

Overview

Transportation of personnel, equipment, supplies, and materials related to development, operation, and closure/reclamation of the proposed Resolution Copper Mine would, under any alternative, substantially increase traffic in the greater Superior area. The anticipated increase in mine-related traffic on local roads and highways is likely to alter local and regional traffic patterns, levels of service, future transportation-related projects, and may adversely affect users of NFS roads through road closures and other changes to the existing system. Higher traffic volumes may also noticeably contribute to accelerated deterioration of local roadways, requiring higher levels of taxpayer-funded maintenance and more frequent repair of local roads and highways.

3.5 Transportation and Access

3.5.1 Introduction

The analysis presented in this section of the EIS examines the most likely effects on regional and local road transportation systems under each of the alternatives. This section summarizes the roads and intersections in the area, along with their background traffic levels and level of service, and assesses the impacts from mine traffic to traffic volume, level of service, and changes in transportation routes and public access.

Some aspects of the analysis are briefly summarized in this section. Additional details not included are in the project record (Newell 2018h).

3.5.2 Analysis Methodology, Assumptions, and Uncertain and Unknown Information

3.5.2.1 Analysis Area

The transportation and access analysis area for the proposed mine facilities and alternatives includes the roads adjacent to the proposed mine, roads that would provide regional access to the proposed mine and its facilities, roads 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. 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 NFS roads.

Temporary haul and mine operations roads within the mine perimeter fence would not be part of the NFS transportation system. However, in order to capture all potential disturbance, we include any impacts that would result from the creation, use, and disposal of temporary or long-term mine haul and service roads in the total site disturbance acreage calculations in this section.

Figure 3.5.2-1 also depicts several key intersections that are used in the transportation analysis. The intersections where there would be increased traffic because of the mine are the critical locations that most affect the level of service (LOS), which is a qualitative measure of how road capacity is perceived by drivers. Traffic impact modeling focuses on these key intersections.

To support this modeling, existing peak-hour turning movement counts were collected at 16 intersections within the analysis area. Twenty-four-hour bidirectional traffic volume, speed, and classification counts were collected along 16 roadway segments within the analysis area. At ADOT’s direction, Resolution Copper collected data during both the summer and winter seasons to provide a conservative estimate of average daily traffic and peak-hour turning movements.

Because we use projections of future growth in non-mine traffic, for traffic impacts we have to assume a specific year at which construction and operations would begin. Traffic projections assume a peak construction year of 2022, with operations beginning in 2027. To minimize the possibility

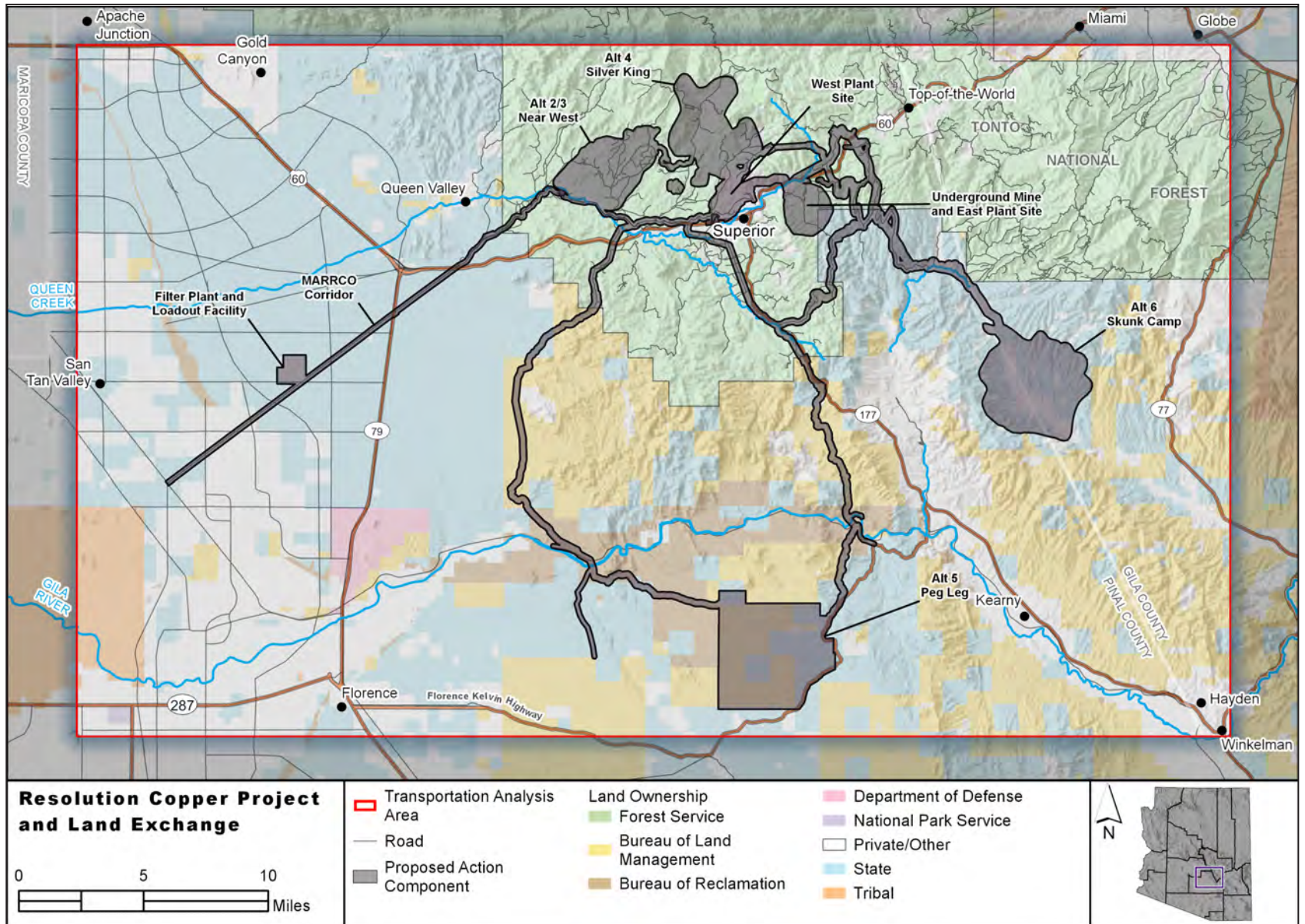


Figure 3.5.2-1. Transportation and access analysis area

of underrepresenting potential traffic and to ensure a conservative analysis of potential traffic impacts, we assumed that the highest number of applicable types of mine-related traffic would use the analyzed transportation network during the peak construction year. To this end, the analysis assumes that the peak construction year (2022) would include concurrent construction of the East Plant Site, the West Plant Site, the tailings storage facility, the filter plant, and the loadout facility. Traffic generated at the peak construction year represents the greatest increase in traffic over background conditions.

We assume regular operations would begin in 2027. Regular operations consist of a combination of employee trips and material supply deliveries for the East Plant Site, the West Plant Site, the tailings storage facility, the filter plant, and the loadout facility. The traffic employee and supply trips generate during normal operations is significantly less than during the peak year of construction.

