Lava Cap Mine Superfund Site

U.S. Environmental Protection Agency $ Region 9 $ San Francisco, CA $ July 2008

EPA Requests Comments on Proposed Groundwater/Drinking Water Cleanup Plan

The United States Environmental Protection Agency (EPA) requests public comments on its proposed plan to address contaminated groundwater that affects drinking water wells near the Lava Cap Mine Superfund Site. The EPA, as the lead agency for the Site, has prepared this Proposed Plan in consultation with the California Department of Toxic Substances Control and the California Regional Water Quality Control Board. This is considered an interim decision solely addressing drinking water, and a final decision for the overall groundwater contamination will be made at a later date. The 30-day comment period is from July 30, 2008 to August 29, 2008. There are several ways to provide comments and these are listed on Page 7.

EPA invites you to a Community Meeting where you can hear a presentation on the proposed plan and offer your oral and written comments. The meeting will be held on August 12 at the Nevada County Board of Realtors, 336 Crown Point Circle, in Grass Valley, from 6:30 pm to 8:30 pm.

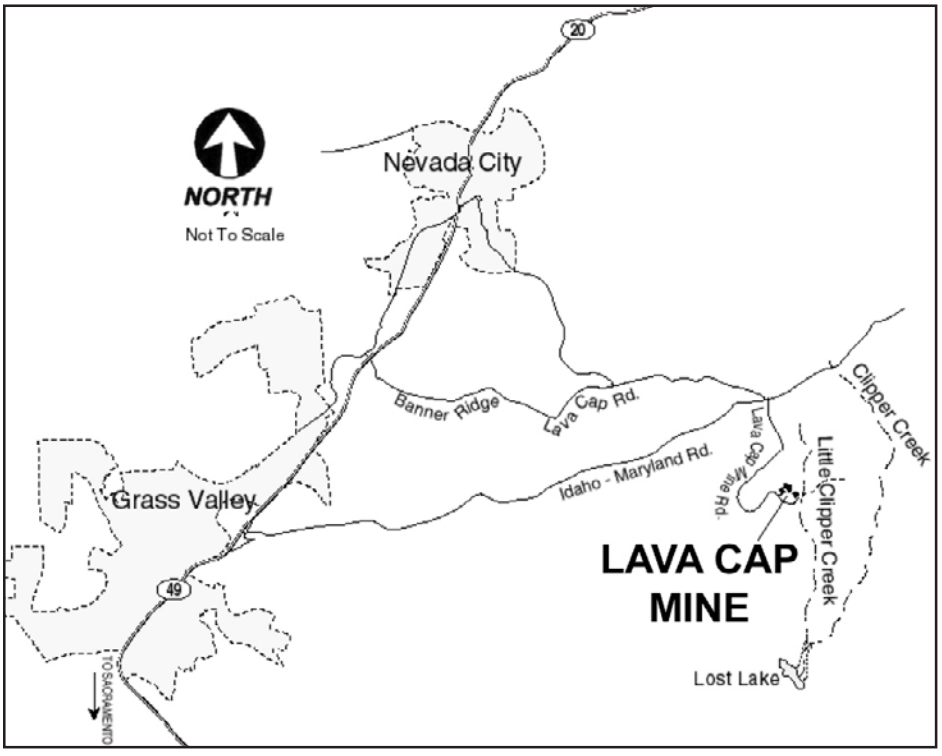
Public Comment Period

July 30 - August 29

Public Comment Meeting

Tuesday, August 12th
6:30 p.m. to 8:30 p.m.

Nevada County Board of Realtors
336 Crown Point Circle
Grass Valley, California, 95945



To assist the public in providing comments, this fact sheet provides a summary of the results of EPA's investigation, an analysis of cleanup alternatives, identifies EPA's preferred method for addressing the contaminants, and explains the ways you can provide public comments.

