

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

USDA Forest Service
Tonto National Forest
Arizona

August 6, 2018

Process Memorandum to File

Transportation and Access Analysis: Assumptions, Methodology Used, and Relevant Regulations, Laws, and Guidance, and Key Documents

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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Revision History

Date	Personnel	Revisions Made
08/06/18	Emily Newell	Process memo created
10/29/18	Emily Newell	Revisions to memorandum title, revision history table added, edits to purpose of process memorandum section, references and key documents section added
10/30/18	Emily Newell	References added
01/14/19	Emily Newell	Ready for PM Review
7/12/19	Donna Morey	Update process memorandum to Draft EIS section
8/7/19	Emily Newell	Final consistency review

Purpose of Process Memorandum

In order to provide a concise and accessible summary of resource impacts, certain detailed information has not been included directly in the environmental impact statement (EIS). The purpose of this process memorandum is to describe additional supporting resource information in detail. The Transportation and Access section of Chapter 3 of the EIS includes brief summaries of the information contained in this process memorandum. This process memorandum covers the following topics:

- Resource Analysis Area
- Analysis Methodology
- Regulations, Laws, and Guidance
- Key Documents and References Cited

Detailed Information Supporting EIS Analysis

Resource Analysis Area

The transportation and access analysis area for the proposed mine facilities includes the roads adjacent to the proposed mine, roads that will provide regional access to the proposed mine and its facilities, road within or cut off by the perimeter fence that would be inaccessible to the public from mine activities, the proposed primary access roads and utility maintenance roads, as well as numerous less-frequently used and/or recreational routes that may potentially be affected by a general increase in area traffic. This 82,188-acre analysis area is depicted in Figure 3.5.2-1 in Section 3.5.2 of the Draft EIS. The analysis area for transportation and access issues includes within its boundaries approximately 141 miles of State highways, 418 miles of Pinal County–owned and local roads, and 533 miles of National Forest System (NFS) roads.

Analysis Methodology

Southwest Traffic

Much of the analysis contained in the Transportation and Access section of the Draft EIS can be found in the traffic impact analysis reports (Southwest Traffic Engineering LLC 2016, 2017, 2018). When modeling for trip generation for the tailings and storage facility alternatives, the following assumptions were used:

- During construction and regular operations of the mine, employees will be operating on 12-hour shifts and thus are assumed to have, on average, between 2 and 3 days off per week. Applying a 0.66 shift reduction factor accounts for the number of days per week an employee is predicted to travel to/from the site.
- Every vehicle entering the site is assumed to carry an average of 1.7 employees. To account for the reduction in trips generated by the site as a result of employees carpooling, a 1.7 employee per vehicle carpooling factor was used.

Regulations, Laws, and Guidance

Mine operations are subject to a wide range of Federal, State, and local requirements. Many of these require permits before the mine operations begin; others may require approvals or consultations, mandate the submission of various reports, and/or establish specific prohibitions or performance-based standards. Table 1 provides a summary of transportation laws, regulations, policies, and plans at the Federal, State, and local level.

Table 1. Relevant Laws, Regulations, Policies, and Plans

Laws, Ordinances, Regulations, and Standards	Description	Applicability
Forest Service Handbook 7709.59, "Road System Operations and Maintenance"	Provides guidance for planning, traffic management, investment sharing (cost share), highway safety, traffic studies, road maintenance, and other NFS road operations and maintenance activities.	Road system operations and maintenance are part of the process of managing NFS roads and road uses to best meet land and resource management objectives. Four NFS road intersection movements would experience a change in LOS by year 2022 with project.

