

A Plan for Cleaning Up Off-Facility Groundwater

NASA's Proposed Plan seeks approval for its preferred alternative to clean up off-facility groundwater, which is the deep groundwater outside the JPL fenceline.

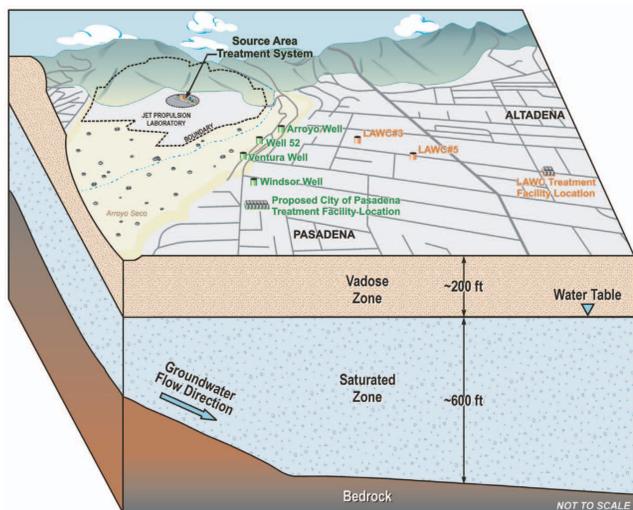
► **NASA's Proposed Plan**
DESCRIBES

How the treatment systems would work,
What other options were considered, and
Why NASA selected this option as its preferred alternative.

NASA's Preferred Alternative = 2 Actions

Centralized treatment:

This approach treats groundwater **after** being pumped from the wells and **before** being used by the City of Pasadena and Lincoln Avenue Water Company customers.



► Funding the construction of a treatment plant for four closed City of Pasadena drinking water wells, and providing funding for the City to lease treatment equipment and for the City to operate the system.

AND

► Continued funding of an existing treatment plant for two Lincoln Avenue Water Company drinking water wells.

Benefits

Helps achieve the cleanup goal of removing target chemicals from an aquifer that is used as a drinking water source.

Helps prevent the further migration of chemicals in groundwater.

Provides more data for assessing long-term solutions for the overall site cleanup.

Public Participation

Getting public comment is important to us.

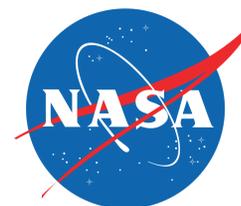
You can provide input on the Proposed Plan by

- Sending written comments to NASA by mail or email
- Attending a Community Information Session and the Public Meeting

After considering all public comments, NASA will publish an Interim Record of Decision including the comments and how this input shaped the final decision.

The Proposed Plan is available at <http://jplwater.nasa.gov> or at a local information repository:

- Pasadena Central Library
- Altadena Public Library
- La Cañada Flintridge Public Library
- JPL Library (for JPL on-site personnel)

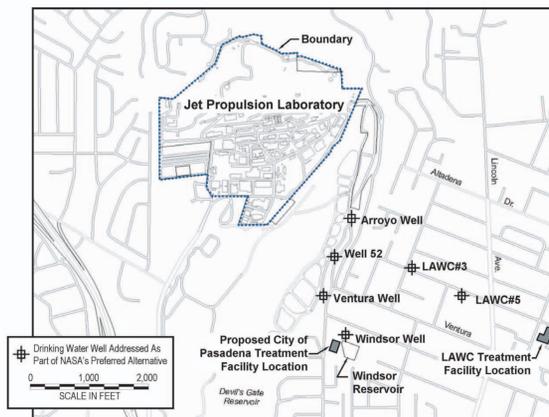


A NASA-Funded Groundwater Treatment Plant in Pasadena

Under an agreement with the City of Pasadena, NASA would fund removal of chemicals from a groundwater aquifer used by the City.

NASA Would

- Pay for the design and construction of a new treatment plant in Pasadena
- Provide funding and technical support to the City of Pasadena who would lease treatment equipment and operate the system



Groundwater extracted from four closed drinking water wells – Windsor Well, Well 52, Arroyo Well, and Ventura Well – would be treated at a facility located on vacant City property next to the Windsor Reservoir.

Benefits

Permanently removes perchlorate and VOCs from groundwater.

Prevents further movement of the chemicals in groundwater.

