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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Ref: 8EPR-ER

March 19, 2014

Jean Magness

Ex. 6 Personal Privacy (PP)

Re: Rico-Argentine Mine Site, Dolores County, Colorado
Denver and Big Strike Lode Mining Claims

Dear Ms. Magness:

I am writing to you to provide an update of the activities at the Rico-Argentine Site which may impact the Big Strike Lode and the Denver Lode mining claims. It is my understanding that you may hold a property interest in one or both claims. In 2011, the U.S. Environmental Protection Agency (EPA) issued a Unilateral Administrative Order (Order) to the Atlantic Richfield Company, requiring it to perform response actions at the Site that include the historical water treatment settling ponds (Docket No. CERCLA-08-2011-0005). The removal action requires treatment of contaminated mine water flowing from the St. Louis Tunnel, as well as management of solids associated with past and future water treatment. Information about the removal action can be found by going to EPA's On-Scene Coordinator (EPA-OSC) website at www.epaosc.org/site/regionmap.aspx, then navigating to Region 8, then the link to the Rico Argentine Mine Site.

One of the requirements of the Order and work plan is for Atlantic Richfield to construct a repository for the solids discussed above. The footprint of Atlantic Richfield's proposed solids repository includes areas adjacent to the settling ponds and over a portion of the Denver Lode and the Big Strike Lode. A design map drafted by Atlantic Richfield is enclosed with this letter. An EPA fact sheet about the Rico-Argentine Site is also enclosed.

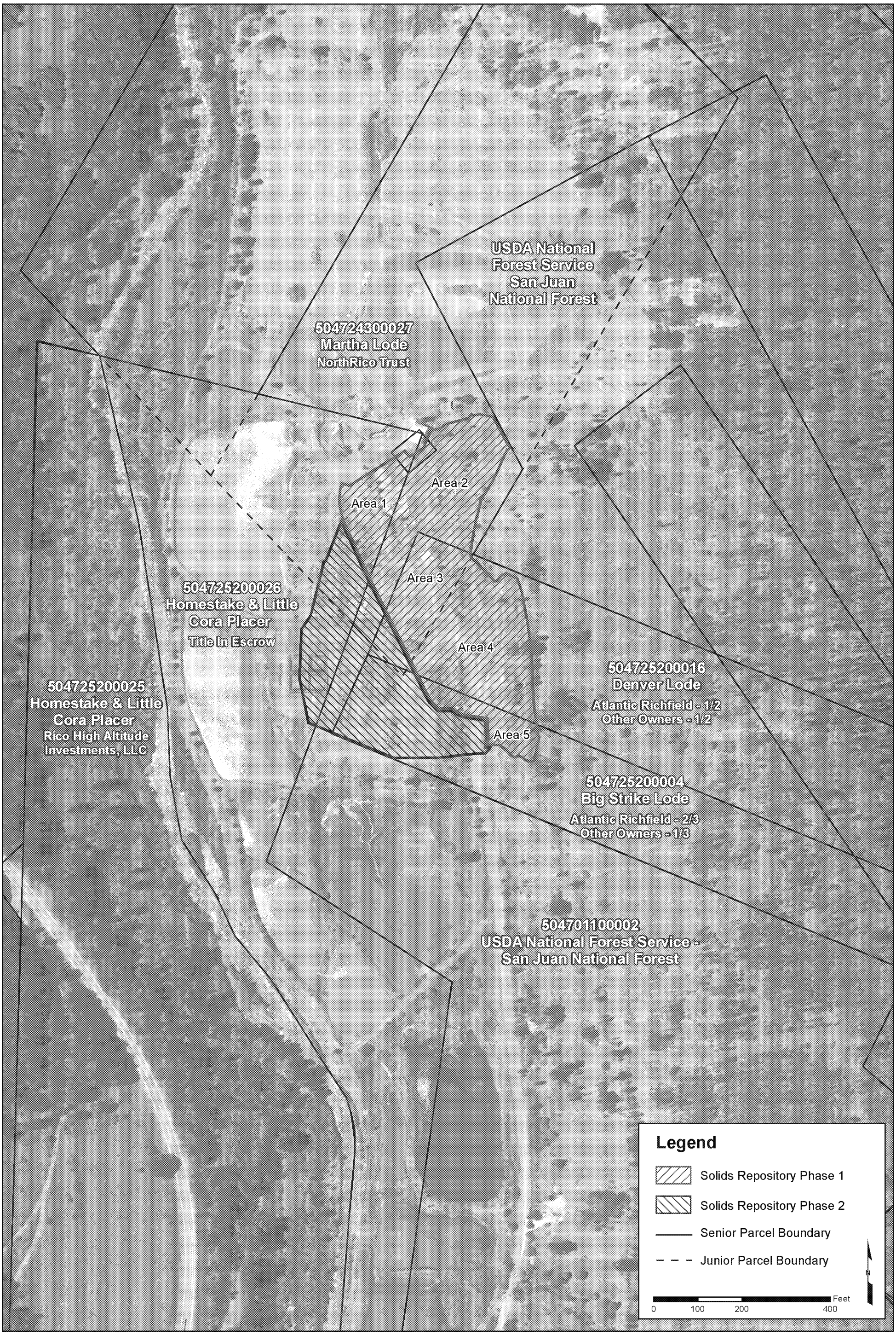
If you have questions about this work or the EPA Order, please contact me at 303.312.6723, or EPA attorney Amelia Piggott at 303.312.6410. If you have questions about the proposed long term land use of the Denver or Big Strike Lodes, please contact Atlantic Richfield's project manager, Anthony Brown, at 714.228.6770.