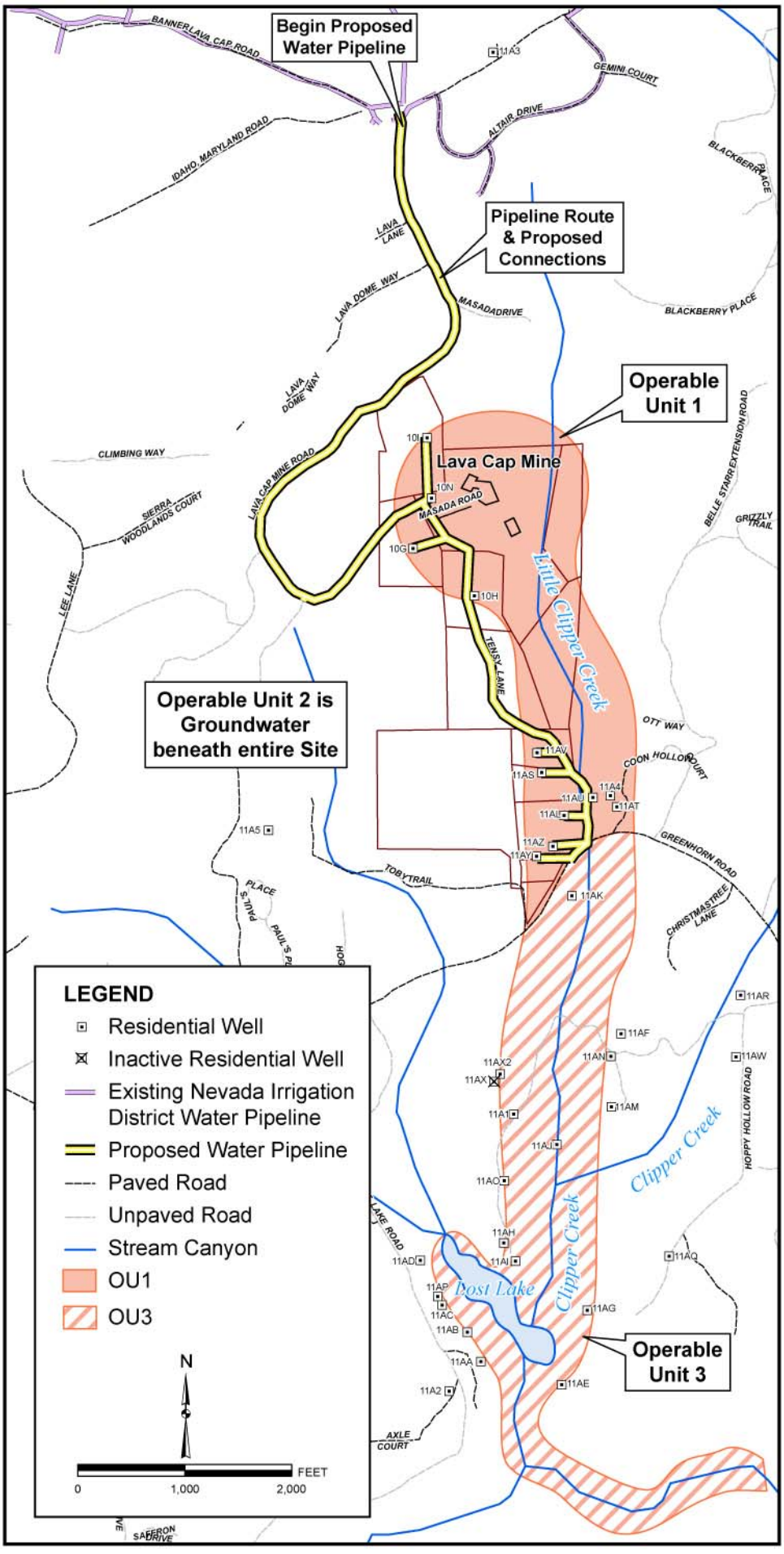
Although EPA has identified a preferred alternative, all cleanup options are being considered for selection. EPA encourages the public to comment on any or all alternatives, and all comments will be considered before a final remedy decision is made. The final decision may change based on the public comments EPA receives.

