

**RECORD OF DECISION**

**LAVA CAP MINE SUPERFUND SITE  
MINE AREA OPERABLE UNIT (OU1)**

**NEVADA CITY, CALIFORNIA**

**September 2004**

**United States Environmental Protection Agency  
Region IX - San Francisco, California**

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## Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
BRA	baseline risk assessment
CA/DTSC	State of California Department of Toxic Substances Control
CA/RWQCB	State of California Regional Water Quality Control Board
CA/SWRCB	California State Water Resources Control Board
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COCs	contaminants of concern
CTR	California Toxics Rule
cy	cubic yards
CWA	Clean Water Act
EBEP	Enclosed Bays and Estuaries Plan
ELCR	excess lifetime cancer risk
ERA	Ecological Risk Assessment
ESA	Endangered Species Act
ESD	Explanation of Significant Differences
FS	Feasibility Study
gpm	gallons per minute
HDPE	high-density polyethylene
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient
IRIS	Integrated Risk Information System
ISWP	Inland Surface Waters Plan
LUC	land use covenant
MCL	maximum contaminant level
mg/kg	milligrams per kilogram (equivalent to parts per million)
µg/L	micrograms per liter (equivalent to parts per billion)
NCP	National Contingency Plan
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPV	Net present value
NRHP	National Register of Historic Places
NTR	National Toxics Rule
NTU	nephelometric turbidity unit
O&M	operations and maintenance
OU	Operable Unit
ppb	parts per billion
ppm	parts per million
PRG	preliminary remediation goal
PRP	Potentially Responsible Party

QA/QC	quality assurance/quality control
RAGS	Risk Assessment Guidance for Superfund
RAOs	remedial action objectives
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RME	reasonable maximum exposure
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
STLC	soluble threshold limit concentration
TAG	Technical Assistance Grant
TBC	to be considered
TCLP	toxicity characteristic leaching procedure
TPCA	Toxic Pits Control Act
TTLC	total threshold limit concentration
UCL	upper confidence limit
USC	United States Code
USEPA	United States Environmental Protection Agency
WDRs	waste discharge requirements

**Part I**  
**Declaration**

# Part I - Declaration

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## 1.1 Site Name and Location

The Lava Cap Mine Superfund Site (CERCLIS ID No. CAD983618893) (the Site) is located in the Sierra Nevada foothills approximately 6 miles east of Grass Valley, Nevada County, California. The Site has been divided into three Operable Units (OUs). This Record of Decision (ROD) pertains to the Mine Area Operable Unit or OU1.

## 1.2 Statement of Basis and Purpose

This decision document presents the Selected Remedy for the Mine Area Operable Unit of the Site, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Contingency Plan (NCP). This decision is based on the Administrative Record for the Site. The State of California concurs with the Selected Remedy.

## 1.3 Assessment of the Site

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

## 1.4 Description of the Selected Remedy

The Lava Cap Mine was historically operated as a hardrock gold and silver mine up until 1943. The Mine Area Operable Unit comprises the historic mine facilities and workings and adjacent waste rock and tailings disposal areas, as well as immediate downstream areas of the Little Clipper Creek drainage, which traverses the historic mine property. Future cleanup actions remain to be proposed for the Lost Lake Operable Unit and the Groundwater Operable Unit.

The processing of ore to extract gold and silver at the Mine Area Operable Unit produced finely ground tailings containing naturally-occurring arsenic and trace metals. USEPA has designated these tailings as a principal threat waste at the Site because they are highly toxic and highly mobile, and present a significant risk should exposure occur. The tailings were disposed of in the Little Clipper Creek drainage adjacent to the mine's ore processing buildings. A portion 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 flood waters spread arsenic-laden tailings downstream.

In addition, arsenic-contaminated water continuously discharges from the mine and enters the Little Clipper Creek drainage. Although USEPA stabilized the tailings pile and surface water drainages in 1997 and 1998, more work is needed to manage the tailings within the Mine Area Operable Unit. Further work is also needed to control surface water drainage and to treat the mine discharge at the Mine Area Operable Unit.

Components of the Selected Remedy for the Mine Area Operable Unit are as follows:

- Mine buildings, tailings, waste rock, and mine drainage: Consolidate, regrade, and cap the tailings with a low-permeability engineered cover system; contour, cover and revegetate the waste rock

disposal area to promote runoff and reduce surface infiltration; replace the failed log dam with a rock buttress; divert clean surface water flows around the tailings and waste rock disposal areas; collect and treat contaminated water emanating from the mine (i.e. the mine drainage) and from the tailings pile (i.e. the seeps) to meet the remedial action objective of restoring Little Clipper Creek to its beneficial use as a potential drinking water supply; remove tanks, vats, sumps, and contaminated soil from mine buildings, consolidating this material with the mine tailings or shipping it offsite for disposal; and implement land use restrictions to protect the Selected Remedy from physical disturbance and prohibit the property from being used as a residence, including any mobile home, a hospital, a public or private school or a day care center, where such use is inconsistent with the Selected Remedy (such land use restrictions shall be implemented as land use covenants under California civil code, Section 1471 (c)).

