Five-Year Review Report

First Five-Year Review Report

For

Triumph Mine Tailings Piles Site

Blaine County, Idaho

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Prepared by Idaho Department of Environmental Quality
Boise, Idaho

Approved by: **Date:**

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I. Introduction

This Review is being done in accordance with the 1994 Triumph Site Memorandum of Agreement (MOA) between EPA and Idaho DEQ. In that MOA DEQ agreed to perform remediation work at Triumph in a manner consistent with the EPA's Superfund process. The DEQ Record of Decision (ROD) for the site subsequently included a requirement for a Five-Year Review. Under Superfund a Five-Year Review is required at sites where contaminants are left behind after remediation. The Triumph ROD states that "Five-year reviews will be required at Triumph because contaminants will remain on-site and may pose potential risk. All caps will be subject to five-year review as well as routine operation and maintenance. House dust metal concentrations may also be reviewed to determine the effectiveness of source control in reducing house dust metal loadings. Additionally, groundwater quality in the area including downstream drinking water wells will be subject to review."

This first review was conducted by DEQ using data from the site monitoring plan and the pre-certification walk-through. Data collection for the review began with the pre-certification walk-through conducted in June 16, 2003. The Idaho Department of Lands performed House dust sampling in the fall on 2003 as an addition to the annual site monitoring plan to support the Review. The review was completed April 20, 2004.

II. Site Chronology

Mine Background. The Triumph Mine produced ore containing lead, zinc, and silver from 1882 to 1957. The mining operations used a flotation process that concentrated lead and zinc from residual waste material (tailings). Tailings were pumped as slurry into two piles (upper and lower tailings piles). The upper tailings were deposited from 1882 to 1930, and the lower tailings from 1930 to 1957.

The Triumph Mine produced ore containing lead, zinc, and silver from 1882 to 1957. During processing, the ore was crushed and ground. The ground material resulted from a gravity process in the original mill and a floatation process in the new mill. Both mills produced concentrates containing high concentrations of lead, zinc, and silver and a residual waste material (tailings). Tailings were conveyed as slurry into two piles (the upper tailings pile and lower tailings pile).

Wooden flumes conveyed the tailings to the tailings piles. The flumes terminated near the outer edges of the tailings piles. Coarser particles generally were deposited near the flume outlet (close to the perimeter of the piles), and finer particles were transported further from the outlet (toward the interior of the tailings piles).

The upper tailings, primarily gravity processed, were deposited between 1882 and 1947, and the lower tailings, primarily flotation processed, were deposited from 1951 to 1957. The upper tailings pile consists of waste material generated at the original mill, the North Star Mill (old process area), before it was destroyed by fire. The new flotation mill near the Triumph portal replaced the original mill. The lower tailings pile consists of the waste material generated by the new flotation mill. Because of milling improvements, particle sizes in the lower tailings pile are generally finer (fine sand to clay) than those in the upper tailings (coarse sand to clay) pile.

Regulatory History. In 1988, DEQ performed a Preliminary Assessment of the Site. DEQ found elevated concentrations above background of arsenic, manganese, and zinc in surface water in the Triumph Tunnel drainage ditches near the lower tailings pile and the East Fork of the Big Wood River. EPA completed a Site Inspection in September of 1991. EPA continued with additional site assessment work in 1992 and 1993. In May of 1993, EPA proposed to add the Site to the federal National Priorities List (NPL). General Notice letters were sent out in June of 1993 to Triumph Minerals, Asarco, and the Idaho Department of Lands (IDL). Snyder Mines, Inc. and the Bureau of Land Management were also notified of potential liability.

