Department of Toxic Substances Control

Preventing environmental damage from hazardous waste, and restoring contaminated sites for all Californians.

State of California

California Environmental Protection Agency

Fact Sheet, October 2006

STRINGFELLOW SUPERFUND SITE PERCHLORATE RI/FS UPDATE

History of the Stringfellow Site

Stringfellow was a hazardous waste disposal site located in Pyrite Canyon, north of Highway 60, that operated from 1956 to 1972 and received about 35 million gallons of hazardous waste. In the early 1980s, the Regional Water Quality Control Board - Santa Ana Region drained the ponds and capped the site. Since 1986, the United States Environmental Protection Agency (USEPA) and Department of Toxics Substances Control (DTSC) have installed hundreds of groundwater extraction wells and several treatment plants to contain and remediate contaminated groundwater migrating from the site. A series of groundwater extraction wells were installed in the trichloroethylene (TCE) plume south of Highway 60 in the early 1990s. As a result of these wells, the area of TCE contaminated water south of the highway has been reduced to a few isolated areas that exceed 5 ppb TCE (the maximum contaminant level allowed in drinking water).

Perchlorate in Ground Water at Stringfellow

Perchlorate is both a naturally occurring and manmade contaminant increasingly found in groundwater, surface water, and soil. Most perchlorate manufactured in the U.S. is used as an ingredient in solid fuel for rockets and missiles. Perchlorate-based chemicals are also used in the construction of highway safety flares, fireworks, pyrotechnics, explosives, common batteries, and automobile restraint systems. Perchlorate has been found in some fertilizers and other household items. Perchlorate impacts human health by interfering with iodide uptake into the thyroid gland. In adults, the thyroid gland helps regulate the metabolism by releasing hormones, while in children, the thyroid helps in proper development. In March 2004, Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) published a public health goal (PHG) of 6 parts per billion (ppb) for per-

Community Availability Session

DTSC staff will be available to answer questions and provide additional information on a drop-in basis on <Weekday>, <date>, from <time> to <time>, at the Stringfellow Information Center, 9415 Mission Blvd., Suite D, Glen Avon, CA.

chlorate in drinking water. The 6 ppb goal is currently being used as the action level for groundwater in California. In February 2006, the U.S. EPA announced a "Drinking Water Equivalent Level" for perchlorate in groundwater of 24.5 ppb; California has not yet set a Minimum Contaminant Level for perchlorate in groundwater, but state law requires the California Department of Health Services to set the MCL in 2006.

In 2001, perchlorate was detected in groundwater south of Highway 60 when it was sampled using a recently developed analytical method that allows detection of low levels of perchlorate. Immediately upon finding the perchlorate in ground water, residents not already on Jurupa Community Services District water were provided with bottled water and the DTSC contracted to install mains, laterals, meters, and hookups at each residence. Concurrently DTSC has been conducting a Remedial Investigation to determine the extent and sources of the perchlorate contamination.

The Remedial Investigation

DTSC began investigations of perchlorate disposal, occurrence, concentrations, migration, and sources immediately after the initial discovery. To date approximately 900 groundwater and surface water samples have been analyzed for perchlorate in the area between Highway 60 and the Santa Ana River. In addition to the perchlorate plume that originates from the Stringfellow site, the results indicate a pervasive low concentration of perchlorate in ground water throughout the Glen Avon area that appears to be associated with sources other than the Stringfellow site. Perchlorate has been detected in most of the samples taken.

Concentrations of perchlorate in groundwater in the Glen Avon area range from a high of about 70 ppb to under 0.5 ppb. The Remedial Investigation data collected to date indicate that the Stringfellow site is a primary contributor to a plume of perchlorate that is moving southward from Pyrite Canyon, generally following the surface alignment of Pyrite Creek. Perchlorate concentrations in the plume generally decrease with distance from the southern edge of the canyon and appear to terminate at or near the Santa Ana River approximately 5 miles to the south. The map presented on the following page summarizes the extent of the perchlorate contamination in the area of investigation.

Many groundwater sampling locations have undergone multiple sampling events to monitor the changes in perchlorate concentrations over time. Based on the perchlorate sampling data collected to date, it appears that the concentrations of perchlorate in groundwater influenced by the present groundwater treatment system are decreasing. It also appears that concentrations of perchlorate in groundwater outside of the areas influenced by the groundwater treatment system are relatively stable.

