



## APACHE POWDER SUPERFUND SITE



U.S. Environmental Protection Agency \$ Region 9 \$ San Francisco, CA \$ February 2007

*St. David, Arizona*

# FIVE-YEAR REVIEW OF SOILS AND GROUNDWATER CLEANUP ACTIONS

The U.S. Environmental Protection Agency (EPA) is currently conducting a Five-Year Review of the Apache Powder Superfund site in St. David, Arizona. The purpose of this Five-Year Review is to evaluate the implementation and the effectiveness of the cleanup to determine if it remains protective of human health and the environment.

The Superfund law requires EPA to evaluate the effectiveness and protectiveness of remedial actions every five years if a cleanup takes more than five years to complete. EPA completed the first Five-Year Review for the Apache site in September 2002. The review found that the cleanup of certain contaminated soils at the Site was protective of human health and the environment. However, a protectiveness determination could not be made about the groundwater cleanup or the inactive ponds because the final cleanup decisions had not yet been made or implemented in these areas. The purpose of this second Five-Year Review is to determine whether present information indicates that the current cleanup continues to be protective in all areas of the Site.

During the review, EPA studies information about the site, conducts a site inspection and interviews people who are familiar with the site. For this current Five-Year Review, EPA will be assisted by the U.S. Army Corps of Engineers who will conduct independent inspections and gather additional information to evaluate the cleanup. The methods, findings, conclusions and recommendations of the review will be documented in the Five-Year Review Report. The report will include the following: site background and history; an explanation of remedial measures in place; a discussion of the site inspection conducted;

an explanation of how the community will be notified about the review; past actions conducted as a result of previous reviews; long-term institutional controls; site recommendations (if warranted); and a statement of protectiveness. The statement of protectiveness documents whether the cleanup decisions and remedial actions continue to be effective.

## INPUT ON FIVE-YEAR REVIEW AND AVAILABILITY OF REPORT

EPA places a high value on community input. If you have concerns or suggestions regarding the Apache Five-Year Review, please feel free to contact the EPA personnel listed at the end of this fact sheet. EPA will place a copy of the final report in the information repositories after the review is complete in September 2007. Additionally, EPA will issue a fact sheet announcing the completion and a summary of findings.

## SITE CONTAMINATION AND CLEANUP ACTIVITIES

In 1922, ANP began manufacturing industrial chemicals and explosives including nitroglycerin, nitric acid, ammonium nitrates and blasting agents. Presently, ANP manufactures solid and liquid ammonium nitrate, ammonium nitrate-based fertilizers, nitric

acid and aqua ammonia primarily for agricultural and mining customers. Historically, these operations produced both liquid and solid wastes that were disposed of on property owned by Apache Nitrogen Products, Inc. (ANP). These past-use disposal practices resulted in the contamination of soils on the facility and groundwater contamination in a perched system underneath the plant's operations area and in the nearby shallow aquifer as well as in the San Pedro River. In the early 1990s, ANP undertook a program to replace affected domestic supply wells by constructing new wells tapping the uncontaminated deeper aquifer.

The Apache Powder Superfund Site was placed on the National Priorities List (NPL or Superfund list) in 1990. In September 1994, EPA signed a Record of Decision (ROD) which selected various remedial alternatives for cleanup of the soils and groundwater contamination at the Site. Construction of a wetlands system to remove nitrate from groundwater in the Northern Area was completed in 1997. In 2000, most of the soils contamination, with the exception of the inactive ponds, was removed from the Site for off-site treatment and disposal. After perchlorate was discovered in the Southern Area groundwater in 1998, additional investigations were conducted at the site and in the San Pedro River during the period of 1999-2004. The findings indicated that the perchlorate and nitrate-contaminated groundwater in the Southern Area was hydraulically confined to the South and that microorganisms present in the subsurface could naturally biodegrade the contamination. Therefore, in September 2005, EPA amended the ROD to select Monitored Natural Attenuation (MNA) or natural degradation of the groundwater with active monitoring and institutional controls to ensure the public did not consume the groundwater. In 2006, additional studies were conducted in the Northern Area to fully define the extent of nitrate contamination and ensure that the current pump and treat remedy is effective and protective. In 2007, ANP plans to regrade and cap the inactive ponds at the Site, thereby implementing the remaining soils cleanup action required by EPA.

## **GROUNDWATER CLEANUP**

There are two primary components to the groundwater cleanup at Apache: (1) use of constructed wetlands to treat the nitrate-contaminated groundwater in the Northern Area; and (2) monitored natural attenuation of contaminated groundwater hydraulically isolated in the Southern Area. Both EPA and ANP conducted groundwater investigative activities in the Northern and Southern Areas during 2006 and early 2007.

