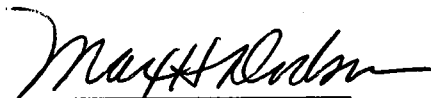


**CLEAR CREEK/CENTRAL CITY SUPERFUND SITE
SECOND FIVE-YEAR REVIEW REPORT**

MARCH 1999

PREPARED BY U.S. EPA REGION VIII



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MAR 26 1999

Date

**FIVE-YEAR REVIEW
CLEAR CREEK/CENTRAL CITY SUPERFUND SITE
MARCH 1999**

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**SECOND FIVE-YEAR REVIEW
CLEAR CREEK/CENTRAL CITY SUPERFUND SITE, COLORADO
MARCH 1999**

INTRODUCTION

AUTHORITY STATEMENT

Region VIII of the U.S. Environmental Protection Agency (EPA) has conducted a five-year Review of the Clear Creek/Central City Superfund Site (Site) in Colorado and has prepared this report under requirements of Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and Section 360.430(f)(4)(ii) of the National Contingency Plan (NCP). A statutory five-year review is required when EPA selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at a site above levels that allow for unlimited use and unrestricted exposure. The five-year review shall be conducted every five years after initiation of such remedial action. This is a statutory, versus a policy, review of the Site. The purpose of the five-year review is to ensure that the remedial actions conducted at the Site remain protective of public health and the environment and that they are functioning as designed. This document will become part of the Site file.

This is the second five-year review for the Site. The first five-year review was triggered by the 1989 remedial actions at the Argo tailings and waste rock pile and the Gregory Incline tailings pile, properties which comprise a portion of the Site. The first five-year review was completed in March 1994. The second five-year review was prepared in accordance with the Office of Solid Waste and Emergency Response (OSWER) Directive #9355.7-02, entitled "Structure and Components of Five-Year Reviews," May 23, 1991, as amended by supplemental five-year review guidance documents dated July 26, 1994 and December 21, 1995. This is a Level Ia review as described by the 1994 Directive. The Level Ia review is for sites with ongoing activities - sites that have yet to achieve construction completion.

SITE DESCRIPTION

Clear Creek originates in the high mountains of Colorado's Continental Divide, in the pristine alpine environment found at 11,000 feet of elevation near Torrey's Peak. The river finds its way from the mountains following glaciated, U-shaped valleys and a steep river canyon until it reaches the City of Golden, Colorado, 60 miles to the east and several thousand feet lower in elevation. Along its path, Clear Creek traverses a section of the Colorado Mineral Belt, unmineralized rocks of the Front Range, and urban and agricultural portions of the Denver metropolitan area, serving as a major source of water for industry, agriculture, and recreation. Clear Creek is the drinking water source for nearly 350,000 living in the northern and western suburbs of Denver, Colorado. Eventually, Clear Creek empties into the South Platte River just north of Denver.

Clear Creek passes through the Colorado Mineral Belt which includes several mining districts in Clear Creek and Gilpin Counties. Due to the rich mineralization, these two counties became some of the most heavily mined areas of Colorado, with gold and silver accounting for the vast majority of the mining. Mining activity in the area commenced in 1859 with placer gold being found at the mouth of Chicago Creek, a tributary to Clear Creek. The first lode discovery occurred in Gregory Gulch later that year. Gregory Gulch is a tributary to North Clear Creek which, in turn, is a tributary to Clear Creek.

By the summer of 1860, almost all surface lodes had been claimed. As the extraction of surface ores progressed, the depth of the mines increased, often to a point below the ground water table. To compensate, the miners constructed tunnels which not only drained and dried the mines, but were used for hauling ore out of the mines.

Today, acidic metal-rich water from these mine tunnels enters Clear Creek and its tributaries at many locations and has a profoundly harmful effect on the ecology of the river. Mine tailings from inactive or abandoned milling operations and waste rock from the development of the mines dot Clear Creek's river banks. These tailings and waste rock piles also contribute metals such as iron, zinc, copper, cadmium, manganese, lead, and arsenic to the river, especially during storms and periods of melting snow.

Occasionally, one of the mine tunnels will produce a "blowout," releasing large quantities of water and sludge in a short period of time. A blowout can happen when debris, likely fallen from the tunnel roof, temporarily impounds water. Water pressure behind the debris dam eventually builds to the point where the dam material and everything behind it are pushed forcefully from the mouth of the tunnel. A blowout from the Argo tunnel in 1980 focused EPA's attention on Clear Creek and was a significant factor when, three years later, EPA included the Site on the Superfund National Priorities List (NPL).

EPA and the Colorado Department of Public Health and the Environment (CDPHE) have studied the 400-square mile upper Clear Creek basin. Because of the immense scale of this project, EPA and CDPHE have chosen to refer to the Clear Creek basin as the Clear Creek/Central City Superfund Study Area. Within this broad study area, several discrete draining mines and mine dumps have been identified as the Site. Currently included in the Site are 23 properties - six mine tunnels and 17 mine waste piles. These tunnels and mine waste piles are located in or near the cities of Central City, Black Hawk, Idaho Springs, Silver Plume, and Empire. Attachment 1 includes a basin land-use map and Site map which provide additional descriptive information.

SITE HISTORY

The Site was nominated for listing on the NPL in 1982 and added to the NPL in September 1983. Once listed on the NPL, a site is eligible to receive funding for studies and cleanup from the Superfund Trust Fund.

Initially, EPA anticipated at least six Operable Units (OUs) for the Site: treatment of the acid drainage from five specific mine tunnels (OU #1), remediation of the five tailings and waste rock piles near those tunnels (OU #2), source control at the Argo tunnel (OU #3), blowout control at the Argo tunnel (OU #4), regional ground water contamination (OU #5), and upstream mine tunnel discharges and tailings (OU #6). Later, largely as a result of public comment received on the feasibility study for OU #2, EPA combined OUs #3 and #4 into a comprehensive remedial investigation and feasibility study of the Argo tunnel and OUs #5 and #6 into what has come to be known as the Phase II remedial investigation and feasibility study. One Record of Decision (ROD) was signed for both the Argo and Phase II studies. Together these studies are reflected in EPA planning documents as OU #3, an expanded version of the original OU #3. This discussion is included because it is important for those reviewing Site activities to remember that the definition and scope of OU #3 have changed over time.

The ROD for OU #1 - Acid Mine Drainage Treatment - was signed September 30, 1987. The selected remedy was treatment of the acid discharges from five mine tunnels using an innovative technology, man-made wetlands. The ROD provided EPA with the flexibility to treat the acid discharges using a conventional technology if pilot studies proved that the innovative technology was ineffective. The five tunnels included the Big Five and Argo tunnels in Idaho Springs, the Gregory Incline and National tunnel in Black Hawk, and the Quartz Hill tunnel in Central City. On June 15, 1988, EPA gave the lead for remedial design for OU #1 to CDPHE. The lead for the Phase II remedial investigation and feasibility study was also given to CDPHE at this time.

The ROD for OU #2 - Tailings/Waste Rock Remediation - was signed March 31, 1988. The selected remedy was storm water controls and slope stabilization for the five failings and waste rock piles associated with the five mine tunnels mentioned previously. The U.S. Bureau of Reclamation was assigned the lead for remedial design of OU #2 in June 1988. Remedial action was completed at two of the five tailings and waste rock piles before work on OU #2 was temporarily suspended. EPA gave the lead for remedial design for the remaining OU #2 properties to CDPHE on September 21, 1995.

In August 1988, EPA completed the Argo Tunnel Discharge Control Feasibility Study. The purpose of the study was to evaluate alternatives for reducing the sources of water into the Argo tunnel such as alluvial ground water or snow build-up inside mine shafts and for controlling or reducing the likelihood of a sudden surge of acid water, a blowout, from the Argo tunnel. A remedy decision on the Argo tunnel was delayed until CDPHE completed the Phase II study.

The Phase II remedial investigation and feasibility study provided a comprehensive view of the entire 400-square mile basin. The purpose of the Phase II study was to determine the nature and extent of additional sources of contamination to Clear Creek. Potential sources included additional draining mine tunnels, eroding mine waste piles, and ground water. The Phase II study also included an investigation of the air quality in Central City and a limited survey of private drinking water wells in the mining district.

The ROD for the Phase II study, or OU #3, was signed on September 30, 1991, with the following remedy components:

- capping or physical barriers and institutional controls for select mine waste piles;
- an alternate drinking water supply where required;
- treatment of the Burleigh tunnel mine water discharge;
- treatment of the Argo tunnel mine water discharge;
- no action to control blowouts from mine tunnels;
- a ground water pump and treat system in the Idaho Springs area to address non-point source metals loading to surface water;
- installation of a pipeline system to carry acid mine drainage from the National and Quartz Hill tunnels and the Gregory Incline to a point below the Black Hawk sewage treatment plant for potential future treatment; and
- reduction in the heavy metals loading from Woods Creek.