Potential Sources of Perchlorate

Wastes were brought to Stringfellow from users and/or manufacturers of rocket fuel and placed in unlined ponds for evaporation. The liquids seeped into the ground water and were carried south beneath Glen Avon.

Quarry blasting in Pyrite Canyon, may have used explosives that contained perchlorate. The blasting creates dust that could contain perchlorate residue that is washed into soil and the creeks, eventually seeping down into the ground water. Quarry operations in Pyrite Canyon have been ongoing since 1904.

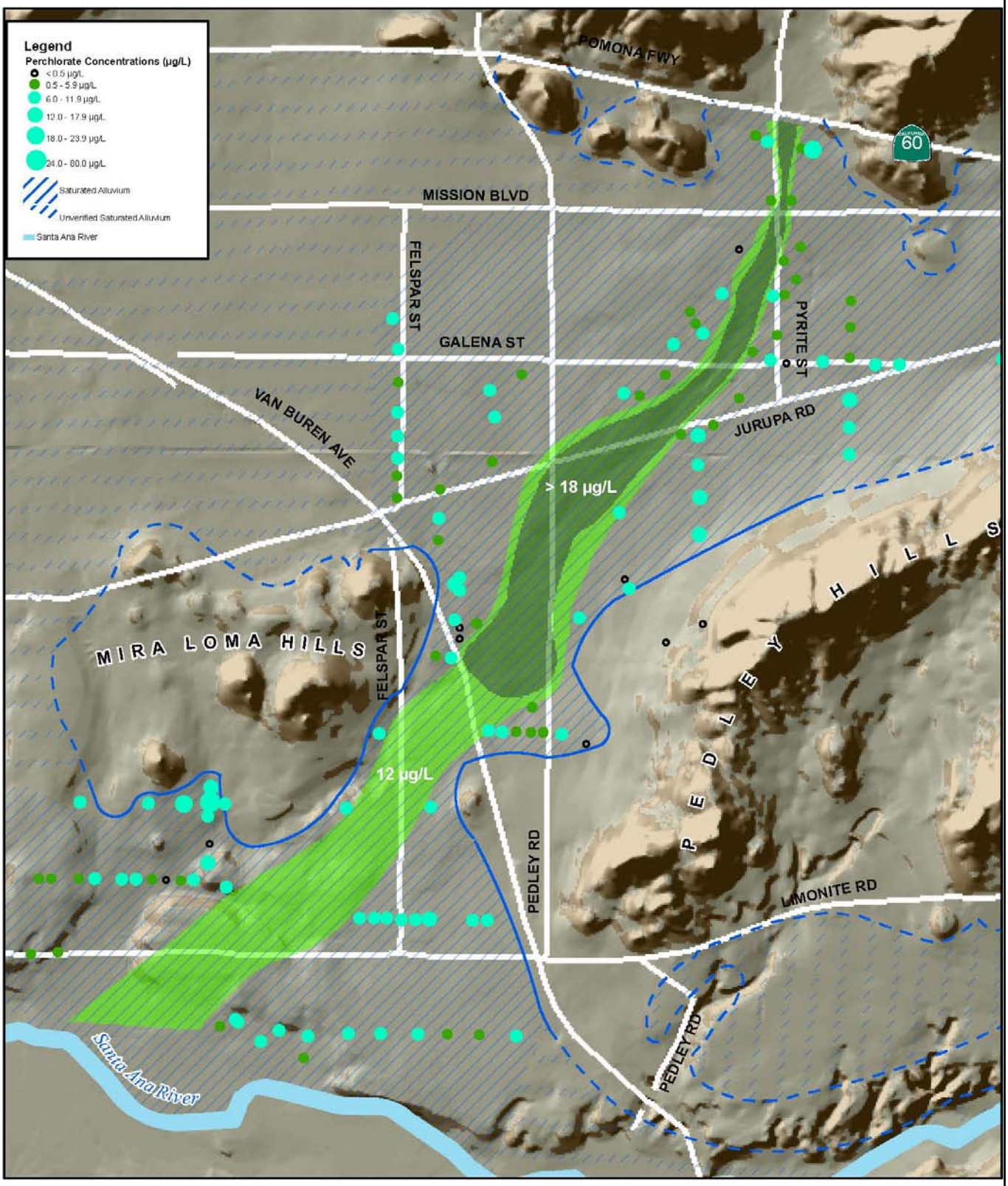
Perchlorate is a natural component of mineral nitrate fertilizers that were imported for agricultural applications. Land use in the Glen Avon area was primarily agricultural for the majority of the 20th Century, and many tons of mineral nitrate fertilizers were used over time.

