fact Sheets - Two fact sheets describe NASA's efforts to remove chemicals from groundwater; one focuses on cleanup actions beneath JPL and the other on cleanup activities adjacent to the JPL facility.

May 2004 Fact Sheet - This fact sheet describes how NASA began construction at JPL of an on-site groundwater treatment plant to remove VOCs and perchlorate.

November 2005 Fact Sheet – This fact sheet describes NASA's Proposed Plan for its interim remedial activity to address on-facility source area groundwater by expanding the existing demonstration groundwater treatment plant located at JPL.

April 2006 Fact Sheet – This fact sheet describes how NASA would pay for a new treatment plant to be built and operated by the City of Pasadena to remove chemicals from a groundwater aquifer used by the City.

SPANISH-LANGUAGE HANDOUT

June 2004 Spanish Language Handout, "Sobre su Agua de la Llave" – This handout was developed to reach a segment of the Latino population, mainly immigrant families

and their children who often influence the information communicated to their parents. The handout describes what NASA is, why and how NASA is cleaning the groundwater beneath and near JPL, and the fact that the tap water is safe to drink.

The fact sheets were distributed at the Pasadena Department of Public Health, are posted on the cleanup project website, were distributed at the Community Information Session and JPL Open House and will be used at local events and posted at schools and at local health departments.

ELECTRONIC NOTIFICATION

NASA uses the JPL intranet site "Daily Planet" to announce public meetings to its employees. NASA also provides additional information via periodic e-mails to all JPL personnel about public meetings and cleanup activities and provides related information (regarding road closure, construction noise, etc.) to workers adjacent to the on-site treatment facility. Community members who provide their e-mail addresses receive e-mail notifications of upcoming public meetings. They also may receive electronic copies of newsletters, instead of mailed copies, if a request is submitted to watercleanup@nmo.jpl.nasa.gov.

CLEANUP PROJECT WEBSITE

Website Updating and Revisions

In mid-2003, NASA established a comprehensive website to share CERCLA-related project information with the community. In 2004, NASA re-designed the website at http://JPLwater.nasa.gov to improve its appearance and ease of use. The website includes all relevant project-related materials including the latest technical reports and documents and transcripts and/or summaries of all public meetings held to date on the cleanup. The website also acts as one of the public information repositories for NASA's administrative record. It includes a list of Frequently Asked Questions (FAQ) and a glossary of terms. A special section on the website includes all available Spanish-language documents. A new feature allows members of the public to ask questions or submit a comment to NASA directly from the website.

INFORMATION REPOSITORIES

Information Repositories Update

CERCLA requires NASA to maintain an Administrative Record and Information Repository of documents that provide the basis for NASA's actions and decisions on the cleanup project. Detailed site and project data pertaining to the JPL cleanup project are available at four physical locations. Information repositories can be found at the Altadena Public Library, the Pasadena Central Library, the La Cañada Flintridge Public Library, and the JPL Library (for JPL personnel only). These locations contain the same materials, including technical reports and reference documents that are available at the website. Additional information is also included that may be of interest to local residents.

To make it easier for the public to learn, ask questions and provide input to its cleanup project, NASA has streamlined its information repository. NASA has reorganized the documents at each repository and improved how they are indexed. As part of the reorganization, many of the documents were transferred

to digital format and placed onto CDs. The CDs are labeled and can be viewed on library computer terminals, making it easier to browse the large volumes of project information, much of which is technical in nature. Also added recently to each repository is a section "En Español" that includes in one place all Spanish-language documents and information that NASA has created on the project.

Each repository now consists of a four-drawer filing cabinet with an index prominently situated that will guide the reader through a wealth of project documents. The addresses of the NASA JPL information repositories are provided in Appendix D.

COMMUNITY INTERVIEWS

Interviews were conducted throughout 2004 and early 2005 to gather information on community concerns in anticipation of revising the Community Involvement Plan. Recognizing the growing diversity in the area surrounding JPL, NASA conducted eleven interviews in 2004 with multicultural leaders in the Altadena and Pasadena communities. Seven interviews were conducted in 2005 with JPL employees and residents of Pasadena, Altadena and La Cañada Flintridge. These interviews are discussed in more detail in Section 5.

EXHIBIT AT ANNUAL JPL OPEN HOUSE

NASA's environmental cleanup team participated in the 2004 and 2005 annual JPL Open House events. A booth featured information on the cleanup activities related to the JPL CERCLA site. Bilingual (English/Spanish) newsletters and other printed materials on the cleanup project were distributed to many of the thousands of visitors attending the Open House sessions. Five displays used at the 2005 March Community Information Session were exhibited at the 2005 Open House and the public was invited to examine "props" such as resin beads of the type used in the ion exchange treatment water system. Black and white 8x10-inch copies of the displays were available as handouts, as were several documents in Spanish.

In 2005, it is estimated that 10,000 people walked by the cleanup project booth during the weekend Open House. NASA's cleanup team responded to a variety of questions and estimates that they spoke with more than 2,000 attendees. A number of inquiring attendees (estimated at 50 percent) had a pre-existing knowledge of JPL's cleanup project or of an environmental cleanup in their own area.

MEDIA

NASA has issued news releases, calendar notices and media advisories at key points in the CERCLA process to convey significant findings and site information. NASA has coordinated with media outlets to announce the January 2004 public meetings, the April 2004 Community Meeting on Health, the March 2005 Community Information Session and the November 2005 *public meeting*. NASA also issued news releases regarding the agreement with the City of Pasadena for NASA to fund a treatment plant for the City, and distributed a release highlighting NASA's successes. Both of these news releases formed the basis for articles in most of the local newspapers. Examples

of news releases are included in Appendix G.

NASA has also used advertising to communicate its outreach activities. Examples include one-quarter page ads in Pasadena's daily newspaper, the *Pasadena Star-News,* to invite the community to its public meetings (January 2004) and the April 2004 Community Meeting on Health. In addition, a Spanish-language ad was placed in the *Pasadena/San Gabriel Valley Journal* announcing the January 2004 public meetings. NASA placed a one-quarter-page ad in the *Pasadena Star-News* announcing the availability of an Action Memorandum describing NASA funding of the LAWC treatment plant and request for public comment (August 2004). NASA also placed ads announcing the March 2005 Community Information Session and a November 2005 public meeting for its Proposed Plan pertaining to on-facility groundwater treatment.

TRANSLATIONS TO SPANISH

NASA has used additional community outreach methods to ensure effective and timely communication with communities in Altadena and Pasadena that have traditionally not been active in environmental issues. With the 2000 Census indicating that 30 percent of the total population living in Pasadena and Altadena were of Latino descent, NASA launched an effort to reach members of the Latino community. Several documents, letters and public meeting announcements were developed for the Latino community and made available via public meetings, placement of flyers in the community, on the JPL website, in one-on-one meetings, and through direct mailings. Bilingual letters notifying adjacent residents of impending construction of two monitoring wells were hand-delivered to each home.

Documents, letters and public meeting announcements that were translated into Spanish included:

- One-page Spanish-language insert, "An Update on Cleanup Activities at JPL, January 2004" including information about the January public meetings was enclosed with the English-language January 2004 newsletter and distributed to nearly 14,000 local residents.

- Four bilingual newsletters, August 2004, March and November 2005, and April 2006, included summaries in Spanish of the stories featured in the newsletters.

- A Spanish-language handout - "Sobre su Agua de la Llave," translated as "About Your Tap Water," - is a simply written one-page handout designed for Latino audiences. This is also available on the cleanup project website.

- A Spanish-language version of Frequently Asked Questions (FAQ) was developed as a handout for the March 2005 Community Information Session and is now available on the website.

- In August, 2004, a bi-lingual letter was hand-delivered to neighbors living near the Pasadena Water and Power "City Yards" facility to inform the neighbors that NASA would be drilling a groundwater monitoring well in the area as part of NASA's cleanup project.

- In November 2004, a bi-lingual letter was hand-delivered to neighbors living close to Muir High School to inform neighbors that NASA would be drilling a groundwater monitoring well in the area as part of NASA's cleanup project.

- A summary of the Action Memorandum outlining NASA's decision to fund a treatment system to remove perchlorate from water extracted from two LAWC drinking water wells was translated into Spanish and made available to Spanish-speaking community members through the NASA cleanup project website. Spanish speakers were notified of the availability of the summary in a Spanish-language portion of the August 2004 newsletter.

- Announcements for public meetings in the form of flyers, postcards, and newspaper ads were translated into Spanish.

- Many of these Spanish-language documents are available to the public at the NASA groundwater cleanup project website and at the section "En Español" located in the Information Repositories.

3.3 COMMUNITY CONCERNS

This section identifies community concerns, perceptions and questions regarding the JPL CERCLA site that were stated to us during the interviews or small group meetings conducted in 2004 and 2005, and concerns expressed at public meetings held in 2001 (for on-facility soil, OU2). This information is being used to help determine information needs and the best mechanisms for continued communication with area residents. Earlier versions of this CIP summarized the historic questions and concerns from a series of community interviews done in 1991 and 1993.

3.3.1 Summary of 2001 Public Meeting Comments

In May and June 2001, three public meetings were held to present to the public the Proposed Plan to clean up soils at the JPL site, and to provide opportunity for public comment on the selected remedy. As a result of these meetings, three community concerns were identified: communication, financing remedial work, and health issues.

Communication

Public meeting attendees requested increased communication between NASA and the public. Some community members indicated that, historically, not enough information had been conveyed to the public regarding the CERCLA-related environmental activities at JPL. Other community members believed there was not enough notice given in the newspapers and community newsletters before the May 2001 public meetings (that concern had been addressed by providing an additional public meeting in June 2001).

Financing remedial work

Several attendees of the public meetings wondered how the investigation, cleanup, and other environmental activities at the JPL site were being financed. Additionally, concerns regarding the stability of funds for the CERCLA site activities were expressed.

Health issues
Members of the communities near JPL expressed concern over health issues potentially related to chemicals in the soil and groundwater at the JPL site. In general, people expressed more concern about the chemicals in groundwater, both beneath the facility and groundwater beyond the facility than about on-facility soils.

3.3.2 Summary of 2004 and 2005 Interviews

NASA conducted additional community interviews in 2004 and 2005 as part of its effort to gather information on needs and preferences for communication as well as to update the Community Involvement Plan. NASA believes that two-way communication is a key to effective outreach and that dialogue with the community is instrumental in determining how NASA can best communicate with community members. Accordingly, NASA made a concerted effort during this period to listen to community members in whatever forum the interactions took place – formal and informal. NASA also has made a concerted effort to extend its reach to include multicultural stakeholders.

Specifically, the purpose of the interviews was to determine community awareness of NASA's cleanup efforts, identify interviewees' concerns and perceptions regarding the cleanup efforts at JPL, and determine preferences for communication about site cleanup activities.

2004 Interviews
(Multicultural Stakeholders)
One factor NASA considers as part of its Community Involvement Plan is the need to help create an environment where all people regardless of sex, religion, ethnicity, national origin, ancestry, occupation, family status, disability, income or age, have the opportunity for meaningful involvement in its environmental cleanup efforts.

With this in mind, NASA began its first phase of community interviews with a focus on eleven leading multicultural leaders representing the diverse Pasadena and Altadena communities. The list of suggested stakeholders was based on earlier informal meetings with opinion leaders who helped identify potential multicultural stakeholders. Once the interview process began, the list of initial stakeholders grew as those interviewed provided referrals to additional multicultural leaders. Referrals during the interview process were especially important in identifying Asian and Armenian leaders. Reflecting the area's complex demographics, the interviews included five Latinos, three African-Americans, one Japanese-American and two Armenian leaders. It is important to note that in meetings with the Armenian leaders, NASA learned that the largest concentration of Armenians was outside of NASA's targeted outreach region and would, therefore, not be a primary multicultural target audience.

The NASA Groundwater Cleanup Outreach Manager and a NASA contractor conducted these interviews in person. While the purpose of the meetings was as listed above, these meetings evolved into opportunities to develop relationships for continued communication.

NASA received overwhelming cooperation from all the stakeholders. Most offered numerous ways they could assist in NASA's cleanup project outreach to their respective communities.

Prior to meeting with these stakeholders, a list of questions of particular interest for the multicultural audiences was prepared. The series of questions and responses have been categorized into the following areas:

- General Awareness of JPL
- Awareness of NASA's Groundwater Cleanup Activities at JPL
- Attitude and Awareness of Environmental Issues
- Input on the Best Ways to Communicate with the Respective Communities

General Awareness of JPL

While JPL receives extensive media coverage, particularly in the local newspapers, the majority of multicultural stakeholders perceived NASA and JPL as not being visible or involved in local community efforts. Several of those interviewed suggested JPL increase its presence in their organizations and extended to NASA their support to accomplish this end.

Most of those who were interviewed knew someone who worked at JPL or were aware of its location, but could not describe the nature of JPL's work.

Awareness of NASA's Groundwater Cleanup Activities at JPL

With the exception of one person who read about it in the *Pasadena Star-News* and one elected official, no other interviewee was aware of the fact that there had been chemicals in groundwater or that NASA was conducting a cleanup effort. However, those interviewed expressed an appreciation for NASA's attempt to personally meet with them to communicate the information during the interview process.

Attitude and Awareness of Environmental Issues

Viewed in the traditional sense of air and water pollution, open space and similar issues, the "environment" was not considered a major community concern. Additionally, questions about chemicals in groundwater or soils were not at the "top of the list" for those interviewed. However, when linked to health concerns, health issues became significantly more important (e.g. air quality and asthma). Most of those interviewed asked about the groundwater chemicals' possible impact on health.

None of those interviewed had ever been directly involved with environmental groups or groundwater issues in the past. When asked about general environmental issues of concern, they cited the following:

- Water quality (as it relates to old plumbing that causes corrosion)
- Lead poisoning
- Mold
- Air quality (as it relates to asthma/health care)

It was interesting to note that water quality was not a self-identified issue of concern for most interviewees. However, when probed, the majority stated that they drink bottled water primarily because of its taste and

perceived freshness. The Latino interviewees indicated that this group tends to distrust tap water because of negative experiences in their native countries.

When asked in general about community issues, housing and health concerns were ranked the highest. Interestingly, many of their environmental concerns (mold, old plumbing) were associated with housing quality issues -- a major concern for Pasadena and Altadena residents. It should be noted that mold and plumbing issues were topics of current media interest at the time the interviews were conducted.

Input on the Best Ways to Communicate with Their Respective Communities

Personal Relationships

Stressing that mailers and flyers were not enough, the majority of those interviewed in 2004 noted the importance of developing personal relationships and having a presence in the community. For NASA to become credible in its messages about environmental cleanup, one community leader stated, "[p]ersonal relationships are the method of developing trusted spokespersons."

The importance of personal relationships was clearly evident as the educational leaders described their phone-tree methods for communicating with parents to prompt their participation in school meetings and other activities.

All interviewees volunteered to assist NASA in its outreach efforts. In particular, they suggested that NASA tie in to existing community organization meetings and events that already have credibility and presence in the community.

Interviewees listed below offered NASA a forum to make a brief presentation about environmental cleanup efforts:

NATHA – Neighbors Acting Together Helping All

- Spanish-speaking parents group
- Public Health Action Community Team (English)
- "Just for Youth" Cable Access TV show

St. Andrew Catholic Church

- Announcement during Mass

Madison Avenue School and Jackson Elementary School

- Parent's Group and/or meeting

NAACP – National Association for the Advancement of Colored People

- Executive Committee Meeting

Metropolitan Baptist Church

- Announcement from pulpit during services and in church bulletin

Japanese Cultural Center

- Senior Citizen's Group

Latino Heritage Association

- Segment on Cable Access TV Show

City Council (Districts 1 and 5)

- District-wide council meetings
- Access to neighborhood coalitions

Neighborhood Connections (Pasadena)

- Access to neighborhood coalitions
- Publication in city-wide bulletin

Public Events
Several interviewees emphasized the need for NASA to go beyond its mailers and flyers and initiate a presence at community events. They suggested that NASA participate in several events as a way to provide information and outreach to the community, for example**:**

- Health Department Informational Fair
- Jackson Elementary School Fair
- Earth Day

Outreach to Schools
Finally, some interviewees suggested meeting with science teachers and developing an educational component on NASA's environmental cleanup as a way to educate the parents through their children. Monolingual adults, particularly in the Latino community, rely heavily on their bilingual children for information on basic resources. They look to the school system for information outside of the basic educational resources. Some school administrators find themselves serving beyond their role as educators by providing social services, at least in giving referrals to parents in need. As a result, schools are a viable resource and vehicle to communicate to Latino parents.