We estimated the distribution for the project-generated trips based on the relative accessibility of cities and towns near the site. Based on an assumed location of material suppliers and the availability of employee housing, we expect that the trips generated for both the construction and the normal operation of the facility share a similar distribution. Of the trips we expect to be generated, 68 percent would originate from the Phoenix/Mesa metropolitan area via U.S. 60. Another 17 percent would originate from the San Tan Valley/Florence area via SR 79. Based on the data, we believe the trips from these areas would have destinations to either the filter plant and loadout facility or to the mining facilities at the East Plant Site, the West Plant Site, and the tailings storage facility. Trips from the west represent 85 percent of the total trips generated. The remaining 15 percent of generated trips are expected from the east. Of these trips, we expect 10 percent to originate along U.S. 60 toward Globe, and 5 percent from SR 177 south of Superior.

Much of the analysis contained in this section can be found in the traffic impact analysis reports (Southwest Traffic Engineering LLC 2016, 2017, 2018). Many details of NFS roads can be found in the travel management plan prepared by the Tonto National Forest (U.S. Forest Service 2016e).

3.5.3 Affected Environment

3.5.3.1 Relevant Laws, Regulations, Policies, and Plans

Primary Guidance Relevant to the Transportation and Access Analysis

- “Roadway Design Guidelines,” ADOT, May 2012
- “Traffic Guidelines and Processes,” ADOT, June 2015
- “Low Volume Roads Engineering Best Management Practices Field Guide,” Gordon Keller, PE, and James Sherar, PE, July 2003
- Forest Service Handbook 7709.56 (Road Preconstruction), July 2011
- Forest Service Handbook 7709.59 (Road System Operations), February 2009
- Forest Service Manual 7710 (Transportation Planning Handbook), May 1991
- “Guidelines for Geometric Design of Very Low-Volume Local Roads,” American Association of State Highway and Transportation Officials, 2001

Forest Service Guidance

FSH 7709.59, “Road System Operations and Maintenance” (U.S. Forest Service 2009), provides guidance for planning, traffic management, investment sharing (cost share), highway safety, traffic studies, road maintenance, and other NFS road operations and maintenance activities. Such 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.

Before any roads are added to or removed from the NFS road system, they must undergo travel analysis, as described in Forest Service Manual (FSM) 7703.26 (U.S. Forest Service 2010a), “Adding Roads to the Forest Transportation System.” Travel analysis considers the values affected by roads, including access to and use of, protection of, 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. Travel analysis requirements are met for the NFS roads analyzed in this EIS. 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.

NFS lands within the analysis area are generally accessed by high-clearance vehicle roads, known as maintenance level 2 roads. Forest Service upkeep of maintenance level 2 roads typically occurs as needed, depending on funding, and usually in response to damage caused by use and/or erosion. Should the proponent desire or require maintenance to a higher standard to reliably and comfortably allow standard passenger car use, highway-legal truck use, or other specific vehicular use of an

NFS road, the proponent must be authorized in writing to perform such maintenance or provide funding to the Forest Service sufficient to allow the Forest Service to perform or contract for the performance of the needed maintenance.

State and Other Guidance

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. The “Roadway Design Guidelines” (Arizona Department of Transportation 2014), with revisions and amendments, and the “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. The 2014 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’s “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) are applicable only to ADOT roads on BLM and NFS lands.

Access and Authorizations

The Tonto National Forest and BLM manage Federal lands that are open to access by the public, subject to appropriate management restrictions. The Tonto National Forest currently manages in accordance with the Tonto National Forest Land and Resource Management Plan (1985b), which is in the process of revision. The BLM manages lands in the analysis area under either the “Phoenix Resource Management Plan/ Environmental Impact Statement, Record of Decision” (Bureau of Land Management 1989) or under the “Records of Decision, Final Safford District Resource Management Plan and Environmental Impact Statement” (Bureau of Land Management 1991, 1994b). Any roads, pipeline corridors, or power line corridors associated with the project placed on Federal lands must be approved by the appropriate agency, in conformance with management direction. Authorization could occur under several regulations, which will depend on the final decisions by the agency. Authorization of easements for the Tonto National Forest would occur either as part of approval of a mining plan of operations under mineral regulations (36 CFR 228 Subpart) or as a special use authorization under land use regulations (36 CFR 251). Similarly, BLM authorization of easements would occur either as part of approval of a mining plan of operations (43 CFR 3809) and/or as easements (43 CFR 2800).

Arizona State Trust lands are managed under the provisions of the Federal Enabling Act that provided for Arizona’s statehood in 1912. Approximately 9.2 million acres throughout the state are currently held in trust. Although this is at ASLD’s discretion, State Trust lands may be leased as a means of providing annual revenue for 14 officially recognized beneficiary agencies and entities (the largest recipient by far is Arizona K–12 education). Trust lands are less frequently for sale through a process of competitive bidding. For the purposes of this EIS, it is assumed that any State Trust lands underlying the two alternative tailings storage facility locations where State lands are present (Alternative 5 – Peg Leg or Alternative 6 – Skunk Camp) would be sold rather than leased, if that location were to be selected. That same assumption may be applied to the State Trust lands located within the predicted subsidence area at the East Plant Site.

3.5.3.2 Existing Conditions and Ongoing Trends

Highways and Roads Description

The following is a list of existing transportation systems within the analysis area. The systems described include State highways, county roads, and NFS roads. Figure 3.5.2-1 depicts the road facilities in relation to the analysis area.

STATE HIGHWAYS

- U.S. 60 is a four-lane divided highway that has an east-west alignment and a posted speed limit of either 45 miles per hour (mph), 50 mph, or 65 mph in the analysis area. The ADOT facility generally has no curb, gutter, or sidewalks provided in the area. U.S. 60 is considered a regional route linking Superior, Miami, and Globe to the Phoenix/Mesa metropolitan area. Between Silver King Mine Road (NFS Road 229) and SR 177, U.S. 60 includes a two-way left-turn lane.
- State Route 177 is an undivided two-lane roadway beginning at the intersection of U.S. 60/SR 177 and extending to the south toward the town of Kearny, Arizona. The roadway has no curb, gutter, or sidewalk facilities in the analysis area. The posted speed limit on SR 177 is 25 mph at the intersection of U.S. 60/SR 177 and increases to 55 mph as the road leaves the town of Superior.
- State Route 79 has a north-south alignment and is a two-lane, undivided roadway with 10-foot paved shoulders. The posted speed limit on SR 79 is 65 mph. SR 79 provides a route from U.S. 60 south to Florence, Arizona. There are no curb, gutter, or sidewalk facilities along SR 79 within the project boundary. Approximately 2 miles south of U.S. 60, SR 79 crosses the existing MARRCO corridor.
- State Route 77 has a north-south alignment and a posted speed of 50 mph. The facility has one travel lane in each direction.

The roadway has no curb, gutter, or sidewalk facilities in the analysis area.