Significant community opposition to the potential listing of Triumph on the NPL resulted in a Memorandum of Agreement (MOA) between EPA and DEQ. This 1994 agreement defers remediation responsibility from EPA to DEQ regulatory authorities. The agreement states that DEQ response activities will be conducted consistent with CERCLA as amended, the NCP, and Idaho State laws and regulations. DEQ entered into a Consent Order with Asarco and IDL in January, 1994 to perform a Remedial Investigation/Feasibility Study for the Site. The Remedial Investigation was completed in January 1997. DEQ completed the Baseline Ecological Risk Assessment in May 1997 and the Baseline Human Health Risk Assessment in August 1997. The final Feasibility Study was completed March 1998 at about the same time the site ROD was issued on March 19, 1998. A second Consent Order was entered into with Asarco and IDL for remedial design and action in August 1999. In this consent order the site was broken into two operable units. These are the soils and mine water components. On April 30, 2003, EPA de-proposed the Triumph site from the National Priorities list. EPA de-proposed the site based on the MOA and DEQ fulfilling its obligations under the agreement. During the course of remediation Asarco found itself in a difficult financial situation and was unable to meet remedial obligations at Triumph and other sites around the country. In 2003 money was made available from Asarco through a settlement the company made with the federal government. In 2003 $300,000 of Asarco money was provided to the site for plug installation. The amount of money, if any, that will be available for the monitoring and contingency implementation if needed is not know. However, funds have been requested through the Asarco settlement trust fund process.

Remedial Action Implementation History. Phase I of the remedial action actually began October 19, 1998 and ended November 25, 1998 prior to finalizing the second

consent order. Phase II construction began May 1999 and was completed December of that same year. Mine plug installation work was initiated in the summer of 2001 beginning with rehabilitation of the Triumph Tunnel. A new tunnel was drilled to connect with the old tunnel after the old tunnel was found to be too unstable to safely and cost effectively re-open. The new tunnel intersected with the old tunnel in a location identified to be appropriate for plug installation. The plug construction was initiated in the summer of 2003 and water was shut off from the mine on August 28, 2003.

III. Background

The Triumph Site consists primarily of two mill tailings piles associated with former lead, zinc, and silver mining and milling areas. Also included are a Mine portal and a former processing area adjacent to the tailings piles (Figure 1). There are about 30 residences located in adjacent to these areas which make up the unincorporated town of Triumph.

The two tailings piles are located on the valley floor immediately north of the East Fork of the Wood River. These tailings piles are broad, flat features and rise 10 feet or more above the valley floor. The upper tailings pile occupies approximately 6 acres and the lower tailings pile occupies about 22 acres. Using an estimated tailings depth of 15 feet, the approximate total volume of both piles is 680,000 cubic yards. The lower tailings pile contained two permanent ponds. As a result of remediation the southern pond has been eliminated. The Triumph Mine portal is situated on the south-facing hillside above the tailings piles, and a waste rock pile extends below the portal to the base of the valley floor.

Approximately 65 people reside in the town of Triumph. Houses are located along the northwestern boundary of the upper tailings pile and along the eastern boundary of the lower tailings pile.

Areas impacted by metal contamination are the tailings piles, process area, residential properties, and wetlands adjacent to the tailings piles. The Mine was also discharging slightly acidic water from the portal at a rate of 90 to 190 gpm.

Habitats within the valley include coniferous forest on the steep mountains to the southeast and scrub-shrub grasslands on the slopes of the mountains to the northwest of the valley. The valley includes a riparian zone along the fluvial plain of the East Fork of the Wood River, with several types of wetlands present. These wetlands provide different habitats for a potentially wide range of mammals, birds, reptiles, amphibians, fish, invertebrates, and plants.

The local physiography consists of an east west-trending alpine valley bounded on the north and south by bedrock upland mountains. Rocks exposed in the vicinity of the Site include the Wood River Formation (south side of the valley) and the Milligen Formation (north side of the valley). The two formations are bounded by a thrust fault contact.

The Wood River Formation has an upper member consisting of calcareous and siliceous sandstones with interbeds of conglomerate and limestone. The lower member consisted of thinly bedded limestone overlying heavily bedded blue sandy limestone with a massive conglomerate in the basal portion.

