

**Resolution Copper Project and Land Exchange
Environmental Impact Statement**

USDA Forest Service
Tonto National Forest
Arizona

February 8, 2018

Process Memorandum to File

Mines in Arizona “Unavailable” for Consideration as Viable Alternatives for Tailings Disposal

This document is deliberative and is prepared by the third-party contractor in compliance with the National Environmental Policy Act and other laws, regulations, and policies to document ongoing process and analysis steps. This document does not take the place of any Line Officer’s decision space related to this project.

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Purpose of Process Memorandum

The purpose of this process memorandum (memo) is to provide a summary of existing, open-pit mines located throughout Arizona that were identified for consideration as a potential alternative location for disposing of tailings from the Resolution Copper Project.

This process memo identifies and describes each active mine/brownfield considered, and then provides the reasoning why the mine/brownfield ultimately was not able to be considered a viable alternative for the Resolution Copper Project's tailings disposal requirements.

Introduction

The scoping period (March 8–July 18, 2016) for the Resolution Copper Project gave the public an opportunity to comment on the project. Scoping comments raised the possibility of placing tailings in a previously disturbed mining area, and specifically within existing mine pits. A wide variety of brownfield or previously disturbed mining sites was considered as part of the alternatives development process.

The initial investigation considered whether all of the tailings could be disposed in an existing pit. Fourteen existing pits were originally considered: Ray, Pinto Valley, Sierrita, Twin Buttes, Casa Grande, San Manuel, Ajo, Copper Queen, Johnson Camp, Copperstone, United Verde, Miami/Globe District (multiple mines), Cyprus Tohono, and Carlota.

Six of these mines (Ray, Pinto Valley, Sierrita, Twin Buttes, Copper Queen, and Johnson Camp) are active operations or planned expansions. The Tonto National Forest did not consider these mines to represent reasonable alternatives; therefore, these locations were considered but dismissed from detailed analysis. Two other sites (the Miami/Globe District and the Cyprus Tohono Mine) are recognized to be part of ongoing cleanup actions under the Arizona Water Quality Assurance Revolving Fund (WQARF) program, commonly known as the "State Superfund" program. The Tonto National Forest recognized that ownership or even use of brownfields in these locations would result in Resolution Copper Company's potentially incurring liability for cleanup costs unrelated to its operations. This was not considered reasonable, and these locations were considered but dismissed from detailed analysis.

The following discussion provides an overview of the documentation considered for these eight mines that led to these sites' being considered unavailable.

Ray Mine

ASARCO's Ray Mine is currently an active operation and is located approximately 10 miles southeast of the town of Superior, Arizona. The Ray Operations consist of a 250,000 ton per day (ton/day) open-pit mine with a 30,000 ton/day concentrator, a 103 million pound per year (pound/year) solvent extraction–electrowinning operation, and associated maintenance, warehouse, and administrative facilities. The mine has an expected reserve life of 2044 and is in the process of further expansion of a

new tailings facility at Ripsey Wash, as well as a land exchange with the Bureau of Land Management (ASARCO Grupo Mexico 2015).

The current operation has been in continuous use for 34 years. In 2016, Ray Mine processed 13,656 thousand tons of mineral material, whose copper content was 46.5 thousand tons. The ore grade averaged 0.51% (Grupo Mexico 2016).

Because the Ray Mine and associated open pit are still in active operation, it is not a viable alternative to dispose of Resolution Copper tailings at the Ray Mine.

Pinto Valley Mine

Capstone's Pinto Valley Mine is currently an active operation and has been mined on and off since the early 1970s. The Pinto Valley Mine is located approximately 11 miles northeast of the town of Superior, Arizona. Capstone has submitted a Plan of Operations for expansion to the Tonto National Forest, which would extend the mine life to 2039, and has published proven and probable reserves of 474 million tons (Capstone Mining Corporation 2016a). Copper concentrate production facilities include a primary crusher, secondary and tertiary crushers, six ball mills, and copper concentrate and molybdenum flotation circuits. In 2016, Pinto Valley's mill throughput was 56,200 ton/day, and the total production for 2016 was 68,900 tons. The ore grade was 0.37% (Capstone Mining Corporation 2016b).

Because the Pinto Valley Mine and associated open pit are still in active operation, and expansion is planned, it is not a viable alternative to dispose of Resolution Copper tailings at the Pinto Valley Mine.

Sierrita Mine

Freeport McMoRan's Sierrita mine has been an open-pit operation since 1959 (Freeport McMoRan 2016a) and is located approximately 96 miles south of the town of Superior, Arizona. The Sierrita Mine reportedly has 2.4 billion tons of recoverable proven and probable reserves (Freeport McMoRan 2016b). The operation includes a 102,000-metric ton/day concentrator. In 2016, Sierrita's production totaled 162 million pounds of copper and 14 million pounds of molybdenum.

Because the Sierrita Mine and associated open pit are still in active operation, it is not a viable alternative to dispose of Resolution Copper tailings at the Sierrita Mine.

Twin Buttes Mine

Twin Buttes mine, owned by Freeport McMoRan, is adjacent to the Sierrita Mine (approximately 95 miles south of the town of Superior) and was acquired by Freeport McMoRan in 2009 with the following stated purpose: "In December 2009, we purchased the Twin Buttes copper mine, which ceased operations in 1994, and is adjacent to our Sierrita mine. The purchase provides significant synergies in the Sierrita minerals district, including the potential for expanded mining activities and access to material that can be used for Sierrita tailings and stockpile reclamation purposes." Freeport McMoRan is conducting drilling on the property and metallurgical studies to support a feasibility study expected to commence in 2012 (Freeport McMoRan 2016b). Twin Buttes has reported mineralized

material of 118 million tons (Freeport McMoRan 2016a). The Twin Buttes EW Facility has a design capacity of approximately 50 million pound/year of copper.

Because the Twin Buttes Mine and associated open pit are being explored for operation or are already in operation, it is not a viable alternative to dispose of Resolution Copper tailings at the Twin Buttes Mine.

Copper Queen Mine

The Copper Queen Mine open pit is located in Bisbee, Arizona, approximately 145 miles southeast of the town of Superior, Arizona. The mine has been closed since 1975. Ore reserves are depleted. In 1976, the mine was opened as a tourist attraction, and more than 1 million visitors from around the world have visited the mine (Queen Mine Historic Mining Tours 2015). The open pit is approximately 0.5 mile wide and 1,000 feet deep (Briggs 2016). The Town of Bisbee actively promotes the Queen Mine as a tourist destination to visitors. Because of the presence of tourism and tourists, the Copper Queen Mine is not a reasonable alternative for disposing of tailings from the Resolution Copper Project.

Johnson Camp Mine

The Johnson Camp Mine is located 101 miles southeast of the town of Superior, Arizona. Excelsior Mining Corporation owns the mine, which consists of a plant and facilities for processing copper. Mining ceased in 2010 but is planned for expansion and restarting, with exploration operations already underway (Excelsior Mining Corporation 2017). Because the Johnson Camp Mine is slated to expand operations, it is not a reasonable alternative for disposing of tailings from the Resolution Copper Project.

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