Irrigation water may have been imported from sources now known to contain perchlorate. Known sources of water imported to the Glen Avon area include Colton, quarry ponds, and the Colorado River.

Perchlorate has also been identified as a natural compound that can be generated in the atmosphere in arid zones, brought to the ground with rainfall, and can concentrate and in soils and plants.

Community Concerns

Unlike the other contaminants from the site (trichloroethylene, perchloroethylene, and chloroform), perchlorate is not volatile. Consequently, there are no health hazards associated with vapor



Perchlorate Concentrations in Groundwater

Stringfellow Zone 4, Glen Avon, California

migration and intrusion.

Studies have shown that leafy vegetables such as lettuce have a tendency to concentrate perchlorate when irrigated with water that contains perchlorate. The upcoming Risk Assessment will evaluate the potential for perchlorate exposure from ingesting garden grown vegetables irrigated with water from domestic wells that contain perchlorate.

What's Next?

A Risk Assessment will be prepared to characterize and evaluate the potential risk to human health and the environment from perchlorate concentrations detected in samples collected during the Remedial Investigation. The results of the Risk Assessment will be used to help evaluate the effectiveness of potential treatment system alternatives.

Additional work is being conducted to identify and evaluate other possible sources of perchlorate that are likely contributing to the perchlorate concentrations observed within area investigated by the Remedial Investigation.

A Feasibility Study will also be conducted to evaluate available treatment technologies to reduce the levels of perchlorate detected in groundwater. These technologies will be evaluated in terms of effectiveness, costs, ease of implementation, and acceptability.

Schedule

The current schedule calls for DTSC to finish the Remedial Investigation/Feasibility Study (RI/FS) by December 2008. Upon completion of the RI/FS, a recommended plan will be selected and a Record of Decision (ROD) will be prepared and issued by the USEPA by December 2009.

Other Stringfellow Site Activities

DTSC operates a pretreatment plant in Pyrite Canyon to treat groundwater extracted from the Stringfellow Site. DTSC is currently conducting pilot tests as part of the design of a new pretreatment plant. The new pretreatment plant is scheduled to be constructed and operational in 2012. A fact sheet on construction of the new pretreatment plant will be prepared at the conclusion of pilot scale test that is currently underway.

A revised draft supplemental feasibility study (SFS) is currently being prepared to further evaluate the potential remedies for the remaining contaminated soil at the site and arrive at a proposed plan that addresses the regulatory requirements and the concerns of the community. The SFS will address a landfill cap over Zone 1 and the extraction systems in Zones 2 and 3. The expected completion date of the SFS is March 2007.

Groundwater monitoring is being conducted semi-annually at the site to assess the effectiveness of the existing groundwater extraction and treatment systems.

An amendment to Record of Decision (ROD) 4 will be prepared based on the SFS. The expected completion date of the ROD 4 Amendment is March 2008.

For More Information

• If you would like to leave a message on the local Stringfellow hotline, please call (909) 782-4267, and a DTSC staff member will get back to you.

• If you would like to talk directly to a DTSC staff member, please contact Randy Sturgeon, DTSC Public Participation Specialist, phone (916) 255-3649, fax (916) 255-3654, E-mail: rsturgeo@dtsc.ca.gov

Notice to the Hearing Impaired

You can obtain additional information by using the California State Relay Service at 1-888-877-5378 (TDD). Ask them to contact Randy Sturgeon at (916) 255-3649 regarding the Stringfellow Superfund site.

Meeting Accessibility

For information on accessibility and to request reasonable accommodations, please contact Randy Sturgeon, DTSC Public Participation Specialist, phone (916) 255-3649

Si usted desea mas informacion en espanol por favor llame al numero 916-322-4896.