The Milligen Formation consists of a gray and black carbonaceous argillite with interbeds of limestone and quartzite. The Milligen Formation is the host for the ore deposits of the Triumph-Parker Mine Mineral Belt. The three main ore-bearing minerals are argentiferous galena, sphalerite, and argentiferous tetrahedrite. Host rock consists mainly of argillite, locally carbonaceous, with interbeds of limestone, siltite, and minor quartzite.

The unconsolidated sediments consist of alluvial deposits varying in grain size from clay to cobbles. The south side of the valley is currently undergoing erosion and deposition caused by the East Fork of the Wood River.

Groundwater at the Site generally occurs under unconfined conditions within the alluvial valley fill. The flow of the groundwater within this alluvial valley fill generally parallels the flow of surface water.

The upper aquifer at the Site is a perched groundwater zone known as the saturated zone. The saturated zone is limited to the lower tailings pile, and possible occurs discontinuously in the upper tailings pile. The groundwater is perched on a clay layer that underlies a large portion of both tailings piles. This saturated zone is recharged by surface water from the ponds on the lower pile and the spring on the upper pile. The northern pond in the lower tailings pile is likely made up of both surface water and ground water. The southern pond was made up of surface water run on. Downward seepage of the water within the tailings saturated zone into the gravel aquifer likely occurs to a greater degree at the base of the western and southern portions of the lower tailings pile where the clay layer is absent.

The lower aquifer in which the community water supply wells are screened is called the gravel aquifer. The groundwater in the gravel aquifer occurs under confined conditions wherever the clay layer is present.

The main surface water body in the vicinity of the Site is the East Fork of the Wood River, which runs along the south side of the valley floor. Surface water is also present in the wetlands in the valley adjacent to the tailings piles and the river, particularly in the area upstream of the upper tailings pile. A spring emerges along the northern boundary of the upper tailings pile. Water from the spring flows through a drainage channel in the upper tailings pile, where it enters the wetlands as a channel that flows into the East Fork of the Wood River.

The Triumph Tunnel prior to the plug installation discharged 90 to 190 gallons per minute (gpm). Water emerged from the Mine portal where it entered into holding ponds

before being piped downhill through plastic drainage pipes. At times this water was not contained in the pipes and ran down the road or seeped into the waste rock pile. Water discharged from the drainage pipes into a ditch then entered a culvert and crossed the East Fork road, where it entered an unlined ditch. The water flowed in a southerly direction along the western edge of the lower tailings pile, where the ditch is less well defined. Ultimately the water dispersed in the wetlands and toward a small pond west of the tailings pile.

Chemicals of concern (COCs) for the Site were antimony, arsenic, cadmium, copper, lead, manganese, mercury, nickel, selenium, silver, vanadium, zinc. Indicator chemicals (chemicals that indicate the presence of others) for the residential soil investigation were arsenic and lead. The greatest risks from the site were associated with contaminated soils, tailings, and water rock materials. These sources were addressed in the soil portion of the remedy. The soils sources remedy was designed to also be protective and groundwater and surface water. The mine plug portion of the remedy was designed to reduce the load of arsenic and manganese from the mine into the wetlands and groundwater. The overall remedy was driven by human health risk. No unacceptable ecological risks that warranted remediation were identified.

IV. Remedial Actions

Selected Remedy Description. The remedy at the site was based on residential and recreational use scenarios.