- **Mine Area residences:** Demolish the residence that was constructed over the waste rock and adjacent to the tailings disposal areas; remove arsenic-contaminated soil from around three other residences and replace it with clean soil; move excavated material to the tailings disposal area for long-term management.
- **Little Clipper Creek to Greenhorn Road:** Excavate the tailings and arsenic-contaminated sediment which has accumulated along Little Clipper Creek adjacent to Tensy Lane as far south as Greenhorn Road; and haul excavated material to the tailings disposal area for long-term management

The estimated project implementation cost (2004 dollars) is \$8.54 million in capital costs, plus \$163,000 in annual operations and maintenance costs. The fifty-year Net Present Value (NPV) is estimated at \$14.1 million.

## 1.5 Statutory Determinations

The Selected Remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

The Selected Remedy satisfies the statutory preference for treatment as a principal element of the remedy (i.e. reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment) by implementing treatment of contaminated surface water emanating from the mine and from the tailings disposal area.

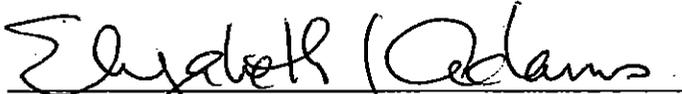
Because this remedy will result in hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

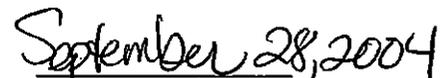
## 1.6 ROD Certification Checklist

The following information is presented in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record for the Mine Area Operable Unit.

- Contaminants of concern (COCs) and their respective concentrations (see Part II, Sections 5.1, 5.2, 5.3, 5.4 and 7.1)

- Baseline risk represented by the COCs (see Part II, Sections 7.1 and 7.2)
- Cleanup levels established for the COCs and the basis for these levels (see Part II, Section 8)
- How source materials constituting principal threats are addressed (see Part II, Sections 11 and 12.2.2)
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment (BRA) and ROD (see Part II, Sections 6.1, 6.2 and 7.1)
- Land and groundwater use that will be available at the site as a result of the selected remedy (see Part II, Section 12.4)
- Estimated capital, operation and maintenance (O&M), and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected (see Part II, Section 12.3)
- Decisive factors that led to selecting the remedy (i.e., how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria) (see Part II, Section 12.1)

  
Elizabeth J. Adams  
Chief, Site Cleanup Branch  
Superfund Division

  
Date

**Part II**  
**Decision Summary**

# Part II - Decision Summary

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## 1 Site Name, Location and Description