The OU #3 ROD amended the OU #1 ROD by invoking an interim remedy waiver of applicable or relevant and appropriate requirements (ARARs) for the treatment of discharges from the National and Quartz Hill tunnels and the Gregory Incline pending treatability studies and further delineation of the contamination sources in North Clear Creek. These studies, which began in Summer 1994, will potentially serve as a new operable unit for the Site. Although a decision on treatment of these three discharges was delayed, EPA and CDPHE agreed to the interim step of installing a pipeline system to carry the acid mine drainage from the three tunnels to a point below the existing sewage treatment plant in Black Hawk. This action was planned in order to reduce the potential for direct human contact to the acid water. A portion of this pipeline system has been installed by private entities.

The OU #3 ROD amended the OU #1 ROD by invoking an interim remedy waiver of water quality ARARs for the treatment of the Big Five discharge until completion of a waste-load allocation of other point sources in the vicinity. In order to do this waste-load allocation, it will be necessary to further define the non-point source metals loading into Clear Creek through Idaho Springs.

The OU #2 ROD was not amended by the OU #3 ROD, but EPA and CDPHE are considering potential changes to the OU #2 selected remedy due to changing exposure scenarios in the cities of Black Hawk and Central City, information that was collected in the Phase II study concerning risks from lead and arsenic exposure, and the recently promulgated Clean Water Act storm water regulations. An Explanation of Significant Differences is being prepared by CDPHE for the Argo and Big Five tailings and waste rock pile remedies.

A more detailed status of each of the three Site OUs is provided later in this review.

In October 1991, soon after the signing of the OU #3 ROD, limited stakes gambling became legal in the cities of Black Hawk and Central City. Land values increased rapidly and a significant increase in construction activity ensued. Several private entities have stepped forward to conduct cleanups that had once been targeted for fund-lead cleanups. EPA's remedial planning activities were impacted as a result with a shift of emphasis from fund-lead to enforcement activities.

REMEDIAL OBJECTIVES

The purpose of the planned remedial actions for the Site is to protect human health and the environment. The specific remedial action objectives for the Site are to protect humans from the potentially harmful effects of metals, especially lead and arsenic, to which they can be exposed via contact with tailings and waste rock material. A second objective is to protect humans from exposure to harmful levels of metal in contaminated private drinking water supplies. Finally, EPA and CDPHE seek to restore the water quality of Clear Creek to a condition which protects aquatic species. Specific remedial action objectives are listed on Page 56 of the OU #3 ROD.

STATUS OF SITE ACTIVITIES

REMOVAL AND REMEDIAL ACTIONS COMPLETED AT THE SITE

As of the completion of this second five-year review, there are several removal and remedial actions that have been completed at the Site. The descriptions are presented in rough chronological order of completion. Attachment 2 provides additional information including a summary of consent orders, a table of cleanup status, and funding history. Attachment 3 contains property profiles and before and after photographs of cleanups.

1. In March 1987, EPA initiated a time-critical removal action at the Gregory Incline in Black Hawk to prevent the collapse of the mine tailings pile. A collapse would have allowed the mine tailings to slide into North Clear Creek. EPA was concerned that a large load of metals-laden mine waste would wash downstream into Clear Creek and potentially endanger the municipal water supply of the City of Golden and other cities which use Clear Creek as a drinking water source. EPA removed an old, deteriorated, wooden crib retaining wall, decreased the slope of the mine waste pile, and constructed a gabion basket retaining wall. This removal action was not part of any planned operable unit for the Site. It took place prior to the signing of the ROD for OU #2, but was later incorporated into OU #2. Both a remedial action and a removal action, discussed later, were subsequently completed at this property.

2. In September 1987, EPA initiated a time-critical removal action in the Idaho Springs area which involved connecting three residences to the City of Idaho Springs water supply. Prior to the removal action, the residences had been served by private ground water wells which contained elevated concentrations of cadmium. The City maintains these connections so there are no remaining maintenance obligations. The removal action was not part of any planned operable unit for the Site.

3. In August 1991, EPA initiated a time-critical removal action approximately one-quarter mile north of Idaho Springs. This action involved removal of pure mercury from a small, abandoned trailer. The trailer was an attractive nuisance to children living nearby. The mercury and a small amount of contaminated soil were placed in a ten-gallon steel drum and shipped to a mercury recovery facility. The trailer was later removed by the U. S. Bureau of Land Management. There are no remaining maintenance obligations. The removal action was not part of any planned operable unit for the Site.

4. EPA conducted a remedial action associated with OU #2 in the Spring, 1990 at the Argo tailings and waste rock pile in Idaho Springs. This remedial action was the trigger for the first five-year review for the Site. A run-on collection structure diverts the flow from Rosa Gulch, the principal contributor to run-on flow, and conveys it beneath the surface of the Argo tailings and waste rock pile directly to the main stem of Clear Creek. This prevents the uncontaminated Rosa Gulch flow from leaching metals from the mine waste pile and carrying the contaminants to the creek. The system became fully operational in 1991. The U.S. Bureau of Reclamation provided oversight of this work. Basic maintenance requirements are to keep the inlet structure clear. EPA has been conducting this maintenance and will continue until CDPHE takes over at some future date. (Copy of Fact Sheet, July 1990, Available in Site file.)

5. EPA conducted a second remedial action associated with OU #2 in the Spring, 1990 at the Gregory Incline tailings pile. The surface of the mine waste pile was graded to facilitate collection of surface drainage. A collection system consisting of membrane lined ditches and pipes was installed. The purpose of the system was to collect storm water before it became contaminated and discharge it to North Clear Creek. The system became fully operational in 1991, The U.S. Bureau of Reclamation provided oversight of this work. (Copy of Fact Sheet, July 1990, Available in Site file.) This storm water collection system was removed in 1994 to make way for casino development and a subsequent removal action, discussed below, was taken at this property.

6. Mr. Johnny Andrianakos signed an Administrative Order on Consent (AOC) (CERCLA-VIII-93-22) with EPA on June 2, 1993 for the conduct of a time-critical removal action. This removal action is considered part of OU #3. On June 15, 1993, Mr. Andrianakos began excavating and disposing metal-laden soil from a property contaminated by acid mine drainage from the National tunnel in Black Hawk. By the next day, Mr. Andrianakos had removed the nearly 300 tons of contaminated soil. The contaminated soil was disposed at a mineral reprocessing facility. CDPHE provided oversight of this removal action. Since the material was disposed off-site, there are no remaining maintenance obligations. The property is currently being used as a casino parking lot.

7. CDPHE completed the OU #3 remedial action of the McClelland tailings pile on December 14, 1993. The McClelland pile is located near Dumont, Colorado. The fund-lead remedial action involved the removal of tailings where they extended into Clear Creek and grading, capping, and seeding of the tailings pile. The remedial action also included excavation and consolidation of contaminated sediment from the McClelland tunnel drainage and the re-routing and installation of a collection and conveyance system for the acid mine drainage.

The Superfund remedial action of the McClelland tailings was part of a larger Clear Creek watershed project. Coors Brewing Company paid for in stream habitat improvements and a rafter put-in ramp in front of the tailings pile. The Colorado Department of Transportation capped tailings on the north side of Clear Creek along highway right-of-way. Clear Creek County provided capping material and has agreed to maintain the cap through a formal two-party agreement between the County and CDPHE. (Copy of Fact Sheet, December 1993, Available in Site file.)

8. Tommyknockers Casino Corporation and EPA reached agreement on an AOC (CERCLA-VIII-93-12) on February 12, 1993 for the conduct of a time-critical removal action. In December 1993, the company began the removal of contaminated mine waste from Millsites 12 and 13 in Black Hawk, a portion of the Golden Gilpin Mill, which is part of the Site. By February 25, 1994, Tommyknockers had completed the excavation and disposal of more than 6000 cubic yards of material from the property. Some of the material went to a mineral reprocessing facility and the rest went to a commercial solid waste landfill. The company completed the last phase of the removal action, the construction of a barrier retaining wall, on April 29, 1994. CDPHE provided oversight of this removal action. The casino company, now called New Allied Development Corp., has yet to obtain the financing necessary to build a casino, so the property remains vacant. Since the contaminated material was disposed off-site, there are no remaining maintenance obligations other than the barrier wall which is to be maintained by the company. The remaining portion of the Golden Gilpin Mill - Millsite 11 - is owned by a different entity and has yet to be remediated.

9. During the Summer, 1993, Millsite 27, Inc., expressed an interest in purchasing the Gregory Incline property. The company wanted to develop the property into support facilities for the company's Bullwhackers Casino. The company signed an AOC with EPA and CDPHE (CERCLA-VIII-94-05) on November 19, 1993. The AOC did not become effective until December 23, 1993 when ownership of the Gregory Incline property was transferred to Millsite 27, Inc.

This time-critical removal action involved the removal of 35,000 cubic yards of tailings from the Gregory Incline property. The remainder of the material was capped in place. As a result of this action, there was no longer a need for the top two tiers of the gabion basket retaining wall, installed as part of an earlier EPA removal action, or the storm water control system, which EPA constructed during remedial action of OU #2. Material from these two systems was not salvageable.