Soils OU. The ROD called for the excavation of residential soil to a depth where the Remediation Goal of 300 mg/kg (same as parts per million, ppm) arsenic will be achieved or to one foot, whichever occurs first (excavation to one foot is anticipated to remove most of the soil containing arsenic above the 300 mg/kg cleanup level). During construction this aspect of the remedy was implemented by removing the top six inches of soil if contamination exceeding the action level was found in the 0 to 1 inch and/or the 1 to 6 inch depth layers. When contamination was found at depths greater than 6 inches the top foot of soil was removed. Contaminated excavated soil was placed on the lower tailings piles and graded to allow surface water to drain. Uncontaminated clean soil was imported and placed in the residential excavations and vegetated. Excavation of contaminated soil materials and replacement with uncontaminated materials was also performed on unpaved roads and road shoulders. In most residential yards removal of soil above 300 mg/kg arsenic in the top foot of a yard was a total removal of contaminated soil. These yards will not need any institutional controls termed Community Protection Measures (CPMs) in the ROD to ensure the barrier is maintained. The CPMs will be applied to those yards and other capped areas that have material remaining above the RG at depths below one foot. In yards with contaminated soil below the top foot, produce garden areas were provided enough soil to create a two feet layer of uncontaminated soil.

The lower tailings pile served as the disposal location for contaminated soils in residential areas. Small isolated tailings accumulations located adjacent to the main piles were consolidated onto the two larger piles. The piles were graded to ensure runoff and capped with a minimum of six inches of soil. The vegetated soil cap serves as a barrier to reduce exposures and contaminant migration including capillary rise. A twelve inch soil cap buffer was created on the tailings piles that are directly adjacent to residential yards and where there is no physical barrier like a road or fence between the residential yard and the tailings pile.

The waste rock and process areas were graded (as necessary) and covered to eliminate the exposure pathway. A six inch vegetative cover was used to eliminate direct exposure and airborne emissions from the area.

Visible tailings and soil hot spots were removed from wetlands areas and disposed on the tailings piles. Areas of barren soil that pose a risk of erosion and are above the arsenic RG were excavated or capped. The wetlands have been found to be providing important metal absorbing and habitat functions at the Site and were left largely undisturbed.

The Triumph Tunnel drainage ditch south of the East Fork Road was excavated to a depth where the RG of 300 mg/kg arsenic was achieved or to one foot, whichever occurred first. The ditch was put into a culvert from the road and was reopened as a ditch as the course turned west away from the Lower Tailings pile. A soil cover was placed in the ditch if soil containing COCs above the RG remained. The materials excavated from the ditch were highly contaminated and were disposed on the tailings pile within a lined cell to ensure these materials do not leach.

House dust was addressed through source control via capping of contaminated soils and tailings. Routine housecleaning by residents post remediation was expected to reduce the metal loading within the home since the source of new contaminated dust was controlled from the soils remedy.

The ROD calls for CPMs to be developed for residential yards, residential developments, and other excavation activities located on capped tailings (or areas that still have soils with arsenic levels greater than 300 mg/kg whether below the one foot soil cap or not). The purpose of the CPMs is to allow the property owner to use their property as they determine appropriate but ensures that any exposed tailings materials or contaminated soils are properly handled, disposed, or capped. An example of the CPMs that could be implemented are to work with Blaine County to create an overlay zone that would provide information to the property owner regarding the way contaminated soils and tailings would need to be handled and disposed. A disposal location has been established and is being maintained by IDL to support disposal of contaminated materials resulting from excavation activities.

The selected remedy includes CPMs to address future residential risks posed by COCs in wetlands soil. These future risks are related to garden produce ingestion. The type of CPMs will be similar to those outlined above for capped areas. The purpose of the CPMs will be to allow the property owner to use their property as they determine appropriate but ensure that any tailings materials or contaminated soils are properly handled, disposed, or capped to ensure that vegetable gardens are not planted in contaminated soil.

Water management was implemented to minimize erosion impacts on any soil caps installed as part of the remedy. Water from the springs in the upper tailings pile is conveyed through a constructed swale to minimize erosion.