Sincerely,

Steven Way
Federal On-Scene Coordinator

Enclosures

cc: Amelia Piggott, USEPA 8ENF-L
Anthony Brown, Atlantic Richfield
Adam Cohen, Davis Graham & Stubbs
Rufus Wilderson, Law of the Rockies



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AECOM

Rico, Colorado (60314374)

Figure 1
Property Ownership
Within Solids Repository

DATE: 02/20/2014	DRWN: SJE	Revision: 0

Rico Argentine St. Louis Tunnel Site

Project Update March 2014

Site Overview

The Rico-Argentine St. Louis Tunnel Site is located adjacent to the Dolores River, north of the town of Rico, in Dolores County, Colorado. The site consists of the St. Louis Tunnel and associated mine workings and a complex of open ponds. Water discharging from the St. Louis tunnel contains elevated concentrations of metals, primarily cadmium and zinc, and is being released into the Dolores River and surrounding environment. In addition, Silver Creek, a tributary to the Dolores River flows through a portion of the site and is impacted by acid mine drainage.

The St. Louis Tunnel is connected to mines on the east side of the Dolores River, the Mountain Springs mine to the north and the Rico-Argentine mining district (near Silver Creek) to the south. The tunnel is inaccessible due to a collapse and an estimated 75 foot debris plug. The first approximately 200 feet of the St. Louis Tunnel behind the opening collapsed, and the tunnel is partially exposed. Water in the mine comes in contact with highly mineralized surfaces that contaminates the water inside the mine workings.

The majority of the contaminated water flows out of the St. Louis Tunnel and into a series of constructed ponds below. The ponds were used historically for lime treatment of the metals-laden water from the tunnel. The treated water flowed into the ponds where the metals precipitated and settled before the water discharged to the Dolores River. Treatment was discontinued in 1996, resulting in untreated, contaminated mine water discharging to the river, and lime-precipitation/metals sludge remained in 10 settling ponds adjacent to the river.

Overall, response actions are focused on three main elements:

- *Identifying* significant sources of contaminated water in the mine workings and reducing their contribution;
- *Controlling and treating* the water flowing from the St. Louis Tunnel to the Dolores River; and
- *Stabilizing* the current pond system and managing the pond sludge

Environmental Response Actions

2000-2013

In 2000, EPA conducted an emergency removal at the Rico-Argentine St. Louis Tunnel Site to prevent a breach where one of the ponds was overtopping. In 2011, Atlantic Richfield Company (ARCO) began work under an Administrative Order to prevent releases of contaminants from the site, and to determine a long-term water management solution. The following are some of the activities undertaken to-date.

Mine Water Source Identification/Reduction

The St. Louis Tunnel drains historical mine workings extending several thousand feet into Telescope and Dolores Mountains. In 2011 and 2012, EPA and the Colorado Division of Reclamation and Mine Safety (DRMS) working in coordination with ARCO, assessed water chemistry, flow pathways, and structural reliability inside the mine workings. The investigations were to determine if highly contaminated water can be captured and removed from the system at the source before it enters the St. Louis Tunnel. Reducing contaminant sources above in the mine workings could reduce the type and amount of long-term treatment required for the water discharging from St. Louis Tunnel. However, the investigations revealed that addressing source areas of contaminants is limited due to the condition of the mine workings.

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Much of the work in the mine workings focused on the Blaine Adit and the connected 517 Mine Shaft. Water previously discharged from the Blaine Adit into Silver Creek, but in 1983 ARCO placed a coffer dam within the tunnel to redirect the water to the St. Louis tunnel through the underground workings. The 517 Shaft extends to the lower workings and receives water from the Blaine workings and discharges water toward the St. Louis Tunnel. Crews reconstructed portals and secured safe access to both the Blaine and the 517 Shaft and replaced the coffer dam to ensure its continued effectiveness.