Lava Cap Superfund Site

Operable Units at the Lava Cap Mine Site

EPA started investigating the mine site in January 1999. To more easily study the contaminants and speed up the cleanup in key areas, the Site was divided into the following four operable units (see map):

- $ Operable Unit 1 (OU-1), the former active mining area, including surface mine wastes, discharges from the mine, impacted surface soil and Little Clipper Creek upstream from Greenhorn Road. The OU-1 remedy construction began in May 2006 and most construction was completed in 2007. The mine discharge treatment component of the OU-1 remedy is still underway. This operable unit is above Greenhorn Road and includes the entire original mine site.
- $ Operable Unit 2 (OU-2) includes groundwater at the Site. The impacted drinking water sources of OU2 are the focus of this Plan. Further studies will be conducted to determine if additional actions are needed, ultimately leading to selection of a final groundwater remedy. The area of this operable unit covers all the groundwater for the site, from the original mine area to Lost Lake.
- $ Operable Unit 3 (OU3) includes the Lost Lake/Deposition Area, plus Little Clipper Creek, Clipper Creek and surrounding areas downstream from Greenhorn Road. Supplemental investigations are underway in OU-3. The additional data will be used in the development and analysis of cleanup alternatives, called the OU-3 Feasibility Study (FS).



Lava Cap Operable Units

$ Operable Unit 4 (OU-4) was originally a subset of OU-1 and was created to quickly deal with contaminated residences located on the mine property. The OU-4 construction activities were completed in early 2006.

This Proposed Plan focuses on Operable Unit 2, and specifically on drinking water.

Results from Groundwater Investigation

A focused groundwater investigation report, known as a Remedial Investigation or RI Report, was completed in July 2008. The report evaluates the groundwater system at and near the Site using collected water sample data and a computerized groundwater flow model to evaluate where and how contamination related to the mine could potentially impact the groundwater.

Due to the complicated nature of the fractured bedrock groundwater flow system in the area, the model is very simplified compared to actual conditions, and there remains a great deal of uncertainty in fully understanding groundwater flow conditions at the Site.

Site History

Lava Cap Mine, located in the northern foothills of the Sierra Nevada Mountains, operated as a gold and silver mine from 1861 until 1943. The 30-acre mine property processed ore to extract gold and silver, which produced finely ground tailings containing naturally-occurring arsenic and trace metals.

The tailings were disposed in the Little Clipper Creek drainage adjacent to the mine's ore processing buildings. Some of the tailings were held in place by a log dam constructed across Little Clipper Creek. During a major storm in January 1997, the log dam partially collapsed and the flood waters spread arsenic-laden tailings down stream.

EPA designated these tailings a health and environmental threat because they are highly toxic, and exposure to these tailings would present a significant health risk. In January 1999, the federal government placed the site on its National Priorities List, or NPL (commonly called the Superfund List).

Because of these uncertainties, coupled with the recent completion of key portions of the OU-1 remedy, EPA believes that additional study is needed to more fully understand the potential extent of mine-related contamination impacts to groundwater. However, contaminated drinking water wells have been identified and EPA can make some decisions for those drinking water supplies based on currently available data.

Mine-related contaminants have adversely impacted portions of the Site, including groundwater beneath the mine facilities. Arsenic concentrations exceeding the drinking water standard (maximum contaminant level or MCL) have been detected in groundwater samples collected at the mine and adjacent properties and pose a threat to human health. To date the five residences nearest the mine have had detections of arsenic above the MCL in their wells. Levels of arsenic concentrations have varied greatly, from just over twice the MCL of 10 µg/L to more than ninety times the MCL.

Because local residents rely on the groundwater beneath their properties as a drinking water supply, EPA believes that implementing one of the cleanup alternatives in this plan is necessary to protect human health. Ingestion of arsenic-contaminated drinking water is considered a risk to health because it is known to cause cancer, as well as other health impacts, in humans. Absorption of arsenic through the skin by bathing or washing is minimal and not considered a risk. However, EPA believes residents near the mine are not currently ingesting arsenic above the MCL in their drinking water due to treatment units installed at their homes.