COUNTY ROADS AND LOCAL ROADS

- Main Street in Superior is an undivided two-lane local roadway with an east-west alignment. Curb, sidewalks, and bike lanes are present along the north and south sides of the roadway. West of Lonetree Road, Main Street is posted 35 mph. East of Lonetree Road, Main Street is posted 25 mph.
- Lonetree Road is a two-lane graded dirt road, providing access to various mining operations north of Main Street. There is no posted speed limit, curb, gutter, or sidewalks along Lonetree Road.
- Magma Avenue is a two-lane paved local roadway along a north-south alignment located in Superior. The roadway provides curb, gutter, sidewalks, and on-street parking along the eastern and western sides of the roadway. The posted speed limit on Magma Avenue is 25 mph.
- Skyline Drive is a two-lane roadway with no curb, gutter, or sidewalk facilities. The speed limit on Skyline Drive is 50 mph west of Quail Run Lane and 45 mph east of Quail Run Lane. There are existing overhead utility lines along the north side of the roadway. Low-density residential development is present on the north side of the roadway between Schnepf Road and Quail Run Lane and south of Skyline Drive east of Quale Run Lane. An RV park is on the south side of the roadway at Sierra Vista Drive. In general, the land surrounding Skyline Drive is largely undeveloped or used as farmland.
- Quail Run Lane is an undivided, two-lane roadway with a posted speed limit of 50 mph. The roadway has a north-south alignment, and does not provide curb, gutter, or sidewalk facilities.
- Sierra Vista Drive is an unpaved, two-lane dirt roadway with a posted speed limit of 25 mph. The roadway has a north-south alignment and no curb, gutter, or sidewalk facilities.
- Schnepf Road is an undivided two-lane roadway with a north-south alignment and a posted speed limit of 50 mph. There are dirt shoulders along both sides of the roadway and no sidewalk facilities.
- Combs Road has an east-west alignment and a posted speed limit of 50 mph. One travel lane is provided in each direction, with dirt shoulders along both sides of the roadway and no sidewalk facilities.
- Florence-Kelvin Highway has an east-west alignment and a posted speed of 50 mph. The roadway is both gravel surfaced and paved; it provides one travel lane in each direction. There are no curb, gutter, or sidewalk facilities along this route within the analysis area.
- Dripping Springs Road has an east-west alignment and no posted speed limit. The roadway is unpaved and provides one lane of travel in each direction. There are no curb, gutter, or sidewalk facilities.

NATIONAL FOREST SYSTEM ROADS

- Silver King Mine Road (also known as NFS Road 229) exists as a graded dirt roadway with a north-south alignment, providing access to State lands and various existing mining operations. There is no posted speed limit on Silver King Mine Road (NFS Road 229). Silver King Mine Road intersects U.S. 60 from the north. South of U.S. 60, the roadway is known as Apache Tear Road (NFS Road 989). Commonly used NFS roads in the project area are shown in figure 3.5.3-1.
- Apache Tear Road (NFS Road 989) is a graded dirt roadway that begins at a cattle guard adjacent to U.S. 60 and extends south, providing access to State lands, various mining

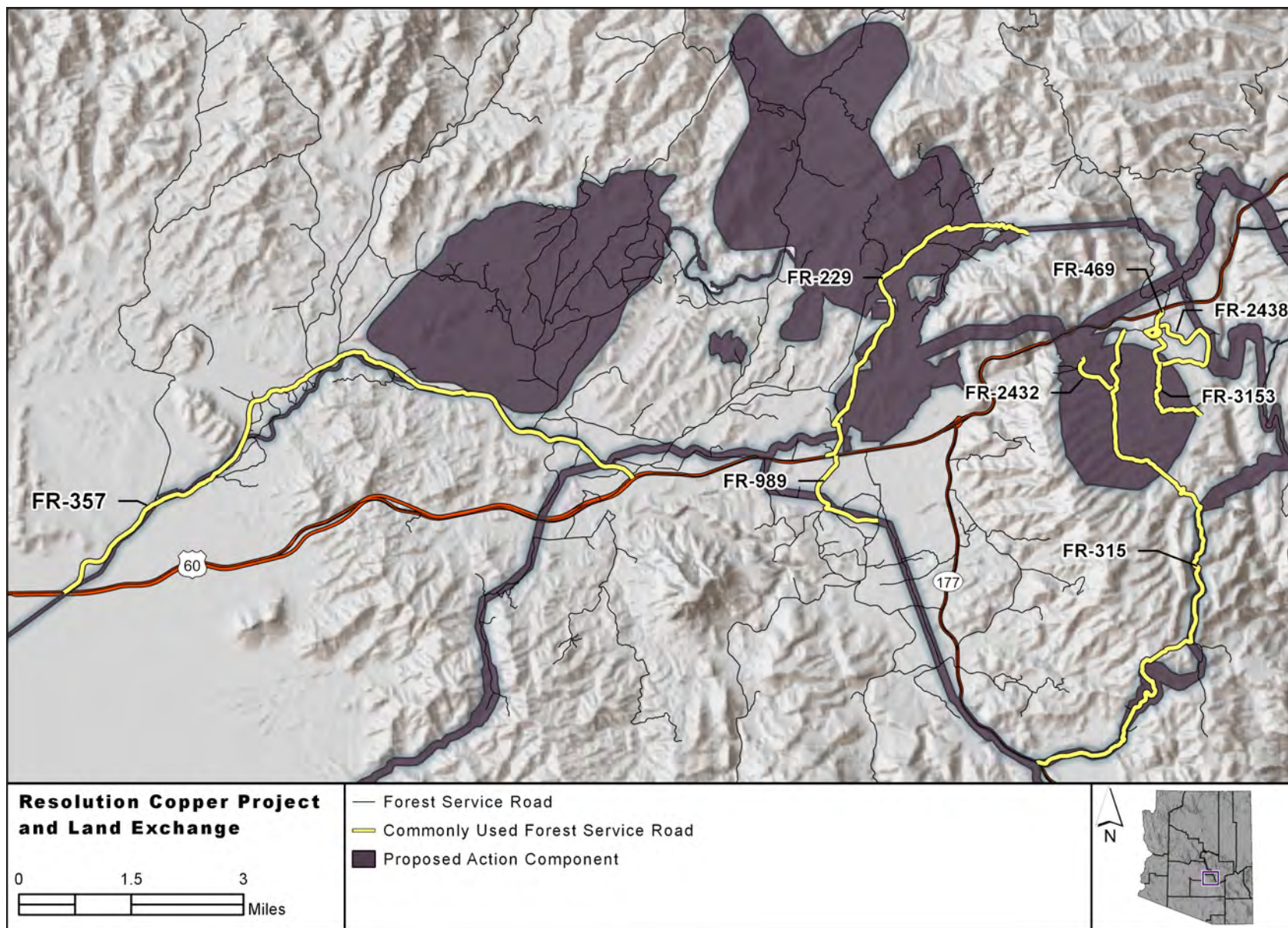


Figure 3.5.3-1. Commonly used NFS roads in the project area

operations, and the Town of Superior's water plant. Apache Tear Road (NFS Road 989) has a posted speed limit of 25 mph.