Mine Water OU. The selected remedy for the Triumph Tunnel Water is a phased approach as necessary to meet ARARs. The first step is the installation of the mine plug in combination with monitoring to predict potential discharges at other portals. Additionally, the plug will be inspected for leakage and stability and a comprehensive reconnaissance to locate seeps and discharges caused by the plugging will be conducted in the area on a regular basis. A reconnaissance of current seeps and discharges was performed prior to plugging to establish baseline conditions. Contamination related to discharges will be addressed through collection, treatment, excavation, or other appropriate measures to address the contamination caused by the discharge. In-line treatment will be implemented if the mine water pool does not reach equilibrium without causing problematic seeps or discharges. The trigger for installation of the in-line component will be based on time-pressure curves that show the depth of water as the mine fills, overflow of the mine pool at another surface opening, the development of discharges or seeps, or a combination of these factors. Similarly, the wetland treatment portion of the remedy will be implemented if analytical results for samples of in-line aeration indicate non-compliance with ARARs, including water quality standards.

The elevated manganese levels in groundwater downstream of the lower tailings pile will be addressed primarily through source control and CPMs to prevent ingestion of the groundwater. Natural attenuation is also expected to provide additional benefit. Groundwater will be monitored to determine the effectiveness of source control and natural attenuation. If manganese levels do not reach the RG after source control, DEQ will determine the appropriate next steps to take to be protective of human health and the environment. Controlling sources as required by the selected remedy would be consistent with foreseen appropriate next steps. Review of the progress toward reaching the RG will occur at least every five years as part of the five year review. If there is residential development in the wetland area and the groundwater does not meet drinking water standards, an alternative source will need to be obtained by the user.

CPMs for groundwater will be established to prevent ingestion of impacted groundwater that is downstream of the lower tailings piles. The CPMs will likely include restricting construction of drinking water wells in the impacted groundwater using Idaho

Department of Water Resources authorities. The purpose is to protect potential future residents from drinking the water with elevated manganese concentrations during the interim until manganese levels are reduced to below the risk based concentration of 840 μg/l (same as part per billion, ppb) via source control and other COCs are below drinking water standards.

Remedial Action Status. All soils related remedy work at the site was completed December 1999. Subsequent remedy repair activities have been implemented. These included drainage problem repairs in residential properties and weed control, re-seeding, and amending soils on areas not sodded under the remedy. These areas include the tailings piles, the waste rock pile, process area, and pastures. The CPMs have not been implemented at this time. Several meetings have been held with Blaine County officials in regard to using an overlay district to institute the CPMs. At this point the County has not agreed to adopt an overlay district. The remedy has not yet been certified complete pending completion of the CPM component.

The mine plug was completed and the valves closed this summer. A site inspection on November 25, 2003 confirmed the completion of the place. Pressure behind the plug was at 22 pounds per square inch. This represents about 50 feet of head behind the plug. About 4 gpm was still discharging from the mine and flowing the surge pond.

V. Progress Since Last Review

This is the first Five-Year Review for the Triumph Site.

VI. Five-Year Review Process

DEQ drafted a Five-Year Review Report based on the construction completion reports for the site and the 2003 Pre-certification walk-through. Also used were field notes and observations take over the review period. Because of the recentness of the Pre-certification walk-through, there was no need to perform an additional site inspection just for the Five-Year Review. The draft document was provided to Asarco and IDL, the two PRPs for the site. Thirty copies of the draft document were mailed to the lead community liaison on March 2, 2004 so that a copy could be provided to each household in Triumph. The community liaisons were established as part of the community relations plan for Triumph. These persons serve as the communication conduit between DEQ and the small community of Triumph. DEQ offered to meet with the community if they wanted a meeting. Comments were requested by March 30, 2004. A telephone call was received from the lead liaison April 8, 2004 indicating that the residents had no comment and that there was no request for a public meeting to explain the Five-Year Review. IDL responded that they were satisfied with the report on March 5, 2004. No comments were received from Asarco.