Millsite 27, also agreed to install a collection system for the acid drainage from the Gregory Incline. This collection system includes a sump-like unit and an accompanying acid mine drainage pipeline. The collection system also includes a separate overflow pipeline to carry excess water to North Clear Creek in the event of a blowout. The purpose of the collection system is to capture the flow from the Gregory Incline and eliminate contact of the acid water with the remaining tailings. Ground water monitoring wells were placed on April 29, 1994, signifying completion of the removal action. CDPHE provided oversight of this removal action. The property is being used as a parking lot and the company is responsible for maintenance. CDPHE is responsible for maintenance of the pipeline system.

10. On February 25, 1993, Western Diversified Builders (WDB) entered into an AOC (CERCLA-VIII-93-14) with EPA. This was a multimedia administrative order, incorporating elements of both CERCLA and the Clean Water Act. During the previous summer, WDB, under contract to the City of Black Hawk, constructed a road and parking lot intended to ease the traffic and parking problems being experienced in Black Hawk due to the recently legalized gambling activities. During the course of constructing the road and parking lot, WDB inundated Running Gulch with fill material without a Section 404 Clean Water Act permit. WDB also allowed debris and cut trees to be placed into the Senator shaft which is connected to the National tunnel, a portion of the Site. The debris formed a dam inside the tunnel creating conditions likely to cause a blowout.

Under terms of the AOC, WDB was required, among other things, to cease any further violations of the Clean Water Act, mitigate for the loss of Running Gulch, apply for a Clean Water Act 404 permit, remove the blockage from inside the National tunnel, and install a pipeline system to carry the acid mine drainage from the National tunnel to Main Street in Black Hawk.

The time-critical removal action required under the AOC began December 8, 1993 and was completed on June 9, 1994. A total of 216 cubic yards of contaminated material was excavated and disposed at a commercial solid waste landfill. CDPHE provided oversight of this removal action. WDB still operates the parking lot for the City of Black Hawk and they maintain the blowout warning system at the parking lot facilities. As part of the AOC, WDB provided money to CDPHE for the maintenance of the pipeline.

WDB did not receive their Clean Water Act 404 permit until nearly two years after completion of the removal action. This was because, while constructing the road, WDB destroyed several historic structures. Since WDB completed this work without any Federal approval or permits, the opportunity for the State Historical Preservation Office and the National Advisory Council on Historic Preservation to comment on the action was foreclosed. WDB's activities were referred to the Advisory Council's Foreclosure Board. The Corps of Engineers issued the permit to WDB on March 15, 1996 after satisfactorily resolving this matter.

11. Anchor Coin Development entered into an AOC (CERCLA-VIII-93-17) with EPA on April 18, 1993. Anchor Coin agreed to the conditions of the AOC because of their plans to build a casino and parking lot on Millsite 39 in Black Hawk. Prior to the time-critical removal action, Millsite 39 was a wetland area contaminated by the acid mine drainage from the National tunnel. Per the AOC, Anchor Coin removed the contaminated soil and sediment from the property and completed the lower half of a pipeline system to carry the National tunnel discharge around the property. As discussed above, WDB completed the upper half of the pipeline system. The excavation and pipeline installation began on August 23, 1993 and were completed May 25, 1994. A total of 650 cubic yards of material was sent to a mineral reprocessing facility. CDPHE provided oversight of this removal action. Today a casino and parking lot are located on the property. There are no maintenance requirements for the casino property since the contaminated material was removed. Anchor Coin provided money to CDPHE for maintenance of the pipeline system.

(The various pipeline systems installed under AOCs with WDB, Anchor Coin, and Millsite 27, Inc., will each become part of the larger system to be constructed by CDPHE pursuant to the OU #3 ROD to carry the acid mine drainage from the National and Quartz Hill tunnels and the Gregory Incline to a point below the Black Hawk sewage treatment plant for potential future treatment.)

Since Anchor Coin's plans contemplated a parking lot where the contaminated wetlands once had been, EPA required them via the AOC to purchase land nearby to construct replacement wetlands. The replacement wetlands were completed on September 23, 1994. A flood in the Spring, 1995 wiped out the replacement wetlands. The wetlands were reconstructed the following winter and replanted in Spring, 1996. Monitoring of the wetland through Spring, 1998 revealed that the wetlands were not going to be viable. On April 13, 1998, EPA and Anchor Coin reached a settlement where the company agreed to pay \$50,000 toward stream restoration work to be completed in Idaho Springs. Idaho Springs is nearing final design for this effort. The restoration will be completed in the Spring, 1999. Idaho Springs will maintain the stream restoration.

12. On July 15, 1994, EPA issued a unilateral order (UAO) to Jack Pine Mining for the conduct of a remedial action at the Black Eagle Mill property near Idaho Springs. The Black Eagle Mill is part of OU #3. The mining company had operated the mill from 1934 to the late 1970's. Cleanup began on August 7, 1994 and was completed on October 11, 1994. The remedial action involved laying back and rip-rapping the tailings slope along Chicago Creek, a tributary to Clear Creek. The tailings were then capped and seeded. CDPHE provided oversight of this remedial action. The mining company is responsible for maintenance of the cap and stream-bank stabilization. (Copy of Fact Sheet, August 1994, Available in Site file.)

13. A flood in May 1995, caused a partial collapse of two tailings piles called Gregory Gulch #1 and #2 into Gregory Gulch, a tributary of North Clear Creek. The tailings piles are located in Central City. EPA issued two UAOs (CERCLA-VIII-95-16 and 17) to the land owners - Eureka Creek Development, Gold Rush Casinos, and Central City Development - for the conduct of time-critical removal actions to repair the damage. The work which consisted of stabilizing the tailings slope with rip-rap was completed on June 9, 1995. EPA provided oversight of these removal actions. Subsequent remedial actions of Gregory #1 and #2 have more permanently addressed these areas.

14. Houston Resources and Mining entered into an AOC (CERCLA-VIII-95-18) with EPA on June 9, 1995 for the conduct of a time-critical removal action at the National tunnel waste rock pile, part of OU #2, and the Clay County tailings pile, part of OU #3. The two properties are joined by the National tunnel. Houston Resources excavated 8350 cubic yards of contaminated waste rock from the National tunnel portal and consolidated it with the 44,700 cubic yards of tailings at the Clay County property, including the tailings that were removed from Lake Gulch and also placed on the pile. The contaminated material was then graded, covered with a significant amount of fill material, and seeded. Work began on October 30, 1995 and was completed April 19, 1996. CDPHE provided oversight of this removal action. Houston Resources is responsible for the maintenance of the cap at the Clay County property. Since the contamination was removed from the portal of the National tunnel, there are no maintenance requirements at that location. A casino has been built where the waste rock used to be located. (Copy of Fact Sheet, June 1995, Available in Site file.)

15. Blackhawk Development Company entered into an AOC (CERCLA-VIII-96-29) with EPA on August 21, 1996 for the conduct of a time-critical removal action at the North Clear Creek tailings pile in Gilpin County. The North Clear Creek tailings are part of OU #3 of the Site. On September 21, 1996, the company began to remove the tailings from North Clear Creek and to grade and cover them. Work was completed on November 10, 1996. CDPHE provided oversight of this removal action. The company is responsible for maintaining the cap. The company ultimately wants to develop the property, but nothing has come to fruition. (Copy of Fact Sheet, September 1996, Available in Site file.)

16. On September 13, 1995, the USDA Forest Service and EPA entered into a CERCLA Section 104 and Section 122 settlement called a "Participating Agreement." As part of this agreement, the Forest Service funded a special account. EPA, in turn, funded a cooperative agreement with CDPHE for the conduct of cleanups on Forest Service managed properties in the Clear Creek watershed. The first property addressed under the Participating Agreement was the Minnesota mine tailings located on Lion Creek north of the town of Empire. This property is a mixed-ownership facility where Federally-managed land is crossed with privately-owned mining claims. The property is within the boundary of the Arapaho National Forest. An Engineering Evaluation/Cost Analysis was completed in August 1995. On November 12, 1996, CDPHE completed the non-time-critical removal action. The 7-acre property, with an estimated 75,000 cubic yards of tailings and 25,000 cubic yards of waste rock, was graded, capped, and seeded. Storm water diversion structures were installed. EPA and the Forest Service are negotiating with the private landowner concerning maintenance responsibilities. (Copy of Fact Sheet, June 1995, Available in Site file.)

17. On September 24, 1998, Gold Rush Casinos completed the remedial action on their portion of the Gregory Gulch #1 property. The remedial action was done pursuant to a UAO (CERCLA-VII-97-73) which EPA issued on September 5, 1997. Gregory Gulch #1 is part of OU #3 of the Site and is located in Central City. Gold Rush excavated and treated the 3000 cubic yards of contaminated tailings on their property with a stabilizing substance called "Envirobond" and a neutralizing agent. The treated material was then consolidated onto one part of the Gold Rush property where it was capped and seeded. Gold Rush is responsible for maintaining the cap. EPA provided oversight of this remedial action.

