Colorado Department of Public Health and Environment

Hazardous Materials and Waste Management Division

Five-Year Review

Summitville Mine Superfund Site
Rio Grande County, Colorado

Prepared by:

Austin Buckingham
State Project Manager

Approved:

Max H. Dodson 9/27/05

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Assistant Regional Administrator
Office of Ecosystems Protection and Remediation

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EXECUTIVE SUMMARY

The purpose of the five-year review is to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. CERCLA 121(c) statutorily mandates five-year reviews.

In addition to considerations of a five-year review, the EPA conducted a Superfund 120 Day Study. As a result, the Office of Superfund Remediation and Technology Innovation (OSRTI) decided to conduct a review at the Summitville Mine Superfund Site to make sure that the selected remedy incorporated new technology and the most cost-effective cleanup approach based on experiences with proven and emerging technologies. Future remedial activities and decisions will include consideration of NRRB recommendations issued in September 2005.

The State of Colorado has conducted the second five-year review of the remedial actions performed at the Summitville Mine Superfund Site located in Rio Grande County, Colorado. The review evaluates the data collected since the last 5-year review, which was completed by EPA in August 2000. Overall, the results of this five-year review indicate that all immediate threats at the site have been addressed and the remedy is expected to continue to be protective of human health. Though significant improvements to the environment have been realized as the result of remedial actions implemented to date, the final remedy will not be fully protective of the environment until the final remedy components are completed as proposed. Therefore, a protectiveness determination is deferred until either the remedy is complete or additional information is obtained to make a protectiveness determination.

Short-term and long-term protectiveness of the remedial actions will be verified through annual or five year monitoring of the affected media, including surface water, sediments and aquatic life. Currently, the data indicate that the site is stable, though some elements of the remedy have not achieved the degree of contaminant load reduction anticipated. The Remedial Action Levels and Objectives specified in the Final Site-Wide Record of Decision (September 2001) have not yet been achieved because several critical components of the final remedy have not been constructed.

Four Interim Records of Decision for the Summitville Mine Superfund Site were issued in 1994. They are:

- Water Treatment, designated OU0.
- Heap Leach Pad Detoxification/Closure, designated OU1.
- Excavation of mine wastes from the Cropsy Waste Pile, Beaver Mud Dump and the Cleveland Cliffs Tailings Impoundment, placement of this material in the mine pits, and mine pit closure, designated OU2.
- Site-wide reclamation activities designated OU4.

Groundwater contamination within South Mountain was also an area of concern and originally designated OU3. An Interim Record of Decision for South Mountain Groundwater (OU3) was never drafted. Instead, groundwater concerns were addressed through the site-wide Remedial Investigation and Feasibility Study and incorporated into the final remedy (OU5).

OU1, OU2 and OU4 are complete. OU0 – Water Treatment is ongoing. The Water Treatment Plant achievement of Interim Effluent Action Levels goals for copper (the ecological risk driver), typically less than 10 percent of the time.

Due to limits of treatment and storage capacity (illustrated in Figure 7-17), the site continues to discharge contaminated water at concentrations in excess of the Remedial Action Levels. The impact of these untreated releases is that surface water standards in the Alamosa River are exceeded on a regular basis. These exceedances have been due, in part, to diffuse groundwater loads entering Wightman Fork in the vicinity of sample point WF2.5 and to release of contaminated water from the Summitville Dam Impoundment and turnout structures during years of normal or above normal precipitation.[1]

OU5 Final Site-Wide Remedy is largely incomplete. The purpose of the final site wide remedy was to address remaining threats to the environment that have not been addressed in Operable Units 1 through 4. The site does not pose a risk to human health and protection of the environment has significantly improved but not fully achieved. The primary reasons for this lack of protectiveness (to the environment) are:

- Contaminant load reduction is less than anticipated for some remedial elements, specifically OU4, therefore it is necessary to treat large volumes of contaminated water that exceed system capacity.
- Water treatment and storage capacity is not able to manage greater than average conditions encountered during spring run-off.
- Highly unpredictable precipitation and melt-off conditions.

The following OU5 remedial elements are complete:

- Upgrade of select site ditches;
- Construction of groundwater interceptor drains, pipelines and impact basin; and
- Construction of a Highwall ditch and sedimentation basin.

The following OU5 remedial elements are not complete:

- Construction of a new water treatment plant;

[1] Several sources of acid mine drainage present at the site are not addressed by the Interim Records of Decision. The combination of inadequate storage and treatment capacity and these acid mine drainage sources, necessitated additional remedial action to further stabilize the site and to meet water quality goals, as codified in the OU5 Site Wide Record of Decision.

- Possible enlargement or replacement of an on-site contaminated water impoundment;
- Construction of a sludge disposal repository;
- Upgrade of Wightman Fork Diversion;
- Rehabilitation of Reynolds Adit; and
- Management of mine pool water.

The following OU5 remedial elements are ongoing:

- Continued site maintenance, and groundwater/surface water and geotechnical monitoring on-site; and
- Surface water, sediment, and aquatic life monitoring in Alamosa River and Terrace Reservoir.