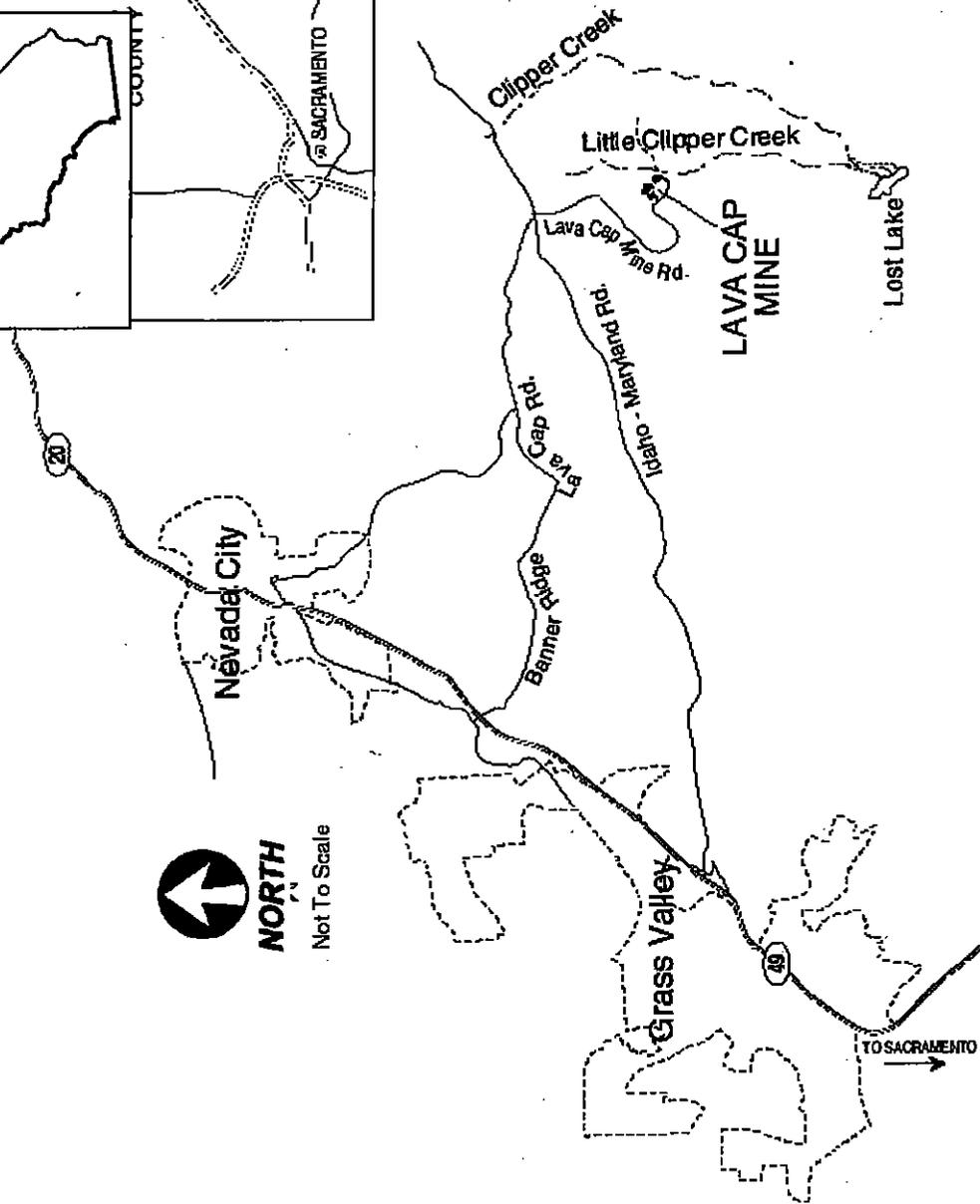
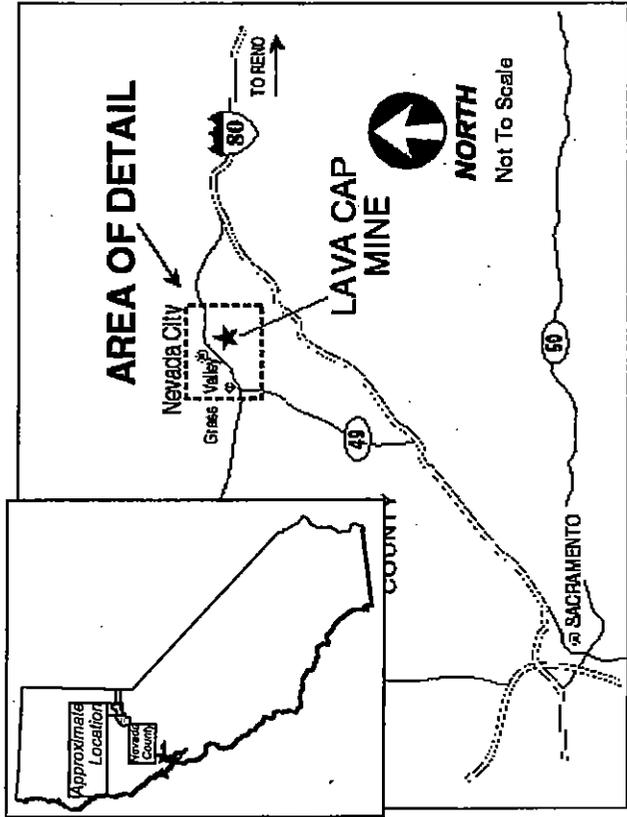
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The subject of this Record of Decision (ROD) is the Mine Area Operable Unit of the Lava Cap Mine Superfund Site. The Lava Cap Mine Superfund Site (CERCLIS ID No. CAD983618893) (the Site) is located in the Sierra Nevada foothills approximately 6 miles east of Grass Valley, Nevada County, California. The geographical coordinates are latitude 39°13'41.0" north and longitude 120°58'11.5" west, Township 16 North, Range 9 East, Section 28 of the Mount Diablo baseline and meridian (See Figure 1).