Information Needs
While the need for simple and easy-to-understand materials pertained to all cultures, it received more emphasis from the Latino community. The following are specific ideas that stakeholders offered about the development of communications materials:

- Keep language simple and write materials in "lay terms"
- Create highly visual, colorful, catchy materials
- Prepare bilingual materials
- Develop a historical timeline with highlights in bullet format
- Use human interest stories featuring people with whom they can identify

Information Sources
The multicultural leaders emphasized using links with the community who are involved, trustworthy, credible and relevant to the community in ethnicity and language. The following approaches were identified as having the greatest likelihood to develop trust:

- Clergy (especially for Latinos and African-Americans)
- Community-based organizational leaders
- School-based community assistants

2005 Interviews
In addition to the multicultural stakeholders interviewed in 2004, NASA conducted seven interviews with other community members and leaders in January 2005. Individuals were identified based on previous interest in the NASA JPL site (such as attendance at community meetings conducted in 2004) or because they represented a specific point of view (employee, elected official, member of special interest group, education, diverse audiences, etc.). Interviewees included a representative from the Pasadena Audubon Society, a representative of the Arroyo Seco Foundation, two JPL employees, a member of the Pasadena

City Council, a member of the Altadena Town Council, and the vice-president of the Welfare and Health Committee of the Pasadena PTA Council. The in-person interviews lasted one hour or more and were conducted by the NASA cleanup outreach manager and a NASA community relations consultant. Appendix F lists the series of questions that were asked during the interviews. General themes in the responses and other comments and concerns are described below.

Summary of Concerns and Information Needs from 2005 Interviews

Information obtained during the 2005 interviews has been organized into the following categories:

- General Awareness of JPL
- General Attitude Toward Environmental Issues
- Knowledge of Environmental Cleanup (CERCLA) Issues at JPL
- Questions and Concerns About the JPL CERCLA site and Associated Cleanup Activities
- Information Needs and Sources
- Preferences for Methods of Community Involvement

General Awareness of JPL

The majority of interviewees in 2005 knew JPL was associated with space exploration programs and knew JPL had been in the community for many years. Although some people mentioned JPL's affiliation with Caltech, they were not clear on the relationship between the two entities. Aside from the JPL employees interviewed, only one person was able to explain that JPL is a NASA facility run by Caltech. Knowledge about JPL came by living in the community and/or working for JPL for many years, or through conversations with people they see regularly that know about JPL.

When asked how they thought other community members felt about JPL, most interviewees thought people have a favorable impression of JPL and NASA. There was one exception. An interviewee cited distrust in government for "not being forthcoming in the past about the chemicals in the water." It was also mentioned that in recent years NASA has done a better job of community outreach and is regaining credibility as compared with comments made in the 2001 public meetings. This suggests that NASA's outreach over the last two years has been positively received.

General Attitude Toward Environmental Issues

Interviewees were aware of environmental, safety and health issues in the area where they lived and worked. The issues ranged from air, noise, and groundwater pollution to traffic, smog, crime, terrorism, safety, preservation of endangered species and chemicals in groundwater that originated at JPL.

Five people were very aware of groundwater pollution due to their past involvement with water quality issues in the area, either as members of water boards or local commissions, or because of their employment with JPL. Those interviewed felt some community members might be suspicious and not believe what JPL has to say. One person wondered about the Raymond Basin plume, and how far it has moved. Another mentioned an area in the southwest part of Pasadena, where

perchlorate had recently been detected and the wells had to be shut down.

A majority of the people interviewed had tried to get information about environmental and groundwater issues in the past. Some cited their own communities as sources of information. One person, who didn't know where to get information on groundwater issues at JPL in the past, was very grateful to NASA for having such information available at public meetings in 2004.

Knowledge of Environmental Issues at JPL

Interviewees varied in their knowledge of groundwater issues at JPL. Among the several interviewees more familiar with the groundwater cleanup were the two JPL employees, one elected official and two members of special interest groups. One had followed the cleanup activities at JPL for years through newspaper articles, reports, studies, and conversations with the water purveyors. The other one had been vaguely aware of the cleanup activities at JPL in the past and started following the groundwater issues recently as a result of her roles and interests in the community.

All but two people (who had no opinion on the topic) interviewed, thought community members in general are not very aware of the groundwater issues at JPL and are not educated on the facts. As one interviewee said, "The topic just doesn't come up in conversations, although it gets published in the *Pasadena Star-News*." A reason for this lack of awareness was believed to be a consequence of people having no time because, for example, they are working two jobs and are raising children.

In spite of this perceived lack of awareness, one person recognized that in the last two years there had been community meetings that were fairly well attended, and that drew people who cared about the issue. Interviewees recognized NASA's efforts to get information out since 2003. As one person noted, "Rumors happen if there's no information."

Questions and Concerns about Environmental Issues at JPL

Interviewees expressed specific concerns about environmental issues at JPL. Several had a sense of urgency about the cleanup activities. One interviewee said, "[t]hings are not going quickly as I had hoped." It was clear that although people felt fairly informed about the cleanup activities at JPL, some were not satisfied with, or aware of the progress.

Interviewees framed community concerns in categories identified as "before" and "after" recent cleanup efforts commenced. Prior to NASA's more recent cleanup efforts, they felt community members primarily had wanted reassurances about possible health impacts. In light of NASA's more recent cleanup efforts, they felt community members were still concerned about health as well as other issues.

Specific questions included:

- Is the water safe to drink?
- How quickly will treatment proceed? When will the wells be providing drinking water again?
- Will the water get us sick 25 years from now?

- Will property values be affected?
- How long did the water contain chemicals before they were discovered and the wells closed?
- How does the treatment system for perchlorate in Operable Unit 1 (OU-1) work?
- Can anything escape into the air?
- Were the milestones achieved? Was progress made?
- Have the cleanup activities been successful?
- Has the treatment process in Pasadena begun?
- Who is in charge of the cleanup and the community outreach at JPL?

Specific concerns included:

- Having a schedule and a timeframe for the groundwater cleanup;
- Having an agreement between the City of Pasadena and JPL/Caltech regarding responsibilities for cleanup;
- Receiving information in detail about the options and technologies studied and selected to remove the perchlorate;
- Having an opportunity to visit a treatment plant;
- Having JPL do something positive for the community, like an environmental education project, which would bring high visibility to JPL.

Information Needs

In general, community members and employees interviewed in 2005 wanted more information about NASA's environmental cleanup project and wanted to know things were moving forward. Interviewees suggested NASA provide information in ways such as a two-page quarterly status report, factual updates in bullet form, fact sheets, brochures (that don't have to be glossy), e-mails, flyers, media articles, website updates, newsletters, posters in the park or post office, and notices sent to every home in the neighboring communities and to every JPL employee.

Information Sources

Interviewees were asked who they trust for information on health or environmental issues. They identified the characteristics that would constitute a trusted source of information: (a) to be "unbiased", (b) have a good reputation, (c) have credibility, and (d) have no vested interest in what is discussed or in politicizing the issue. More than one person thought the following institutions and individuals are reputable sources of information on health and environmental issues: the National Institutes of Health, U.S. EPA and Cal/EPA, people in the health community, doctors and scientists from UCLA and Caltech, the South Coast Air Quality District, Pasadena Public Health Department, Pasadena Unified School District, trusted leaders in Pasadena (Mayor and others), academics, researchers, and truly independent studies. One interviewee said, "[f]or health issues I trust my doctor."

Ways to Involve the Community

Without exception, those interviewed in 2005 expressed an interest in attending future NASA-sponsored meetings to find out more about the cleanup project. Except for employees who preferred having future meetings at JPL, the other interviewees didn't care where a meeting would be located or on what day of the week it would be conducted. One thought having a meeting on Saturdays might draw more elderly

community members but fewer families with children.

Interviewees discussed ways to keep the community involved and provide opportunities to increase awareness of NASA's cleanup efforts. Ideas ranged from writing articles in existing newsletters (Audubon Society and Altadena Heritage newsletters), to connecting with other organizations interested in the topic such as the Sierra Club, the Arroyo Seco Foundation, Rose Bowl Riders, Altadena Town Council, the Town Council Watershed Committee, neighborhood associations, trail groups, hiking clubs, and religious groups. They also mentioned living room meetings for small groups or having workgroups consisting of more informed people who can act as ambassadors in the community. Similar to responses from multicultural group leaders, the interviewees suggested outreach via the schools, including partnering with science departments to offer students a science project or an internship, and staffing a booth at local health fairs.

Interviewees recommended the NASA outreach manager contact other organizations and community members to inform them about NASA's cleanup efforts. Some of the organizations and community members mentioned were Caltech faculty and students, City commission members, those interested in the issue by virtue of their position (heads of business associations and membership organizations like the Rotary Club of Pasadena), the Senior Center in Altadena, water companies, people from the American Association of Retired Persons (AARP) and retirement communities, Boy and Girl Scouts, and hospitals such as the local Huntington Memorial Hospital.

Finally, those interviewed in 2005 agreed NASA should continue to make information available to the community about the cleanup efforts at JPL. They praised what NASA has been doing in the last year and a half and they asked for more factual information that shows progress, more community meetings, printed materials, and stories in the newspaper. They also hoped for NASA to move more quickly in the future. One person summed up the feeling of many by saying, "The outreach has been critical to defuse potential community concerns about the chemicals in the groundwater."

Differences Between the 2004 (Multicultural Stakeholders) and 2005 (General Community Leaders) Interviews

The wide range of interviews conducted over the last two years reveals several kinds of concerns and a variety of outreach methods mentioned by multicultural groups and other community group leaders and employees.

General Awareness of JPL

Multicultural stakeholders interviewed in 2004 revealed "brand awareness" or at least name recognition of JPL, but they were not as specific in their description of JPL's programs as other community group leaders were. They also perceived JPL as less involved in the community than did other stakeholders interviewed.

Attitude and Awareness of Environmental Issues

Only two multicultural leaders (2004) had any awareness of NASA's cleanup issues in the area and most did not rank environmental issues as the top priority on their community agendas. However, they did refer to water problems within the context of other important social issues such as health and housing (e.g., rusted pipes). None of the multicultural leaders interviewed had ever been involved in environmental issues.

Because individuals chosen for the 2005 interviews were identified based on previous interest in the JPL site (such as attendance at community meetings conducted in 2004) or because they represented a specific point of view (employee, elected official, member of special interest group, education, diverse audiences, etc.), they showed a keen interest and awareness about general environmental, safety and health issues as well as varying levels of knowledge regarding groundwater issues at JPL.

Best Ways to Communicate

Information Needs

Whereas the multicultural community representatives stressed simple, quick, easy-to-understand and "top-line" information, the other stakeholder group requested more frequent and detailed information. Multicultural leaders wanted bold graphics, simply laid out (i.e., bullet points) in contrast to other stakeholder group members who indicated a preference for receiving more technical data.

All those interviewed were interested in NASA communicating the following messages: key milestones in the cleanup process, i.e., a timeline and identifying progress made; reassurances that the water is safe to drink; and information on general cleanup activities at JPL and the surrounding communities.

Information Sources

Multicultural leaders stressed the importance of personal relationships, especially those with whom they deal on a daily basis. Multicultural leaders cited credible spokespersons as clergy, community-based organizations and school-based community assistants. Other stakeholder group interviewees cited government agencies and larger institutions (i.e., South Coast Air Quality District, EPA, and Caltech) as reputable sources of information on health and environmental issues.

Ways to Communicate Meetings and Involvement Opportunities

Multicultural leaders expressed far less interest in attending general public meetings on environmental cleanup, but overwhelmingly offered to integrate NASA communications into their existing meetings and events. In contrast, employees and other stakeholder group interviewees expressed interest in attending future NASA-sponsored meetings to find out more about the cleanup project.

4.0 HIGHLIGHTS OF THE COMMUNITY INVOLVEMENT PLAN

The overall goal of NASA's Community Involvement Program at the JPL CERCLA site is to promote two-way communication with local residents, and to provide opportunities to the community for meaningful and active involvement in the cleanup process. NASA will try to implement all the community involvement activities described in section 5.0, "Required and Discretionary Activities".

NASA has designed the following communications activities for the JPL CERCLA site based on activities conducted to date, including interviews with a variety of stakeholders and ongoing contact with interested employees and members of the public, continued Community Information Sessions, large public meetings and small group meetings, periodic newsletters, fact sheets and other print materials, a project website and an information repository (updated regularly) of all CERCLA-site-related documentation. Communications activities will also respond to individual questions and/or information needs identified by NASA's outreach manager.

5.0 REQUIRED AND DISCRETIONARY ACTIVITIES

This section presents some of the community involvement techniques that NASA has used and intends to continue to use throughout the cleanup process to keep the community informed and to provide opportunities for input into the process. Section 5.1 describes the community involvement activities for any CERCLA site based on the most recent EPA Community Involvement Plan (CIP) guidance (EPA 2005). Section 5.2 describes NASA's activities that go beyond legal requirements. These are based on suggestions received from interviews and from other interactions with the public. NASA has made efforts to reach its diverse community and to develop an effective CIP that will help create an environment where all people regardless of race, color, national origin, or income have the opportunity for meaningful involvement in the environmental cleanup efforts.

5.1 REQUIRED COMMUNITY INVOLVEMENT ACTIVITIES

The activities listed in this section correspond to the three *Operable Units* at the JPL CERCLA site. Required activities are conducted to ensure that the public receives notice of key CERCLA actions and has opportunities to provide input throughout the various stages of the cleanup process.

CERCLA-required community involvement activities are:

-Maintain Administrative Record
-Maintain Information Repositories
-Produce Public Notices
-Provide for Public Comment Periods
-Undertake Proposed Plan(s) (and summary of plan suitable for public)
-Announce, Advertise and Conduct Public Meetings
-Prepare Responsiveness Summary(-ies)
-Prepare and Publish Record(s) of Decision
-Maintain and Update Community Involvement Plan (CIP)

CERCLA-required activities are described in general below and for each *Operable Unit* as appropriate.

Administrative Record
The Administrative Record is required for every CERCLA site and may be kept at the same location as an information repository. This file contains all documents used by federal decision makers to select remedial actions or removal actions for the JPL CERCLA site, including a chronological listing of all community involvement products and activities.

Information Repository
An Information Repository pertaining to the JPL CERCLA site and available for public inspection and copying is required for all CERCLA sites placed on the National Priorities List. An information repository makes the finalized documents and supporting information publicly available.

Public Notices
The goal of a Public Notice is to communicate an important announcement to as many people as possible in the affected community. Public notices are in the form of paid

advertisements published in local newspapers or may be placed in the legal notices section of the paper.

Proposed Plan
A Proposed Plan is an outline of the remedial alternatives evaluated for a site (or in the case of the JPL CERCLA site – each *Operable Unit*), including a statement of the preferred alternative. NASA must hold a 30-day public comment period on any proposed plan, during which time the public may submit comments in writing or may voice comments at a public meeting.

Public Comment Period
The public must be allotted a period of time to review and comment on various documents and NASA CERCLA cleanup-related actions. Public notices announce the start of a comment period, indicate where documents are available for review, and explain where and how comments can be made and submitted.

Public Meeting
Public meetings give citizens a forum for hearing information on specific proposed actions or related activities and give them an opportunity to provide formal comments and testimony on proposed actions. NASA intends to have public meetings as a way to inform, encourage discussion and receive citizen feedback on proposed courses of action for the JPL CERCLA site. A public meeting can be combined with other forms of meetings such as a Community Information Session (see Section 5.2 below) as long as there are ways for community members to make formal comments and for those comments to be recorded. NASA also offers public meetings to provide general updates to the community.

Responsiveness Summary
In a Responsiveness Summary, NASA must document public comments that have been expressed on any Proposed Plans and indicate if any changes based on those comments or concerns to the Proposed Plan were made.

Updating the Community Involvement Plan (CIP)
As the CERCLA process moves forward in stages, the Community Involvement Plan is periodically updated to ensure that NASA is involving the community and responding to citizens' information needs. This is the second update to the original CIP (formerly Community Relations Plan). The plan was initially written in 1994 and amended in 2003. This is the first iteration under the new EPA Guidance (2005). Its primary purpose is to document community involvement activities to support NASA's cleanup activities at the JPL site since 2003. As part of developing and updating the CIP, interviews with various members and segments of the community were undertaken to determine awareness levels, information needs, and preferences for involvement and communication.

What follows is a description of the menu of specific actions possible for each *Operable Unit* and where specific community involvement is required as part of the overall CERCLA program.

5.1.1 OPERABLE UNIT 1 (OU-1) On-Facility Groundwater

Proposed Plan
The final remedy for on-facility groundwater (OU-1) will be selected following decisions about the required

perchlorate cleanup levels in groundwater and will be based on the effectiveness of interim remedial actions to date. In late 2005, NASA prepared a Proposed Plan that summarized the interim remedial activity to address on-facility source area groundwater and proposed expanding the existing demonstration groundwater treatment plant located at JPL. The demonstration plant has been operating at JPL since early 2005 and has successfully removed volatile organic compounds and perchlorate from source area groundwater.

Public Notification
A Public Notice was placed in area newspapers (as described above) prior to a public meeting in November 2005 announcing that the Proposed Plan was available for review in the information repository and on the JPL website. Using the cleanup project mailing list, NASA distributed a two-page fact sheet which briefly described the Proposed Plan, advertised the public meeting and locations of information repositories in local newspapers, and in the mailing, the advertisements and the public meeting solicited written comments.

Public Comment Period
The Public Comment Period (November 1, 2005 to December 15, 2005) on the Proposed Plan was announced in the public notice (newspaper advertisement) and in the fact sheet (newsletter) mailed to the cleanup project mail list. Members of the public were encouraged to submit comments electronically to the cleanup project outreach manager or in person (orally on the record or in writing) at the public meeting.

Public Meeting
NASA conducted a Public Meeting on November 16, 2005 at the Altadena Community Center during the public comment period. A court reporter was present to record the meeting and prepared a transcript of official public comments. That transcript will be available to the public via the information repository and the website.

