



2016

YEAR in REVIEW

NASA's Groundwater Cleanup Program

Jet Propulsion Laboratory

This 2016 Year in Review highlights NASA's continued progress with groundwater cleanup activities and community outreach efforts at and in the vicinity of NASA's Jet Propulsion Laboratory (JPL).

BACKGROUND

In 2016, NASA made considerable strides towards restoring water quality in the vicinity of JPL. The groundwater chemicals being addressed are volatile organic compounds (VOCs) and the chemical compound perchlorate. The chemicals originated from long-discontinued liquid and solid waste disposal practices during the 1940s and 1950s when wastes from JPL drains were disposed of in brick-lined seepage pits – a waste management practice that was common at the time.

Five-Year Review 2012-2017

NASA's cleanup at JPL is being accomplished through water treatment systems known as "remedies." The remedies are operating beneath the "source area" at JPL, and in deep groundwater beyond the fence line at two sites: near four wells operated by Pasadena Water and Power in Pasadena, and at wells operated by the Lincoln Avenue Water Company (LAWC) in Altadena. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, requires ongoing remedies at CERCLA sites be reviewed at least once every five years to determine if the remedies continue to be protective of human health and the environment. In 2016, NASA – in conjunction with the U.S. Environmental Protection Agency (U.S. EPA) – initiated a second Five-Year Review in September. This review process integrated information taken from operations and performance documents throughout the past five years, together with site inspections, and interviews with those responsible for, and affected by, actions at the site. Based on all the data and information, the treatment systems are performing as designed and are protective of human health and the environment. NASA will make the Five-Year Review Report along with an associated fact sheet available on our website upon finalization in February 2017.

Continued Groundwater Monitoring

NASA maintains a robust monitoring program consisting of 25 monitoring wells on and in the vicinity of JPL. Quarterly monitoring reports were filed and posted at <http://jplwater.nasa.gov>. Each report indicates the systems in place were effective in remediating the affected groundwater during 2016.

Groundwater Cleanup
Steady progress was made throughout the year to clean up groundwater at three NASA-funded treatment plants.

On JPL property at the "source area." The treatment – working well as designed – has removed from source area groundwater more than 1,895 lbs. of perchlorate with a fluidized bed reactor (FBR) system, and more than 45 lbs. of VOCs using liquid-phase granular activated carbon (LGAC), since startup in January 2005. In 2016, NASA completed routine annual well maintenance activities.

In the Arroyo Seco, near four Pasadena drinking water wells that draw from the aquifer known as the Monk Hill Basin. By year's end 2016, the Monk Hill Treatment System, located approximately in the middle of the affected area, had removed more than 1,086 lbs. of perchlorate using ion exchange, and more than 128 lbs. of VOCs with an LGAC system, since startup in January 2011.

At two Lincoln Avenue Water Company (LAWC) drinking water wells in Altadena, at the outer edges of the affected area. By the end of 2016, more than 1,187 lbs. of perchlorate using ion exchange, and more than 266 lbs. of VOCs with an LGAC system, had been removed from groundwater by the LAWAC treatment plant since startup in July 2004. After the chemicals are removed from groundwater and after disinfection, the treated water is used by Pasadena and LAWAC for drinking water.

LAWC New Well Gets Set To Operate

A new NASA-funded and constructed groundwater extraction well is nearing completion. Within a few months, the new well will be operating to enhance groundwater cleanup efforts at Altadena’s Lincoln Avenue Water Company. The well’s operation will remove chemicals from deep groundwater at the leading edge of NASA’s chemical plume, thus maintaining effective containment of chemicals in groundwater originating from long-discontinued waste disposal practices at JPL. The well will also serve as a modern, reliable well for the LAWC, ensuring for its customers continued clean drinking water supplies for many decades. During the well development phase, extraction of approximately 15 million gallons of water – enough to serve more than 100 homes for a year – was required. Normally, this well development water would be treated to remove chemicals and then discharged to a stormwater drain. However, considering the severe drought that California was experiencing, NASA submitted a detailed work plan to the State Water Board for the water to be treated first by a temporary treatment plant, tested, and treated again at the existing, permitted LAWC treatment system, to meet all drinking water standards. This “Double Treatment” ensured clean, high quality water and enabled a valuable resource to be saved. Infrastructure improvements are underway at the site and the new well is expected to be on line later in 2017.

Moving Forward on Decision for Final Remedy

NASA continues to work on the Draft Final Record of Decision (ROD) for Groundwater. The Draft ROD and Responsiveness Summary were sent to regulators (U.S. EPA, and the California regulators – the Department of Toxic Substances Control and the Regional Water Quality Control Board), comments were received, and revisions made. In November, discussions with the agencies proved productive on moving the draft towards a final ROD for the cleanup.

Community Outreach

We remain **strongly committed** to groundwater cleanup and to **communicating** with neighbors and community members about the **progress** being made.

DURING 2016 NASA

Published a 2015 Year in Review document.

Responded to inquiries from the community about NASA’s cleanup efforts.

Continued to update and maintain the cleanup project website including adding documents and archiving of historical content.

Added cleanup related documents to the Administrative Record/Information Repository.

Sent an announcement describing NASA’s second Five-Year Review via emails to community and interested parties and posted to the cleanup project website.

Continued to share project status updates via email with regulators and local water purveyors.

On the LAWC well construction project, NASA...

Maintained close contact with neighbors near the construction site and with other stakeholders including Altadena Town Council members.

Conducted outreach on the cleanup project, reaching some 15 groups and 80-90 people overall in March at an Altadena Coalition of Neighborhood Associations (ACONA) quarterly meeting.

Continued to coordinate with the California State Water Resources Control Board’s Division of Drinking Water on the beneficial use of well development water.

Continued to coordinate with LAWC on new well construction, schedules, and safety measures.

For information, contact

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