The Mine Area Operable Unit comprises the portion of the Site where hardrock mining operations took place, plus several contiguous land parcels. Other portions of the Site which may be addressed in future response actions comprise areas to which waste materials generated at the mine migrated over time (see Section 4, Scope and Role of Operable Units). The mine is no longer operational but was once an active gold and silver mine. The surface elevation of the central shaft is approximately 2,840 feet above sea level. At the mine, ore was hauled to the surface, crushed, and processed to concentrate the fractions of gold and silver present. The finished product was sent offsite for further refining to smelters located near Tacoma, Washington and San Francisco, California. The operators of the mine deposited waste tailings into the Little Clipper Creek drainage which runs through the mine property. This disposal practice resulted in the migration of a significant quantity of tailings away from the mine to downstream areas.

Portions of the Mine Area Operable Unit in need of cleanup include: large tailings and waste rock piles covering an area of approximately 4 acres; several abandoned mine buildings; four residences; and mine tailings deposited in the Little Clipper Creek surface water drainage immediately downstream of the mine.

The United States Environmental Protection Agency (USEPA) assumed lead responsibility for the Site when it was added to the Superfund National Priorities List (NPL) in February 1999. USEPA's response activities at the Site are and have been conducted under the authority established in the federal Superfund law, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 U.S.C. Section 9601 et seq. The agency with the lead supporting role is the California Department of Toxic Substances Control (CA/DTSC). Site investigation and cleanup activities under the federal Superfund program to date have been funded by the federal government; the State of California has also incurred costs during its involvement at the Site (see Section 2/Site History and Enforcement Activities).



**FIGURE 1**  
**SITE LOCATION MAP**  
 LAVA CAP MINE  
 NEVADA COUNTY, CALIFORNIA

## 2 Site History and Enforcement Activities

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Various entities operated the Lava Cap Mine during two distinct periods, from 1860-1918, and from 1934-1943. It was during the latter period when the most intensive mining occurred, with an average of 300 to 400 tons of ore processed per day. Processing operations consisted of crushing and grinding circuits to reduce the rock to flour, followed by a flotation plant to separate out the gold and silver. The resulting concentrate was sent to smelters offsite for further refining. Amalgamation processes which utilize mercury in the recovery of silver and gold were not extensively used at the Lava Cap Mine because of chemical interferences with the processes. Late during the mine's period of operation, a cyanide process was installed in an attempt to recover additional gold and silver from the waste tailings (see Photo 1), but the process proved ineffective and was discontinued.



**Photo 1: Interior of cyanide building c. 2003**

The native ore, in addition to gold and silver, contained naturally occurring arsenic and trace amounts of heavy metals such as lead. Following the processing of the ore, the arsenic and heavy metals remained in the finely ground tailings. The tailings were deposited in the Little Clipper Creek drainage on the property. During operations, two structures were built for the purpose of holding the tailings in place: a log dam placed across Little Clipper Creek on the mine property; and Lost Lake, which was constructed as a tailings impoundment approximately 1.5 miles downstream of the mine.

No mining-related activity has occurred at the Site since 1943, although attempts have been made to reopen the mine. In February 1978, Keystone Copper Corporation submitted an application for a National Pollutant Discharge Elimination System (NPDES) permit to the California Regional Water Quality Control Board (CA/RWQCB), seeking to discharge 63 million gallons of water to Little Clipper Creek as part of a project to de-water the mine workings. High concentrations of arsenic

were determined to be present in water discharging from the mine workings. CA/RWQCB did not issue a permit and the project was abandoned.

In 1979, the log dam, which had started to decompose, released tailings into Little Clipper Creek. The CA/RWQCB subsequently issued a Cleanup and Abatement Order to the owner (Keystone Copper Corporation) and the lessees of the mine property to take corrective action, including: removal of sediment from the streambed and installation of settling basins; diversion of surface water around the compromised log dam; and evaluation of the log dam by a licensed professional engineer or engineering geologist. Records suggest that compliance with this order was incomplete: diversion structures were not built; an investigation of the stability of the log dam was not undertaken; and improvements to the dam were not made.

Franco-Nevada Mining Corporation acquired surface and mineral rights at the Lava Cap Mine in 1984 with the goal of re-opening the mine, but this project was also abandoned when the company's proposal to re-zone the property from "residential/ agricultural" to "mineral extraction" was opposed by local

property owners and rejected by Nevada County. Franco-Nevada then quit-claimed the surface and mineral rights back to Keystone Copper Corporation.

Banner Mountain Properties, Ltd., subsequently acquired the mine property and in 1991 attempted to develop it for residential use, but adjacent property owners and local homeowners associations expressed opposition, and the development plan never came to fruition.