Laws, Ordinances, Regulations, and Standards	Description	Applicability
Forest Service Manual (FSM) 7703.26 "Adding Roads to the Forest Transportation System"	Travel analysis considers the values affected by roads, including access to and use, protection, and administration of NFS lands; public health and safety; valid existing rights; and long-term road funding opportunities and obligations. Environmental analysis for roads includes effects on associated ecosystems; introduction of invasive species; effects on threatened and endangered species and areas with significant biodiversity, cultural resources, fish and wildlife habitat, water quality, and visual quality; effects on recreation opportunities; and effects on access to NFS lands.	Alternative 4 would require a re-routing of Silver King Road approximately 1 mile in length. Alternative 5 would require 5.1 miles of new disturbance for the western alignment and 2.2 miles for the eastern alignment. Alternative 6 would need new access roads along the tailings conveyance pipeline corridor. In total, 4 miles of new access road would be required for the northern alignment, 6 miles for the southern alignment, and 20 miles for a separate power line corridor. Travel analysis requirements are met for the NFS roads analyzed in this DEIS. Roads on private land and roads under the jurisdiction of entities other than the Forest Service are not required to undergo travel analysis. Road width, surfacing, and grades for segments of the access roads that would be NFS roads must meet or exceed Forest Service standards or have appropriate professional engineering justification and Forest Service approval for deviations from Forest Service standards.
Forest Service Manual 7709.56 "Road Preconstruction Handbook"	Provides guidance on the location, survey, design, and preparation of cost estimates for NFS roads.	These guidelines are applicable to roads on NFS lands.
Forest Service Manual 7710 (Transportation Planning Handbook), May 1991	Establishes requirements for administration of the NFS transportation system, including roads and trails.	The analysis area includes roads managed by the Forest Service that are applicable under FSM 7710.
"Roadway Design Guidelines" (Arizona Department of Transportation 2014)	Guide the roadway designer in exercising sound engineering judgment in applying design parameters. These guidelines are complementary to the American Association of State Highway and Transportation Officials' "A Policy on Geometric Design of Highways and Streets" (American Association of State Highway and Transportation Officials 2004) and the "Roadside Design Guide" (American Association of State Highway and Transportation Officials 2011) and are to be used in conjunction with these documents. The American Association of State Highway and Transportation Officials' policies reflect general nationwide practices and are not necessarily applicable to the conditions in Arizona. Where the design values provided in the ADOT manual differ from those presented in the American Association of State Highway and Transportation Officials' guidelines, the ADOT manual takes precedence.	ADOT has exclusive jurisdiction over State highways, State routes, and State-owned airports, as well as jurisdiction over all State-owned transportation systems or modes. ADOT has the responsibility to contribute the most desirable design parameters consistent with safety, service, environment, and cost effectiveness and to apply these parameters with sound engineering judgment on routes under State jurisdiction.
"Guidelines for Highways on Bureau of Land Management and U.S. Forest Service Lands" (Wheat Scharf Associates and ADOT/FHWA/BLM/USFS Steering Committee 2008)	Guide the roadway designer in exercising sound engineering judgment in applying design parameters.	These guidelines are applicable to ADOT roads on Bureau of Land Management (BLM) and NFS lands.
Traffic Guidelines and Processes ADOT June 2015	Provides a guide for department personnel and consultants for traffic studies, operations, and design.	Traffic studies were conducted as part of the analysis for the Draft EIS and were informed based on the ADOT Traffic Guidelines and Processes.

Laws, Ordinances, Regulations, and Standards	Description	Applicability
"Low Volume Roads Engineering Best Management Practices Field Guide," Gordon Keller, PE, and James Sherar, PE, July 2003	Provides guidance to build better, more cost-effective roads, and roads that minimize adverse environmental impacts.	New roads are planned to be constructed as a result of the project
"Guidelines for Geometric Design of very Low-Volume Local Roads," American Association of State Highway and Transportation Officials, 2001.	Provides guidance for very low-volume local roads.	The analysis area includes low-volume local roads. Low-volume local roads require different geometric design than those normally applied to higher volume roads.

Sources: American Association of State Highway and Transportation Officials (2004), American Association of State Highway and Transportation Officials (2011), Arizona Department of Transportation (2014), U.S. Forest Service (2009), U.S. Forest Service (2010), Wheat Scharf Associates and ADOT/FHWA/BLM/USFS Steering Committee (2008).

Key Documents and References Cited for Transportation and Access

The following list is meant to highlight key process or analysis documents available in the project record. It should not be considered a full list of all available documentation considered within this process memorandum or the EIS analysis.

American Association of State Highway and Transportation Officials. 2004. *A Policy on Geometric Design of Highways and Streets*. 5th ed. Washington, D.C.: American Association of State Highway and Transportation Officials.

———. 2011. *Roadside Design Guide*. 4th ed. Washington, D.C.: American Association of State Highway and Transportation Officials.

Arizona Department of Transportation. 2014. *Roadway Design Guidelines*. Phoenix, Arizona: Roadway Engineering Group, Arizona Department of Transportation. April.

Resolution Copper. 2016. *General Plan of Operations Resolution Copper Mining*. Superior, Arizona. May 9.

Southwest Traffic Engineering LLC. 2016. *Traffic Impact Analysis, Resolution Copper Mine, Superior, Arizona*. Prepared for Resolution Copper. Phoenix, Arizona: Southwest Traffic Engineering, LLC. July 1. ———. 2017. *Traffic Impact Analysis, Resolution Copper Mine, Superior, Arizona*. Prepared for Resolution Copper. Rev. Phoenix, Arizona: Southwest Traffic Engineering, LLC. July 1.

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U.S. Forest Service. 2009. *FSH 7709.59 - Road System Operations and Maintenance Handbook*. Amendment No. 7709.59-2009-1. Washington, D.C.: U.S. Forest Service National Headquarters. February 5.

———. 2010. Chapter 7703.26 - Adding Roads to the Forest Transportation System. In *FSM 7700 - Travel Management*. Washington, D.C.: U.S. Forest Service National Headquarters. August 30.

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Wheat Scharf Associates and ADOT/FHWA/BLM/USFS Steering Committee. 2008. *Arizona Department of Transportation Guidelines for Highways on Bureau of Land Management and U.S. Forest Service Lands*. Prepared for Arizona Department of Transportation, Federal Highway Administration, Bureau of Land Management, and U.S. Forest Service. Tucson, Arizona: Wheat Scharf Associates.