- Hewitt Station Road (NFS Road 357) is an unpaved, graded dirt road providing access to State lands as well as other recreational and off-road vehicle NFS roads north of U.S. 60. A dirt parking/staging area for recreational users exists on the east side of Hewitt Station Road (NFS Road 357) immediately north of U.S. 60. Cattle guards are located across Hewitt Station Road (NFS Road 357) at the intersection with U.S. 60. There is no posted speed limit. There are currently access restrictions along this road where it crosses private property.
- Magma Mine Road (NFS Road 469) is a two-lane undivided paved roadway with no curb, gutter, or sidewalk facilities which provides access to mining operations south of U.S. 60. The Forest Service classifies Magma Mine Road (NFS Road 469) as a level 4 road. There is no posted speed limit. Beyond its intersection with East Oak Flats Road (NFS Road 2438), Magma Mine Road becomes NFS Road 315 with a level 2 road classification. This section of Magma Mine Road (NFS Road 315) is paved with a single lane. Magma Mine Road splits from NFS Road 315 approximately 5,800 feet from its intersection with East Oak Flats Road (NFS Road 2438), becoming a private road designated as NFS Road 2432.
- East Oak Flats Road (NFS Road 2438). Approximately 1,400 feet from U.S. 60, Magma Mine Road intersects with East Oak Flats Road (NFS Road 2438). East Oak Flats Road (NFS Road 2438) is an unpaved loop road classified as a level 2 road by the Forest Service. There is no posted speed limit.
- NFS Road 3153 intersects East Oak Flats Road (NFS Road 2438) and is an unpaved dead-end road classified as a level 2 road by the Forest Service. There is no posted speed limit. Current Forest Service documentation identifies this road as closed.

Background Traffic Volume Counts

Resolution Copper collected peak-hour turning movement counts in August 2015, to capture summer traffic patterns (Southwest Traffic Engineering LLC 2017, 2018). At ADOT's direction, counts were collected on a Friday between the hours of 7:00 a.m. and 10:00 p.m. Additional counts were collected in November 2016, during the same daily time frame to capture winter traffic patterns. Volume counts collected during the winter period were generally higher than the summer period. We analyzed the larger of the two count periods and adjusted for seasonal factors and background growth to provide for a conservative analysis; in other words, we analyzed more traffic rather than less traffic.

Resolution Copper completed turning movement counts at the following intersections, as shown in figure 3.5.3-2:

- Magma Mine Road (NFS Road 469)/U.S. 60
- SR 177/Eastbound U.S. 60 ramps
- SR 177/Westbound U.S. 60 on-ramp
- Ray Road/Heiner Street/Westbound U.S. 60 off-ramp
- Main Street/U.S. 60
- NFS Road 989/U.S. 60
- Silver King Mine Road (NFS Road 229)/U.S. 60
- Hewitt Station Road (NFS Road 357)/U.S. 60
- Main Street/Lonetree Road
- Main Street/Magma Avenue
- Skyline Drive/Quail Run Lane
- Skyline Drive/Sierra Vista Drive
- Skyline Drive/Schnepf Road
- Combs Road/Schnepf Road

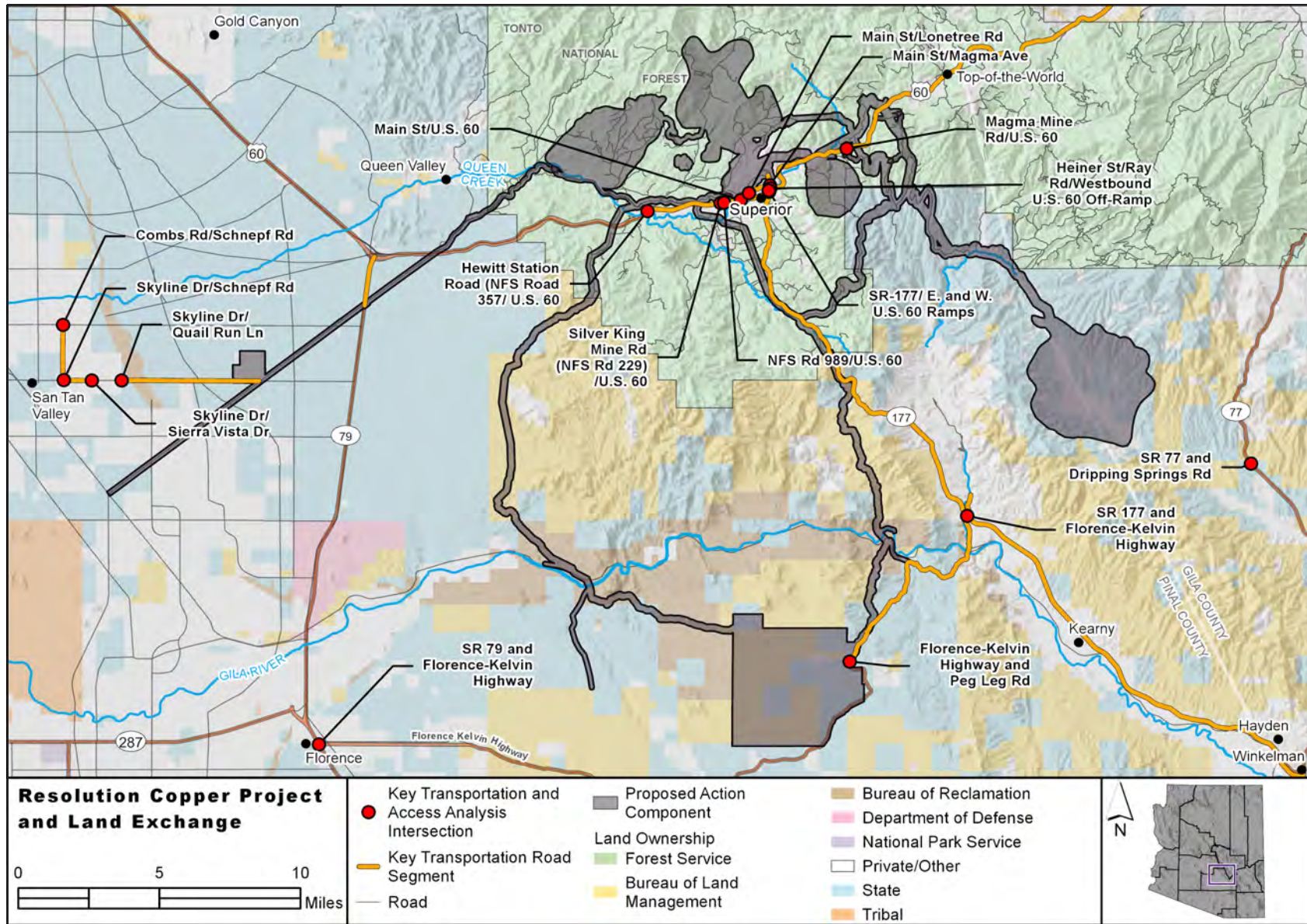


Figure 3.5.3-2. Key intersections and road segments analyzed through traffic counts

- Florence-Kelvin Highway/SR 79
- Florence-Kelvin Highway/SR 177
- Florence-Kelvin Highway/Peg Leg Road
- SR 77/Dripping Springs Road

In addition to intersection vehicle-turning movement counts, 24-hour bidirectional traffic volumes, vehicle speed, and vehicle classification counts were collected along roadway segments within or adjacent to the analysis area. These roadway segments are also depicted in figure 3.5.3-2:

- Magma Avenue, north of Copper Road
- Main Street, east of Pinal Avenue
- Main Street, west of Pinal Avenue
- U.S. 60, west of Silver King Mine Road (NFS Road 229)
- U.S. 60, between Silver King Mine Road (NFS Road 229) and Main Street
- U.S. 60, between Main Street and SR 177
- U.S. 60, west of Magma Mine Road (NFS Road 469)
- U.S. 60, east of Magma Mine Road (NFS Road 469)
- SR 79, between U.S. 60 and the MARRCO Railroad Line
- Skyline Drive, east of Quail Run Lane
- Skyline Drive, between Sierra Vista Drive and Schnepf Road
- Schnepf Road, between Skyline Drive and Hash Knife Draw Road
- Schnepf Road, between Hash Knife Draw Road and Combs Road
- Florence-Kelvin Highway, east of Peg Leg Road

- Florence-Kelvin Highway, east of SR 177
- SR 177, north and south of Florence-Kelvin Highway

Background Level of Service

Resolution Copper conducted an operational analysis of the existing intersections for the weekday peak hour using the nationally accepted methodology set forth in the “Highway Capacity Manual” (Transportation Research Board 2000), and using operational analysis computer software Synchro 9 to calculate the LOS for individual movements, approaches, and for each intersection. In accordance with the Highway Capacity Manual procedures, LOS has been determined by estimating the average vehicular delay of the intersections and the individual intersection movements.

LOS is a qualitative measure of the traffic operations at an intersection or on a roadway segment that is ranked from LOS A (little or no congestion), to LOS F, which signifies severe congestion. ADOT considers LOS D as adequate operational LOS at both signalized and unsignalized intersections in developed areas.

Delay thresholds for a given LOS for unsignalized intersections are lower than those reported for signalized intersections. This difference between intersection control accounts for the greater variability in delay associated with unsignalized movements as well as different driver expectations associated with each type of intersection control. Drivers generally have the expectation that signalized intersections are designed to carry higher traffic volumes and therefore would experience greater delay than might otherwise be expected at an unsignalized intersection.

At unsignalized intersections, LOS is predicted/calculated for those movements which must either stop for or yield to oncoming traffic and is based on average control delay for the movement. Control delay is the portion of total delay attributed to traffic control measure, such as stop signs. The criteria for LOS at unsignalized intersections are shown in table 3.5.3-1.

Table 3.5.3-1. Level of service criteria for unsignalized intersections

LOS Rank	Delay Threshold
A	≤ 10 seconds
B	10 seconds to ≤ 15 seconds
C	15 seconds to ≤ 25 seconds
D	25 seconds to ≤ 35 seconds
E	35 seconds to ≤ 50 seconds
F	> 50 seconds

Existing, or background, LOS were calculated for the study intersections. The resulting delay and associated LOS for each intersection are detailed in table 3.5.3-2.

All intersections in the analysis area currently operate with a LOS C or better for all movements during the peak hour under current conditions.

3.5.4 Environmental Consequences of Implementation of the Proposed Mine Plan and Alternatives

3.5.4.1 Alternative 1 – No Action

Traffic Volume/Level of Service

Under the no action alternative, no mine expansion would occur and the existing transportation patterns and existing infrastructure in the analysis area would continue. Traffic volumes are expected to continue to increase at an average 2 percent annual growth rate over the next 10 to 20 years, resulting in increased traffic levels on all roads in the area (Southwest Traffic Engineering LLC 2017). With increasing traffic, due to normal background growth and development of the area, the intersections in the analysis area are generally expected to operate within an acceptable LOS in the peak construction and operation years 2022 and 2027 (see table 3.5.4-3 later in this section). The Combs Road/Schnepf Road intersection is expected to operate with a side street LOS

E/F by year 2022 through 2027. A traffic signal may be required at this intersection, along with exclusive turn lanes for all approaches, to alleviate delays expected to occur with or without the project.

Transportation Routes

Under the no action alternative, existing transportation routes would not change. There would be no direct, indirect, or cumulative effects on the transportation routes as a result.

Changes in Access

Public access to NFS land and transportation infrastructure would not be impacted under the no action alternative because there would be no new roads, updates to existing roads, or closures of existing roads under this alternative. There would be no direct, indirect, or cumulative effects on changes in access as a result.

3.5.4.2 Impacts Common to All Action Alternatives

Effects of the Land Exchange

The land exchange would have significant effects on transportation and access. The Oak Flat Federal Parcel would leave Forest Service jurisdiction, and with it public access would be lost to the parcel itself, as well as passage through the parcel to other destinations, including Apache Leap and Devil’s Canyon. These locations have other means of access, but those routes may not be as direct or convenient. Resolution Copper may keep portions of the property open for public access, as feasible.

The offered land parcels would enter either Forest Service or BLM jurisdiction. The eight parcels would have beneficial effects; they would become accessible by the public and be managed by the Federal Government for multiple uses. Roads and access would be managed in accordance with the appropriate management plans and agency direction.

Table 3.5.3-2. Existing peak hour level of service and delay

Intersection	Peak Hour	
	LOS Rank	Delay (seconds)
Combs Road/Schnepf Road		
Eastbound Left	C	18.9
Eastbound Through/Right	C	15.6
Westbound Left	B	11.4
Westbound Through/Right	B	11.3
Northbound Left	C	15.6
Northbound Through/Right	B	11.6
Southbound Left	B	10.5
Southbound Through/Right	C	24.9
Skyline Drive/Sierra Vista Drive		
Eastbound Left/Through	A	7.7
Southbound Left/Right	A	9.9
Skyline Drive/Quail Run Lane		
Eastbound Left/Through/Right	A	8.1
Westbound Left/Through/Right	A	7.8
Northbound Left/Through/Right	A	8.6
Southbound Left/Through/Right	A	7.4
Hewitt Station Road (NFS Road 357)/Westbound U.S. 60		
Northbound Left/Through	A	0.0
Southbound Through/Right	A	0.0
Hewitt Station Road (NFS Road 357)/Eastbound U.S. 60		
Southbound Left	A	0.0
Silver King Mine Road (NFS Road 229)/U.S. 60		
Eastbound Left	A	0.0
Westbound Left	A	8.4
Northbound Left/Through/Right	C	15.4
Southbound Left/Through/Right	B	14.7
Main Street/Lonetree Road		
Eastbound Left	A	7.3

continued

Table 3.5.3-2. Existing peak hour level of service and delay (cont'd)

Intersection	Peak Hour	
	LOS Rank	Delay (seconds)
Southbound Left/Right	A	8.8
Main Street/U.S. 60		
Eastbound Left/Through	A	8.8
Southbound Left	C	24.0
Southbound Right	B	12.7
Main Street/Magma Avenue		
Eastbound Left/Through/Right	A	7.4
Westbound Left/Through/Right	A	7.7
Northbound Left/Through/Right	A	7.9
Southbound Left/Through/Right	A	7.5
Heiner Street/Ray Road/Westbound U.S. 60 Off Ramp		
Eastbound Left/Right	A	9.4
Westbound Left/Through/Right	A	9.6
Northbound Left/Through	A	7.5
SR 177/Eastbound U.S. 60 Ramps		
Eastbound Left/Through/Right	A	9.6
Southbound Left/Through	A	7.6
Magma Mine Road (NFS Road 469)/U.S. 60		
Eastbound Left	A	0.0
Westbound Left	A	7.9
Northbound Left/Through/Right	C	16.8
Southbound Left/Through/Right	A	0.0
Florence-Kelvin Highway/SR 79		
Westbound Left/Right	A	9.8
Southbound Left	A	7.8
Florence-Kelvin Highway/SR 177		
Eastbound Left/Right	A	9.1
Northbound Left/Through	A	7.5

continued

Table 3.5.3-2. Existing peak hour level of service and delay (*cont'd*)