18. The Argo tunnel treatment plant came on line on April 7, 1998. This treatment plant was built by CDPHE as a fund-lead remedial action under OU #3 of the Site. The land upon which the plant was built was acquired in a settlement between EPA and the land owner. This settlement is embodied in a Consent Decree which was lodged with the court on June 3, 1997. The treatment plant employs sodium hydroxide neutralization and a high-density sludge process to treat an average flow of 300 gallons per minute of acidic water which constantly drains from the Argo tunnel. The plant removes approximately 1400 pounds of metals per day from the discharge, which accounts for one-third to one-half of the total metals loading in Clear Creek. The plant is operated by a professional water treatment plant operator under contract to CDPHE. EPA is currently paying 90% of the operation and maintenance costs via a cooperative agreement with CDPHE.

19. CDPHE completed a non-time-critical removal action at the Little Bear tailings pile near Idaho Springs on December 14, 1998. The Little Bear tailings are part of OU #3 of the Site and this is the second property to be funded and addressed under the Participating Agreement between EPA and the Forest Service. The removal action consisted of excavating 7500 cubic yards of tailings and disposing them off-site at a noncommercial solid waste landfill. Since the contamination was removed, there will be minimal maintenance required at this property. The Forest Service will be responsible for the maintenance per Amendment #1 of the Participating Agreement.

20. The remaining portion of the Gregory Gulch #1 tailings pile was remediated in a joint effort by Eureka Creek Development and the City of Central under UAOs (CERCLA-VIII-97-74 and 72, respectively) issued by EPA on September 5, 1997. This OU #3 remedial action was completed on March 29, 1999, and consisted of removing 4352 cubic yards of contaminated tailings from Gregory Gulch to a commercial solid waste landfill and containing approximately 2000 cubic yards of material behind a culvert on city-owned Leavitt Street. EPA provided oversight of this remedial action. There will be no maintenance required on the Eureka Creek property, but Central City will be responsible for maintaining the culvert so that the tailings remain encapsulated.

STATUS OF OTHER MAJOR COMPONENTS OF SELECTED REMEDIES

This section of the second five-year review for the Site provides the status of the major components of the selected remedies that have not already been addressed by the removal or remedial actions described in the previous section.

STATUS OF OPERABLE UNIT #1:

The remedy selected for this OU in the September 30, 1987 ROD was treatment of the acid drainage from five mine tunnels using an innovative technology, man-made wetlands, and, failing treatability studies, conventional treatment. As discussed earlier, the remedy for OU #1 was substantially amended by the OU #3 ROD. The interim remedy waiver of ARARs was invoked for the treatment of four of the five mine tunnel discharges pending further water quality studies of Clear Creek through Idaho Springs and of North Clear Creek. The four tunnel discharges are the Big Five tunnel in Idaho Springs, the National tunnel and Gregory Incline in Black Hawk, and the Quartz Hill tunnel in Central City. The interim remedy waiver will be addressed in the future through either an amendment to the OU #3 ROD or by an additional ROD. No date has been set.

Also via the OU #3 ROD, the type of treatment for the Argo tunnel discharge was changed from the OU #1 remedy of man-made wetlands to a more conventional technology. The change was necessary because pilot studies of man-made wetlands showed that, in order to be effective, shallow wetlands require a large land area, land which is not readily available in Idaho Springs near the Argo tunnel.

EPA planning documents now show all post-September 30, 1991 OU #1 activities under OU #3.

STATUS OF OPERABLE UNIT #2:

The remedy selected for this OU in the March 31, 1988 ROD was stabilization and installation of storm-water controls at the tailings and waste rock piles located near the OU #1 mine tunnels. The OU #2 remedial action is complete at the Argo tailings and waste rock pile and remedial and/or removal actions are complete at the Gregory Incline tailings and the National tunnel waste rock piles. These actions were discussed in the previous section.

In 1990, EPA experienced performance problems with the contractor hired by the U.S. Bureau of Reclamation. The Bureau was the lead agency for remedial design and remedial action for OU #2, via an interagency agreement with EPA. As a result, EPA suspended further work on this OU for a time. EPA gave the lead for OU #2 to CDPHE on September 21, 1995 so that CDPHE could conduct the remedial design and remedial action for the remaining OU #2 tailings and waste rock piles along with the remaining OU #3 piles. As of the completion of this review, an Explanation of Significant Differences (ESD) is being prepared by CDPHE to make the remedies consistent between the two OUs. The ESD is necessary because, since the OU #2 ROD was signed, there has been site-specific information developed on risks from lead and arsenic exposure and EPA has issued new Clean Water Act storm water regulations, both of which impact the OU #2 remedy.

CDPHE plans on completing the remedial action for the Big Five waste rock pile in 1999. The draft final remedial design for this project, is complete. The final design is scheduled to be approved by CDPHE in April 1999. Further work will have to be conducted at the Argo tailings pile in order to make the OU #2 remedy consistent with OU #3. CDPHE plans on conducting the additional Argo tailings work as a fund-lead project in the year 2000. The remedial action at Quartz Hill is planned for the year 2001. It is possible, however, that the Quartz Hill pile will be cleaned up by private parties looking to develop the property for casinos or hotels.

STATUS OF OPERABLE UNIT #3:

The status of remaining components of the OU #3 remedy is as follows:

- Capping or physical barriers, and institutional controls for select mine waste piles.

Five OU #3 tailings and waste rock piles remain to be addressed - Chase Gulch #1 and #2, Gregory Gulch #2, the Boodle Mill, and the rest of the Golden Gilpin Mill.

Chase Gulch #1: EPA entered into a Prospective Purchaser Agreement with a buyer for the Chase Gulch #1 tailings pile on September 14, 1998. The new owner has agreed to remove the tailings during the Summer, 1999.

Chase Gulch #2: CDPHE plans on addressing the Chase Gulch #2 tailings pile in the year 2001.

Gregory Gulch #2: Approximately 2000 cubic yards of tailings from what is known as the Gregory Gulch #2 tailings pile in Central City will be excavated and disposed off-site at a commercial solid waste landfill in 1999. This remedial action will be done pursuant to UAOs (CERCLA-VIII-97-75 and 76) issued to American Prometheus and Colorado Viento Vista, respectively, on September 19, 1997.

Boodle Mill: Central City has purchased the privately owned portion of the Boodle Mill and is acquiring the rest of the property from the U.S. Bureau of Land Management. The City plans on cleaning up the property in 1999 and then using it for city facilities. EPA approved the City's cleanup work plan on January 28, 1999.

Golden Gilpin Mill: CDPHE plans on addressing the remainder of the Golden Gilpin Mill property in the year 2001. The Golden Gilpin Mill is a mining facility permitted by the Colorado Division of Minerals and Geology. It is possible that the cleanup of the mill will be addressed via the permit.

- Drinking water program

Approximately 60 private well owners whose drinking water was potentially contaminated by historic mining activities volunteered to have their wells tested. Results of the sampling program were received on January 15, 1997. Of the wells tested, four were contaminated from sources other than indoor plumbing. These four well owners have since been receiving bottled drinking water. CDPHE plans on completing the drinking water program in the year 2000 either by hooking up these four homes to municipal systems, installing wellhead treatment, or by continuing to provide bottled water.

- Treating the Burleigh tunnel mine water discharge.

A pilot treatment system consisting of man-made wetlands was completed at the Burleigh tunnel in the Fall, 1993. The Burleigh tunnel is located in Silver Plume. After initially promising results, the system performance has declined to the point where a re-evaluation is necessary. As part of this re-evaluation, the U.S. Geological Survey is conducting a study of the Georgetown Reservoir which is down stream of the Burleigh tunnel. This study is being funded via an interagency agreement with EPA. The study will be completed in 1999. In addition, CDPHE has completed a study of Clear Creek between Silver Plume and the reservoir. The findings are published in a report entitled "October 1997 Clear Creek Surface Water Investigation, Burleigh tunnel to the Georgetown Reservoir," dated April 24, 1998. CDPHE plans on evaluating the results of these two studies then selecting either a new remedy or no action for the Burleigh tunnel discharge. No date has been planned for this decision.

- Installing a ground water pump and treat system in the Idaho Springs area to address non-point source metals loading to surface water.

CDPHE conducted an initial evaluation of the non-point source load In April 1994. These findings are published in a report entitled, "Clear Creek Remedial Design, Surface Water Sampling Results - Final Report," dated April 4, 1994, The primary source of contamination is Virginia Canyon ground water. Further evaluation is planned for 1999 and a collection system will be constructed, if feasible by the year 2002. Initial plans are to treat the contaminated ground water, if it can be captured, at the Argo tunnel treatment plant.

- Reducing heavy metals loading from Woods Creek.

Cyprus Amax owns the Urad facility, an historic molybdenum mine, located on Woods Creek, a tributary to the West Clear Creek. Under the requirements of NPDES permit CO-0041467, the company built a water treatment plant which began meeting more stringent limits in July 1993. Through the NPDES permit, the remedial objective for this portion of the Clear Creek watershed is being met and no Superfund action is contemplated at this time.

- No Action to control surge events from the mine tunnels.