In 1996, the current property owner, Stephen Elder, entered into a voluntary cleanup agreement with CA/DTSC under which studies were to be undertaken to: identify Site characterization data gaps; research available alternatives for returning the Site to productive use; and make a determination on the regulatory restrictions for using mine wastes from the Site. Subsequent to EPA taking the lead at the Site under the federal Superfund program, the voluntary cleanup agreement was terminated (in 2000) without cleanup having been undertaken.

The primary event that precipitated USEPA's involvement occurred in January 1997, when during a major winter storm, the upper half of the log dam collapsed, releasing over 10,000 cubic yards (cy) of tailings into Little Clipper Creek (see Photo 2). In May 1997, staff from CA/DTSC, the California Department of Fish and Game, and Nevada County's Department of Environmental Health inspected the mine and downstream areas. They found extensive deposits of tailings in Little Clipper Creek and downstream in Clipper Creek and Lost Lake.



**Photo 2: Failed log dam c. 2003**

In October 1997, the USEPA Region 9 Superfund Emergency Response Office determined that the high arsenic concentrations and the mobility of the extremely fine-grained tailings warranted a time-critical removal action under Superfund authority. During October and November 1997, USEPA removed 4,000 cubic yards (cy) of tailings from just upstream of the damaged log dam and stockpiled this material in a more stable location closer to the mine buildings. These tailings were placed on an under-liner of high density polyethylene (HDPE) and covered with an over-liner of HDPE, a clay cap, and waste rock. The project also included: grading the tailings pile upstream of the log dam to reduce its slope; reinforcing the partially failed dam with large diameter rock; diverting the water discharging continuously from the mine adit around the tailings pile; and diverting Little Clipper Creek around the tailings pile. In 1998, USEPA stabilized another smaller tailings release and further improved drainage.

USEPA listed the Lava Cap Mine Superfund Site on the Superfund National Priorities List (NPL) in February 1999. USEPA began the in-depth investigation of the nature and extent of contamination, called the Remedial Investigation (RI), in October 1999. As part of this effort, USEPA studied the risks posed by the Mine Area Operable Unit to both human and ecological health. These efforts identified arsenic, and to a lesser extent iron and lead, as the primary contaminants of concern (COC) for human health at the Mine Area Operable Unit, and arsenic and other metals as potentially harmful to plant and animal species. The RI report was released for public comment in November 2001 (EPA, 2001a). The Feasibility Study (FS) for the Mine Area Operable Unit, which evaluated cleanup alternatives for that portion of the Site, was released for public comment in February 2004 (EPA, 2004a).

From April 2003 through February 2004, USEPA conducted a second removal action to reduce risks to certain individuals living on the mine property and to others whose individual water supply wells had demonstrated elevated levels of arsenic. Actions taken included the offsite relocation of the occupants of two residences and the installation of water filtration treatment units at three residences.

In February 2004, USEPA issued its Proposed Plan for cleanup of the Mine Area Operable Unit. USEPA held a public meeting to present the plan and take comments on February 26, 2004, at the Nevada County Board of Realtors Office in Grass Valley, Nevada County, California. In addition to comments taken at the meeting, comments were taken during the public comment period which closed on March 26, 2004. Following USEPA's review of comments received, this ROD was developed.

USEPA has conducted enforcement activities at the Site since its listing on the NPL in an effort to obtain participation in the cleanup from parties responsible for the contamination. In June 2001, General Notice letters were sent to the current property owner and to two corporate successors to previous owners/operators of the mine. These letters, which were issued in conjunction with USEPA's Potentially Responsible Party (PRP) search, notified the parties of the necessity for USEPA to spend federal funds on the study and cleanup of the Site, costs for which the parties are potentially liable.

USEPA also issued Special Notice Letters to the same three parties in July 2003, notifying them of USEPA's intent to initiate a Groundwater Operable Unit Remedial Investigation and offering them an opportunity to conduct the work. To date, none of the PRPs identified by USEPA have offered to perform work or reimburse USEPA for its costs.

### 3 Community Participation

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Following USEPA's practice at federal Superfund sites, after the listing of the Lava Cap Mine Superfund Site on the NPL, USEPA developed a Community Involvement Plan that outlined the types of activities envisioned to keep the local community informed. The plan also summarized key community concerns going into the Superfund process, which were solicited from the public during community interviews conducted in March 1999.

Throughout its involvement at the Site, USEPA has kept State and County agencies, the business community, local non-profit organizations, and property owners near the Site informed of its activities and the results of its studies. Under the Technical Assistance Grant (TAG) program, USEPA funded a local organization-- the Lava Cap Mine Superfund Coalition-- to hire an independent technical advisor to help the community understand the issues and represent their concerns regarding the Site. USEPA has also held annual public meetings, frequent briefings of Nevada County staff, and has published periodic newsletters. These newsletters are available through USEPA's web site at:

<http://yosemite.epa.gov/r9/sfund/fsheet.nsf>.