Water Monitoring, Control, and Treatment

In order to better characterize the site and plan for adequate water treatment, EPA directed ARCO to collect continuous flow measurements at the St. Louis Tunnel discharge and at the pond system outfall to the Dolores River. In addition, ARCO has collected monthly (quarterly as of 2014) water quality samples from various locations in the Dolores River and outfall/pond system. Groundwater monitoring is also occurring monthly, when conditions permit, from 48 wells drilled above, on, and below the site.

In addition, ARCO developed a model and analyzed potential hydraulic control alternatives and recommendations. This information, which was submitted to EPA in 2013, will assist in determining the anticipated flows from the St. Louis Tunnel and what type of hydraulic controls are needed to manage the discharge over time.

EPA has directed ARCO to evaluate a number of potential water treatment methods. These include active lime treatment system, in-situ treatment, passive treatment (such as passive wetlands and bioreactor systems), and ion exchange. Active lime treatment is often the default system for mine water in order to meet discharge criteria for surface water. Brief descriptions of these treatments are as follows:

- A pilot-scale in-situ water treatment test was conducted from Sept. to Nov. 2012. It involved injecting potassium carbonate and sodium hydroxide into the 517 Shaft to treat water. Cadmium and zinc concentrations at the St. Louis Tunnel discharge point were reduced by approximately 40 percent during the test.
- A pilot scale wetland/sulfate reducing water treatment test was initiated in November 2012. The system was successful in removing the primary contaminants: 95 percent of cadmium and 99 percent of zinc. The results of

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the pilot scale passive system are summarized in a report submitted in November 2013.

- A demonstration scale passive water treatment test was designed and construction began in 2013. This will involve both a horizontal flow system (settling basin, wetlands, aeration channel, and rock drain), and a vertical flow treatment system (settling basin, biotreatment cell, aeration cascade). Start-up of this test will begin in June 2014.

Ponds Stabilization and Sludge Management The ponds on-site were constructed in the Dolores River floodplain of materials found on-site, including stream and hillside deposits and waste rock. In 1984, a water treatment system began operation to treat water that discharges from the St. Louis Tunnel. The system treated the water with lime to increase pH and precipitate metal contaminants.

The treated water flowed through the ponds where the metal precipitate was allowed to settle before the water was discharged to the Dolores River. Water treatment ceased in 1996, and untreated mine discharge water was left to flow through the ponds to the Dolores River, and metal precipitate sludge remained in the ponds which were not maintained and in danger of overtopping or failing.

ARCO conducted geologic, geotechnical, and hydrologic evaluations of the pond system, potential on-site sludge drying facility and repository locations, and the collapsed portion of the St. Louis Tunnel.

ARCO is removing sludge left in the ponds from historic lime water treatment to increase the ponds' storage and to reduce the potential for releases to the Dolores River. More than 10,000 cubic yards of metals-precipitate sludge has been removed from a number of ponds and placed in temporary drying cells onsite.

Flood dike upgrades were constructed to improve the dike performance in the event of flooding and to increase stability. Sludge in each of the temporary drying cells was tested for stability and moisture content to help determine the best design for a permanent drying facility.

An alternatives evaluation report was completed in 2013 that indicated the preferred location for a permanent solids drying and repository site. The location is onsite to the south of the St. Louis Tunnel discharge andnear the current temporary drying cells. Repository preliminary

designs and operating plans were submitted by Atlantic Richfield to EPA in December 2013. These plans were also submitted to the State and County.

- The passive treatment demonstration project designed to treat a portion of the St. Louis Tunnel discharge will be constructed and operational by early summer 2014.

Next Steps for 2014

- Water quality sampling and flow measurements will continue.
- Another pond, Pond 14, will be drained and the solids excavated and placed in Pond 13 for temporary draining and storage.
- A proposed permanent solids repository location has been identified and repository construction is planned in 2014. Waste placement is scheduled to begin in October 2014
- The hydraulic control measures to be used at the St. Louis Tunnel will be selected and construction will being in 2014.
- The pilot-scale passive treatment system will be continued through June 2014 or demonstration-scale wetland system start-up.

EPA expects that final water management and treatment systems will be installed at the Rico Argentine site in 2015.

Contacts

If you have questions, or would like more information, please feel free to contact:

Steven Way, EPA On-Scene Coordinator, 303-312-6723, way.steven@epa.gov

Jennifer Chergo, EPA Public Affairs and Communications Coordinator, 303-312-6601, chergo.jennifer@epa.gov

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