EPA Considered the Cleanup Alternatives

When considering cleanup alternatives, EPA develops specific actions or alternatives that satisfy its cleanup goals. This decision is focused on drinking water from contaminated groundwater wells, and the following alternatives were considered for addressing contaminated drinking water:

Alternative 1 – No Action

This alternative requires no active remediation or monitoring, and no cost is associated with this alternative. Consideration of a no-action alternative is required by the Superfund law as a baseline for comparing the effectiveness and costs of the other alternatives.

Alternative 2 – Point-of-use Treatment

This alternative protects people by minimizing consumption of arsenic-contaminated groundwater. It includes land use notifications describing the potential for arsenic contamination in the groundwater, expanded monitoring of groundwater, and installation and maintenance of point-of-use (POU) treatment systems. These systems are commercial reverse-osmosis units that would mount under the kitchen sink to ensure treatment of any water entering the faucet.

EPA estimated that seven systems would be installed, in addition to the three existing POU systems already in place. A total of ten systems would be maintained over time in order to develop a cost estimate for this alternative. The monitoring component would include sampling existing wells to detect new or changing residential well impacts and to monitor potential movement of mine-impacted groundwater towards residential wells.

Alternative 3 – Wellhead Treatment

This alternative protects people by preventing contact with arsenic in residential wells. The components of this alternative include the installation and maintenance of wellhead treatment units, groundwater monitoring as stated in Alternative 2, and land use notifications as described in Alternative 2. The wellhead treatment units would treat all water extracted from impacted wells, including landscaping and irrigation water, to the drinking water standard. For the cost estimate of this alternative, EPA estimated that twelve systems would be installed and maintained, which includes two wells currently used solely for irrigation.

Alternative 4 – Nevada Irrigation District Water Supply

This alternative provides a reliable municipal water supply to replace contaminated drinking water wells. The local municipal water supplier would be the Nevada Irrigation District (NID). Residences within the footprint of mine-impacted groundwater would be connected to the NID treated drinking water supply. Because NID does not currently operate a pipeline in the area, a distribution system would need to be built, likely extending from Banner Lava Cap Road down to Greenhorn Road, to provide a water supply for residents near the mine. For the purposes of this alternative, EPA estimated that 14,200 feet of pipeline would be installed, with ten connections to the NID drinking water supply. The Feasibility Study also considered extending the pipeline beyond Greenhorn Road, but that analysis is not included in the cost estimate for this alternative. This alternative also includes similar land use notifications and monitoring components as described in Alternatives 2 and 3.

EPA's Cleanup Goals

The specific goal for the Drinking Water cleanup plan is to:

Protect against exposure to groundwater contaminated with mine-related arsenic that presents an unacceptable risk to human health. Based on the Site investigations, arsenic is the primary contaminant that presents human health risks at the Site. EPA uses the arsenic drinking water standard or MCL of 10 µg/L (micrograms of arsenic per liter of water) as the cleanup goal.

EPA Compared the Cleanup Alternatives

EPA has created a list of specific criteria for comparing the effectiveness, efficiency, costs, and other factors of potential remedies (see Figure). EPA evaluated each alternative individually against criteria specified by the Superfund statute and guidance, and then compared them to determine the specific strengths and weaknesses that must be balanced. (See Table 1)

Human Health

In comparing all the alternatives, Alternative 1 is not adequately protective of human health because no action will be taken to prevent consumption of drinking water from arsenic-contaminated residential wells. Alternatives 2 through 4 provide protection of human health by limiting or preventing exposure to arsenic in drinking water. Alternative 2 provides the lowest overall protection because contaminated water would continue to be used in residences at non-treated faucets and for outdoor uses.

Alternative 3 provides a greater level of protection by treating all water from impacted wells, further reducing potential exposure. Alternative 4 offers the highest level of human health protection by providing an alternative water supply that does not rely on the effectiveness of wellhead treatment or the associated long-term routine maintenance.

Complying with Regulations and Standards

Only Alternative 1 would not comply with drinking water standards. The other alternatives are all expected to meet the Maximum Contaminant Level (MCL) for arsenic in drinking water, although Alternative 2 may not fully comply because some residential consumption may continue in excess of the MCL.