These newsletters and other documents referred to in this ROD are also available to the public as part of the Administrative Record for this ROD at the Region 9 Superfund Records Center located at 95 Hawthorne Street in San Francisco, California. The Administrative Record is also available for public review at the local information repositories at the Nevada County Library (980 Helling Way, Nevada City, California) and the Grass Valley Public Library (206 Mill Street, Grass Valley, California).

USEPA issued its proposed cleanup plan for the Mine Area Operable Unit in February 2004 and presented the plan at a public meeting held at the Nevada County Board of Realtors office in Grass Valley the evening of February 26, 2004. (See Part III of this ROD, the Responsiveness Summary, which includes a transcript of the meeting.) The Proposed Plan specified how USEPA, in cooperation with CA/DTSC, intends to protect people and the environment from contamination at the Mine Area of the Site. It described the cleanup alternatives USEPA considered, and presented a preferred alternative. In addition to taking comments at the meeting, USEPA invited the public to submit comments on the Proposed Plan over a thirty-day period from February 25 to March 26, 2004. USEPA did not receive any requests for an extension of the comment period and it closed as planned.

In the development of this ROD, USEPA carefully considered all comments submitted. Most of the comments received were either neutral or favorable toward USEPA's proposed cleanup. A few concerns were raised or suggestions offered by commenters on how best to accomplish various aspects of the cleanup, but none rejected USEPA's proposal. (See the Responsiveness Summary [Part III of the ROD] for further discussion of these issues.) Consequently, this ROD carries forth and adopts the preferred alternative published in the Proposed Plan. USEPA will continue to work with the State of California and local stakeholders during the design process to ensure that any concerns regarding implementation of the remedy, should they arise, continue to be appropriately addressed.

## 4 Scope and Role of Operable Units

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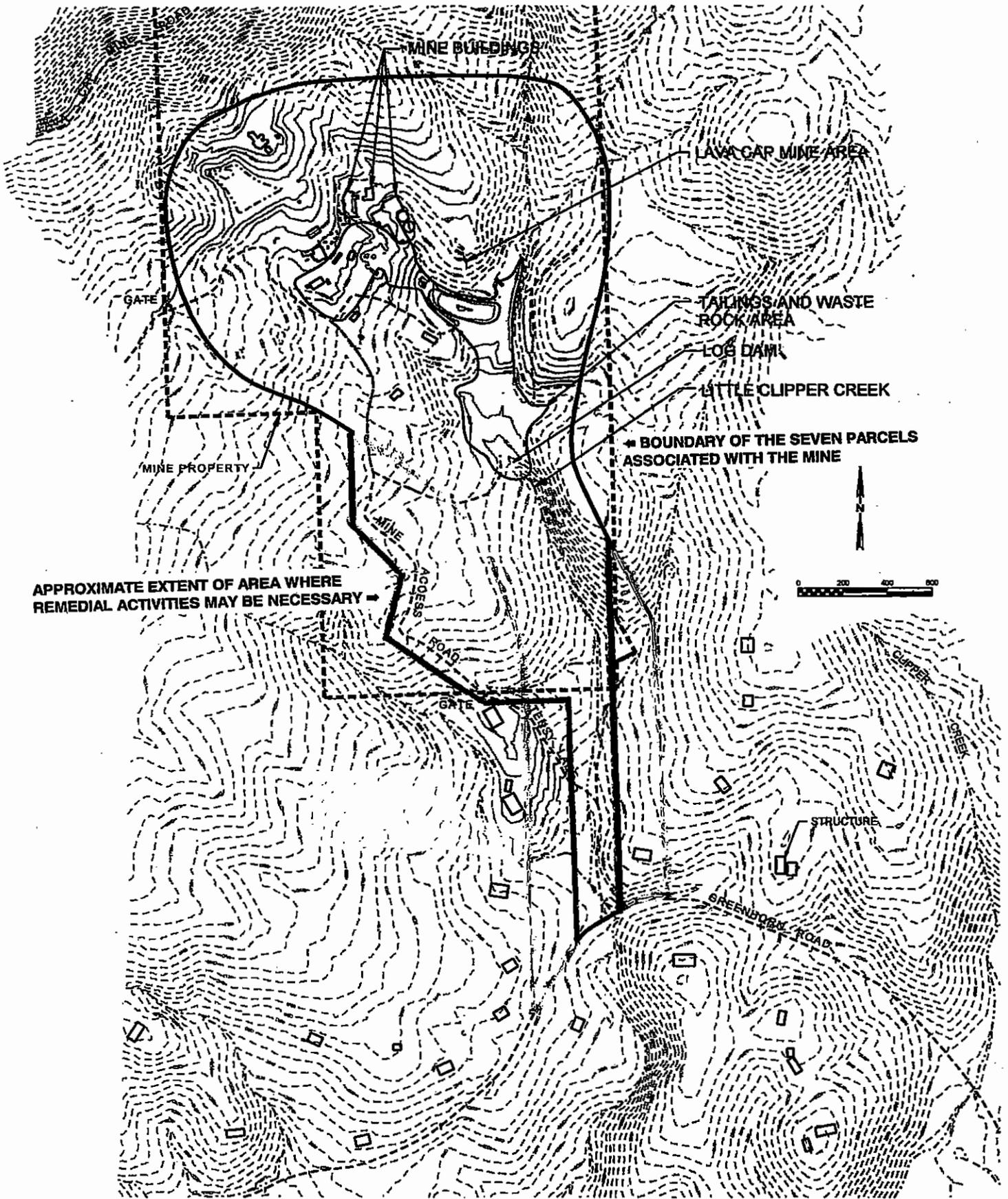
The Lava Cap Mine Superfund Site as a whole comprises a large geographic area. The Mine Area Operable Unit is part of the whole and comprises the portion of the Site where hardrock mining operations took place, plus several contiguous land parcels. The Mine Area Operable Unit principally comprises seven land parcels totaling an approximate 30 acres in size, 4 acres of which represent the main tailings disposal area for the mine. The seven parcel numbers are as follows: 39-160-16; 39-160-21; 39-160-25; 39-160-27; 39-160-28; 39-160-29; and 39-160-30. The boundary of the Mine Area Operable Unit also incorporates a narrow band of property along the banks of Little Clipper Creek on parcel numbers 39-170-66 and 39-170-77 located south or downstream of the location of the failed log dam at the mine and to the north of the intersection of Tensy Lane and Greenhorn Road. USEPA is issuing this ROD for the Mine Area Operable Unit.