Responsiveness Summary
Following the public meeting and consideration of all community comments made on the Proposed Plan, NASA will prepare a response to comments received that will be included as an appendix to the Interim Record of Decision. The public will be informed of the availability of the Interim Record of Decision through publication of a notice in the local newspaper.

Remedial Design/Remedial Action Work Plan
NASA will develop a Remedial Design/Remedial Action Work Plan based on the Interim Record of Decision detailing how and when the remedy will be conducted. After the remedial design is approved and before construction begins, NASA will issue a fact sheet and provide a public briefing about the final engineering design prior to the initiation of remedial action.

5.1.2 OPERABLE UNIT 2 (OU-2) On-Facility Soil

Remedial Action Report
NASA will continue to update the public about on-facility soil cleanup through its community involvement activities. Following a final inspection of on-facility soil remediation, NASA will prepare a Remedial Action Report, usually called a “closeout report”, demonstrating that the

cleanup goals have been achieved in the *Operable Unit* (as specified in the ROD). The Remedial Action Report is submitted to the EPA. It will be available to the public and posted on the project website. There are no other CERCLA milestones for this particular *Operable Unit* after submission and approval of the RA Report because there are no operation and maintenance or post-remediation activities required.

5.1.3 OPERABLE UNIT 3 (OU-3)

Off-Facility Groundwater

Proposed Plan

NASA will prepare a Proposed Plan that summarizes the Interim Remedial Action for off-facility groundwater (City of Pasadena and Lincoln Avenue Water Systems) and will solicit public input in Spring 2006.

Public Notification

A Public Notice will be placed in area newspapers (as described above) to announce that the Proposed Plan is available for review in the information repository, on the JPL website and by request, to announce the public meeting date and location, and to solicit public input and written comments. The newspaper notice will be published approximately two weeks preceding the public meeting.

Public Comment Period

NASA will hold a public comment period of at least 30 days following the announcement of the availability of Proposed Plan. During this time, the public may make written and oral comments on the Proposed Plan. Public comment periods can be extended if there is sufficient public interest or reason to do so, and an appropriate request is made.

Public Meeting

NASA will conduct a public meeting or combination meeting/Community Information Session at an appropriate location during the public comment period. Some combination of fact sheets and other materials (see section 5.2 Discretionary Activities) will be used to facilitate effective communication. A court reporter will be present to prepare a meeting transcript of official public comments. That transcript will be available to the public via the information repository and the website.

Responsiveness Summary

Following the public meeting and after consideration of all community comments made on the Proposed Plan, NASA will prepare a response to comments received that will be included as an appendix to the *Interim Record of Decision* (IROD). The public will be informed of the availability of the Interim Record of Decision through publication of a notice in the local newspaper.

Addendum to the Remedial Investigation

NASA prepared a Remedial Investigation Addendum Work Plan in November 2004 to conduct additional investigations in OU-3. The objectives of the additional investigations were 1) to evaluate the down-gradient (southern) extent of chemicals that originate from the JPL facility, and 2) to determine whether the presence of perchlorate in the Sunset Reservoir were associated with migration of chemicals from the JPL facility. The investigations include installation of two new monitoring wells (MW-25 and MW-26) with multiple locations for sampling (referred to as

multiport wells), and a stable isotope study (see below).

Construction reports documenting the installation of MW-25 and MW-26 were completed in July 2005 and are available in the administrative record and information repository. In addition, these wells were added to the quarterly groundwater monitoring program and therefore included in the results posted quarterly.

The *isotopic analysis* (begun in 2005) uses recently developed technologies to remove perchlorate from groundwater and examine the chemical makeup of the compound, specifically looking at chlorine, oxygen, hydrogen, helium and strontium atoms. The isotopic analysis may distinguish between natural and man-made perchlorate and may improve the ability to understand groundwater flow patterns. A Remedial Investigation Addendum is being prepared to document the results of the isotope study, expect in 2007

5.2 DISCRETIONARY COMMUNITY INVOLVEMENT ACTIVITIES

Many of the activities listed below already have been implemented over the past two years. NASA will continue building on the outreach tools that have been effective and adding other outreach methods based on community needs and interest.

5.2.1 Written materials

Objective:
Providing residents with a consistent source of information about cleanup progress is a top priority for NASA's environmental cleanup efforts. Periodic mailings include brief summaries of site status, ongoing activities for the project, notices of meetings, fact sheets, and other types of written communication. These mailings provide interested neighbors and the general public the opportunity to stay informed and get more information if desired. Making written materials available to a wide range of community members helps gain program awareness, builds interest in the community, and provides an opportunity to educate and inform the public

Methods:
The types of written materials likely to be used throughout the remainder of the project include: bilingual newsletters (English and Spanish), notices of meetings, fact sheets, Frequently Asked Questions (FAQs) and answers, a glossary of terms, publications through existing community newsletters, website updates, postcards, displays and exhibits. A description of each method and its timing (i.e., season of distribution, quarterly, annually, as needed, etc.) is listed below.

Bilingual (Spanish/English) Newsletters
The primary group of non-English speakers in the area adjacent to JPL is Spanish-speaking. Other language groups contacted through representatives (Japanese, Chinese, Armenian) felt that English language materials were adequate.

Bilingual newsletters provide brief updates on the status of cleanup plans and activities. They describe accomplishments and project milestones, and give in-depth information on topics of interest to the

community. In addition, newsletters announce public involvement opportunities (i.e., notices of meetings, hearings and presentations and materials available for review).
To distribute these newsletters to the pertinent audiences, NASA will continue to update its database of residents living within the boundaries of the San Gabriel Mountains to the north, Gould Avenue to the west, Interstate 210 to the southwest and south, and Lake Avenue to the east and also will include all who sign up for receipt of mailings.

Action:
Newsletters will be created and disseminated when there is important information to share. A newsletter or other update is targeted to occur at least twice a year. In response to Latino stakeholders' suggestions for simple, easy-to-understand information, a Spanish-language summary of selected articles in the newsletter generally will be provided. Bilingual newsletters will be sent to the entire mailing list.

Notices of meetings
Newspaper advertisements, bilingual flyers and bilingual postcards are effective ways to alert the public of important events such as public meetings and Community Information Sessions. They complement public notices appearing in local newspapers that NASA is required to publish to announce key milestones in the CERCLA cleanup process such as the availability of a document for comment or a required public meeting.

Action:
Bilingual notices of meetings will be made when there is a need to announce a public meeting, Community Information Session or any other important event.

Fact Sheets
Fact sheets usually consist of a brief report summarizing technical information useful to understand current and proposed activities that are part of the investigation and cleanup process. Based on comments received, some stakeholders prefer fact sheets that are simple and easy to read and highlight major concepts of the cleanup process. For Spanish-language audiences, these facts may be adapted and translated to highlight major points of the cleanup process as appropriate.

Action:
NASA will prepare fact sheets for the project as needed that will complement information made available in other communications vehicles such as the bilingual newsletter. Glossaries will be incorporated to help educate people on terms and concepts. For the Latino community, fact sheets will be produced in Spanish that summarize project highlights, or Spanish summaries will be provided as sidebars to the text.

Frequently Asked Questions (FAQs)
Frequently Asked Questions provide the public with answers to general questions they may have about the project and cleanup activities, the chemicals present in groundwater, and health-related questions. They are written in lay terms.

Action:
NASA has developed Frequently Asked Questions (FAQs) in both English and Spanish, about the CERCLA process, its community involvement activities, the JPL site, chemicals detected in soil and groundwater, and cleanup activities at

JPL. NASA will continue to revise the FAQs list as needed to reflect the current project status and new topics/questions of interest. FAQs will be disseminated through the JPL cleanup project website, at public meetings and public events.

Glossary of Terms

A glossary of terms is useful to educate the public on terms and concepts used in the CERCLA process and facilitates reading of related technical documents.

Action:

A glossary is available on the website and it will be updated as necessary (i.e., when NASA publishes certain new technical information). A glossary of terms is part of this CIP update in Appendix C.

Publications through Existing Community Newsletters

NASA's communication effort will be augmented by publishing articles about the cleanup process in existing community newsletters of established organizations that are considered reliable sources of information for people in the community. NASA has developed and will continue to update a database of newsletters and notices published by relevant neighborhood and community organizations, environmental groups and government agencies that may distribute information about environmental cleanup efforts. This database includes information on the frequency and lead-time required to submit information for publication.

Action:

The continually expanding database for newsletter mailings will be used to distribute notices of public meetings and Community Information Sessions. NASA will continue to contact organizations and vehicles such as the Pasadena Audubon Society, Arroyo Foundation, Altadena Heritage, Pasadena In-Focus, and the Sierra Club, that have offered to carry articles in their newsletters and websites about NASA's cleanup efforts.

Displays and Exhibits

Displays and exhibits provide another way to inform the public about NASA's cleanup efforts. Because exhibits and displays use pictures and other graphics with minimal text, they offer a visually appealing and understandable means for people to learn about the groundwater cleanup project. Displays and exhibits also can encourage feedback and input from individuals by prompting questions as one reviews the displays, and by providing a phone number to call with comments and questions.

Action:

Displays and exhibits have been created and are updated as needed to elaborate on information specific to upcoming technical milestones for each of the *Operable Units*. They may be used at public meetings, Community Information Sessions, and special events such as the JPL Open House, fairs and other community gatherings.

Website

To make information about JPL cleanup activities easily available, NASA has developed a website. Features of this website include: the ability to search and retrieve documents from the information repository, an up-to-date contacts list, schedules of upcoming activities, and the ability to submit questions. It also includes current information such as fact

sheets, newsletters, flyers and other printed material. A section containing all the Spanish language materials rounds out the website. The website also serves as an official Administrative Record.

Action:
The website is frequently updated as new documents are developed. Updates include press releases and announcements of current activities such as any cleanup actions for public comment, public meetings or Community Information Sessions.

Translations: Outreach to Non-English Speakers
To facilitate dialogue where there is a large population of Spanish-speaking residents, NASA makes bilingual personnel available to this community. In most printed materials, NASA provides a contact listing of a bilingual (Spanish/English) staff person who may be reached by email, telephone or mail. In addition, NASA has bilingual personnel available to attend meetings where translation is necessary and to provide insight on culturally relevant issues to the Latino community. NASA may also be able to provide translation for groups needing materials in another language.

Action:
NASA will continue to offer Spanish translations to the Latino community in written materials such as letters to local residents in specific locations where NASA activities are planned, fact sheets, bilingual newsletters, and announcements. NASA will continue having translators available if requested at public meetings, in one-on-one meetings with members of the community, at multicultural satellite meetings and by phone

5.2.2 Opportunities for dialogue

Objectives:
NASA is committed to ensuring opportunities for input and meaningful public involvement. A key to this involvement is providing a variety of formal and informal mechanisms to facilitate open and straightforward dialogue between community members and NASA. This enables citizens to express their interests, questions, concerns and comments on all aspects of the investigations and cleanup process and especially about remediation decisions that have potential long-term effects on their communities.

Methods:
Opportunities for dialogue include having a dedicated contact with the community, conducting community interviews, canvassing with information (i.e., flyers), and offering small group meetings, Community Information Sessions, multicultural “satellite” meetings, speaking engagements (e.g., at specific group meetings and community conferences), outreach to schools, and at local events..

Dedicated Contact Person
Since hired in the winter of 2003, NASA’s full-time Groundwater Cleanup Manager for Community Involvement has been building relationships with individuals and interested community leaders. Her phone number and email address are included in all printed materials (i.e., newsletters, flyers, ads) encouraging contact from the public and allowing her to respond in a timely

manner to community questions and requests for information. NASA's outreach office also maintains a phone log of requests to monitor topics of community interest.

Action:
Telephone contact will continue to be publicized and available, as well an email (watercleanup@nmo.jpl.nasa.gov) address to which any reader of the website or other user of the email address may submit a comment or inquiry. Several staff members receive email from the general address simultaneously. This ensures prompt response, even if one person is unavailable.

Small Group Meetings
Meetings with small groups of residents provide opportunities for informal, two-way communication. Held in local meeting places, offices or in residents' homes, NASA personnel get first-hand information about the communities' questions, comments and concerns. Small group meetings add a personal dimension to the technical nature of the project. Several interviewees expressed a desire to have these types of meetings available.

Action:
NASA will conduct small group meetings, as interest exists, for residents through the remaining stages of the cleanup process.

Community Information Sessions (CIS)
NASA understands the importance of communicating frequently with its neighbors. The Community Information Session is a less formal alternative to traditional public meetings and is designed to facilitate two-way dialogue. NASA has designed the CIS format recognizing that some community members may be reluctant to ask questions in a larger more formal public meeting. The CIS allows people to ask questions and express concerns directly to those who are most knowledgeable about groundwater cleanup activities, and receive immediate responses The CIS features a series of displays (visually appealing posters) highlighting various aspects of the cleanup project. At least one NASA staff person or technical expert stands at each display to answer questions. The CIS may also incorporate other communications vehicles such as videos, slide presentations and models or other representations of technical aspects of the cleanup process. Finally, the CIS may be used in combination with public meetings to collect better formal and informal comments.

Action:
Because the Community Information Session format promotes two-way dialogue, NASA elected to host a CIS in March 2005 instead of a traditional public meeting. NASA will make an effort to conduct Community Information Sessions possibly in conjunction with a more formal public meeting at least annually.

Multicultural Satellite Meetings
The majority of multicultural stakeholders noted that they were unlikely to attend larger, more formal public meetings, and preferred that NASA integrate its outreach information into the community's existing meetings. Several offered to include NASA on their own meeting agendas to educate their constituents. NASA will pursue these

forums to educate the community on its environmental cleanup efforts.

Action:
Unless focused solely on the groundwater cleanup, satellite meetings will be timed to coincide with multicultural general meetings. Presentations will be adapted for the particular multicultural audience(s).

Speaking Engagements
NASA personnel are available to speak on the cleanup progress. These speaking engagements are a good way to target major stakeholders whose sphere of influence reaches NASA's target audience. These opportunities may include city council meetings, environmental meetings, neighborhood council meetings, Rotary meetings etc.

Action:
NASA will continue to participate in speaking engagements.

Community Outreach to Schools
Several people interviewed in 2004 and 2005 suggested meeting with science teachers at schools to develop an educational component to NASA's cleanup project. From such activities, students may develop interest in science projects or other activities. This approach recognizes that schools are a good mechanism to educate parents through their children. This would be especially effective in Latino and other cultural communities.

Action:
NASA will contact the science departments at several schools to offer to establish partnerships.

Community Events:
Multicultural stakeholders stated that mailers and flyers weren't enough. They stressed the importance of developing personal relationships and a presence in the community. While many of the multicultural communities' special events may not be environmentally specific, these community events serve as a bridge for communicating with otherwise disenfranchised communities.

Action:
NASA will develop a database of annual multicultural community events to determine resources and staff availability for participation.

Informal Visits in the Community
Community members prefer multiple ways both to keep informed and provide comments to NASA about site activities and community opinions. NASA staff will make informal visits in the community, such as attending neighborhood association meetings and unscheduled appearances at community events, to talk spontaneously with local residents.

Action:
NASA monitors local listservs, web pages and newspapers to identify appropriate activities to attend.