The most important of the remaining remedial elements that must be implemented is to acquire adequate treatment capacity and/or storage capacity. Without this essential component of the final remedy, the water management system (storage and treatment) is overwhelmed with 50,000,000 to 80,000,000 gallons of excess contaminated water produced during spring runoff. Also adequate treatment capacity is needed to retire an aging plant subject to increasing mechanical and electrical failure frequency and significance

FIVE YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name (from WasteLAN): Summitville Mine		
EPA ID (from WasteLAN): COD 983778432		
Region: 8	State: CO	City/County: Rio Grande
SITE STATUS		
NPL Status: • Final, □ Deleted, □Other (specify) proposed		
Remediation Status (choose all that apply): • Under Construction, • Operating, ☐ Complete		
Multiple OUs? • Yes, □ No	Construction Complete date:	
Has site been put into reuse: No Please refer to text description for each OU.		
REVIEW STATUS		
Reviewing Agency: □ EPA, • State, □ Tribe, □ Other		
Author Name: Austin Buckingham		
Author Title: Remedial Project Manager	Author Affiliation: CDPHE	
Review period: April 2000 through August 2005		
Date(s) of site inspection: Continuous throughout the period of March 2000 through November 2004		
Type of Review: • Statutory, □ Policy (□ Post-SARA, □ Pre-SARA, □ NPL-Removal Only), □ Non-NPL Remedial Action Site, □ NPL State Tribe Lead		
Review number: □ 1 (first), • 2 (second), □ 3 (third), □ Other (specify)		
Triggering action: □ Actual RA Onsite Construction at OU#, □ Actual RA Start at OU#, □ Construction Completion, • Previous Five-Year Review, ☐ Other (specify)		
Triggering action date (from WasteLAN): 08/03/2000		
Due Date (five years after triggering action date): 09/30/05		

Five-Year Review Summary Form, cont.

Issues:

1. Interim Water Treatment Plant OSHA repairs and treatment capacity
2. Non-point source contaminant loading to Wightman Fork
3. OU4 Site Wide Reclamation assumptions
4. Mine pool management
5. Heap Leach Pad reservoir
6. Potable water source for the current and future Water Treatment Plant

Recommendations and Follow-up Actions:

1. Implement the remaining OU5 remedial components as soon as funding becomes available, the most important of which is a new large capacity WTP.
2. Investigate remedy options for controlling non-point source discharges.
3. Revise the site hydraulic model and water balance.
4. Reynolds Adit rehabilitation or long-term stabilization.
5. Continue to explore remedies that might result in permanent, passive or semi-passive control of contaminant sources.
6. Continue monitoring all on-site and off-site remedial elements and affected media.
7. Prior to the next Five-Year Review, conduct on-site ground water and seep sampling.
8. Prior to the next Five-Year Review, conduct off-site sediment and aquatic life sampling in the Alamosa River.
9. Placement of fish in Terrace Reservoir.

Protectiveness Statement: The Site does not pose a risk to human health. Threats to the environment have been reduced but not eliminated. All immediate threats at the site have been addressed. The remedy is expected to be protective of human health. Protection of the environment will continue to improve as the remaining elements of the Final Site Wide Remedy are completed. However, protectiveness determinations for the final remedy is deferred until it is either complete or information is obtained to make a protectiveness determination.

Long Term Protectiveness: Long-term protectiveness of the remedial actions will be verified through annual monitoring, which will be required to continually assess remedy performance.

Other Comments: Until all remaining components of the final remedy are implemented, achieving OU5 Remedial Action Levels and Objectives, and Alamosa River surface water standards is unlikely.

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ARAR	Applicable or Relevant and Appropriate Requirement
BLM	Biotic Ligand Model
$CaCO_3$	Calcium Carbonate
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
COC	Chemical of Concern
DCM	Discharge Control Mechanism
DMG	Division of Minerals and Geology
DOC	Dissolved Organic Carbon
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
gpm	gallons per minute
MCL's	Maximum Contaminant Levels
mg/L	milligrams per liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOV	Notice of Violation
NPL	Superfund National Priorities List
NRCS	Natural Resource Conservation Service
O&M	Operations and Maintenance
OSRTI	Office of Superfund Remediation and Technology Innovation
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
ppb	parts per billion
ppm	parts per million
PRP	Potentially Responsible Party
RALs	Remedial Action Levels
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RTG	Resource Technologies Group
SCMCI	Summitville Consolidated Mining Company, Inc.
SEO	State Engineer's Office
SDI	Summitville Dam Impoundment
SMSS	Summitville Mine Superfund Site
SOW	Statement of Work
SSC	State Superfund Contract
TBC	To Be Considered
TTRMC	Tetra Tech RMC

UAA	Use Attainability Assessment
ug/g	micrograms per gram
µg/L	micrograms per liter
U.S. BOR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
U.S. EPA	U.S. Environmental Protection Agency
WTP	Water Treatment Plant
WQCC	Water Quality Control Commission
WQCD	Water Quality Control Division