EPA and CDPHE have not obtained any new information requiring a change to this remedial action decision at this time. Using non-Superfund monies, EPA purchased an emergency response dial-down system which can be activated to immediately and simultaneously alert users of Clear Creek of mine tunnel blowouts, highway accidents, or other incidents resulting in spills into Clear Creek. This system was installed in the Argo tunnel treatment plant in 1999.

- Collecting discharges from the Gregory Incline and the National and Quartz Hill tunnels.

A portion of this collection system has been installed by various responsible party actions discussed previously. Completion of this system will occur if a decision is made to treat these three discharges.

- Treatability studies and further delineating contamination sources in North Clear Creek.

Two studies have been completed on the North Fork of Clear Creek since the OU #3 ROD was signed. One study was conducted by EPA in July 1994. This study focused on sediment quality in the North Fork and was used to upgrade the existing water quality fate and transport model for this tributary. The study findings are published in a report entitled, "Chemical and Physical Assessment of North Clear Creek During July, 1994" dated May 1995. CDPHE conducted an evaluation of North Clear Creek in 1994 and 1995. The study findings are published in an April 1997 report entitled, "North Clear Creek Surface Water Investigation." A feasibility study of alternatives for addressing the North Fork has not been scheduled. No treatability studies have been completed.

SUMMARY OF FIVE-YEAR REVIEW SITE VISIT

A five-year review visit is not required for a Level Ia five-year review if the remedial project manager has been to the Site within six months of the initiation of the five-year review. The CDPHE project officers or the EPA remedial project manager visit the Site on a weekly basis on average. Maintenance needs, if any, are noted during these visits. In addition, a summary of completed and ongoing operation, maintenance, and monitoring activities is maintained in a notebook by EPA. This notebook is used by the EPA project manager for tracking ongoing requirements at each property at the Site, be they responsible parties requirements stemming from an enforcement order or government responsibilities at fund-lead properties. The notebook is updated as necessary.

APPLICABLE OR RELEVANT APPROPRIATE REQUIREMENTS REVIEW

An exhaustive review of ARARs or a recalculation of risk is not necessary for a Level Ia five-year review. This is because for sites with ongoing activities, EPA may implement necessary changes through an ESD, ROD amendment, amendment to a consent decree or order, or other enforceable document, as appropriate.

Summaries of ARARs for the selected remedial actions are provided on Page 34 of the OU #2 ROD, dated March 31, 1988, and in Section 8.2, Page 51 of the OU #3 ROD, dated September 30, 1991. The interim remedy waiver of certain Clean Water Act requirements for treatment of the Quartz Hill, National, and Big Five tunnels and the Gregory Incline remains in effect pending further study.

EPA and CDPHE have completed an enhanced analysis of ARARs for the Argo tunnel discharge treatment. This analysis is embodied in a document entitled, "Clear Creek/Central City Superfund Site, Argo Tunnel Treatment Plant, Applicable or Relevant and Appropriate Requirements Compliance Document" dated February 1, 1999. The Compliance Document is very similar to an NPDES permit.

Other than the analysis of ARARs for the Argo tunnel, EPA and CDPHE have not identified any new information which would alter the ARARs analysis provided in the OU #3 ROD, nor have any new ARARs been noted which would significantly alter the planned OU #3 remedial action. The agencies will consider the new storm-water regulations in the upcoming re-evaluation of the OU #2 remedy to determine if these regulations are ARARs and necessary to protect the environment. If so, these changes will be embodied in an ESD or ROD amendment.

AREAS OF NON-COMPLIANCE

The State of Colorado's 1998 Clean Water Act Section 303(d) list of water quality impacted segments includes three segments of the upper Clear Creek watershed. These are Clear Creek from the Interstate-70 bridge at Silver Plume to the Argo tunnel (listed for copper and zinc), Clear Creek from the Argo tunnel to the Farmer's High Line Canal in Golden (listed for iron, manganese, and zinc) and North Clear Creek (listed for cadmium, copper, manganese, zinc, and aquatic life).

EPA and the Upper Clear Creek Watershed Association have been conducting joint monitoring of Clear Creek since 1994. A total of 13 stations are sampled eight times per year. This monitoring basically confirms the state's 303(d) list. (See graphs provided as Attachment 4.) EPA and CDPHE have yet to complete all of the remedial actions planned for the Site, some of which are planned for areas within impacted stream segments. West Clear Creek is now routinely in compliance with water quality standards due to the Cyprus Amax treatment plant at the Urad facility.

RECOMMENDATIONS

EPA and CDPHE should continue to work as quickly as possible to complete the remedial actions planned for the Site so that the situation of non-compliance described in the previous section can be remedied. EPA will be the lead agency for enforcement-lead actions and CDPHE will be the lead for fund-lead actions. Milestone dates and lead agency status have been established for the majority of the remaining actions and this information is provided in the Status and Planning Table provided in Attachment 2.

CDPHE should move quickly to complete the studies of the non-point source metals loading to Clear Creek in the vicinity of Idaho Springs so that the concerns which caused CDPHE and EPA to invoke the interim remedy waiver for the treatment of the Big Five tunnel discharge can be resolved. Similarly, CDPHE should complete the feasibility study of North Clear Creek so that the questions surrounding the treatment of the three tunnel discharges on that segment of stream can be answered and a final decision on the second interim remedy waiver can be made. Finally, EPA and CDPHE need to make a decision concerning future remedial activities at the Burleigh tunnel. These are all necessary steps that must be taken before final Site decisions can be made.

STATEMENT ON PROTECTIVENESS

The selected alternative for OU #3 is profiled against the nine NCP evaluation criteria in Table 8-1 of the ROD. This information has been reviewed and no changes, other than the recommendations suggested above, are required at this time. The remedies that have been completed at the Site remain protective.

DOCUMENTS REVIEWED

1. Record of Decision, Clear Creek/Central City Superfund Site, Clear Creek and Gilpin Counties, Colorado, Operable Unit No. 2 (OU #2) Tailings and Waste Rock Remediation, March 31, 1988.
2. Record of Decision, Clear Creek/Central City Superfund Site, Operable Unit No. 3 (OU #3), Gilpin and Clear Creek Counties, Colorado, September 30, 1991.

NEXT FIVE-YEAR REVIEW SCHEDULE

The next five-year review for the Site will be due on or before March 31, 2004.

ATTACHMENTS

1. MAPS:

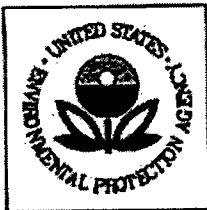
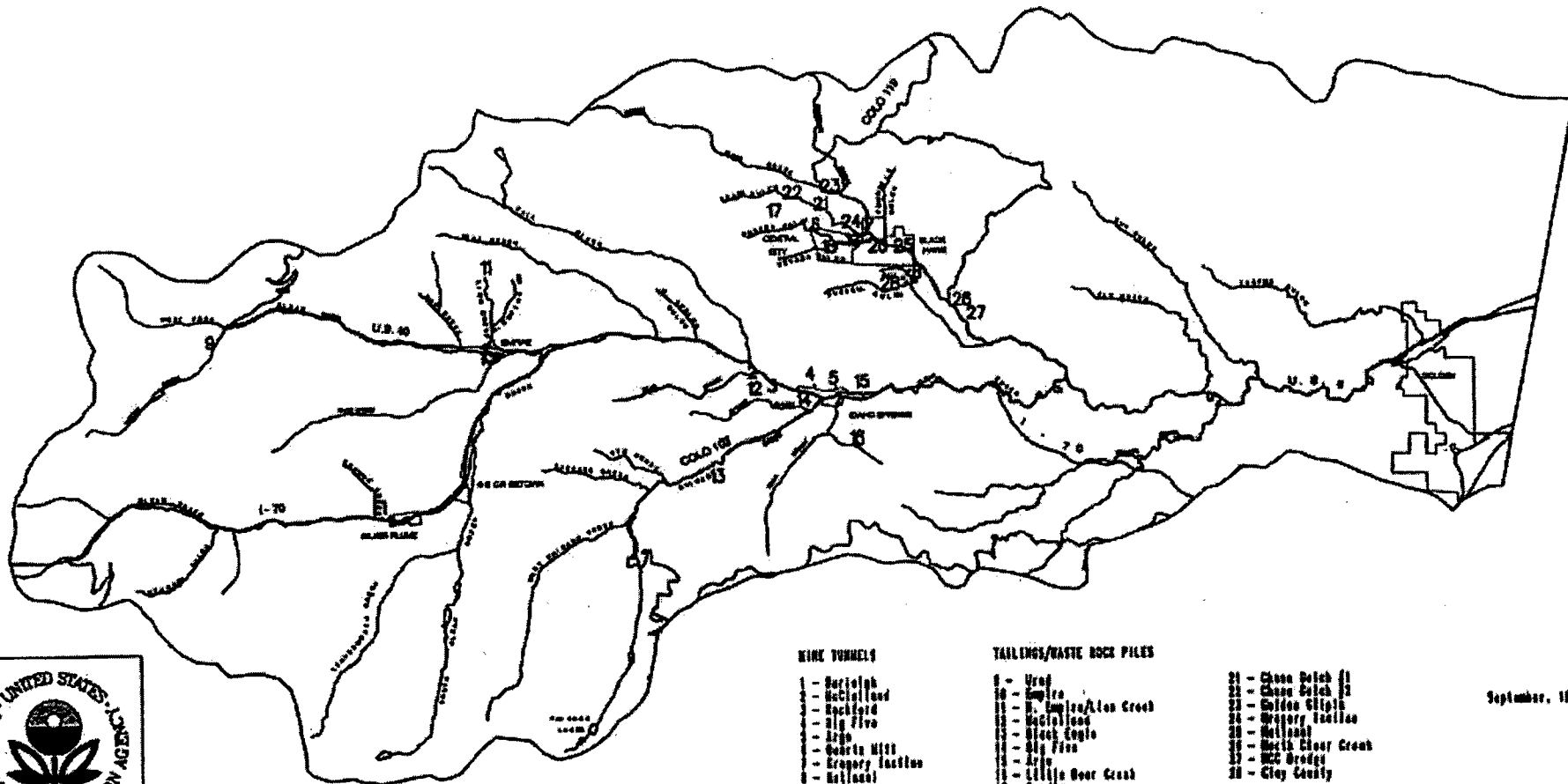
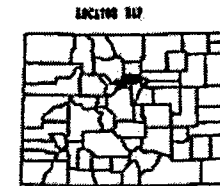
- Land-use Map
- Clear Creek/Central City Superfund Site Map