APPENDIX A

LIST OF KEY CONTACTS AND INTERESTED PARTIES

Appendix A-1 Agency and Regulatory Contacts

NASA Jet Propulsion Laboratory

NASA Management Office - JPL
M/S 180-801
4800 Oak Grove Drive
Pasadena, CA 91109

Steve Slaten
Remedial Project Manager
Phone: (818) 393-6683
Fax: (818) 393-5103
Email: steven.w.slaten@nasa.gov

Merrilee Fellows
Manager, Community Involvement
Phone: (818) 393-0754
Fax: (818) 393-5103
Email: mfellows@nasa.gov

Website: http://jplwater.nasa.gov

U.S. Environmental Protection Agency

U.S. Environmental Protection Agency,
Region 9
75 Hawthorne Street, M/S SFD-8-3
San Francisco, CA 94105

Mark Ripperda
Remedial Project Manager
Phone: (415) 972-3028
Fax: (415) 744-1916
Email: Ripperda.Mark@epamail.epa.gov

California Department of Toxic Substances Control

California Environmental Protection Agency
Dept. of Toxic Substances Control
1011 North Grandview Avenue
Glendale, CA 91201

Michel Iskarous
Remedial Project Manager
Phone: (818) 551-2857
Fax: (818) 551-2841
Email: miskarou@dtsc.ca.gov

Website: www.dtsc.ca.gov

Los Angeles Regional Water Quality Control Board

Los Angeles Regional Water Quality Control
Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Mohammad M. Zaidi
Remedial Project Manager
Phone: (213) 576-6732
Fax: (213) 576-6640
Email: mzaidi@waterboards.ca.gov

Website: www.swrcb.ca.gov/rwqcb4

Pasadena Water and Power Department

Pasadena Water and Power
P.O. Box 7115
Pasadena, CA 91105
(626) 744-4005

www.ci.pasadena.ca.us/waterandpower

Lincoln Avenue Water Company

Lincoln Avenue Water Co.
564 West Harriet Street
Altadena, CA 91001
(626) 798-9101

Agency for Toxic Substances and Disease Registry

Agency for Toxic Substances and Disease Registry
(ATSDR)
75 Hawthorne Street, Room 100
Mail Code HHS-1
San Francisco, CA 94105
Phone: (415) 947-4318

Website: www.atsdr.cdc.gov

Appendix A-2 Government Officials

LOCAL OFFICIALS

Pasadena

Bill Bogaard, Mayor, City of Pasadena
117 E. Colorado Blvd., 6th Floor
Pasadena, CA 91105
Phone: (626) 744-4311
Fax: (626) 744-3921
Email: bbogaard@cityofpasadena.net

Pasadena City Council
117 E. Colorado Blvd., 6th Floor
Pasadena, CA 91105
Phone: (626) 744-4311
www.ci.pasadena.ca.us

Pasadena City Council Members
1st District: Joyce Streator
2nd District: Paul Little
3rd District: Chris Holden
4th District: Steve Haderlein
5th District: Victor Gordo
6th District: Steve Madison (Vice Mayor)
7th District: Sid Tyler

Pasadena Public Health Department
Wilma J. Allen, Director of Public Health
Room 1114A
1845 North Fair Oaks Avenue
Pasadena, CA 91103
Phone: (626) 744-6005

Altadena

Altadena Town Council
600 East Mariposa Street
Altadena, CA 91101
Phone: (818) 798-3616
www.altadenatowncouncil.org

Altadena Town Council Executive Committee
Chairman: Ken Balder
Vice Chairman: Lorie Judson
Recording Secretary: Mabel Duncan
Corresponding Secretary: Michelle Zack
Treasurer: Bobby Thompson

La Cañada Flintridge

La Cañada Flintridge City Council
La Cañada Flintridge City Hall
1327 Foothill Blvd.
La Canada, CA 91011
Phone: (818) 790-8880
Fax: (818) 790-7536
www.lacanadaflintridge.com

La Cañada Flintridge City Council Members
Mayor: Gregory Brown
Mayor Pro-Tem: David Spence
Councilmember: Laura Olhasso
Councilmember: Stephen A. Del Guercio
Council Member: Anthony J. Portantino

COUNTY OFFICIALS

Michael Antonovich,
County of Los Angeles Supervisor,
Fifth District
869 Kenneth Hahn Hall of Administration
500 West Temple Street
Los Angeles, CA 90012
Phone: (213) 974-5555
Fax: (213) 974-1010
Email: fifthdistrict@bos.co.la.ca.us

District Office
215 N. Marengo Ave., Suite 120
Pasadena, CA 91101-1505
Phone: (626) 356-5407

Board of Supervisors for Los Angeles County

1st District: Gloria Molina
2nd District: Yvonne B. Burke
3rd District: Zev Yaroslavsky
4th District: Don Knabe
5th District: Michael Antonovich

STATE ELECTED OFFICIALS

Governor Arnold Schwarzenegger
State Capitol Building
Sacramento, CA 95814
Phone: (916) 445-2841
Fax: (916) 445-4633
Email: governor@governor.ca.gov

State Senator Jack Scott
21st Senate District
215 N. Marengo Ave., Suite 185
Pasadena, CA 91101
Phone: (626) 683-0282
Fax: (626) 793-5803
Email: senator.scott@sen.ca.gov

State Assemblywoman Carol Liu
44th Assembly District
215 N. Marengo Ave., Suite 115
Pasadena, CA 91101
Phone: (626) 577-9944
Fax: (626) 577-2868
Email: assemblymember.liu@assembly.ca.gov

FEDERAL ELECTED OFFICIALS

U.S. Representative David Dreier
26th Congressional District
Washington D.C. Office
233 Cannon House Office Building
Washington, DC 20515
Phone: (202) 225-2305
District Office
2220 East Route 66, Suite 225
Glendora, CA 91740
Phone: (626) 852-2626

U.S. Representative Adam Schiff
29th Congressional District
Washington D.C. Office
326 Cannon House Office Building
Washington, DC 20515
Phone: (202) 225-4176
District Office
Braley Building
35 S. Raymond Avenue, #205
Pasadena, CA 91105
Phone: (626) 304-2727
Fax: (626) 304-0572

Senator Barbara Boxer
Washington D.C. Office
112 Hart Senate Office Building
Washington, DC 20510-0505
Phone: (202) 224-3553
District Office
312 N. Spring Street, Suite 1748
Los Angeles, CA 90012
Phone: (213) 894-5000

Senator Dianne Feinstein
Washington D.C. Office
331 Hart Senate Office Building
Washington, DC 20510-0504
Phone: (202) 224-3841
District Office
11111 Santa Monica Blvd., Suite 915
Los Angeles, CA 90025
Phone: (310) 914-7300

Appendix A-3 A Sample of Local Environmental Groups

Arroyo Seco Foundation
P.O. Box 91622
Pasadena, CA 91109-1622
(626) 584-9902
www.arroyoseco.org

California Native Plants Society, San Gabriel Mountains Chapter
750 North Altadena Drive
Pasadena, CA 91107
www.cnps-sgm.org

CASO, the Council of Arroyo Seco Organizations
P.O. Box 91622
Pasadena, CA 91109-1622
(626) 584-9902
www.arroyoseco.org/caso.htm

Eaton Canyon Nature Center Associates
1750 North Altadena Drive
Pasadena, CA 91107
(626) 398-5420
www.ecnca.org

North East Trees
570 West Avenue 26, Suite 200
Los Angeles, CA 90065
(323) 441-8634
Fax: (323) 441-8618
www.northeasttrees.org

Pasadena Audubon Society
1750 North Altadena Drive
Pasadena CA 91107
(626) 355-9412
www.pasadenaaudubon.org

Sierra Club, Pasadena Group of the Los Angeles Chapter
Sierra Club-Pasadena Group
P.O. Box 94086
Pasadena, CA 91109-4086
(626) 794-2603
http://angeleschapter.org/pasadena

Spirit of the Sage Council
SW Office
30 North Raymond Avenue, Suite 303
Pasadena CA 91103
(626) 676-4116
www.sagecouncil.com

Appendix A-4 Media Contacts

Newspapers/Magazines

Publication	Address	Newsroom Phone	Newsroom Fax
Pasadena Star-News	911 E. Colorado Blvd. Pasadena, CA 91109	(626) 578-6300	(626) 795-5515
Los Angeles Times	202 West First Street Los Angeles, CA 90012	(213) 237-7298	(213) 237-4712
La Opinion	700 S. Flower St., Ste 3000 Los Angeles, CA 90017	(213) 622-8332	(213) 896-2171
Pasadena Weekly	50 S. DeLacey Avenue Pasadena , CA 91105	(626) 584-1500	(626) 795-0149
The Pasadena/San Gabriel Valley Journal	1541 N. Lake Avenue Pasadena, CA 91104	(626) 798-3972	(626) 798-3282
La Cañada Valley Sun	PO Box 38 La Cañada, CA 91012	(818) 790-8774	(818) 790-5690
La Cañada Outlook	650 Foothill Blvd. La Cañada Flintridge, CA 911011	(818) 790-7260	(818) 790-7500
Pasadena Independent	34 E. Huntington Drive Arcadia, CA 91006	(626) 294-1090	(626) 294-1099
Glendale News-Press/ Foothill Leader	111 W. Wilson Ave., #200 Glendale, CA 91203	(818) 637-3200	(818) 241-1975

TV/Radio Stations

Station	Channel	Address	Phone	Fax
Pasadena Public Access Television	Channel 56	2057 N. Los Robles Avenue Pasadena, CA 91104	(626) 795-5556	(626) 795-5874
KPCC Radio	89.3 FM	1570 E. Colorado Blvd. Pasadena, CA 91106	(626) 585-7820	(626) 585-7916

APPENDIX B

ACRONYMS AND ABBREVIATIONS

APPENDIX B

ACRONYMS AND ABBREVIATIONS

Cal/EPA	California Environmental Protection Agency
Caltech	California Institute of Technology
CIP	Community Involvement Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
DHS	California Department of Health Services
DTSC	Department of Toxic Substances Control
EE/CA	Engineering Evaluation/Cost Assessment
EPA	U.S. Environmental Protection Agency
FAQ	Frequently Asked Questions
FBR	Fluidized Bed Reactor
FS	Feasibility Study
IROD	Interim Record of Decision
HRS	Hazard Ranking System
JPL	Jet Propulsion Laboratory
LAWC	Lincoln Avenue Water Company
LGAC	Liquid-phase Granular Activated Carbon
NASA	National Aeronautics and Space Administration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priority List
OUs	Operable Units
PA	Preliminary Assessment
PWP	Pasadena Water and Power
RA	Removal Action
RI	Remedial Investigation
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board – Los Angeles Region

SARA	Superfund Amendments and Reauthorization Act of 1986
SVE	Soil Vapor Extraction
VOCs	Volatile Organic Compounds

APPENDIX C

GLOSSARY OF TERMS[1]

A

Action Memorandum: The document that describes the selected removal action alternative (if needed) for an area of a CERCLA site—or as part of the CERCLA cleanup process and explains the rationale for the selection. The Action Memorandum includes responses to public and regulatory agencies' comments and concerns raised during the public comment period. It is placed in the administrative record and the information repository.

Activated carbon: Oxygen is used to open up millions of small pores on a charcoal product, which increases its ability to adsorb other chemicals.

Adjudicated Water Basin: A nine-member board administers and enforces the provisions of the court order, which established water rights and the responsibility for efficient management of the quantity and quality of the groundwater.

Administrative Record: A file containing everything (reports, transcripts, etc.) the lead agency used in reaching its decision to select a CERCLA remedial action or removal action for a site. The Administrative Record serves as a vehicle for public access to information and participation in the CERCLA process.

Air Stripping: A treatment system that removes or "strips" volatile organic compounds from contaminated groundwater or surface water by forcing an air stream through the water causing the compounds to evaporate.

Aquifer: A sand, gravel or rock formation capable of storing or conveying water below the surface of the land.

B

Boletin Bilingüe: A newsletter published by NASA in English and Spanish with the purpose of updating the public, including Spanish-speaking residents, on the JPL groundwater cleanup project.

C

California Department of Health Services (DHS): A department of the California Health and Human Services Agency that provides information about public health services, programs, health statistics, health licensure and more.

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[1] These definitions are provided to assist public understanding of technical terms. They are not the specific legal definitions for words included here.

California Environmental Protection Agency (Cal/EPA): The State agency whose mission is to restore created to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality.

California Institute of Technology (Caltech): Located in Pasadena, California, Caltech is an academic and research institution focused on math, science and engineering. JPL is an operating division of Caltech, who manages JPL for NASA.

Carbon Filtration: A water treatment system that forces contaminated water through tanks where activated carbon (see above) is present. Unwanted chemicals bond to the porous carbon leaving clean water to pass through the filter. The used carbon filter is properly disposed.

Cleanup: A term broadly used to describe various activities taken to deal with a release or threatened release of hazardous substances that could affect public health and/or the environment.

Code of Federal Regulations (CFR): A collection or systematic arrangement of rules published in the Federal Register by the executive departments and agencies of the federal government.

Community Interviews: One-on-one meetings or small group interviews conducted with area residents or various stakeholders to gather information (i.e., perceptions, concerns, questions, information needs and preferences for communication). NASA's community interviews about the groundwater cleanup process at the JPL CERCLA site were used as a basis to update the Community Involvement Plan.

Community Information Session: An event (or meeting) where community members are invited to learn more about various aspects of NASA's cleanup process and have the opportunity to meet one-on-one with NASA staff and experts to ask questions or voice concerns. Information is usually presented in a series of displays that community members may peruse depending on their interests.

Community Involvement: An important part of the CERCLA program used to ensure that members of the public have ways to be meaningfully informed about investigation and cleanup activities and also have opportunities to have a say in the decision-making process.

Community Involvement Plan (CIP – formerly Community Relations Plan): Based on community interviews, this document outlines community concerns and expectations for the remediation of a CERCLA site. This document describes how the lead agency will address public information needs and provide means for community involvement in decision-making and understanding the cleanup.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):
A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA), commonly known as Superfund, to address risks to human health and the environment posed by hazardous waste sites.

Contaminant: An element, substance, compound, or mixture that is not naturally occurring and is considered a hazardous substance.

D

Department of Toxic Substances Control (DTSC): Part of the California Environmental Protection Agency (Cal/EPA), DTSC's mission is to restore, protect and enhance the environment.

Delisting: When all appropriate response actions are completed and no further activity is required at a CERCLA site to protect human health or the environment, the site may be removed (de-listed) from the National Priorities Lists.

Discretionary Activities: The additional methods, beyond what is required by U.S. EPA guidance for CERCLA sites, that NASA uses to inform the public and involve the community in the JPL cleanup process.

Drinking Water Standards: A set of legally enforceable regulations that apply to public water systems to protect public health by limiting the levels of contaminants in drinking water.

E

Engineering Evaluation/Cost Assessment (EE/CA): If a lead agency determines that a removal action is appropriate at a CERCLA site and there is a planning period of at least six months is available for planning the action, an EE/CA is conducted to identify the objectives of the removal action and evaluate various alternatives based on cost, effectiveness, and implementability.

Environment: As used in CERCLA, the environment includes any surface water, drinking water supply, groundwater, land, surface or air within the U.S. or under U.S. jurisdiction.

Expanded Site Inspection (ESI): A step in the CERCLA process following the Preliminary Site Investigation sometimes necessary to provide more detailed information to use in the Hazard Ranking System (HRS).

Expanded Treatability Study: Larger in scope than a pilot test, this field study further demonstrates the effectiveness of the specific water treatment technology selected for cleanup of on-facility groundwater at JPL.

F

Feasibility Study (FS): A step that follows the Remedial Investigation in the CERCLA process. The FS develops alternatives for remediating a site, evaluates them and selects a preferred alternative.

Fluidized Bed Reactor: A treatment system designed to remove perchlorate from groundwater that uses vertical tanks containing a bed of granular activated carbon (see above). Added nutrients make naturally occurring bacteria multiply. As groundwater flows upward and through the bed, the bacteria destroy the perchlorate.

Frequently Asked Questions (FAQ): NASA has compiled a list of questions and answers commonly asked by the public about the JPL CERCLA process. The FAQs can be found on the website and in the information repository.

G

GPM: Gallons per minute is the unit commonly used to measure water flow.

Groundwater: Water found beneath the earth's surface that fills in pores between sand, soil, or gravel that supplies wells and springs.

H

Hazard Ranking System (HRS): A scoring system that EPA uses to decide if a site poses potential risks to public health and the environment from releases or threatened releases of hazardous substances and should be placed on the National Priorities List and be regulated by CERCLA.

Hazardous Substance: specifically defined by statue (in CERLCA) generally material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.

I

Information Repository: A file available to the public that contains current information, technical reports, and reference documents regarding a CERCLA site. The information repository is usually located in a public building that is convenient for local residents - such as a public school, city hall, or library.

Institutional Controls: Legal, non-engineering methods such as zoning, deed restrictions or other barriers to prevent use or access to a site after the remedy has been implemented.

Ion Exchange Treatment System: A treatment system designed to remove perchlorate from groundwater. The system runs groundwater through tanks filled with resin beads. When perchlorate touches the beads, perchlorate is exchanged with chloride and is extracted from water.

Interim Record of Decision: A legal, public document that explains the proposed action to address actions at a CERCLA site allowing additional studies to be performed prior to selection of the final remedy for the entire site.

In-situ Bioremediation: Any process performed at the site (in-situ) that uses microorganisms (bacteria) to remove unwanted chemicals from the environment.

Isotopic Analysis: The use of recently developed technologies to remove perchlorate from groundwater to examine its chemical makeup, which may help distinguish between natural and man-made perchlorate and may improve the ability to understand groundwater flow patterns.

L

Liquid-phase Granular Activated Carbon: A treatment system where particles of volatile organic compounds are attracted to the surface of the activated carbon and removed from water.

M

Monitoring Wells: Wells drilled at specific locations where groundwater can be routinely sampled at selected depths to determine groundwater flow patterns, and types and extent on contamination present.

Multicultural Stakeholders: Multiculturalism recognizes the broad scope of dimensions of race, ethnicity, language, sexual orientation, gender, age, disability, class status, education, religious/spiritual orientation, and other cultural dimensions.

N

National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan, NCP): The Federal regulation that guides the CERCLA program.

National Priorities List (NPL): EPA's list of highest priority sites for investigation and cleanup that become regulated by CERCLA. The List is based primarily on the score it receives on the Hazard Ranking System (HRS). EPA is required to update the NPL at least once a year.

Notice of Intent: The published notice of a lead agency’s intent to de-list a site from the NPL. Usually announced in a local newspaper.

O

Operable Unit (OU): A site listed on the NPL may be divided into separate areas to get a better idea of what needs to be done to address specific issues at the site such as geographic areas within the site, contaminants, or environmental conditions.

P

Packed Bed Reactor: A water treatment system for removing perchlorate from groundwater.

Perchlorate: Perchlorate is both a naturally occurring and manmade chemical. Naturally occurring perchlorate, for example, is found in nitrate fertilizer deposits from Chile. Perchlorate, ClO_4^-, is used in flares, fertilizers and fireworks in addition to its use as an oxidizer in rocket propellant.

Public Comment Period: A time period during which the public can review CERCLA-related documents and proposed activities and submit written and/or verbal comments that become part of the official transcript.