VII. Technical Assessment

Is the remedy functioning as intended by the decision documents? The remedy for the soils portion is functioning as intended. Contaminated soils had been removed and disposed of on site, and barriers have been created that encapsulate contaminated material remaining at the site. These actions have broken the exposure pathway from contaminated soil to humans. The Pre-certification walk-through found that the barriers are at or thicker than the prescribed remedy. The remedies were found to be in place based on the spot checks performed as part of the Pre-certification walk-through as well as the field inspections during remediation. The construction completion report for this remedy also documents the completion of each remediated property. It is expected that the routine yard care provided by property owners and the ongoing O&M activities by the PRPs will ensure the remedy stays in place against routine erosional occurrences.

The outstanding issue that needs to be addressed is the implementation of the CPMs. The CPMs guide active excavation work such that a clean barrier is installed on the surface once work is complete. To date, the DEQ and IDL have been working with property owners to make sure contaminated soil is not left on the surface and that clean soil barriers are created. This informal method is not sustainable and the CPMs need to be implemented.

The contaminant source control measures taken outside of the home are expected to reduce house dust levels to be below unacceptable risk. Samples from three homes were collected in the summer and fall of 2003 for the purpose of this Five-Year Review. Results show lead levels 180, 363, and 465 mg/kg for the three homes. Arsenic levels for the same three homes are 49, 54, and 269 mg/kg. This compares to pre-remediation levels of 185 to 1320 mg/kg lead and 163 to 759 mg/kg arsenic from four houses tested. The data suggests that the house dust concentrations are decreasing since source control measures were implemented. The sample numbers are not large enough to make a statistical comparison. However, other sites have shown that source control via residential soil remediation does reduce house dust lead concentrations over time. House dust concentrations will need to continue to be monitored as part of the next Five-Year Review. It is expected that ongoing house cleaning and changing out of carpeting will further reduce the metal concentrations and metal loads in the homes.

The mine plug is holding water discharge volumes to about 4 gpm. This is a much more easily manageable quantity than prior to the plug when flows ranged from 90 to 190 gpm. The quality of the post-plug water was tested September 24, 2003. The results showed that the concentration of total arsenic decreased from 648 µg/l to 40 µg/l from November 20, 2002 to the September 2003 sample date. Total cadmium decreased from 1.2 µg/l to less than 0.5 µg/l , total manganese from 3620 µg/l to 170 µg/l, and total zinc from 2510 µg/l to 156 µg/l . Lead concentrations were below detection limits for both sampling events. This decrease demonstrates the difference in water sources. Prior to the plug the water was largely from the mine workings where the water was in

contact with the lead-zinc-silver sulfide ore body carrying associated sulfur and arsenic solutes and particulates. Now that that portion of the flow has been blocked off, the remaining water is coming from the non-mineralized argillites/carbonates gangue rock through which the Triumph tunnel penetrates.

The plug still needs to be monitored to make sure the water does not daylight somewhere else. It is too early to determine if the plug will be able to serve as a stand alone remedy for the mine water. The reductions in manganese concentrations in the remaining mine discharge will prevent further manganese loading in the wetland groundwater. Groundwater monitoring results since 2000 show significant variability in manganese concentration in the two nested well sets of GW4a and b and GW7a and b. Biannual monitoring will need to continue to monitor the effects of the plug and soils remedy on groundwater.

No downstream drinking water wells were tested for this Five-Year Review. A full evaluation of groundwater quality will be performed in the next year or two to measure the effectiveness of the mine water plug and other source control measures to improve groundwater quality.

Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid? The exposure assumptions remain valid at this site. The one water quality standard that has changed since the time of the ROD is the arsenic drinking water standard. At the time of the ROD the standard was 50 µg/l . The standard has been 10 µg/l . Drinking water well at Triumph has been tested for arsenic and found to be below that standard using detection limits of 1 to 3 µg/l .

Has any other information come to light that could call into question the protectiveness of the remedy? DEQ does not have any information that would suggest that the remedy for the site will not be protective once completely implemented.