Intersection	Peak Hour	
	LOS Rank	Delay (seconds)
Dripping Springs Road/SR 77		
Eastbound Left/Right	A	9.1
Northbound Left/Through	A	7.4

Effects of Forest Plan Amendment

The Tonto National Forest Land and Resource Management Plan (1985b) provides guidance for management of lands and activities within the Tonto National Forest. It accomplishes this by establishing a mission, goals, objectives, and standards and guidelines. Missions, goals, and objectives are applicable on a forest-wide basis. Standards and guidelines are either applicable on a forest-wide basis or by specific management area.

A review of all components of the 1985 forest plan was conducted to identify the need for amendment due to the effects of the project, including both the land exchange and the proposed mine plan (Shin 2019). A number of standards and guidelines (12) were identified applicable to management of transportation and access. None of these standards and guidelines were found to require amendment to the proposed project, either on a forest-wide or management area-specific basis. For additional details on specific rationale, see Shin (2019).

Summary of Applicant-Committed Environmental Protection Measures

A number of environmental protection measures are incorporated into the design of the project that would act to reduce potential impacts on transportation and access. These are non-discretionary measures and their effects are accounted for in the analysis of environmental consequences.

The GPO (Resolution Copper 2016d) outlined applicant-committed environmental protection measures by Resolution Copper in Appendix K, “Road Use Plan:”

- Public access to the lands in the vicinity of the East Plant Site would be maintained via SR 177 and NFS Road 315 as well as U.S. 60 and NFS Road 469 (until access is no longer possible).
- A number of best management practices for road construction and maintenance were identified in the GPO:
 - To the extent practicable, vegetation will not be removed except from those areas to be directly affected by road reconstruction activities.
 - Cut-and-fill slopes for road reconstruction will be designed to prevent soil erosion.
 - Drainage ditches with cross drains will be constructed where necessary. Disturbed slopes will be revegetated, mulched, or otherwise stabilized to minimize erosion as soon as practicable following construction.
 - Road embankment slopes will be graded and stabilized with vegetation or rock as practicable to prevent erosion.
 - Runoff from roads will be handled through best management practices, including sediment traps, settling ponds, berms, sediment filter fabric, wattles, etc. Design of these features will be based on an analysis of local hydrologic conditions.

- Off-road vehicle travel will generally be avoided.
- During construction and operations, diversions will be constructed around affected areas to minimize erosion. A number of best management practices including check dams, dispersion terraces, and filter fences also will be used during construction and operations.
- Specific NFS road improvements and maintenance are also specified in the GPO; these are summarized here together with known impacts on NFS roads. The GPO notes several replacement roads that provide periphery access around the tailings facility; these roads are anticipated to be located within the fence line that excludes public access and therefore these roads are not considered to replace any through-access lost from the tailings facility.
- Realignment of NFS Road 229/Silver King Mine Road is envisioned under all alternatives. The physical disturbance from this realignment is incorporated into the assessment of impacts. Note that under Alternatives 2, 3, 5, and 6, the realignment of Silver King Mine Road is meant to provide through-access to the highlands north of the West Plant Site. For Alternative 4 this is true as well, but the presence of the tailings facility in this area restricts through-access to administrative uses only.

Two additional measures were identified in the traffic studies as being recommended to improve LOS impacts caused by mine traffic (Southwest Traffic Engineering LLC 2017). These measures would be subject to approval by the appropriate local traffic authorities prior to implementation:

- New stop signs would be installed at minor approaches to intersections as needed and subject to appropriate approval by ADOT.
- If necessary, flaggers or officers would be used to assist with turning movements at major project intersections during peak construction, subject to appropriate approval by ADOT.

- During peak construction, construction traffic or similar advanced warning signs would be used as needed, and subject to appropriate approval by ADOT.

Mine-Related Traffic

Increased traffic associated with the mine during peak construction (2022) and normal operations (2027), includes four main traffic generators:

1. East Plant Site
2. West Plant Site
3. San Tan Valley filter plant and loadout facility
4. Tailings storage facility (four alternate locations)

There are four alternative locations for the tailings and storage facility (located at either the Near West, Silver King, Peg Leg, or Skunk Camp location), with each location having unique access roads, as shown in figure 3.5.4-1. All alternatives, except for Silver King, place the filter plant and loadout facility in the San Tan Valley. The Silver King alternative places the filter plant and loadout facility at the West Plant Site. This section focuses on the impacts that are common to all action alternatives; the impacts associated specifically with each alternative are summarized in the next sections. Table 3.5.4-1 describes the intersections that would be impacted by the East Plant Site, West Plant Site, and the San Tan Valley filter plant and loadout facility.

Transportation of personnel, equipment, supplies, and materials related to mine development, operation, and reclamation has the potential to increase traffic. Moreover, this increased traffic can impact local and regional travel patterns and intersection LOS. In addition, increased volumes of traffic are likely to contribute to earlier and more extensive deterioration of road surfaces, therefore requiring more frequent and higher levels of maintenance.