Preliminary Assessment: A step in the CERCLA process to collect and review available information about a site. EPA uses this information to determine whether the site requires further study and if needed, an Expanded Site Inspection is undertaken.

Proposed Plan: An outline of the remedial alternatives evaluated for a site (or Operable Unit), including reasons for selecting the preferred alternative. When a Proposed Plan is issued, a 30-day public comment period follows, during which time the public may submit comments in writing or may voice concerns at a public meeting.

Public Meeting: A forum where the public hears information on specific proposed actions or related activities and has an opportunity to provide formal comments and testimony on proposed actions.

R

Record of Decision (ROD): A legal, public document that explains the final cleanup alternative to be used for a particular Operable Unit or the overall site. The ROD includes a responsiveness summary, in which NASA responds to public comments received during the public comment period on a Proposed Plan. The public is informed of the availability of the final Record of Decision through publication of a notice in the local newspaper.

Regional Water Quality Control Board – Los Angeles Region (RWQCB): One of nine Regional Boards statewide belonging to the California Environmental Protection Agency (CAL/EPA) protecting ground and surface water quality in the Los Angeles Region, including the coastal watersheds of Los Angeles and Ventura Counties, along with very small portions of Kern and Santa Barbara Counties.

Remedial Action (RA): A step in the CERCLA process following the Remedial Design, in which the remedy is implemented.

Remedial Design: An engineering phase in the CERCLA process that follows the Record of Decision when technical drawings and specifications for the site remedy are developed. Necessary permitting activities may also occur during this time period.

Remedial Investigation (RI): A step in the CERCLA process to gather data necessary to fully determine the nature and extent of contamination at a CERCLA site.

Remedial Project Manager: The lead agency official responsible for overseeing remedial response activities.

Remedial Response: A long-term action that stops or substantially reduces a release or threatened release of hazardous substances that is serious, but does not pose a threat to public health and/or the environment.

Remediation: Actions taken to deal with a release or threatened release of hazardous substances that could affect public health, welfare or the environment. The term "remediation" is often used broadly as “cleanup” to describe various CERCLA response actions, such as a Removal Action or a Remedial Action.

Removal Action: An immediate action taken to address a release or threatened release of hazardous substances.

Response Action: A short-term Removal Action (see above) or a long-term remedial response.

Responsiveness Summary: The collection of oral and/or written public comments received by NASA during a public comment period on key documents, and NASA's responses to those comments.

Reverse Osmosis: A water treatment process where unwanted chemicals may be extracted by forcing the water through a semi-permeable membrane under high pressure.

Risk Assessment: A study conducted as part of the remedial investigation that assesses conditions at a CERCLA site and determines the risk posed to public health and/or the environment.

S

Satellite Meetings: Small group meetings to permit more informal yet in-depth discussion of issues pertinent to the composition of the group. The group may be representative of a particular neighborhood or be of like cultural or language background.

Site Discovery: A step in the CERCLA process to review records and historical practices at the site to learn of conditions that could present risk to human health and/or the environment, such as citizen complaints of unusual odor or of a fire.

Site Investigation: A step in the CERCLA process following a preliminary assessment, to collect sufficient information to score the site, using the Hazard Ranking System, and to determine if the site presents an immediate threat that requires prompt response action.

Soil Vapor Extraction: A treatment technology that removes vapors from air spaces in contaminated soil by setting up a pressure gradient or vacuum.

Source Area: The location that contains the highest concentration of perchlorate and VOCs on-facility at JPL

Stakeholder(s): Any individual or party that has an interest in the outcome of a decision.

Superfund Amendments and Reauthorization Act of 1986 (SARA): The federal law of 1986 reauthorizing and expanding CERCLA intended to provide citizens with information about potential chemical hazards in their communities.

Surface water: Water that flows over or is stored on the ground surface.

U

U.S. Environmental Protection Agency (EPA): A federal agency responsible for protecting the human health and the environment.

V

Vadose Zone: The region between the water table and the land surface where the moisture content is less than saturation.

Volatile Organic Compound (VOC): An organic (carbon-containing) compound that evaporates (volatilizes) readily at room temperature.

W

Water Purveyor: A public utility, mutual water company, county water district, or municipality that delivers drinking water to customers.

APPENDIX D

INFORMATION REPOSITORY / ADMINISTRATIVE RECORD FILE LOCATION

INFORMATION REPOSITORY / ADMINISTRATIVE RECORD FILE LOCATION

Altadena Public Library
600 E. Mariposa Avenue
Altadena, CA 91001
(626) 798-0833

La Cañada Flintridge Public Library
4545 Oakwood Avenue
La Cañada Flintridge, CA 91011
(818) 790-3330

Pasadena Central Library
285 E. Walnut Street
Pasadena, CA 91101
(626) 744-4052

JPL Library
(JPL Employees Only)
4800 Oak Grove Drive, Bldg. 111
(818) 354-4200

APPENDIX E

PUBLIC MEETING LOCATIONS

PUBLIC MEETING LOCATIONS

Charles W. Eliot Middle School
2184 N. Lake Avenue
Altadena, CA 91001
(626) 794-7121

John Muir High School
1905 N. Lincoln Avenue
Pasadena, CA 91103
(626) 798-7881

Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109
(818) 354-4321

Altadena Community Center
730 E. Altadena Drive
Altadena, CA 91001
(626) 398-6174

APPENDIX F

LIST OF COMMUNITY INTERVIEW QUESTIONS

LIST OF COMMUNITY INTERVIEW QUESTIONS

1. 2004 MULTICULTURAL COMMUNITY INTERVIEW QUESTIONS

(1) General Awareness of JPL / Knowledge of Current and Past Operations

1- When you hear people talk about JPL, what kinds of things do they say?

2-How did you learn/hear about JPL?

3-Have you ever been to JPL? For what purpose?

4-Do you think JPL is visible in the community?

5- Do you think NASA JPL is a trustworthy, credible source of information?

(2) General Attitude toward Environmental Issues

6- When you think about the environment and the area where you live, what comes to mind?

7- What type of water do you drink?

- Tap water
- Bottled water
- Home delivery service
- Filtering system
- Other (specify):

8- Have you ever tried to get information or have you had any prior involvement in environmental issues (e.g., endangered plants/animals, air quality, water quality, traffic)?

(3) Knowledge of the CERCLA Program / Environmental Issues at JPL

9-Are you familiar with any environmental issues associated with JPL?

INTERVIEWER: Describe the JPL Cleanup.

10 - Were you aware of the clean up activity at JPL and how did you become aware?

11 -To want extent do you think others in the community are aware of these issues?

12 - Have you ever tried to get any information about the clean up activities at JPL? Do you remember what it was about/when?

(4) Questions and Concerns about JPL's Environmental Issues

13 - Do you *currently* have any questions about the environmental issues/clean up activities associated with JPL?

14 - What concerns do you think other community members might have?

15 - Based on questions a few local citizens from Altadena had at the meetings NASA held in January, NASA volunteered to bring together some government experts on April 21 to discuss health concerns. Is this something you are likely to go to?

(5) Questions about Information Needs/ Information channels / Information sources

22 - What information would you like to know/receive about what JPL is doing? How often would you like to receive information?

- Issues of most interest:
    - Cleanup progress and actions in lay terms
    - Technical aspects of water treatment
    - Human interest -- the people involved
    - Other?

23 - What's the best way to get information to you?

- Forms of communications most trusted:
    - Church activities
    - School meetings/activities
    - Health organizations activities
    - "Promotoras"

- Source of news: Newspaper, TV station and radio station?

- How can we best reach your community? (reaching them, as asked in the question above, may differ from how we reach the community they serve) *(i.e. barbers hops and salons, churches, direct mail, ads)*

- Meetings
    - Public meetings
    - Small meetings
    - Tie-in to existing meetings
    - Door-to-door surveys

- Language preference? For you? For Your community/clients/constituents?

24 - Who would you see as trusted sources of information when it comes to health or environmental issues?

- Most trusted spokespersons:
    - Educators
    - Elected officials
    - Clergy
    - Government health officials
    - Community leaders:

- Whom do you consider as some of the trusted leaders in community?

(5) Community Involvement

25 - NASA JPL has public meetings to discuss clean up methods or the status of clean up efforts, do you see yourself going to it? Do you think others in the community would go to it? If not, why and what would capture their interest in attending?)

26 – Is there a role your organization could, or would like to play in helping us disseminate information about the cleanup at JPL?

27 - Are there other ways you think the community should be involved in the clean up process?

28 - Are there any partnership opportunities in the community to help us promote awareness of the cleanup that you can recommend? (*i.e. tie-in to special events, existing community programs/activities)*

29-Is there anyone else in the community we should talk to?

Wrap-Up

30 - What do you think is the most important thing JPL should do to communicate its clean up efforts with the community?

31 - Are there any other comments you would like to make?

2. 2005 COMMUNITY INTERVIEW QUESTIONS

(I) General Awareness of JPL / Knowledge of Current and Past Operations

1. What types of things do you know about JPL? How did you learn/hear about JPL?

2. Do you think people in the community know much about JPL?

3. How do you think NASA JPL is perceived in the community? Do you think information coming from NASA JPL is considered credible?

(II) General Attitude toward Environmental Issues

4. When you think about the area where you live or work; are there any health, safety or environmental issues that come to mind? Do you think others would agree with you? Are there any specific questions or concerns you have?

5. Have you ever tried to get information or have you had any prior involvement in any environmental issues (e.g., endangered plants/animals, air quality, water quality, traffic)?

(III) Knowledge of the Superfund Program / Environmental Issues at JPL

6. Were you aware of the clean up activity at JPL? How did you become aware?

7. To want extent do you think others in the community are aware of these issues? Has it ever come up in any conversations?

(IV) Questions and Concerns about JPL's Environmental Issues

8. Do you *currently* have any questions about the environmental issues/clean up activities associated with JPL?

9. What concerns or questions do you think other community members (or probe as to specific group of interest) might have?

(V) Questions about Information Needs/ Information channels / Information sources

10. What information would you like to know/receive about what we are doing? How often would you like to receive information?

11. What's the best way to get information to you?

12. Who would you see as trusted sources of information when it comes to health or environmental issues?

(VI) Community Involvement

13. If NASA JPL has public meetings to discuss clean up methods or the status of clean up efforts, do you see yourself going to it? Do you think others in the community would go to it? If not, why and what would capture their interest in attending?)

14. Are there other ways you think the community should be involved in the clean up process?

15. Are there any opportunities in the community to help us promote awareness of the cleanup that you can recommend?

16. Is there anyone else in the community we should talk to?

(VII) Wrap-Up

17. What do you think is the most important thing NASA should do to communicate its clean up efforts with the community?

18. Are there any other comments you would like to make?

APPENDIX G

EXAMPLES OF FACT SHEETS AND DIRECT MAILINGS

Appendix G-1
Examples of Fact Sheets and Newsletters

- Spanish Language Brochure: Información actualizada acerca de las actividades de limpieza en JPL, Enero del 2004 (An update on cleanup activities at JPL, January 2004)
- Fact Sheet: Cleaning Up Groundwater Beneath JPL, January 2004
- Fact Sheet: Cleaning Up Groundwater Near JPL, January 2004
- Spanish Flyer, June 2004
- Fact Sheet: Groundwater Cleanup and Your Community, April 2006
- April 2006 Bilingual Newsletter

Jet Propulsion Laboratory

Una parte importante de la misión de la NASA es la de entender y proteger a nuestro planeta Tierra. Por eso queremos mantenerlos informados sobre las actividades que la NASA está realizando para limpiar la tierra y el agua en el sitio del "Jet Propulsion Laboratory" (JPL) y en sus alrededores.

Una invitación

Si desea más información se le invita a asistir a una de las reuniones públicas a realizarse en las fechas indicadas más abajo.

En estas reuniones habrá intérpretes para ayudar a las personas de habla hispana. Los intérpretes estarán disponibles para explicarle los métodos de limpieza que aseguran que el agua que usted recibe en su casa se pueda seguir usando con toda confianza.

EL DÍA MARTES, 27 DE ENERO DEL 2004
7:30 p.m.
Charles W. Eliot Middle School
2184 N. Lake Avenue
Altadena, CA 91001

EL DÍA MIÉRCOLES, 28 DE ENERO DEL 2004
7:30 p.m.
John Muir High School
1905 N. Lincoln Avenue
Pasadena, CA 91103

Si desea más información, por favor llame a:
Gabriel Romero
NASA JPL
Teléfono: 818-354-8709

INFORMACIÓN ACERCA DEL AGUA DE LA LLAVE EN SU CASA

El "Jet Propulsion Laboratory (JPL)", ubicado cerca de Pasadena en California, fue el sitio donde se pusieron a prueba los primeros cohetes creados por el Ejército de los Estados Unidos, prácticas que se iniciaron en el año 1936. Desde el año 1958 el "California Institute of Technology (Caltech)" contratado por la NASA ha conducido varios tipos de experimentos en JPL los cuales han ayudado a incrementar el conocimiento del espacio y a mejorar la tecnología en los campos de la medicina y de las comunicaciones en la Tierrra. Hoy día la NASA desde JPL mantiene contacto con naves espaciales, una que opera automáticamente y que va al planeta Marte y otras llamadas "Voyager", que viajan a los puntos más distantes del espacio.

Actualmente todos los productos químicos de deshecho en JPL se reciclan o se envían con mucha seguridad fuera de JPL a plantas y a sitios especializados donde son eliminados bajo regulaciones. En las décadas de los años 1940 y 1950 los productos químicos de deshecho colectados de los desaguaderos de JPL se tiraban en zanjas, un procedimiento muy común en esos años.

Desafortunadamente, algunos de esos productos químicos se han encontrado en la tierra y en el agua subterránea que se halla debajo de JPL. Los productos químicos llamados compuestos orgánicos volátiles (VOCs) y perclorato se han desplazado bajo tierra hacia los pozos de agua más cercanos. En la actualidad estos pozos de agua están cerrados y no se usan para proveer agua a la comunidad. Deseamos informarle que el agua de la llave en su casa continúa siendo de la mejor calidad. La NASA ha tomado medidas para solucionar este problema del pasado y está comprometida a realizar la limpieza.

SOLUCIONES

Después de un extensivo proceso de investigación y por medio de la más avanzada tecnología la NASA ha desarrollado ciertos métodos de limpieza para asegurar que el agua que usted recibe en su casa pueda ser usada con toda seguridad. Queremos informarle que las empresas que proveen agua a las comunidades de Pasadena y Altadena sólo distribuyen agua limpia que se puede usar con toda confianza.

Información sobre los productos químicos

Los compuestos orgánicos volátiles (VOCs)

Los compuestos orgánicos volátiles (VOCs) son un grupo de compuestos químicos que se evaporizan fácilmente y que se han usado frecuentemente en la industria. La "U.S. Environmental Protection Agency (EPA)", la agencia que protege al medio ambiente, estima que los VOCs se encuentran presentes en 1/5 de las reservas de agua del país.

El perclorato

El perclorato es un compuesto químico que ha sido usado de varias maneras entre ellas como ingrediente del combustible empleado en los cohetes, para inflar las bolsas de aire de los automóbiles y en la fabricación de pinturas.

La Academia Nacional de Ciencias (National Academy of Sciences), un destacado organismo científico de consejería en este país, está estudiando los posibles efectos en la salud de las personas como consecuencia de tomar agua que contiene perclorato. Los resultados de este estudio estarán disponibles a fines del año 2004.

Jet Propulsion Laboratory

This fact sheet briefly describes NASA's efforts for cleaning up chemicals from groundwater beneath the Jet Propulsion Laboratory. A more detailed description of all JPL cleanup activities is available at local Information Repositories (listed on the back), and online at **http://JPLwater.nasa.gov.**

CLEANING UP GROUNDWATER BENEATH JPL

While developing the final groundwater cleanup solutions for JPL, NASA is also planning to conduct an Expanded Treatability Study to remove the higher concentrations of volatile organic compounds (VOCs) and perchlorate found in groundwater beneath JPL (the area referred to as On-JPL). This Study is referred to as "expanded" because it increases the size of the treatment system to clean more groundwater at a faster rate than seen in previous tests. Conducting the Expanded Treatability Study now will have several benefits:

►Evaluates effectiveness and reliability of the system design before going full-scale

►Cleans up a portion of groundwater on the site

►Keeps chemicals from spreading in groundwater

From Small-Scale Study to Expanded Treatability Study

Over the past several years, NASA has conducted a number of pilot tests - pumping and treating relatively small amounts of groundwater from localized areas at JPL. These pilot tests helped NASA to see how well different VOC and perchlorate treatment technologies - being used successfully at other cleanup sites - work under specific conditions found at JPL (see side bar).

Site Conditions NASA Considered

Concentration of chemicals

Type of soil and permeability

Groundwater flow and velocity

Pumping location and volume

NASA's Five Small-Scale Tests at JPL

►In 1999, NASA, with US Filter, conducted a preliminary study to evaluate the effectiveness of reverse osmosis in removing perchlorate.

►NASA with the Calgon Carbon Corporation completed a six-month study in March 1999 using an Ion Exchange perchlorate removal system. In January 2000, the California Department of Health Services (DHS) gave its conditional acceptance to the system based, in part, on some of the data from this JPL study.