### **NORTHERN AREA**

In response to community comments on the 2005 ROD Amendment, EPA conducted additional investigative studies in the Northern Area. In January 2006, EPA hired two outside experts to complete a hydrogeological evaluation of whether pumping of the extraction well SEW-1 was causing potential leakage between the deep and shallow aquifers via old or poorly constructed wells. The outside experts concluded in their September 2006 report that they do not believe SEW-1 is causing leakage between the two aquifers, but they recommended the collection of some additional data to further validate these findings. During December 2006, water quality data and temperature data were collected from SEW-1 and nearby wells. Also, SEW-1 was shutdown for two weeks to test whether there was evidence of any hydraulic connection between aquifers. The results of this data collection effort reconfirmed that the two aquifers are separate and pumping of SEW-1 is not influencing water levels in nearby private deep aquifer wells. EPA will place this new data and final conclusions of the outside experts in EPA's information repositories.

### **SOUTHERN AREA**

During 2006 and early 2007, ANP conducted various field activities in the Southern Area to implement the selected remedy of Monitored Natural Attenuation for this area. Last summer, when a borehole was drilled to install a monitoring well in the Southern area, no groundwater was found. This location had previously been thought to be part of a hydraulically

separate aquifer informally named the Molinos Creek Sub-Aquifer (MCA). In December 2006, 10 additional exploratory boreholes were installed in the Southern Area to further refine the extent of contaminated groundwater in the MCA. Water quality samples were also collected from these boreholes. The results indicated that both water levels and concentrations of nitrate and perchlorate continue to drop in the MCA and the lateral boundaries of the MCA are smaller than originally thought. In addition, water quality in monitoring well MW-24, the northern most monitoring point in the MCA, has now dropped to below EPA's cleanup standards for both nitrate and perchlorate. In spite of recent precipitation and extended runoff in the San Pedro River, little recovery of the MCA groundwater table was observed. These findings further confirm the hydraulic isolation of the MCA groundwater from the shallow aquifer associated with the San Pedro River and indicate that the MCA may have been created "artificially" by the discharge of ANP's plant washdown waters to washes and unlined evaporation ponds. Now, 10 years after ANP installed the brine concentrator to treat these process wastewaters and ceased these discharges, the MCA appears to be drying up. With the dropping water levels and lower contaminant concentrations in the MCA, EPA now thinks that the Monitored Natural Attenuation remedy for the Southern Area may achieve the selected cleanup standards in less time than originally estimated.

## SOILS CLEANUP

ANP has also nearly completed the soils remedy specified in the 2005 ROD Amendment, under oversight by ADEQ and EPA. Currently, the remaining contaminated infiltration ponds are being cleared of vegetation, regraded and capped with native clay covers. To date, clay covers have been installed over several formerly active ponds, and permeability testing of these soil covers indicates that little or no stormwater can infiltrate the covers. ANP plans to complete the clay covers for the remaining inactive and formerly active ponds by May 2007. ANP and ADEQ are also in the process of implementing a Declaration of Environmental Use Restriction (DEUR) for these areas. The DEUR is a restriction that limits the use of ANP's property to non-residential uses in those areas where contaminated soils remain in place underneath clay covers.

## For More Information:

If you have questions or concerns about the Apache Powder Superfund Site, please contact any of the people listed below:

### **Andria Benner**

Remedial Project Manager  
U.S. EPA  
75 Hawthorne St. (SFD-8-2)  
San Francisco, CA 94105  
(415) 972-3189  
benner.andria@epa.gov

### **Vicki Rosen**

Community Involvement Coordinator  
U.S. EPA  
75 Hawthorne St. (SFD-3)  
San Francisco, CA 94105  
(415) 972-3244  
rosen.vicki@epa.gov

### **Bill Ellett**

Supporting Project Manager  
Arizona Department of  
Environmental Quality  
400 W. Congress St., Suite 433  
Tucson, AZ 95701  
(520) 628-6714  
Ellett.William@azdeq.gov



EPA's toll-free number is (800) 231-3075. ADEQ's toll-free number is (888) 271-9302. Please leave a message and your call will be returned.

EPA's website: [www.epa.gov/region09/waste/sfund](http://www.epa.gov/region09/waste/sfund)



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## INFORMATION REPOSITORIES

The reports referenced in this fact sheet on the Northern Area Groundwater, in addition to EPA's September 2005 Amended Record of Decision on the Southern Area Groundwater and Soils Cleanup Areas, can be found at the Benson Library and EPA's Superfund Records Center in San Francisco. Many documents are also available at ADEQ's Tucson office.

### **Benson Library**

302 South Huachuca  
Benson, Arizona 85602  
(520) 586-9535

Mon & Thurs 10:00 am – 7:00 pm

Tues & Wed 10:00 am – 6:00 pm

Fri 10:00 am – 5:00 pm

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### **Superfund Records Center**

95 Hawthorne St., Suite 403S  
San Francisco, CA 94105  
(415) 536-2000

Mon–Fri 8:00 am – 5:00 pm



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United States Environmental Protection Agency  
Region 9  
75 Hawthorne Street (SFD-3)  
San Francisco, CA 94105  
Attn: Vicki Rosen (Apache 2/07)

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