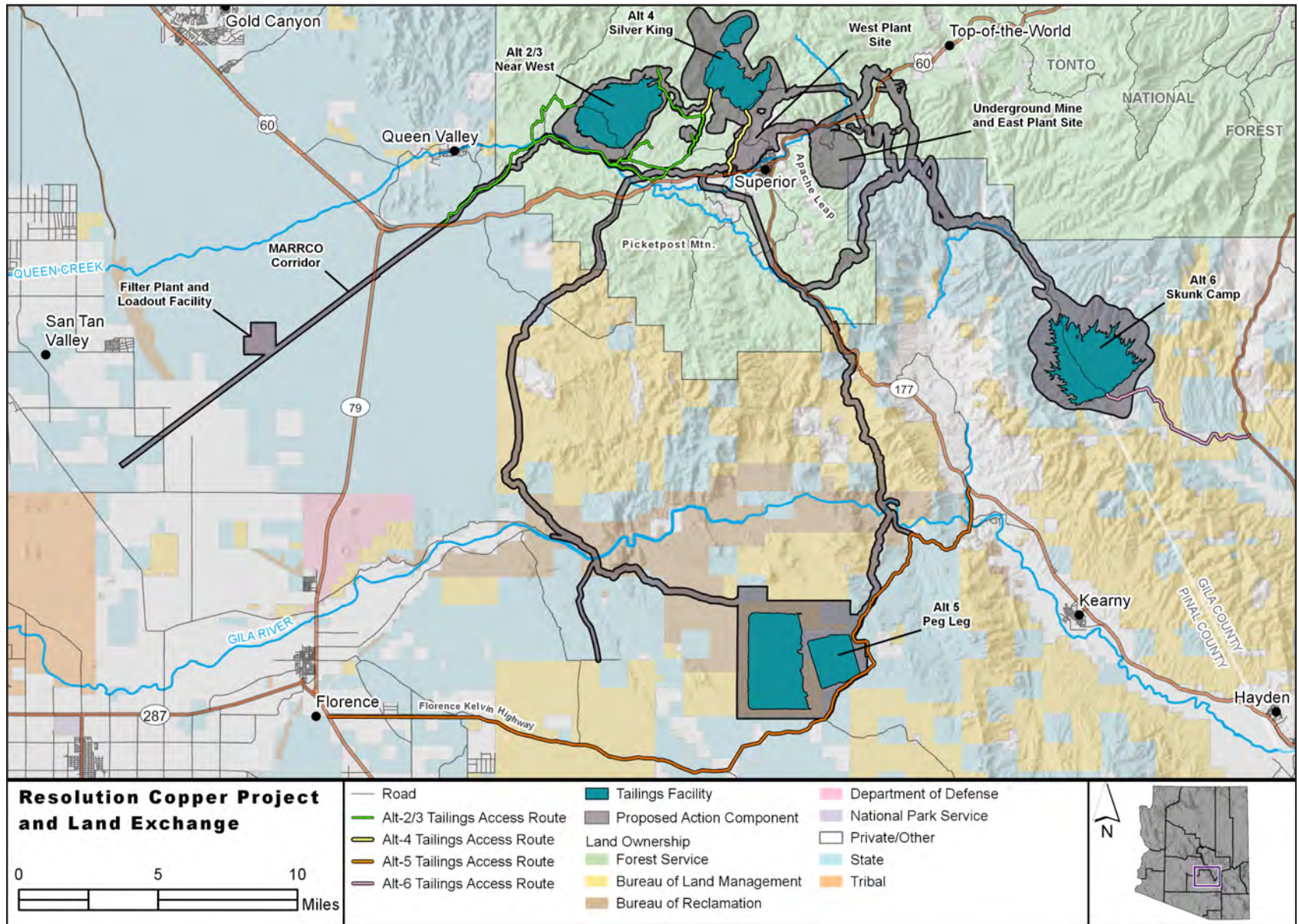


Figure 3.5.4-1. Access roads for alternative tailings storage facilities

Table 3.5.4-1. Intersections impacted by all action alternatives

Facility	Intersections Impacted
East Plant Site	U.S. 60 and Magma Mine Road
West Plant Site	Main Street and Magma Avenue Main Street and Lonetree Road Main Street and U.S. 60 Heiner Street/Ray Road/Westbound U.S. 60 off-ramp SR 177 and eastbound U.S. 60 ramps U.S. 60 and Silver King Mine Road U.S. 60 and Hewitt Station Road
San Tan Valley filter plant and loadout facility (except Silver King alternative)	Skyline Drive and Sierra Vista Drive Skyline Drive and Quail Run Road Schnepf Road and Combs Road

Table 3.5.4-2. Site-generated trips during peak hour

Facility	Peak Construction		Normal Operations	
	Employee Trips	Material/ Equipment Trips	Employee Trips	Material/ Equipment Trips
East Plant Site	438	22	332	22
West Plant Site	1,038	22	336	22
San Tan Valley filter plant and loadout facility	60	16	18	0

Note: Peak hour employee and material/equipment trips are assumed to be 50 percent inbound, 50 percent outbound

Typical road maintenance and repair activities of paved roads due to increased traffic flows include more frequent asphalt resealing, patching, and pothole repair, line repainting, overlay work, and, eventually, complete pavement reconstruction. At present, the costs due to increased mine-related traffic of these activities would be borne solely by the Town of Superior, Pinal County, or ADOT, depending on the particular roadway segment. Please see Section 3.13, Socioeconomics, for a more detailed discussion of the economic effects of increased traffic in the vicinity of the Resolution Copper Project.

Table 3.5.4-2 shows the total number of trips expected during the peak hour during peak construction and normal operations (50 percent of trips are assumed to be inbound and 50 percent outbound during the peak hour). There are 1,596 trips expected in the peak hour during construction and 730 trips in the peak hour during normal operations. In general, traffic impacts are more significant during peak construction than operations, as there are more employee commute trips.

The analysis includes assumptions designed to estimate peak hour employee trips based on the number of employees working at each facility:

- There would be several different employee types and shift times/lengths at the mining facilities. A shift reduction factor of 0.66 was applied to estimate the number of employees traveling to/from the site during the peak hour.
- It was assumed that half of the employees would arrive, and half depart, during the peak hour.
- To factor in employee carpooling, it was assumed that each vehicle entering the site would carry an average of 1.7 employees.

Traffic Volume and Level of Service

Table 3.5.4-3 shows the delay and LOS for each intersection movement, with and without the project, during peak construction (year 2022) and

normal operations (year 2027). A 2 percent annual growth rate was used to estimate projected background traffic volumes in years 2022 and 2027 (Southwest Traffic Engineering LLC 2017).

With increasing traffic, due to normal background growth and development of the area, the intersections in the analysis area are generally expected to operate within an acceptable LOS in years 2022 and 2027 for most intersections (see table 3.5.4-3). Project-related traffic would contribute to decreased LOS at many intersections, but only the following have LOS degraded to LOS E/F status:

- The Combs Road/Schnepf Road intersection, southbound, degrades from LOS E to LOS F; this occurs under the no action alternative as well.
- The Silver King Mine Road/U.S. 60 intersection, northbound, degrades from LOS C to LOS F during construction, and to LOS E during operations. The southbound lanes degrade from LOS C to LOS F during construction, and LOS D during operations.
- The Main Street/U.S. 60 intersection, southbound, degrades from LOS C to LOS F during construction and operations.
- The SR 177/U.S. 60 intersection, eastbound, degrades from LOS A to LOS E during construction.
- The Magma Mine Road/U.S. 60 intersection, northbound, degrades from LOS C to LOS F during operations.

Transportation Routes and Changes in Access

Changes in access to the NFS road system as a result of the proposed activities at the East Plant Site, West Plant Site, and filter plant and loadout facility are shown in table 3.5.4-4. Approximately 8.0 miles of NFS roads are expected to be decommissioned or lost.

The primary impacts occur from the subsidence area development and include large portions of NFS Roads 315 and 3153. These roads provide

access to areas that include Apache Leap and Devil's Canyon as well as connectivity to other NFS roads. Access would still be available to these areas, but those routes may not be as direct or convenient. Resolution Copper may keep portions of the property open for public access, as feasible, but the roads that pass through the Oak Flat Federal Parcel are not expected to remain open.

All alternatives would involve impacts on Silver King Mine Road and NFS Road 229, which provide through travel to the highlands north of Superior, as well as to private inholdings in the Tonto National Forest. All alternatives would maintain access to these areas; for Alternative 4, access would be administrative due to the presence of the tailings storage facility.

Railroads

Increased rail traffic along the MARRCO corridor associated with the mine has the potential to impact traffic patterns in the local area. All alternatives involve use of the MARRCO corridor from the San Tan Valley filter plant and loadout facility to the main rail line. Alternative 4 – Silver King requires approximately two trains per day during peak operations to deliver materials along the MARRCO corridor from the West Plant Site to the main rail line. The trains are expected to arrive and depart during the night shift. Due to their overnight operations, the trains are expected to be inconsequential to the operations of the road network.