►NASA with US Filter and Envirogen conducted a small six-gallons-per-minute test combining a Liquid-phase Granular Activated Carbon (LGAC) process to remove VOCs and a Fluidized Bed Reactor to remove perchlorate. Completed in 2001, this system is the focus of NASA's Expanded Treatability Study described in this fact sheet.

►In October 2002, NASA and Foster Wheeler completed a test at JPL of a Packed Bed Reactor, a biological treatment for removing perchlorate.

►NASA and Arcadis looked at removing perchlorate while the water remained in the ground - injecting a 2% corn syrup solution to promote growth of the natural bacteria population to destroy perchlorate. The study was completed in August 2003.

Expanded Treatability Study

NASA will conduct the Expanded Treatability Study on the highest concentration of VOCs and perchlorate in groundwater beneath eight acres in the north-central section of JPL. NASA intends to begin Phase 1 of the two-phased study in late 2004 (see side bar).

Phase 1
NASA plans to install one multi-level extraction, or pumping well, and two multi-level injection wells during Phase 1 - pumping and treating 100 gallons of groundwater per minute.

Phase 2
If Phase 1 proves effective, NASA will install one additional pumping well and two additional injection wells to increase the treatment capacity - pumping and treating 250 gallons of groundwater per minute.

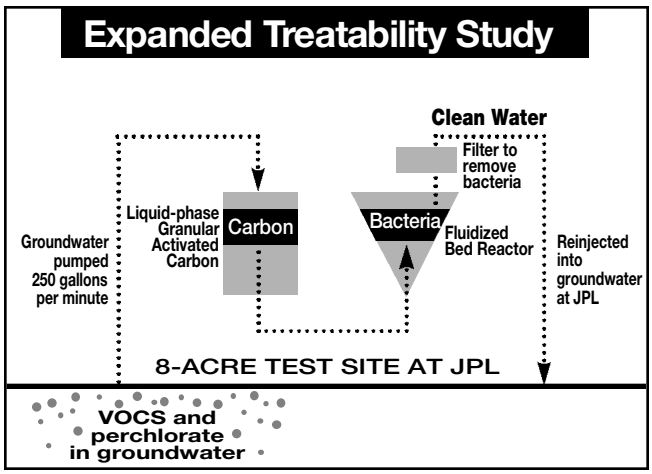
Groundwater Cleanup Technologies

Removing VOCs

For the treatment of VOCs, NASA is using a proven effective system called Liquid-phase Granular Activated Carbon. As groundwater flows through vertical tanks, very porous carbon particles attract and accumulate the molecules of VOCs where they can be removed from the water, collected and properly disposed.

Removing Perchlorate

In this system, called a Fluidized Bed Reactor, vertical tanks contain a bed of granular activated carbon where, when nutrients are added, naturally occurring bacteria multiply to form a thin layer over the activated carbon called a biofilm. As groundwater is pumped upward through the biofilm, the bacteria take in perchlorate and destroy it, reducing it to water and chloride. The water then passes through a filter to remove the bacteria.



NASA plans to pump the groundwater and pipe it to a treatment facility to remove VOCs and perchlorate. The filtered treated water would then be reinjected into the groundwater beneath JPL.

If the Expanded Treatability Study is successful, NASA will develop a plan to make this treatment system a part of the overall and final site groundwater cleanup solution.

To Learn More About It

Information on these technologies and other JPL cleanup activities is available online at http://JPLwater.nasa.gov and at the following Information Repositories:

La Cañada Flintridge Public Library
4545 Oakwood Ave.
La Cañada Flintridge,
California 91011
818-790-3330

Pasadena Central Library
285 E. Walnut St.
Pasadena, California 91101
626-744-4052

Altadena Public Library
600 E. Mariposa Ave.
Altadena, California 91001
626-798-0833

JPL Repository
(JPL Employees Only)
4800 Oak Grove Dr.
Bldg. 111
818-354-4200

For more information, contact

Merrilee Fellows
Water Cleanup Outreach Manager
818-393-0754
or
Steve Slaten
Remedial Project Manager
818-393-6683

NASA Management Office
4800 Oak Grove Drive
Pasadena, CA 91109

Jet Propulsion Laboratory

This fact sheet briefly describes NASA's efforts for cleaning up chemicals from groundwater beneath the Jet Propulsion Laboratory. A more detailed description of all JPL cleanup activities is available at local Information Repositories (listed on the back), and online at **http://JPLwater.nasa.gov.**

CLEANING UP GROUNDWATER NEAR JPL

Site History

NASA's spacecraft capable of robotic exploration on the surface of Mars originated from the Jet Propulsion Laboratory (JPL) near Pasadena, California.

It was almost sixty years ago that engineers at JPL collaborated with the United States Army to develop the first rocket ever to enter outer space, which climbed to an altitude of 244 miles. Much has changed since then, including JPL's waste management practices. In those days, wastes collected from JPL laboratories were disposed in ground seepage pits - a waste management practice that was common in the 1940s and '50s. Beginning in 1955, a sewer system was installed and the use of seepage pits stopped. However, some chemicals disposed into these pits - volatile organic compounds (VOCs), used primarily as cleaning solvents, and perchlorate, a rocket propellant - have been found in the soil and groundwater beneath JPL and in some nearby water supply wells. In 1992, JPL was placed on the U.S. Environmental Protection Agency's National Priorities List for investigation and cleanup, and it became regulated by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

Water supply officials continue to test, treat and provide clean drinking water to all the communities surrounding JPL.

Taking Cleanup Action

While developing final site-wide cleanup solutions for JPL, NASA wants to begin removing VOCs and perchlorate from groundwater nearby and outside of JPL boundaries (the area referred to as Off-JPL). While not the final cleanup solution, taking this interim cleanup step will have several benefits. It will:

►Accelerate the cleanup process

►Keep chemicals in the groundwater from spreading further

►Protect public health and the environment

Evaluating Alternatives

NASA looked at a variety of alternatives that combined the best ways to pump the groundwater with the different technologies available for treating VOCs and perchlorate. Following a comprehensive comparison of alternatives, NASA will propose its preferred treatment system. The final selection will be made in cooperation with the local water purveyors, the regulatory agencies, and the community.

NASA's Interim Cleanup

For cleaning up Off-JPL groundwater, NASA is proposing to pump the water out of the ground and pipe it to a new treatment facility to remove the VOCs and perchlorate. Following startup of the system, the filtered treated water will be initially reinjected into the ground, and may later be provided to the City of Pasadena who, following regulatory approval, will make it available for drinking water purposes.

Removing VOCs

For treatment of VOCs, NASA is proposing to use a proven effective system called Liquid-phase Granular Activated Carbon. As groundwater flows through vertical tanks, very porous carbon particles attract and accumulate the molecules of VOCs where they can be removed from the water, collected and properly disposed.

Removing Perchlorate

NASA's evaluation of available treatment systems identified two effective options for removing perchlorate from groundwater. Both technologies underwent small-scale testing at JPL and have been effective in removing perchlorate to non-detectable levels of less than 4 parts per billion. Both options have been conditionally accepted by the State of California for treating drinking water and are being used successfully at other cleanup sites.

Parts per billion, or ppb, is a way to describe extremely small concentrations of a substance - the number of 'parts' by weight of a substance per billion parts of water.

Treatment Option One

This system, called Ion Exchange, runs groundwater through tanks filled with millions of tiny resin (plastic) beads. When perchlorate touches the beads, perchlorate is exchanged with chloride and is removed from the water. The process is similar to that of a home water softener.

Treatment Option Two

In this system, called a Fluidized Bed Reactor, vertical tanks contain a bed of granular activated carbon where, when nutrients are added, naturally occurring bacteria multiply to form a thin layer over the activated carbon called a biofilm. As groundwater is pumped upward through the biofilm, the bacteria take in perchlorate and destroy it, reducing it to water and chloride. The water then passes through a filter to remove the bacteria.

To Learn More About It

Information on these technologies and other JPL cleanup activities is available online at http://JPLwater.nasa.gov and at the following Information Repositories:

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Altadena, California 91001
626-798-0833

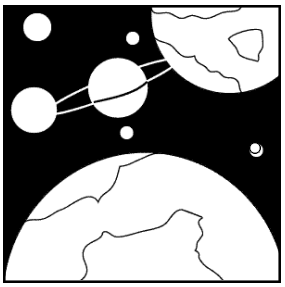
JPL Repository
(JPL Employees Only)
4800 Oak Grove Dr.
Bldg. 111
818-354-4200

For more information, contact

Merrilee Fellows
Water Cleanup Outreach Manager
818-393-0754
or
Steve Slaten
Remedial Project Manager
818-393-6683

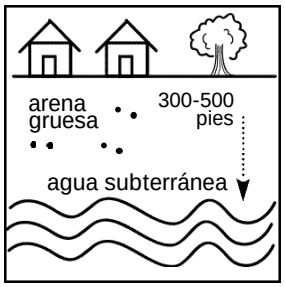
NASA Management Office
4800 Oak Grove Drive
Pasadena, CA 91109

Sobre Su Agua de la Llave



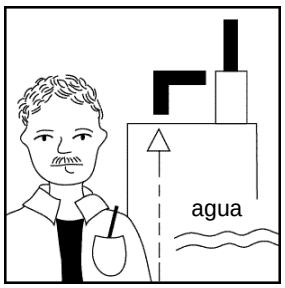
Quién es la NASA/JPL?

La NASA/JPL se dedica a la investigación científica para la exploración del espacio.



Porqué la NASA está limpiando el agua subterránea debajo y alrededor de JPL?

Hace muchos años, los productos químicos que se usaban en JPL se tiraban en zanjas. Después de un tiempo, algunos de estos productos químicos se encontraron en la tierra y en el agua a grandes profundidades en el área alrededor de JPL.



Como está la NASA limpiando el agua subterránea?

Los ingenieros de la NASA han instalado sistemas con la mejor tecnología para limpiar el agua de estos productos químicos.

Puedo usar mi agua de la llave?

Sí! Usted puede continuar usando su agua de la llave con toda seguridad. La ley requiere que su compañía proveedora de agua analice la calidad de su agua de la llave para asegurarse de que la puede usar con toda confianza.

La NASA está comprometida a limpiar el agua de estos productos químicos.

Para más información
En español:
Gabriel Romero 818.354.8709

En inglés:
Merrilee Fellows 818.393.0754
Manager, NASA Water Cleanup Outreach

NASAfacts

Groundwater Cleanup and Your Community

NASA's Plan Involves You

We recognize that being a good neighbor includes sharing information that will help you to better understand NASA's groundwater cleanup project at the Jet Propulsion Laboratory (JPL). We want you to know how you can participate in decisions shaping this cleanup effort. Your views are important to us, especially as we plan for a cleanup activity that is proposed to take place in your community.

A New Pasadena Groundwater Treatment Plant

Under a recent agreement with the City of Pasadena, NASA would pay for a new water treatment plant to be built by the City on vacant property in the Windsor Reservoir area (see map). Groundwater extracted from four drinking water wells owned by the City would be treated to remove volatile organic compounds (VOCs) and perchlorate – chemicals that originated from waste disposal practices at the Jet Propulsion Laboratory many decades ago. In addition to paying for the design, construction and operation of the plant, NASA would provide technical support to the City of Pasadena, who would be responsible for operating the treatment plant.

The new plant would treat up to 7,000 gallons of water per minute. It would allow NASA to clean up groundwater in the Monk Hill Subarea, which is a portion of the larger Raymond Basin aquifer, far sooner than if we tried to remove all the chemicals by building another treatment plant on site at JPL. The new plant would use technology similar to the treatment facility NASA funded for the Lincoln Avenue Water Company in Altadena, which has been successfully operating since July 2004.

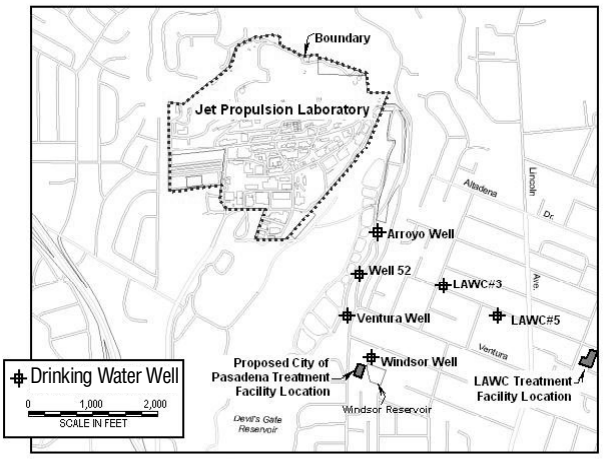
How It Works

Removing VOCs

In the liquid-phase granular activated carbon process, very porous carbon particles attract and accumulate unwanted volatile organic compounds that are in the water. The carbon beads are later disposed of at a licensed off-site facility.

Removing Perchlorate

Ion exchange technology runs groundwater through tanks filled with tiny resin, or plastic, beads. When the unwanted perchlorate in the groundwater touches the beads, perchlorate is exchanged with chloride in the resin, and the perchlorate is extracted from the water.



A new treatment plant for groundwater extracted from four closed drinking water wells – Windsor Well, Well 52, Arroyo Well, and Ventura Well – would be located southeast of JPL on vacant City property next to the Windsor Reservoir.

Next Steps

When will construction start? What will traffic be like during construction? What will the facility look like? These are some of the many details still to be worked out. For example, NASA would assist the City in its application for a local building permit. ►

NASAfacts

The permitting approval process provides opportunities during the public comment period for sharing your views on the treatment plant under consideration in your community such as:

- A City of Pasadena Conditional Use Permit authorizing that the proposed land use and activities are compatible and consistent with those of the particular zoning district.
- California Environmental Quality Act (CEQA) compliance requiring the City to identify significant environmental effects and avoid or mitigate those impacts, if feasible.
- California Department of Health Services permit allowing the system to supply drinking water after treatment.

Your Comments Matter

NASA has published a document referred to as a Proposed Plan that describes NASA's preferred alternative for cleaning up chemicals in groundwater to the east and southeast of the Jet Propulsion Laboratory. That plan includes funding of the proposed new groundwater treatment plant for the City of Pasadena and continued funding of the Lincoln Avenue Water Company facility that has been operating (with NASA funding) since July of 2004. The Proposed Plan explains how this proposed treatment would work, what other options were considered, and the reasons why NASA thinks this is the best method for cleaning up groundwater in the Monk Hill Subarea.

You can read the Proposed Plan at the local information repositories listed below, and on our website at http://jplwater.nasa.gov. The public comment period from April 19 to May 19 is when you can give your views on the document in writing. There will be a Community Information Session and a public meeting you can attend for more discussion and yet another opportunity to provide your comments on the Proposed Plan. Once NASA has been able to get everyone's input, we'll make the final decision on the best way to proceed. Then, a document referred to as a Record of Decision will include a summary of the comments received and how those comments changed the decision that was reached.

We'll continue sharing information about groundwater cleanup in your community as we learn more along the way. If you have questions, please email, write or call (addresses and numbers are listed below).

ATTENTION!
Please note that the public comment period has been extended to Friday, July 7.

For more information contact

Merrilee Fellows
NASA Water Cleanup Outreach Manager
NASA Management Office
Jet Propulsion Laboratory 180-801
4800 Oak Grove Dr.
Pasadena, CA 91109
(818) 393-0754
mfellows@nasa.gov

Para más información en español llame a

Gabriel Romero
NASA JPL teléfono: (818) 354-8709

Information Repositories

La Cañada Flintridge Public Library
4545 Oakwood Ave., La Cañada Flintridge, California 91011
(818) 790-3330

Pasadena Central Library
285 E. Walnut St., Pasadena, California 91101
(626) 744-4052

Altadena Public Library
600 E. Mariposa Ave., Altadena, California 91001
(626) 798-0833

JPL Library, Bldg. 111
(JPL Personnel Only)
(818) 354-4200

National Aeronautics and Space Administration

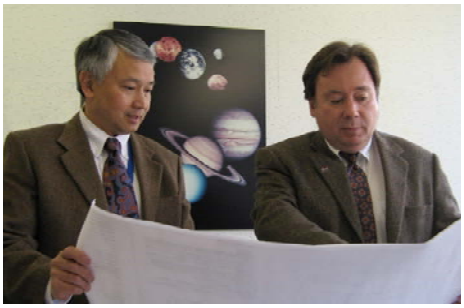
GROUNDWATER CLEANUP **UPDATE**

An update on groundwater cleanup activities at the Jet Propulsion Laboratory
Novedades acerca de las actividades de limpieza del agua subterránea en el Jet Propulsion Laboratory

Bilingual Newsletter April 2006
Boletín bilingüe abril de 2006

NASA Proceeds on Agreement to Fund Groundwater Treatment Plant

Under a new agreement, NASA would fund a new treatment plant to remove chemicals from a groundwater aquifer used by the City of Pasadena. The treatment plant would be located on vacant property next to the Windsor Reservoir and would treat water from drinking water wells that are owned by the City of Pasadena and located just southeast of the Jet Propulsion Laboratory. NASA would pay for all of the costs related to the plant's design, construction and operation, and would provide technical support. The City of Pasadena would be responsible for operating the system.



FORMER ASTRONAUT Dr. Eugene Trinh (left), the new Director of the NASA Management Office at the Jet Propulsion Laboratory, and NASA Remedial Project Manager Steve Slaten examine maps and charts related to a proposed NASA-funded groundwater treatment plant on City of Pasadena property adjacent to the Windsor Reservoir.