The Mine Area Operable Unit is mostly comprised of disturbed land of an abandoned industrial character. Two of the seven land parcels discussed above (39-160-16 and 39-160-21) are located away from the mine's disposal areas and appear to be primarily residential in character; limited quantities of contaminated soil are located on these parcels and may be associated with construction fill or road building activities. Another two of the seven parcels (39-160-27 and 39-160-29) do not have any residential use at present but also contain limited quantities of contaminated soil. The three remaining parcels (39-160-25; 39-160-28; and 39-160-30) contain the majority of the contaminated areas of the operable unit, including: one residence built on or adjacent to mine tailings and waste rock; one residence surrounded by considerable deposits of mine tailings and/or waste rock used for construction fill or road building; the mine's process buildings (the mill building, assay building, cyanide building and other smaller co-located structures); the mine's disposal areas (which include waste rock and tailings, sometimes interspersed); the central mine shaft; the adit, from which contaminated mine drainage emanates as surface water flow; stretches of Little Clipper Creek which contain contaminated sediment and which carry contaminated surface water flows; and the failed log dam placed across Little Clipper Creek. As discussed above, two further parcels downstream of the log dam and north of Greenhorn Road contain narrow bands of accumulated contaminated sediments. Greenhorn Road represents the southernmost boundary of the Mine Area Operable Unit. (See Figure 2/Mine Area Operable Unit.)

Beyond the boundaries of the Mine Area Operable Unit, tailings produced at the mine have traveled a distance of over 1 ½ miles downstream, spreading over an area approximately 7 acres in size located in a low-density residential area. The complexity of cleanup issues in the downstream areas has led USEPA to separate out that part of the Site for further analysis. USEPA has designated that subject area as the Lost Lake Operable Unit (See Figure 3/Operable Units).

Additionally, tailings and/or water discharging from the mine and/or waste tailings may have contributed to elevated levels of arsenic that have been found in the local groundwater system. The groundwater investigation at the Site is the most complex of all and USEPA has further separated out that portion of the Site for additional study by designating the Groundwater Operable Unit.

The Mine Area Operable Unit in comparison to the rest of the Site presents fewer complexities in the development of cleanup alternatives. This is why USEPA first arrived at a cleanup decision for the Mine Area Operable Unit. Rather than postpone this part of the cleanup while developing plans for remaining areas, USEPA has decided to divide the overall Site cleanup into phases. By designating the Mine Area Operable Unit, USEPA has enabled this part of the cleanup to proceed.