VIII. Issues

Community Protection Measures. The ad hoc basis that DEQ and IDL have been working with property owners to meet the objectives of remedy protection and reinstallation is not a sustainable program. The CPMs for the soil portion of the cleanup need to be implemented for the remedy to be protective in the long term. This issue will affect protectiveness in the future.

House Dust. House dust arsenic levels have decreased to be below the action level for arsenic in the three homes tested. This is the same trend identified qt the Bunker Hill site where house dust metal levels declined after soil remediation. The decline tends to lag behind the soil remediation level. It is expected that with the control of the contamination source and continued good house cleaning by the homeowner arsenic and lead levels in house dust will decrease further. Additionally, as people change out

carpets one of the big residual sources of arsenic and lead contaminated dust in the home will be removed.

Mine Water. The remaining components of the first phase of the Mine Water selected remedy need to be performed. Of primary importance is the assessment of the effectiveness and success of the plug. This includes seep development reconnaissance, groundwater monitoring, and developing time-pressure curves for the plug. The time-pressure curves will be monitored to estimate mine pool elevation relative to the mine working and other mine openings. This issue could affect protectiveness in the future. Effectiveness of the first phase will determine the need for the follow on phases identified in the ROD.

Groundwater. Mine discharge water is believed to be a significant source of manganese and arsenic to the shallow water in the wetlands. Now that the mine plug has significantly diminished the mine water flow, the impacts can be monitored in the groundwater monitoring wells in the wetlands. The impacts on the deeper aquifer that is used for drinking water in Triumph will also need to be monitored over time. There is the possibility that the plug could negatively impact the quality of the water used for the Triumph community drinking water wells. Finally, the water quality of wells lower down in the valley need to be tested to make sure that the water quality has remained acceptable for drinking water purposes. Samples from downstream private wells prior to remediation showed no metal concentrations above water quality standards. This issue will affect protectiveness in the future and will determine the need for CPMs for drinking water.

IX. Recommendations and Follow-up Actions

Soils OU.

Community Protection Measures. The CPMs for the soil portion of the cleanup need to be implemented for the remedy to be protective in the long term. If an overlay district cannot be implemented, other alternatives such as conservation easements with owners should be investigated. The PRPs are responsible for implementing the CPMs. DEQ will be the oversight agency. The milestone date is July 2004. This action will affect future protectiveness.

House Dust. House dust metal levels need to be evaluated in the next Five-Year Review. Data from other sites shows that outside source control is effective at reducing metal concentrations and loads inside homes. Furthermore, research has continued to call into question the usefulness for one time cleaning to reduce metal concentrations for the long term. The best option for reducing metal load and possible metal concentration in the home is to continue regular cleaning, change out carpets, and take measures to reduce tracking of dirt and mud into the home. The PRPs will continue to monitor house dust levels as part of Five-Year Reviews. DEQ will be the oversight agency. The milestone date is the next Five-Year Review in October 2008. If house

dust levels do not continue to decrease, current and future protectiveness would be affected.

Mine Water OU

Mine Water. The remaining components of the Mine Water remedy need to be implemented. Asarco is the implementing party for this work. DEQ is the oversight agency. This work is ongoing. If the remedy work were not completed, current and future protectiveness would be affected.

Soils and Mine Water OUs

Groundwater. A plan needs to be developed to evaluate remedial effectiveness of source controls to reduce metal concentrations in groundwater. The plan will need to include Triumph community drinking water wells, downstream private drinking water wells, and the wells in the wetland down gradient from the lower tailings pile. The PRPs are responsible for implementing this work. DEQ is the oversight agency. The milestone will depend upon the results of mine plug monitoring. But it should be implemented by the end of 2006. Current and future protectiveness could be affected depending upon the results of the analysis. Results may call for implementation of CPMs for drinking water wells.

IX. Protectiveness Statement

The remedy at the Soils and Mine Water OUs are expected to be protective of human health and the environment upon completion of all remedial actions, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.

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