The City of Pasadena and the California Institute of Technology, as the contractor that manages the Jet Propulsion Laboratory for NASA, recently signed this funding agreement. NASA Groundwater Cleanup Project Manager Steve Slaten calls the agreement "a win-win situation for everyone." Slaten said of the plant's proposed construction, "It is exciting because it allows NASA to be able to clean up the Monk Hill Subarea far sooner than if we tried to remove all the chemicals by building another treatment plant on-site at the Jet Propulsion Laboratory. This major new step moves toward a comprehensive cleanup and helps prevent further spread of unwanted chemicals."

Funding of the new Pasadena plant and continued NASA funding of a treatment facility for two Lincoln Avenue Water Company wells in Altadena is described by NASA in a recently published proposed plan as its "preferred alternative" for a remedial action to clean up off-facility groundwater. A summary of that proposed plan is carried in this newsletter on pages 2 and 3. A public meeting on the proposed plan is scheduled for 7:00-8:30 p.m. on Wednesday, May 3 at the Altadena Community Center, 730 E. Altadena Dr. The public meeting will be preceded and followed by a Community Information Session on the cleanup project from 6:00-7:00 p.m. and 8:30-9:00 p.m. when the public can meet with project staff members and view displays on the project. Public comments on the proposed plan are being solicited by NASA during the period from Wednesday, April 19 through Friday, May 19 (see sidebar for details).

The new plant would treat up to 7,000 gallons of water per minute with a liquid-phase granular activated carbon system to remove volatile organic compounds from the water and an ion exchange system to remove perchlorate. The chemicals originated from waste disposal practices at JPL many decades ago. While those disposal practices were discontinued by the early '60s, chemicals have been found in the aquifer hundreds of feet below the ground surface in areas east and southeast of the Laboratory.

Continued on Page Five

COMMENT IS INVITED ON PROPOSED PLAN

Public Meeting is Scheduled to Discuss It

PUBLIC MEETING
Wednesday, May 3
7:00-8:30 p.m.
Altadena Community Center
730 E. Altadena Dr., Altadena

The public meeting will be preceded and followed by a **Community Information Session** on the cleanup project from 6:00 - 7:00 p.m. and 8:30 - 9:00 p.m. when the public can meet with project staff members and view displays on the project.

PUBLIC COMMENT PERIOD
Wednesday, April 19 - Friday, May 19

NASA is encouraging public input on its Proposed Plan to fund a new groundwater treatment plant for four closed City of Pasadena drinking water wells and continue funding of a treatment plant for Lincoln Avenue Water Company drinking water wells.

NASA has established a public comment period from Wednesday, April 19 - Friday, May 19 and seeks your comments on the document. Once finalized following consideration of public comments, the plan will be described in an interim Record of Decision that will include a summary of the comments received and how comments changed the decision reached.

You are also invited to a public meeting to hear about NASA's Proposed Plan and to offer your views about it. The public meeting will be held from 7:00 - 8:30 p.m. on Wednesday, May 3, at the Altadena Community Center, 730 E. Altadena Dr., Altadena. NASA will prepare a transcript of that meeting and make it available on the website and at local Information Repositories. The public meeting will be preceded and followed by a Community Information Session on the cleanup project from 6:00 - 7:00 p.m. and 8:30-9:00 p.m. when the public can meet with project staff members and view displays on the project.

Comments may also be submitted electronically to watercleanup@nmo.jpl.nasa.gov or by mail to Merrilee Fellows, NASA Groundwater Cleanup Outreach Manager, NASA Management Office, Jet Propulsion Laboratory, 180-801, 4800 Oak Grove Drive, Pasadena, CA 91109. No specific format for the comments is necessary. All comments must be submitted either electronically before midnight, Friday, May 19, or, if posted by mail, the comments must bear a postmark of no later than Friday, May 19.

Spanish summaries of stories in this newsletter can be found on page 5.
Si desea leer historias en español, diríjase a la página 5 de este boletín

Page 4
A Guide to Navigating the Proposed Plan

National Aeronautics and Space Administration

Summary of the Proposed Plan

to Fund Construction and Operation of Treatment Systems for Groundwater from Drinking Water Wells Located Near the National Aeronautics and Space Administration, Jet Propulsion Laboratory

Introduction

This fact sheet summarizes the Proposed Plan. The actual Proposed Plan – containing the details and rationale behind NASA's "Preferred Alternative" – is available at the NASA groundwater cleanup website at: http://jplwater.nasa.gov or by request.

NASA has been conducting environmental investigations and cleanup activities at the Jet Propulsion Laboratory (JPL) for more than a decade under the federal law requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). NASA has already implemented several cleanup initiatives – including addressing groundwater – while considering options for the final, long-term cleanup remedy.

For example, two groundwater treatment plants are already operating and cleaning up groundwater. One is on-facility (within the JPL fenceline) to clean water directly beneath JPL, and one is off-facility (outside the JPL fenceline) for two drinking water wells owned by Lincoln Avenue Water Company in Altadena.

The Proposed Plan outlines NASA's Preferred Alternative for a remedial action to clean up groundwater beyond and adjacent to the JPL facility (referred to as off-facility groundwater). The document also describes alternatives that NASA evaluated for cleaning up this off-facility groundwater, and it describes how the public can comment on the proposed action through written comments and by participating in the public meeting.

NASA proposes the following as its "Preferred Alternative"

- NASA would fund construction and operation of a treatment system proposed to be located on vacant City property next to the Windsor Reservoir.
- NASA would continue to fund treatment of groundwater from two Lincoln Avenue Water Company drinking water wells at its existing treatment facility in Altadena.

Invitation to submit comments & attend the public meeting

Before NASA makes a final decision, we want you to find out more about the cleanup plan and make your views known. The plan that is finally chosen will be described in a document referred to as an Interim Record of Decision that will include a summary of the comments received and a statement on how those comments changed the decision that was reached. You are invited to a public meeting Wednesday, May 3 from 7:00-8:30 p.m. at the Altadena Community Center, 730 E. Altadena Dr., Altadena, to hear about NASA's Proposed Plan and to ask questions and offer your views about it.

NASA will prepare and make available a transcript of that meeting. NASA invites public comment on the Proposed Plan from Wednesday, April 19 - Friday, May 19. Written comments may be addressed as noted below in the "Submit Written Comments" box. No specific format for the comments is necessary. All comments must be submitted either electronically before midnight, Friday, May 19, or, if posted by mail, the comments must bear a postmark of no later than Friday, May 19.

Submit Written Comments

PUBLIC COMMENT PERIOD:
Wednesday, April 19 through Friday, May 19

NASA will accept written comments on the Proposed Plan during the public comment period.

You may submit your comments to watercleanup@nmo.jpl.nasa.gov or to:

Merrilee Fellows
NASA Groundwater Cleanup Outreach Manager
NASA Management Office
Jet Propulsion Laboratory 180-801
4800 Oak Grove Dr.
Pasadena, CA 91109

Attend the Public Meeting

You are invited to a meeting sponsored by NASA to hear about the Proposed Plan to fund construction and operation of treatment systems for groundwater from drinking water wells located near the Jet Propulsion Laboratory. At the meeting you will be able to state your views about the proposed plan.

The meeting will be held on
Wednesday May 3
7:00-8:30 p.m.

Altadena Community Center
730 E. Altadena Dr., Altadena.

Location of Information Repositories

Pasadena Central Library
285 East Walnut St.
Pasadena, CA 91101
(626) 744-4052

Altadena Public Library
600 East Mariposa Ave.
Altadena, CA 91001
(626) 798-0833

La Cañada Flintridge Public Library
4545 Oakwood Ave.
La Cañada Flintridge, CA 91011
(818) 790-3330

JPL Library
(JPL On-Site Personnel)
Bldg 111, Room 112
Pasadena, CA
(818) 354-4200

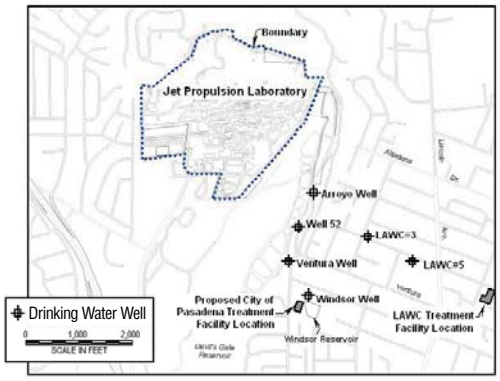
For More Information

A copy of the proposed plan, which describes the preferred cleanup alternative and the other alternatives that were studied, and technical documents that support the plan and other information about NASA's groundwater cleanup program at the Jet Propulsion Laboratory may be viewed on our website at: http://jplwater.nasa.gov, read at any of the public libraries (Information Repositories) noted above, or a copy can be mailed to you upon request. You may call (818) 393-0754 for information.

Site Background

In the 1940s and 1950s, liquid wastes from materials used at JPL were disposed of into seepage pits, a practice common at that time. While these disposal practices were discontinued by the early 1960s, some chemicals, such as perchlorate and volatile organic compounds, have been found in groundwater beneath JPL and in areas adjacent to JPL, to the east and southeast.

Cleanup Action Proposed



NASA is proposing as its "Preferred Alternative"

- To fund the construction and operation of a system for water treatment for four closed City of Pasadena drinking water wells located just southeast of JPL in and near the Arroyo Seco. The proposed treatment plant would be sited on a vacant portion of the same property as the Windsor Reservoir. The City itself would be responsible for operating the system.
- NASA would also continue to fund treatment of groundwater from two Lincoln Avenue Water Company drinking water wells at an existing treatment facility. The Lincoln Avenue Water Company system was previously constructed and funded by NASA. Lincoln Avenue Water Company would continue to operate the facility.

Preferred Alternative

NASA prefers this alternative of two separate treatment systems operated by the City of Pasadena and Lincoln Avenue Water Company because it would help achieve the remedial goal of removing target chemicals from throughout the aquifer that is a source of drinking water and help prevent the further migration of chemicals in groundwater. Both the Pasadena and Lincoln Avenue Water Company treatment systems would use liquid phase granular activated carbon and ion exchange systems to permanently remove from the water volatile organic compounds and perchlorate. These systems, combined with the on-going on-site source area groundwater cleanup, are designed to move toward a comprehensive cleanup of the Monk Hill Subarea groundwater.

Proposed Plan Cleanup Goals

1. Remove target chemicals from the aquifer by treating water pumped from specified drinking water wells in the Monk Hill Subarea of the Raymond Basin. This is referred to as centralized treatment.
2. Prevent further migration of the chemicals in groundwater.
3. Provide additional data to assess possible long-term cleanup remedies for groundwater on and off the JPL facility.

Your Comments

NASA studied a number of ways to meet these goals, and believes that the proposed action will best protect human health and the environment. Before making a final decision, we want you to find out more about the cleanup plan and make your views known.The plan that is finally chosen will be described in an interim Record of Decision that will include a summary of the public comments received and a statement on how those comments changed the decision that was reached.

A Guide to Navigating the Proposed Plan

NASA takes seriously its responsibility to keep the community informed, although doing so in non-technical language is no easy task.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), sometimes known as the Superfund law, governs NASA's cleanup and requires certain terminology to be used in formal documents related to the CERCLA process. One such document is the Proposed Plan (see pages 2-3 of this newsletter for a brief summary of that Plan). This guide is intended to provide our readers with assistance in navigating that summary and the Proposed Plan itself.

The Proposed Plan outlines NASA's Preferred Alternative for a remedial action to clean up off-facility groundwater. To translate the previous sentence:

Preferred Alternative – NASA evaluated several methods and technologies to clean up groundwater located beneath areas beyond the JPL fenceline. These other methods are discussed in the full Proposed Plan, available as noted on page 2. The term "Preferred Alternative" refers to NASA's recommendation for what it considers the best method and combination of technologies to meet the cleanup goals.

Remedial Action – The term "remediation" is used broadly to refer to removing or reducing the concentration of substances (in this case, chemicals in the groundwater) that are present and need to be addressed. A "remedial action" is essentially the cleanup action that is taken.

Off-Facility Groundwater – NASA's extensive studies have shown that unwanted chemicals are present in groundwater. We use the phrase "off-facility groundwater" to refer to that part of the Monk Hill Subarea of the Raymond Basin that is beyond and southeast of the JPL fenceline.

Other terms you may encounter include:

Interim Action – Occasionally, interim cleanup or remedial actions are taken to hasten the cleanup process while studies are still being done to determine the nature of the final cleanup action. Often, interim actions become part of the final or long-term remedial action.

Ion Exchange – A technology like that used in home water softeners in which an unwanted chemical is removed. To remove perchlorate, water flows past specially engineered tiny plastic beads called resins, to which the perchlorate attaches. The used resin is later disposed of at a licensed facility. NASA proposes to use this technology to remove perchlorate at the plants discussed in this newsletter.

Liquid Phase Granular-Activated Carbon – A water treatment process in which carbon particles are effective in removing unwanted volatile organic compounds that are in the water. The used carbon is later disposed of at a licensed facility. NASA proposes to use this technology to remove volatile organic compounds in groundwater at the plants discussed in this newsletter.

Removal Action – Sometimes it makes sense to take a more immediate cleanup step. Think of the term "removal action" as a quicker response!

Responsiveness Summary – One of the reasons NASA is issuing a "Proposed Plan" – rather than directly taking action – is to make sure that members of the public have an opportunity to provide their thoughts and comments (see page 1 for information on the Proposed Plan Comment Period and the Public Meeting to discuss the Proposed Plan). A "Responsiveness Summary" refers to the collection of oral and written public comments received by NASA during a public comment period for key documents, and NASA's responses to those comments.

Record of Decision – This term refers to the legal, public document that NASA will issue that explains the final cleanup alternative to be used and why NASA arrived at that decision. The Record of Decision also includes the Responsiveness Summary described above.

If you run across other terms or phrases that are not familiar to you, be sure to check our groundwater cleanup program website at http://jplwater.nasa.gov for a more complete glossary including most of the acronyms we use. ■

Inclusion of LAWC in Proposed Plan Looks Toward Overall Cleanup

Technicians conduct maintenance at the NASA-funded Lincoln Avenue Water Company groundwater treatment plant. Shown above is the ion exchange system that removes perchlorate from water. Another section of the plant, not shown, removes volatile organic compounds from the water.

Readers of NASA's Proposed Plan (see summary on pages 2-3) will note that it recommends continued NASA funding for an existing Lincoln Avenue Water Company (LAWC) treatment plant in Altadena as well as funding for a new Pasadena treatment plant.

NASA has been funding the Lincoln Avenue treatment plant for two of the company's wells as a "removal action," thus enabling its customers continued use of those wells to provide clean drinking water. A removal action is typically a short-term action. With the Proposed Plan, NASA seeks approval to ensure the Lincoln Avenue treatment operations continue to be funded on a longer-term basis as a part of NASA's overall groundwater cleanup plan for the Monk Hill portion of the Raymond Basin.

The Lincoln Avenue Water Company treatment system has been successfully removing volatile organic compounds and perchlorate from groundwater since July 2004. ■

Jet Propulsion Laboratory
NASA MANAGEMENT OFFICE 4800 Oak Grove Drive Pasadena, CA 91109

For more information contact

Merrilee Fellows
Groundwater Cleanup Outreach Manager
(818) 393-0754

Steve Slaten
Remedial Project Manager
(818) 393-6683

Para más información en español llame a

Gabriel Romero
NASA JPL
Teléfono: (818) 354-8709

Updated Community Involvement Plan is Available

An updated Community Involvement Plan for NASA's environmental cleanup project at JPL has recently been completed and may be downloaded from the Groundwater Cleanup Website at http://jplwater.nasa.gov or examined in person at any of the Information Repositories listed elsewhere in this newsletter. The purpose of this Plan is to document many of the recent public outreach efforts NASA has taken as part of its commitment to keep the public informed on the cleanup as well as to describe possible future activities NASA may take to inform and involve the public.

The Plan (earlier known as the Community Relations Plan), was first published in 1994 and updated in January 2003. The newest update includes information about community involvement activities that have taken place since then. It also describes results of a series of in-depth community interviews in 2004 and 2005 with multicultural stakeholders and others along with feedback from numerous means of community interaction, including a series of community meetings held over the past two years. This information was used to suggest various ways to keep the community engaged in NASA cleanup efforts. The Community Involvement Plan also lists activities that NASA may undertake in the future to inform and involve the public in the cleanup process in ways identified during community interviews. ■

NASA Proceeds on Agreement Continued from Page One

The approval process for the proposed treatment system provides extensive opportunity for public comment and regulatory review. Because the proposed location is within Pasadena city limits, as part of the new plant construction the City of Pasadena would obtain local permits prior to constructing a new treatment facility, including a "conditional use permit" and a "building permit." Also, the California Department of Health Services will conduct a public process before issuing a permit to allow the system to supply drinking water.