APPROXIMATE EXTENT OF AREA WHERE  
REMEDIAL ACTIVITIES MAY BE NECESSARY →

→ BOUNDARY OF THE SEVEN PARCELS  
ASSOCIATED WITH THE MINE

**FIGURE 2**  
**MINE AREA OPERABLE UNIT**  
LAVA CAP MINE  
NEVADA COUNTY, CALIFORNIA



**Photo 3: Lost Lake c. 2003**

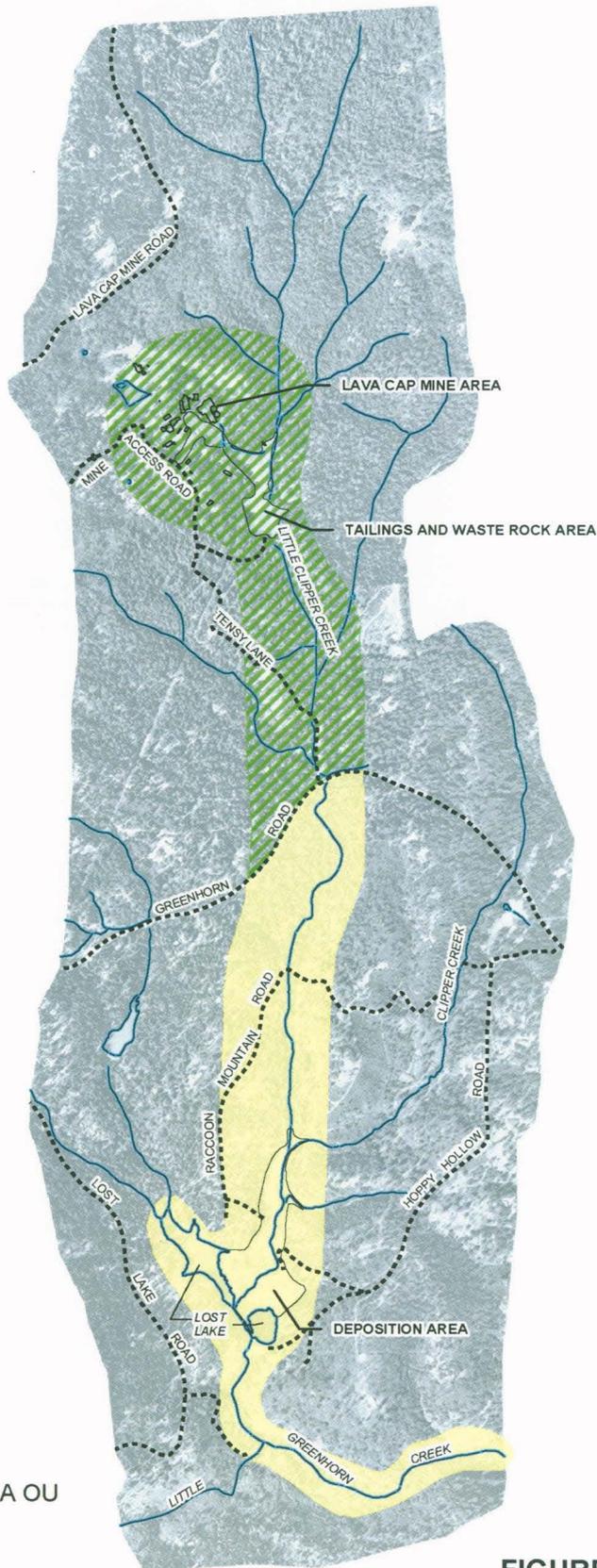
The Lost Lake Operable Unit (see Photo 3) begins where the Mine Area Operable Unit ends, comprising the Little Clipper Creek drainage south of Greenhorn Road; the Clipper Creek drainage downstream of its confluence with Little Clipper Creek; Lost Lake; and areas downstream of Lost Lake in Little Greenhorn Creek.

The Groundwater Operable Unit encompasses the study of areas of potentially-impacted groundwater, from the Mine Area Operable Unit in the north to the Lost Lake Operable Unit to the south. The groundwater system consists of fractured bedrock penetrated by mine shafts and tunnels and overlain by mine tailings; complexities in this system have made it necessary for USEPA to make additional resources

available to more fully evaluate current and potential future groundwater impacts arising from Site-related contamination. The groundwater study is further complicated by the presence of naturally-occurring arsenic within the groundwater system.

**LEGEND**

- ..... ROADS
  - STREAMS
  - LOST LAKE AREA OU
  - ▨ MINE AREA OU
  - BUILDINGS
- 0 1,500 Feet
- 



**FIGURE 3  
OPERABLE UNITS  
(APPROXIMATE BOUNDARIES)**

LAVA CAP MINE  
NEVADA COUNTY, CALIFORNIA