2. STATUS DOCUMENTS:

- Status of Consent Orders as of March, 1999
- Funding History as of March, 1999

CLEAR CREEK BASIN, COLORADO

Site Map



Original Scale 1 : 100,000

MINE TUNNELS

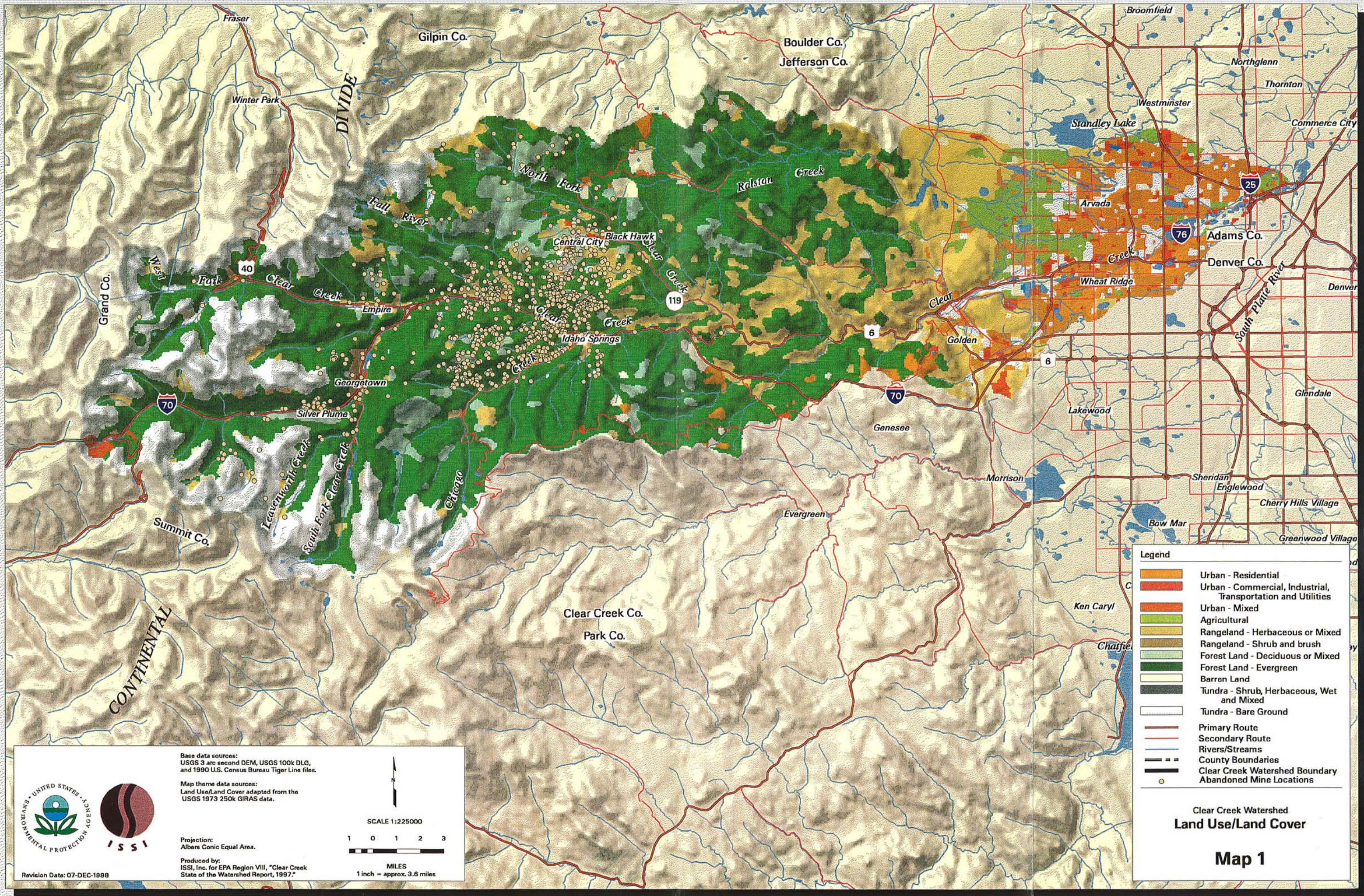
- 1 - Barlow
- 2 - McClintock
- 3 - Rockford
- 4 - Big Five
- 5 - Ligo
- 6 - Quartz Mill
- 7 - Gregory Tunnel
- 8 - Holladay

TAILINGS/WASTE ROCK PILES

- 11 - Vred
- 12 - Empire
- 13 - S. Empire/Alon Creek
- 14 - McClintock
- 15 - Black Eagle
- 16 - Big Five
- 17 - Argo
- 18 - Little Bear Creek
- 19 - Beadie
- 20 - Quartz Mill
- 21 - Gregory Gulch #1
- 22 - Gregory Gulch #2

- 23 - Chase Gulch #1
- 24 - Chase Gulch #2
- 25 - Golden Gulch
- 26 - Gregory Tunnel
- 27 - Holladay
- 28 - North Clear Creek
- 29 - MCC Bridge
- 30 - Cley County

September, 1981



- Legend**
- Urban - Residential
 - Urban - Commercial, Industrial, Transportation and Utilities
 - Urban - Mixed
 - Agricultural
 - Rangeland - Herbaceous or Mixed
 - Rangeland - Shrub and brush
 - Forest Land - Deciduous or Mixed
 - Forest Land - Evergreen
 - Barren Land
 - Tundra - Shrub, Herbaceous, Wet and Mixed
 - Tundra - Bare Ground
 - Primary Route
 - Secondary Route
 - Rivers/Streams
 - County Boundaries
 - Clear Creek Watershed Boundary
 - Abandoned Mine Locations

Clear Creek Watershed
Land Use/Land Cover

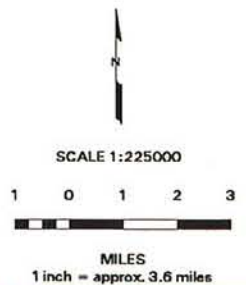
Map 1

Base data sources:
USGS 3 arc second DEM, USGS 100k DLG,
and 1990 U.S. Census Bureau Tiger Line files.