Long-term Effectiveness

All current and future risks to human health would remain under Alternative 1. Alternative 2 is ranked lower for long-term effectiveness than either Alternative 3 or 4 because it relies on long-term, consistent use and proper maintenance of the POU treatment units. Similarly, Alternative 4 is ranked higher than Alternative 3 because of the increased reliability and adequacy of the NID supply compared with the long-term proper monitoring, operation, and maintenance of wellhead treatment units at individual residences.

Short-term Effectiveness

There would be no short-term impacts from Alternative 1, though cleanup goals would also not be met. Alternatives 2 and 3 are ranked favorably because they include only limited construction activities, primarily involving installation of treatment units. Installation of the NID pipeline in Alternative 4 would create short-term risk to workers and have a significant short-term nuisance impact on the local community adjacent to the mine.

Implementability

The no-action alternative, Alternative 1, is easily implemented. Alternatives 2 and 3 are also expected to be readily implementable because of the small number of residences involved. Alternative 4 requires coordination with NID, property owners, and other stakeholders. Installation of an NID water supply pipeline will provide additional administrative challenges but is feasible. For these reasons, Alternative 4 is ranked lowest for this criterion.

Reducing Toxicity, Mobility, or Volume through Treatment

Alternative 1 does not provide any reduction in toxicity, mobility or volume of arsenic. Alternatives 2 and 3 reduce, through treatment, the toxicity of arsenic in groundwater extracted by residential wells for drinking water purposes. Although Alternative 4 does not include any treatment, it does reduce toxicity by eliminating groundwater extraction from contaminated wells.

Cost

The estimated net present value for each alternative is listed in the table. The net present value includes the capital costs of installing the remedy, plus the present value of the money required to provide 50 years of remedy Operation and Maintenance. Alternative 4 is the most expensive alternative, while Alternatives 2 and 3 are very similar in cost, with Alternative 1 requiring no additional funds.

Qualitative assessment of the results of the criteria evaluation: ● Favorable ◐ Favorable with qualifiers ○ Not Favorable

Remedial Alternative	Major Components	Threshold Criteria		Balancing Criteria				
		Protection of Human Health and the Environment	Compliance with ARARs	Long-term Effectiveness and Permanence	Reduction in Toxicity, Mobility, and Volume through Treatment	Short-term Effectiveness	Implementability	Estimated Cost
Alternative 1 – No Action	None	○ Cleanup objectives would not be achieved. Health risks to residents would be above acceptable range	○ Would not comply with the Safe Drinking Water Act (SDWA)	○ Future risks to human health and the environment would not be diminished	○ No treatment or reduction in toxicity, mobility, or volume of arsenic in drinking water	○ No remedial action; therefore no additional impacts residents due to implementation. Cleanup goals would not be achieved	● Implementable	$0
Alternative 2 – Point-of-use Treatment	Point-of-use treatment, Groundwater Monitoring, Land use notifications	◐ Significantly reduces arsenic ingestion by residents if only treated water is consumed.	◐ Would comply with SDWA if residential consumption is limited to only POU treated water.	◐ Residential exposure to drinking water is controlled, though only at POU. Some uncertainty with long-term reliance solely on under-sink POU treatment to limit exposure	◐ POU treatment would reduce toxicity in drinking water at the unit, though other water supplies in household would not be treated	● Very limited construction activities; therefore, minimal additional impacts to community from implementation.	● Readily implementable with adequate coordination with property owners. Most existing residential wells that exceed the drinking water standard have some form of POU treatment already installed	$1,184,000
Alternative 3 – Wellhead Treatment	Wellhead treatment, Groundwater Monitoring, Land use notifications	◐ Significantly reduces risks of exposure to arsenic in residential well water during all use (indoor and outdoor).	● Would comply with SDWA	◐ Significant reduction in risks to human health, as long as units are properly maintained	● Wellhead treatment reduces toxicity of all water from well	● Very limited construction activities; therefore, minimal impacts to community from implementation.	● Readily implementable with adequate coordination with property owners	$1,554,000
Alternative 4 – NID Water Supply	Municipal water supplied by NID, Groundwater Monitoring, Land use notifications	● High level of protection of human health because exposure to contaminated groundwater eliminated through municipal source of water	● Complies with all ARARs, including any location-specific ARARs associated with the pipeline route	● Significant reduction in human health risks, with no requirement for maintenance of treatment units	◐ Although there is no treatment, this alternative eliminates the use of contaminated residential wells, making the need for further treatment unnecessary	◐ Installation of the NID pipeline would create short-term risks to workers and have significant short-term nuisance impacts on the local community adjacent to the mine	◐ Implementable, but administrative challenges associated with installation of the NID pipeline, including coordination with NID and a larger number of property owners, must be addressed	$4,263,000