Uses system similar to NASA-funded Lincoln Avenue Water Company facility, which has successfully operated since July 2004.

Uses State-approved technology for removing perchlorate from drinking water.

Next Steps

NASA would assist the City in its application for permits needed by the City to build and operate the plant.

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.

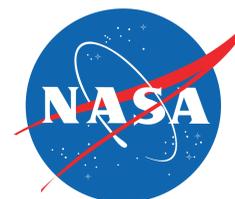
How it Works

Removing Perchlorate Ion Exchange System

- ▶ Groundwater is pumped from four closed wells to new treatment plant.
- ▶ Groundwater runs through tanks filled with tiny plastic beads, or resin. When perchlorate touches the beads, perchlorate is exchanged with chloride in the resin.
- ▶ The old resin is removed and properly disposed of at a licensed off-site facility and new resin is placed in tanks.

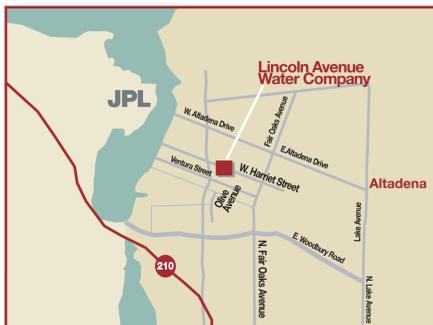
Removing Volatile Organic Compounds (VOCs) Liquid-Phase Granular Activated Carbon System

- ▶ Water flows through tanks filled with very porous carbon particles that attract and accumulate VOCs.
- ▶ The old carbon beads are disposed of at a licensed off-site facility and new carbon is placed in tanks.



Effective Groundwater Treatment at Lincoln Avenue Water Company

A NASA-funded groundwater treatment plant has been removing chemicals from the Lincoln Avenue Water Company (LAWC) drinking water wells in Altadena. The company has been operating the plant since July 2004.



The groundwater treatment plant is located in Altadena.

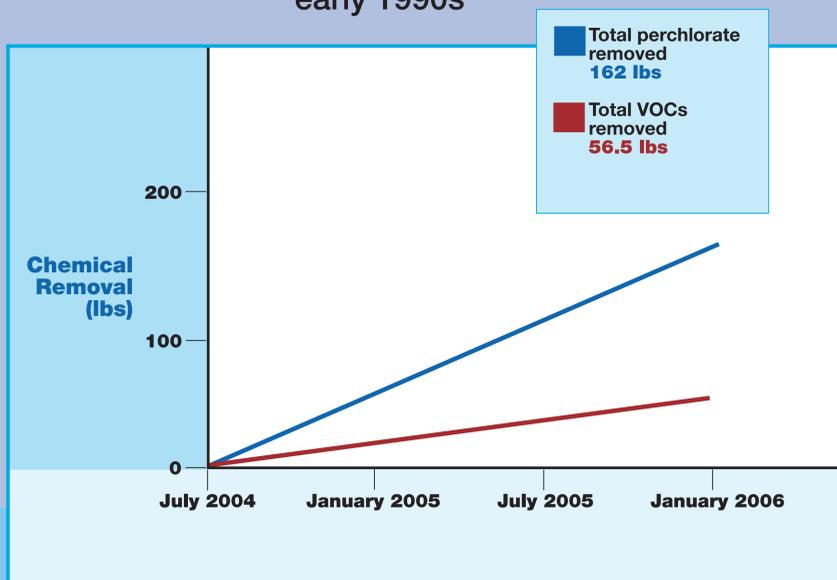


On July 28, 2004, NASA's Deputy Administrator Frederick Gregory (left) and LAWC General Manager Bob Hayward (right) launched the new treatment plant to remove perchlorate from two Altadena drinking water wells.

NASA's continued funding of the existing plant has many benefits

Effective Treatment Technologies

- ▶ An ion exchange system has effectively removed perchlorate since July 2004
- AND**
- ▶ A liquid-phase granular activated carbon system has effectively removed volatile organic compounds (VOCs) since the early 1990s



Benefits

- Permanently removes perchlorate and VOCs from groundwater.
- Prevents further movement of the chemicals in groundwater.
- Uses State-approved technology for removing perchlorate from a drinking water source.
- System operates as expected with efficiency and flexibility to meet highs and lows of seasonal water demands.