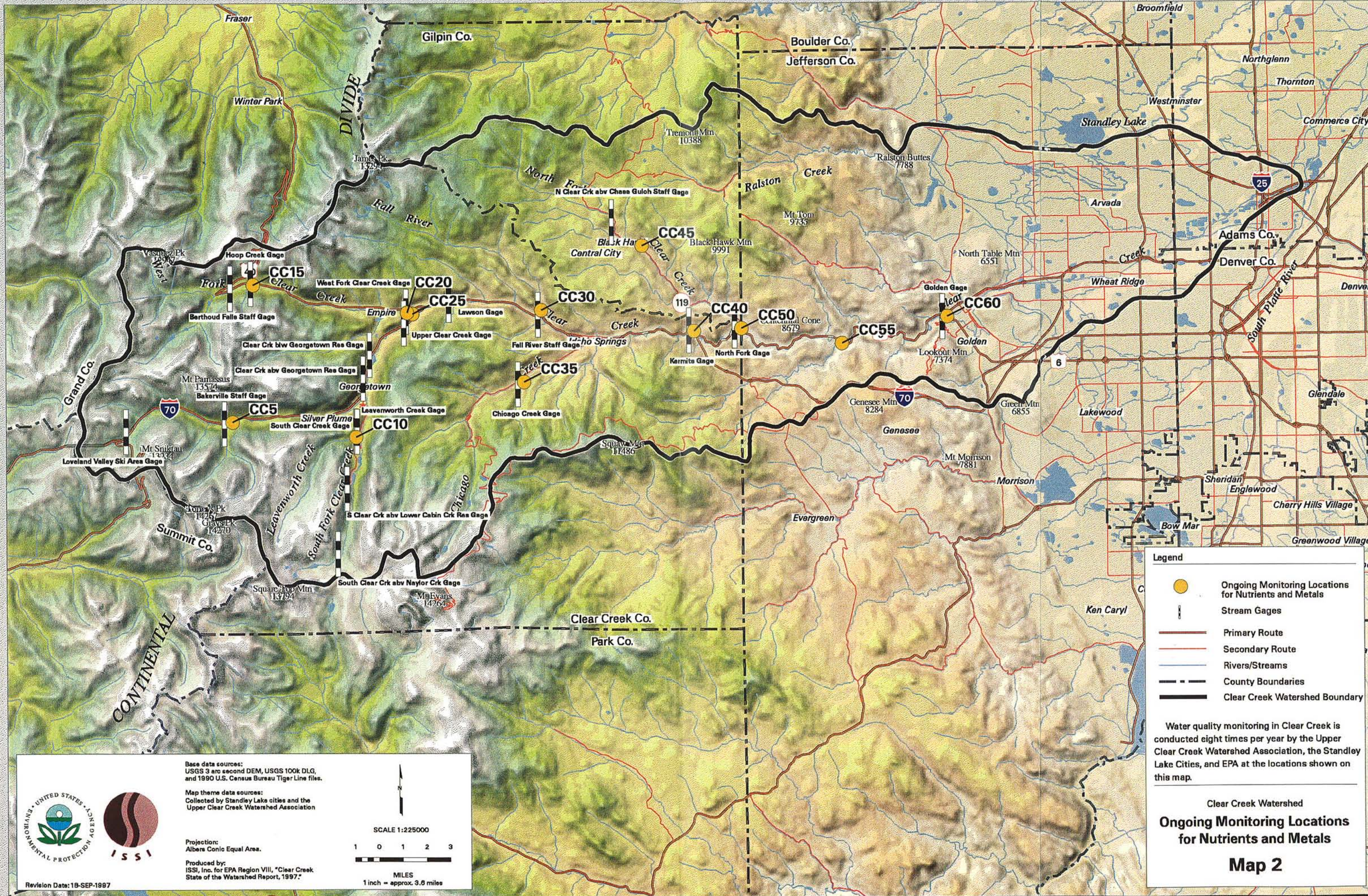
Map theme data sources:
Land Use/Land Cover adapted from the
USGS 1973 250k GIRAS data.

Projection:
Albers Conic Equal Area.

Produced by:
ISSI, Inc. for EPA Region VIII, "Clear Creek
State of the Watershed Report, 1997."



Revision Date: 07-DEC-1998



Legend

- Ongoing Monitoring Locations for Nutrients and Metals
- Stream Gages
- Primary Route
- Secondary Route
- Rivers/Streams
- County Boundaries
- Clear Creek Watershed Boundary

Water quality monitoring in Clear Creek is conducted eight times per year by the Upper Clear Creek Watershed Association, the Standley Lake Cities, and EPA at the locations shown on this map.

Clear Creek Watershed
**Ongoing Monitoring Locations
 for Nutrients and Metals**
Map 2

Base data sources:
USGS 3 arc second DEM, USGS 100k DLG, and 1990 U.S. Census Bureau Tiger Line files.

Map theme data sources:
Collected by Standley Lake cities and the Upper Clear Creek Watershed Association

Projection:
Albers Conic Equal Area.

Produced by:
ISSI, Inc. for EPA Region VIII, "Clear Creek State of the Watershed Report, 1997."

Revision Date: 18-SEP-1997

SCALE 1:225000

MILES
1 inch = approx. 3.8 miles

American Prometheus (CERCLA-VIII-97-75, BF003):

Gregory Gulch #2

Unilateral Order Status: Effective Date - 9/19/97
Statement of Work Status: Not Applicable
Administrative Record Status: Supplement prepared
Public Notice: Not Applicable
NSD/ESD/Rod Amendment: Not Applicable
Pre-construction Deliverable Status: Complete
Workplan Approved: 11/17/97
Construction Status: Start -
Complete -
PRP Final Report:
Close-out Letter:
Final Billing:

Colorado Viento Vista (CERCLA-VII-97-76): Acquired by American Prometheus

Gregory Gulch #2

Unilateral Order Status: Effective Date - 9/19/97
Statement of Work Status: Not Applicable
Administrative Record Status: Supplement prepared
Public Notice: Not Applicable
NSD/ESD/Rod Amendment: Not Applicable
Pre-construction Deliverable Status: Complete
Workplan Approved: 11/17/97
Construction Status: Start -
Complete -
PRP Final Report:
Close-out Letter:
Final Billing:

Blackhawk Development Company (CERCLA-VIII-96-29, BB008):

North Clear Creek Tailings

Administrative Order Status: Effective Date - 8/21/96
Statement of Work Status: Not Applicable
Administrative Record Status: Delivered
Public Notice: 8/96 Action Memorandum: Signed 8/14/96
Pre-construction Deliverable Status: Complete
Construction Status: Started 9/21/96
Complete 11/10/96

POLREPS: 1/21/97
OSC Report:
PRP Final Report: 1/13/97
Close-out Letter: 1/21/97
Final Billing: Rcvd payment - 9/4/97

**Houston Mining and Resources (CERCLA-VIII-95-18, BB006):
National Tunnel Dump and Clay County Tailings**

Administrative Order Status: Effective Date - 6/9/95
Statement of Work Status: Not Applicable
Administrative Record Status: Delivered 6/19/95
Public Notice: 6/23/95 Action Memorandum: Signed 5/19/95
Pre-construction Deliverable Status: Complete
Construction Status: Started - 10/30/95
Complete - 4/19/96
POLREPS: 9/30/96
OSC Report:
PRP Final Report: 7/96
Certification Letter: 9/18/96
Close-out Letter: 9/30/96
Final Billing: Sent
Dunning Sent -
Rcvd Payment -

**Eureka Creek Development/Gold Rush Casinos/Central City Development (CERCLA-VIII-95-16
and 17, BB007):**

Gregory Gulch #1 and #2 Flood Response

Unilateral Order Status: Effective Dates - 6/2/95
Statement of Work Status: Done
Administrative Record Status: Delivered 6/8/95
Public Notice: 6/16/95 Action Memorandum: Signed 6/21/95
Pre-construction Deliverable Status: Complete
Construction Status: Completed 6/9/95
POLREPS: Initial a Final: 8/22/95
OSC Report: 8/23/95
PRP Final Report: 7/5/95
Close-out letter: Deferred to follow-on UAOs
Final Billing: Rcvd payment - NA - UAOs
Concurrence on Final Close-Out:

**Jack Pine Mining (CERCLA-VIII-94-23, BF001):
Black Eagle Tailings**

Unilateral Order Status: Effective Date - 7/15/94
Statement of Work Status: Done
Administrative Record Status: N/A
Public Notice: 7/25/94
Pre-construction Deliverable Status: Complete
Construction Status: Started 8/7/94
Completed 10/11/94
Completed 10/13/94 (Final Inspection)
Final Report: 2/17/95
Close-out letter: 1/6/98
Final Billing: Rcvd payment - 7/18/96

**Western Diversified Builders (CERCLA-VIII-93-14, BB003):
National Tunnel Drainage**

Administrative Order Status: Effective Date - 2/25/93
Statement of Work Status: Done
Administrative Record Status: Delivered 8/11/93
Public Notice: 8/20/93
Action Memorandum: Signed 7/27/93
Pre-construction Deliverable Status: Complete
Construction Status: Started 12/8/93
Complete 6/9/94
POLREPS: Initial - 3/14/93
Final - 12/29/94
OSC Report: 12/29/94
PRP Final Report: Second draft 7/8/94
Close-out letter: Drafted 10/94, not sent pending access
Final Billing: Rcvd payment - 11/19/96
Concurrence on Final Close-Out:

**Tommyknocker Casino Corporation (CERCLA-VIII-93-12, BB004):
Golden Gilpin Mill - Millsite 12 & 13 portion**

Administrative Order Status: Effective Date - 2/12/93
Statement of Work Status: Not applicable
Administrative Record Status: Delivered
Public Notice: 6/11/93 Action Memorandum: Signed 5/11/93
Pre-construction Deliverable Status: Complete
Construction Status: Started 12/15/93
Complete 2/25/94 (Excavation)
Complete 4/29/94 (Retaining Wall)
POLREPS: Initial - 3/16/94
Final - 1/23/95
OSC Report:
PRP Final Report: 7/27/94
Close-out letter: 8/13/97
Final Billing:
Dunning Notice: 9/23/96
2nd Dunning Notice: 2/27/97
Rcvd payment - 10/31/97
Concurrence on Final Close-Out:

**Anchor Coin Development (CERCLA-VIII-93-17, BB002):
National Tunnel Drainage**

Administrative Order Status: Effective Date – 4/18/93

Amended 8/20/93

Amended 8/20/93

Statement of Work: Done

Administrative Record Status: Delivered 8/11/93

Public Notice: 8/20/93

Action Memorandum: Signed 7/23/93

Pre-construction Deliverable Status: Complete

Construction Status: Started 8/23/93

Complete 5/25/94 (Excavation and Pipe)

Complete 9/23/94 (Wetlands Mitigation)

POLREPS: Initial - 8/24/93

Final - 2/6/95

OSC Report:

PRP Final Report: 6/24/94, approved 7/21/94

2/95 (Wetlands Report)

Close-out letter:

Final Billing: Rcvd payment - 9/12/98

Concurrence on Final Close-Out:

**Johnny Andrianakos (CERCLA-VIII-93-22, BB001):
National Tunnel Drainage**

Administrative Order Status: Effective 6/2/93

Statement of Work: Done

Administrative Record Status: Delivered 8/11/93

Public Notice: 8/20/93 Action Memorandum: Signed 7/23/93

Pre-construction Deliverable Status: Complete

Construction Status: Started 6/15/93,

Completed 6/16/93

POLREPS: Initial and Final - 7/30/93

OSC Report: 7/30/93

PRP Final Report: 6/93

Close-out letter: 8/30/93

Final Billing: Rcvd payment -

Millsite 27 - Bullwhackers (CERCLA-VIII-94-05, BB005):
Gregory Incline Tailings

Administrative Order Status: Signed 11/19/93, Effective 12/23/93

Statement of Work: N/A

Administrative Record Status: Delivered 1/12/94

Public Notice: 1/12/94 Action Memorandum: Signed 12/21/93

Pre-construction Deliverable Status: Complete

Construction Status: Started 1/4/94 (Mobilization)

Started 1/17/94 (Excavation)

Complete 4/29/94 (Wells set)

5/12/94 (Final Inspection)

POLREPS: Initial - 2/24/94

Interim - 3/9/94

Interim - 4/1/94

Final - 5/5/94

OSC Report: 11/9/94

PRP Final Report: 8/23/94, supplemented 9/28/94

Close-out Letter: 10/5/94

Final Billing: Dunning Notice - 2/1/96

Rcvd Payment - 9/19/97

Concurrence on Final Close-Out:

**CLEAR CREEK/CENTRAL CITY SUPERFUND SITE
ENFORCEMENT ORDERS AND RESPONDENT CONTACT LIST**

CERCLA-VIII-97-76 Contact: Attorney:	Colorado Viento Vista Jim Norville (303) 582-3222 Tom Matlock (956) 682-4308	Work Complete
CERCLA-VIII-97-75 Contact: Attorney:	American Prometheus Jim Norville (303) 582-3222 Unknown	Work Complete
CERCLA-VIII-97-74 Contact: Attorney:	Eureka Creek Development Stewart Jackson (303) 292-2222 Unknown	Work Complete
CERCLA-VIII-97-73 Contact: Steve Attorney:	Gold Rush Casinos Schurman (no longer with company) Rick Stone (303) 233-7S38	Work Complete
CERCLA-VIII-97-72 Contact: Attorney:	Central City Jim Drinkhouse (303) 582-5251 Kerry Buckey (303) 582-5251	Work Complete
CERCLA-VIII-96-29 Contact: Attorney:	Blackhawk Development Company Bart Peaslee (970) 249-9884 Unknown	Work Complete
CERCLA-VIII-95-18 Contact: Attorney:	Houston Resources and Mining Tom Winn (713) 621-2531 Unknown	Work Complete
CERCLA-VIII-95-17 Contact: Attorney:	Central City Development Co.. Tom Robb (303) 582 5925 George Holley (303) 233-7838	Work Complete
CERCLA-VIII-95-16 Contact: Attorney:	Eureka Creek Development Stewart Jackson (303) 292-2222 Rick Stone (303) 233-7838	Work Complete
CERCLA-VIII-94-23 Contact: Attorney:	Jack Pine Mining Fabyan Watrous (303) 567-2350 Linda Rockwood (303) 292-6400	Work Complete
CERCLA-94-05 Contact: Attorney:	Millsite 27 No Longer With the Company Allan Mayer (303) 271-2580	Work Complete
CERCLA-VIII-93-22 Contact: Attorney:	Andrianakos Property Johnny Andrianakos (303) 722-9880 Did Not Use One	Work Complete

CERCLA-VIII-93-17	Anchor Coin Development	Work Complete
Contact:	Bill Parkhill (303) 466-8030	
Attorney:	John Dingess (303) 779-0200	
CERCLA-VIII-93-14	Western Diversified Builders	Work Complete
Contact:	Windell Pickett (303) 582-5127	
Attorney:	John McCarthy, HRO (303) 866-0457	
CERCLA-VIII-93-12	New Allied Development	Work Complete
Contact:	Roger LeClerc (303) 777-6111	
Attorney:	Joel Cantrick (303) 839-1204	

PHASE II RI/FS/RD NUMBER	AWARD DATE	Phase ii RI	Phase ii FS	OU 1 RD	Phase II RD	
V008534-01-0	6/15/1988	\$ 750,000				
V008534-01-0	6/15/1988			\$ 300,000		
V008534-01-1	9/9/1988	\$ 359,784				
V008534-01-2	3/1/1990		\$ 257,000			
V008534-01-3	9/27/1990		\$ 49,999			
V008534-01-4	9/23/1991				\$ 349,778	
V008534-01-5	7/17/1992				\$ 598,800	
V008534-01-6	9/11/1992				\$ 709,879	
V008534-01-7	7/27/1993				\$ -	Extension
V008534-01-8	9/21/1993				\$ 888,413	
V008534-01-9	7/26/1994				\$ -	Extension
V008534-01-A					\$ -	Extension
V008534-01-B	9/21/1995				\$ 355,261	
V008534-01-C	6/27/1996				\$ -	
V008534-01-D	0+9/26/96				\$ 165,617	
V008534-01-E	5/1/1997				\$ -	Extension
V008534-01-F	6/15/1998				\$ -	Extension

TOTAL COST -
PHASE II RI/FS/RD

\$ 1,109,784	\$ 306,999	\$ 300,000	\$ 3,067,748
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\$ 4,784,531

REMEDIAL ACTION - COST w/o 10% State Cost Share

PHASE II RA

V998176-01-0	9/29/1993	\$3,412,572
V998176-01-1	3/14/1994	\$1,879,211
V998176-01-2	9/29/1994	\$3,512,546
V998176-01-3	1/27/1995	\$0 (Change Scope)
V998176-01-4	9/21/1995	\$0 (Extension)
V998176-01-5	6/27/1996	\$0 (Extension+)
V998176-01-6	9/16/1997	\$0 (Extension)
V998176-01-7	9/30/1998	\$0 (Extension+)
V998176-01-8	12/24/1998	\$0 (Change Scope)

TOTAL COST - PHASE II RA \$8,804,329

McClelland	9/29/1993	\$101,185
Tailings RA		

TOTAL COST - RA -McClelland \$101,185

OU 2 RA

V998764-01-0	9/25/1997	\$1,893,352
V998764-01-1	9/29/1998	

TOTAL COST OU 2 RA \$1,893,352

GRAND TOTAL COST RA

\$10,798,866

A42.182

Argo Early Operations & OF - RA

V998608-01-0	9/26/1996	\$544,500	(EO)
V998608-01-1	9/27/1997	\$500,000	(EO)
V998608-01-2	6/16/1998	\$527,859	(EO)
V998608-01-3	9/21/1998	\$1,533,272	(EO)

**TOTAL ARGO
EO & OF - (RA)****\$3,105,631****GRAND TOTAL****RI/FS, RD, RA****\$18,689,028****FOREST SERVICE
REMOVALS**

V998473-01-0	5/15/1996	\$1,422,999 (Lion Creek)
V998473-01-1	1/17/1997	\$0 (Extension)
V998473-01-2	11/21/1997	\$0 (Little Bear) (CHANGE IN SCOPE)

TOTAL - FOREST SERVICE REMOVALS**\$1,422,999****COMMUNITY RELATIONS - CLEAR CREEK AND ARKANSAS RIVER WATERSHEDS**

X998581-01-0	9/27/1996	\$98,800
X998581-01-1	9/27/1996	\$30,000
X998581-01-2	8/31/1998	\$95,679

TOTAL - COMMUNITY RELATIONS**\$224,479**

A84.1135

SUMMARY

TOTAL RI	\$ 1,109,784
TOTAL FS	\$ 306,999
TOTAL RD	\$ 3,367,748
TOTAL RA	\$10,798,866
TOTAL EARLY OPERATIONS & OF (RA)	\$3,105,631

SUB - TOTAL RI,FS,RD,RA,EO & OF - RA	\$ 18,689,028
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TOTAL FOREST SERVICE REMOVALS	\$1,422,999
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TOTAL COMMUNITY RELATIONS	\$224,479
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GRAND TOTAL - AS OF 03/99	\$20,336,506
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A142.1168