EPA's Preferred Remedy

Based on the evaluation of the alternatives developed for the drinking water component of the Groundwater Operable Unit, EPA prefers Alternative 4 — NID Water Supply. EPA prefers this alternative because it is the only alternative that meets our Threshold Criteria without qualification, and provides a safe, long-term drinking water supply for residences affected by mine-related arsenic.

While Alternatives 2 and 3 both provide safe drinking water through treatment of the contaminated well water, only Alternative 4 provides a reliable long-term solution that requires no additional maintenance from EPA, the State, or the property owner.

In the event that additional wells become impacted by mine-related arsenic, Alternative 4 allows for additional connections to the municipal water supply to reduce potential future exposure to arsenic-contaminated groundwater.

Opportunities for Public Comment

If you wish to make comments on the proposed Drinking Water cleanup plan, you have several options: postal mail, fax, e-mail, or in-person at the public meeting. The deadline for post mark is August 29, 2008.

Postal Mail

US Environmental Protection Agency
ATTN: Rusty Harris-Bishop
75 Hawthorne (SFD-7-2)
San Francisco, CA 94105

FAX

(415) 947-3528
ATTN: Rusty Harris-Bishop, (SFD-7-2)

E-mail

harris-bishop.rusty@epa.gov

Community Involvement

EPA is committed to involving the public in the cleanup decision-making process. Its Community Involvement Program focuses on answering the community's questions about the cleanup effort, providing information to the community about site activities, and incorporating community issues and concerns into Agency decisions, particularly when a cleanup remedy is proposed.

To learn more about the Site, you will find an extensive amount of information at EPA's Information Repositories (see box).

One convenient place to find major Site documents is to go to EPA's web site: www.epa.gov/region09/lavacapmine

EPA has two points of contact for the Lava Cap Mine Site, the Remedial Project Manager, Rusty Harris-Bishop, and the Community Involvement Coordinator, David Cooper. If you have technical questions about EPA's cleanup effort, please call Rusty Harris-Bishop, and if you have questions about public participation, please call David Cooper.

Information Repositories

Pertinent documents related to the Lava Cap Mine Superfund Site can be found at the locations below. Documents at these repositories are part of the Administrative Record for the Site.

Nevada County Library
980 Helling Way
Nevada City, CA 95959
Telephone: 530-265-7050

Grass Valley Public Library
206 Mill Street
Grass Valley, CA 95945
Telephone: 530-273-4117

Superfund Records Center
95 Hawthorne Street
San Francisco, CA 94105
Telephone: 415-536-2000

Lava Cap Mine Superfund Site
Proposed Cleanup Plan

For Further Information:

If you have questions or concerns, please contact the following individuals:

Rusty Harris-Bishop
Remedial Project Manager
US EPA Region 9
75 Hawthorne (SFD-7-2)
San Francisco, CA 94105
415-972-3140
harris-bishop.rusty@epa.gov

David Cooper
Community Involvement Coordinator
US EPA Region 9
75 Hawthorne (SFD-3)
San Francisco, CA 94105
(415) 972-3245
cooper.david@epa.gov

You can also call toll-free (800) 231-3075.
Leave a message and your call will be returned.

United States Environmental Protection Agency
Region 9
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105
Attn: David Cooper (Lava Cap 7/08)

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