The City would also be required to certify treatment plant operators, and as part of the new plant construction, Pasadena would need to comply with the California Environmental Quality Act (CEQA), a law that applies to projects undertaken or requiring approval by state or local government agencies. CEQA imposes requirements on those agencies that are similar to the requirements the National Environmental Protection Act (NEPA) imposes on federal agencies. In particular, CEQA requires California public agencies to identify the significant environmental effects of its actions and avoid and/or mitigate potentially negative effects. ■

Español

Nuevo Acuerdo Para Limpiar el Agua Subterránea

La NASA propone financiar la construcción de una nueva planta de tratamiento en un área vacante de la propiedad donde se encuentra Windsor Reservoir, en Pasadena; con el propósito de remover los compuestos químicos de un aquifer de agua subterránea. La planta trataría agua proveniente de unos pozos de agua potable cerrados, pertenecientes a la ciudad de Pasadena y localizados al sureste del Jet Propulsion Laboratory.

La NASA pagaría todos los gastos relacionados al diseño, la construcción y la operación de la planta, así como los gastos relacionados al apoyo técnico. La ciudad de Pasadena se haría responsable de la operación del sistema.

Los detalles de la propuesta se encuentran en un resumen del Plan Propuesto, traducido al español, que se halla en las bibliotecas públicas de Pasadena, Altadena y La Cañada y en la página web: http://jplwater.nasa.gov.

Parte del proceso de aprobación de la propuesta es que los miembros de la comunidad puedan hacer comentarios por escrito o durante una reunión pública a realizarse el 3 de mayo, 2006. ■

La NASA Solicita Comentarios de la Comunidad

La NASA solicita sus comentarios respecto al Plan Propuesto de financiar una nueva planta de tratamiento de agua subterránea que trataría cuatro pozos de agua potable cerrados por la ciudad de Pasadena. Una recomendación del Plan es de continuar la financiación de una planta de tratamiento ya existente, que trata dos pozos de agua potable pertenecientes a Lincoln Avenue Water Company.

El período establecido para recibir los comentarios del público es del miércoles 19 de abril al viernes 19 de mayo. El Plan, una vez aprobado, incluirá un documento con un resumen de los comentarios recibidos y una explicación de como los comentarios influenciaron las decisiones tomadas.

Le pedimos que mande sus comentarios por correo electrónico a: watercleanup@nmo.jpl.nasa.gov o por correo a: Merrilee Fellows, NASA Groundwater Cleanup Outreach Manager, NASA Management Office, Jet Propulsion Laboratory, 180-801, 4800 Oak Grove Drive, Pasadena, CA 91109. Si usa el correo electrónico, por favor mande sus comentarios antes de la medianoche del viernes 19 de mayo. Si usa el correo, asegúrese que el sello tenga fecha límite del viernes 19 de mayo.

Plan de Limpieza Propuesto

Una recomendación del Plan de Limpieza propuesto por la NASA, es de continuar financiando la planta de tratamiento existente en Lincoln Avenue Water Company en Altadena, y de financiar la construcción y la operación de una nueva planta en Pasadena. Esta recomendación es parte de un programa de limpieza más amplio y a largo plazo. ■

Reunión Comunitaria: Plan Propuesto

La NASA le invita a asistir a una reunión comunitaria, el miércoles 3 de mayo de 2006, de 7:00 a 8:30 p.m. en Altadena Community Center, para discutir y obtener sus comentarios del Plan Propuesto de financiar una nueva planta de tratamiento de agua subterránea cerca de Windsor Reservoir. También está invitado a asistir a una sesión comunitaria que se realizará antes y después de la reunión comunitaria, (de 6:00 a 7:00 p.m. y de 8:30 a 9:00 p.m.), para hacer preguntas y conversar con el personal encargado del proyecto. ■

Nuevo Plan Comunitario

La NASA acaba de publicar un nuevo Plan Comunitario del proyecto de limpieza del medio ambiente en JPL, el cual está disponible en las bibliotecas públicas de Altadena y Pasadena. El Plan contiene información de las actividades de limpieza pasadas emprendidas por la NASA y las que posiblemente desarrollará en el futuro. El propósito del Plan es mantener a la comunidad informada e involucrada en el proceso de limpieza.

El Plan incluye los resultados y las sugerencias provenientes de entrevistas realizadas en 2004 y 2005 con líderes Latinos, Afro-Americanos, Asiáticos y de otros grupos comunitarios localizados en Pasadena y Altadena.

Una copia del Plan se encuentra en: http://jplwater.nasa.gov. ■

NASA Groundwater Cleanup

JOIN US!

Public Meeting & Community Information Session

WEDNESDAY, MAY 3, 2006

Public Meeting	Community Information Session
7:00-8:30 p.m.	6:00-7:00 p.m. & 8:30-9:00 P.M.

Altadena Community Center
730 E. Altadena Drive, Altadena

¡ASISTAN!

Reunión Comunitaria y Sesión Comunitaria

MIÉRCOLES, 3 de mayo de 2006

Reunión Comunitaria	Sesión Comunitaria
7:00 – 8:30 p.m.	6:00 – 7:00 p.m. & 8:30 – 9:00 p.m.

Altadena Community Center
730 E. Altadena Drive, Altadena

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www.nasa.gov

VISIT OUR WEBSITE AT http://jplwater.nasa.gov
VISITE NUESTRA PÁGINA WEB

National Aeronautics and Space Administration
Jet Propulsion Laboratory
NASA Management Office
Mail Code 180-801
4800 Oak Grove Drive
Pasadena, CA 91109-8099

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APRIL 2006 UPDATE

NASA Groundwater Cleanup

Public Meeting & Community Information Session

Wednesday, May 3, 2006

Public Meeting	Community Information Session
7:00-8:30 p.m.	6:00-7:00 p.m. & 8:30-9:00 p.m.

Altadena Community Center
730 E. Altadena Drive, Altadena

Bilingual Newsletter April 2006
Boletín bilingüe abril de 2006

Appendix G-2
Community Meeting on Health Postcard and Flyer

- A postcard sent to residents and an informational flyer announcing a Community Meeting on Health on April 21, 2004.

COMMUNITY MEETING ON Health

Wednesday, April 21, 2004
7:00-9:00 PM
(Doors open 6:30 p.m.)

Altadena Community Center
730 E. Altadena Dr., Altadena

Medical and public health experts from the State and County Departments of Health Services, the City of Pasadena Department of Public Health, USC, UCLA and the U.S. Environmental Protection Agency will be available to address health questions related to chemicals in groundwater underneath and near NASA-JPL.

For more information, call
Merrilee Fellows
NASA Water Cleanup Outreach Manager
at 818.393.0754.

For those unable to attend, a summary of the meeting will be provided on the Web at
http://JPLwater.nasa.gov.

Reunión comunitaria sobre la salud

El día miércoles 21 de abril del 2004
7:00-9:00 PM
(Las puertas del Altadena Community Center estarán abiertas desde las 6:30 p.m.)

Altadena Community Center
730 E. Altadena Dr., Altadena

Se le invita a asistir a una reunión comunitaria sobre asuntos de la salud.En esta reunión, personal médico y expertos en el área de la salud de los departamentos de Servicios de Salud del Estado y del Condado, Salud Pública de Pasadena, USC, UCLA y la Agencia de Protección del Medio Ambiente en Estados Unidos responderán a preguntas de la salud relacionadas con productos químicos que se encuentran en el agua subterránea debajo y cerca del Jet Propulsion Laboratory (JPL), propiedad de la NASA.

También habrá intérpretes para ayudar a las personas de habla hispana.

Si desea más información, por favor llame a:
Gabriel Romero al teléfono
818-354-8709.

Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109

COMMUNITY MEETING ON Health

FACILITATED BY
NASA

CO-HOSTED BY
City of Pasadena
Department of Public Health

California Department
of Health Services

U.S. Environmental Protection Agency

Wednesday, April 21, 2004
7:00-9:00 PM

Altadena Community Center
730 E. Altadena Dr., Altadena

COMMUNITY MEETING ON Health

Wednesday, April 21, 2004

7:00-9:00 PM
(Doors open 6:30 p.m.)

Altadena Community Center

730 E. Altadena Dr., Altadena

FACILITATED BY
NASA

CO-HOSTED BY
City of Pasadena Department of Public Health
California Department of Health Services
U.S. Environmental Protection Agency

Following a brief update of NASA's groundwater cleanup activities, medical and public health experts will be available to address health questions related to chemicals in groundwater beneath and near NASA-JPL. Brief presentations will be made by some of the experts, followed by a question and answer period.

The following health professionals will be available to respond to questions:

Thomas M. Mack, MD, MPH
Cancer Epidemiologist
Division of Health Epidemiology
USC Norris Cancer Center

Cyrus Rangan, MD
Director of the Toxics & Epidemiology Program
Los Angeles County Department of Health Services

Marilyn Underwood, Ph.D.
Toxicologist
Environmental Health Investigations Branch
California Department of Health Services

Jerome M. Hershman, MD, MS
Endocrinologist
Professor of Medicine
UCLA School of Medicine

Dan Stralka, Ph.D.
Toxicologist, Superfund Division
U.S. Environmental Protection Agency Region 9

Takashi M. Wada, MD, MPH
Health Officer
City of Pasadena Public Health Department

For more information, please call

Merrilee Fellows
NASA Water Cleanup Outreach Manager at 818.393.0754.

For those unable to attend, a summary of the meeting will be provided on the Web at **http://JPLwater.nasa.gov.**

Spanish translation will be provided during the meeting. En esta reunión habrá intérpretes para ayudar a las personas de habla hispana. Si desea más información en español, llame a Gabriel Romero NASA JPL Tel: 818 354 8709

REUNIÓN COMUNITARIA SOBRE LA salud

El día miércoles 21 de abril del 2004

7:00-9:00 PM

(Las puertas del Altadena Community Center estarán abiertas desde las 6:30 p.m.)

Altadena Community Center

730 E. Altadena Dr., Altadena

FACILITADA POR
La NASA

AUSPICIADA POR
El Departamento de Salud Pública de Pasadena
El Departamento de Servicios de Salud de California
La Agencia de Protección del Medio Ambiente en Estados Unidos

En la reunión se le informará sobre las actividades de limpieza del agua subterránea más recientes que la NASA está llevando a cabo debajo y cerca del Jet Propulsion Laboratory (JPL), propiedad de la NASA. Más tarde, habrá personal médico y expertos en el área de la salud que responderán a preguntas de la salud relacionadas con productos químicos que se encuentran en dicha agua subterránea. Algunos de estos expertos harán presentaciones breves seguidas de preguntas y respuestas.

A continuación, se le ofrece la lista de expertos de la salud que estarán disponibles para responder a sus preguntas:

Dr. Thomas M. Mack, MPH
Epidemiólogo de Cáncer
División de Epidemiología de Salud
Centro de Cáncer Norris en USC

Dr. Cyrus Rangan, MD
Director del Programa de Epidemiología de Substancias Tóxicas
Departamento de Servicios de Salud del Condado de Los Angeles

Marilyn Underwood, Ph.D.
Toxicóloga
Subdivisión de Investigación de Asuntos de Salud relacionados al Medio Ambiente
Departamento de Servicios de Salud de California

Dr. Jerome M. Hershman, MS
Endocrinólogo
Profesor de Medicina
Escuela de Medicina en UCLA

Dan Stralka, Ph.D.
Toxicólogo
División Superfund
Región 9 de la Agencia de Protección del Medio Ambiente en Estados Unidos

Dr. Takashi M. Wada, MPH
Representante de la Salud
Departamento de Salud Pública de Pasadena

También habrá intérpretes para ayudar a las personas de habla hispana.

Si desea más información, por favor llame a:
Gabriel Romero al teléfono
818-354-8709.

Appendix G-3
Examples of Recent News Releases on the Cleanup

- A news release on the cleanup sent to media on January 24, 2006 and posted on the web.

Merrilee Fellows
NASA Management Office/Jet Propulsion Laboratory
Phone: (818) 393-0754

January 24, 2006

RELEASE: 05-003 NMO

FINAL AGREEMENT EXECUTED FOR NEW TREATMENT PLANT

The City of Pasadena and the California Institute of Technology, as the contractor that manages NASA's Jet Propulsion Laboratory (JPL), finalized an agreement this week to provide NASA funding of a major new water treatment plant in Pasadena.

"This agreement is a win-win situation for everyone," said Steve Slaten, NASA's Remedial Project Manager at JPL. "It is exciting because it allows NASA to be able to clean up the Monk Hill sub-basin far sooner than if we tried to remove all the chemicals using a treatment plant on site at JPL."

Once operational, the city will be able to re-open its wells and provide customers with clean drinking water. NASA will pay for all of the costs related to the plant's design, construction and operation as well as provide technical support.

"Combined with our existing on-site treatment plant and with the NASA-funded system at Lincoln Avenue Water Company in Altadena, this new major step moves toward a comprehensive cleanup and helps prevent further spread of these chemicals," Slaten said.

Volatile organic compounds and perchlorate that originated from waste disposal practices on the JPL site many decades ago have been found in the groundwater beneath JPL. In 1990, Pasadena installed a NASA-funded air stripper to remove volatile organic compounds from water in the Arroyo Well, Well 52, the Ventura Well, and the Windsor Well. This new agreement continues treatment for those chemicals and adds treatment for perchlorate.

When detected levels of perchlorate in the wells rose above California's action level for perchlorate, the city closed the wells, and they have remained closed since. A proposed treatment system will undergo extensive public comment and regulatory review. It is anticipated the system will be a liquid-phase granular activated carbon system to remove volatile organic compounds from the water and an ion exchange system to remove perchlorate.

For information about NASA's groundwater cleanup efforts on the Web, visit:

http://jplwater.nasa.gov

- end-

LIST OF FIGURES

FIGURE 1 – Aerial View of JPL

FIGURE 2 – Photo of JPL

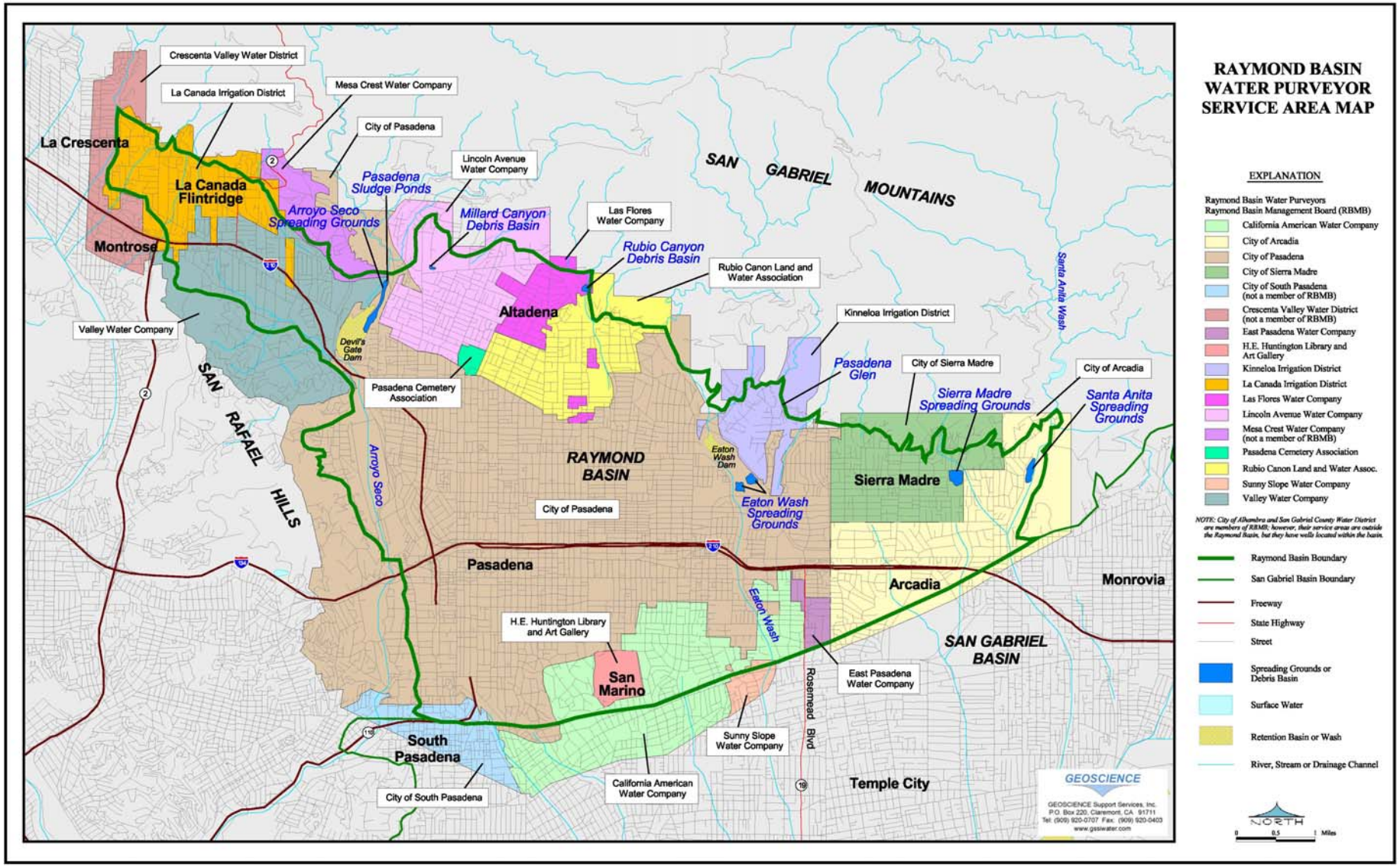

FIGURE 3 – Map of the Raymond Basin