For safety purposes, it is recommended that Resolution Copper work with ADOT to update signage at highway and NFS road/railroad-grade crossings.

3.5.4.3 Alternative 2 and Alternative 3 – Near West

Mine-Related Traffic

Table 3.5.4-5 summarizes the facility footprint and intersections impacted by mine-related traffic at each tailings storage facility alternative. For Alternatives 2 and 3, the tailings storage facility is

Table 3.5.4-3. Level of service and delay during peak construction (2022) and normal operations (2027)

Intersection	2022 without Project		2022 with Project		2027 without Project		2027 with Project	
	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)
Combs Road/Schnepf Road								
Eastbound Left	C	24.8	D	25.9	D	31.5	D	31.8
Eastbound Through/Right	C	20.4	C	24.9	D	25.4	D	26.7
Westbound Left	B	12.1	B	12.3	B	12.3	B	12.4
Westbound Through/Right	B	12.3	B	12.6	B	12.8	B	12.9
Northbound Left	C	18.5	C	21.8	C	21.0	C	21.8
Northbound Through/Right	B	12.7	B	12.9	B	13.4	B	13.5
Southbound Left	B	11.1	B	11.3	B	11.5	B	11.5
Southbound Through/Right	E	42.4	E	47.1	F	67.5	F	67.7
Skyline Drive/Sierra Vista Drive								
Eastbound Left/Through	A	7.7	A	7.8	A	7.9	A	7.9
Southbound Left/Right	B	10.1	B	10.4	B	10.6	B	10.7
Skyline Drive/Quail Run Lane								
Eastbound Left/Through/Right	A	8.5	A	9.1	A	8.8	A	8.9
Westbound Left/Through/Right	A	8.0	A	8.4	A	8.1	A	8.2
Northbound Left/Through/Right	A	9.0	A	9.4	A	9.3	A	9.4
Southbound Left/Through/Right	A	7.6	A	7.9	A	7.7	A	7.8
Hewitt Station Road (NFS Road 357)/Westbound U.S. 60								
Northbound Left/Through	A	0.0	A	0.0	A	0.0	A	0.0
Southbound Through/Right	A	0.0	C	15.7	A	0.0	B	12.6
Hewitt Station Road (NFS Road 357)/Eastbound U.S. 60								
Southbound Left	A	0.0	A	0.0	A	0.0	A	0.0
Silver King Mine Road (NFS Road 229)/U.S. 60								
Eastbound Left	A	9.2	B	13.1	A	9.5	B	11.0
Westbound Left	A	8.6	B	11.2	A	8.8	A	9.9
Northbound Left/Through/Right	C	18.6	F	>120	C	20.9	E	45.4
Southbound Left/Through/Right	C	17.8	F	105.7	C	19.4	D	33.1

continued

Table 3.5.4-3. Level of service and delay during peak construction (2022) and normal operations (2027) (cont'd)

Intersection	2022 without Project		2022 with Project		2027 without Project		2027 with Project	
	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)
Main Street/Lonetree Road								
Eastbound Left	A	7.4	A	8.1	A	7.4	A	7.6
Southbound Left/Right	A	8.9	C	15.3	A	8.9	A	9.8
Main Street/U.S. 60								
Eastbound Left/Through	A	9.1	C	15.9	A	9.5	B	11.5
Southbound Left	C	23.3	F	>120	D	27.2	F	70.1
Southbound Right	B	10.9	D	26.3	B	11.3	B	14.6
Main Street/Magma Avenue								
Eastbound Left/Through/Right	A	7.6	B	11.5	A	7.9	A	8.1
Westbound Left/Through/Right	A	7.8	B	10.8	A	8.1	A	8.2
Northbound Left/Through/Right	A	8.0	D	25.6	A	8.4	A	8.8
Southbound Left/Through/Right	A	7.7	C	19.7	A	7.9	A	8.3
Heiner Street/Ray Road/Westbound U.S. 60 Off-Ramp								
Eastbound Left/Right	A	9.6	C	17.1	A	9.7	B	10.2
Westbound Left/Through/Right	A	9.9	B	13.5	A	9.9	B	10.4
Northbound Left/Through	A	7.6	A	8.7	A	7.6	A	7.7
SR 177/Eastbound U.S. 60 Ramps								
Eastbound Left/Through/Right	A	9.8	E	43.5	B	10.0	B	11.1
Southbound Left/Through	A	7.7	A	8.0	A	7.7	A	7.8
Magma Mine Road (NFS Road 469)/U.S. 60								
Eastbound Left	A	0.0	A	0.0	A	0.0	A	0.0
Westbound Left	A	8.0	A	8.3	A	8.1	A	8.2
Northbound Left/Through/Right	C	19.3	D	31.0	C	21.9	F	>120
Southbound Left/Through/Right	A	0.0	A	0.0	A	0.0	A	0.0

Note: Shaded cells indicate an LOS of E or F, which is considered inadequate by ADOT

Table 3.5.4-4. Miles of NFS roads decommissioned and lost for East Plant Site, West Plant Site, and filter plant and loadout facility

Facility	Tonto National Forest NFS Roads Decommissioned and Lost (miles)*	Resolution Copper Applicant-Committed Improvements and Maintenance
West Plant Site: Total Roads	2.54	
NFS Road 1010	0.37	Level 1
NFS Road 229	2.17	Portions reconstructed to level 3
East Plant Site/Subsidence Area: Total Roads	5.45	
NFS Road 2432	0.78	None
NFS Road 2433	0.23	None
NFS Road 2434	0.29	None
NFS Road 2435	0.28	None
NFS Road 2438	0.32	None
NFS Road 3153	1.19	None
NFS Road 3791	0.1	None
NFS Road 315	2.28	None
San Tan Valley Filter Plant and Loadout Facility: Total Roads	0.0	None

Notes: Roads intersected by pipeline corridors or transmission line corridors are considered to remain open.

Level 1 – Basic custodial care; Level 2 – High-clearance vehicles; Level 3 – Suitable for passenger cars

* Includes West Plant Site, East Plant Site, subsidence area, and maximum impact acreage for Silver King Mine Road alignment. Road segments less than 0.05 mile not shown.

Table 3.5.4-5. Footprint and intersections impacted by each tailings storage facility location

Alternative	Footprint within Tailings Storage Facility Fence Line (acres)	Intersections Impacted by Traffic
Alternatives 2 and 3 – Near West	4,903	U.S. 60 and Hewitt Station Road
Alternative 4 – Silver King	5,661	U.S. 60 and Silver King Mine Road
Alternative 5 – Peg Leg	10,782	SR 79 and Florence-Kelvin Highway SR 177 and Florence-Kelvin Highway Florence-Kelvin Highway and Peg Leg Road
Alternative 6 – Skunk Camp	8,647	SR 77 and Dripping Springs Road

located at the same site and the traffic impacts are the same; therefore, the results for these two alternatives have been grouped together.

Table 3.5.4-6 shows the total number of trips expected during the peak hour for each alternative (50 percent of trips are assumed to be inbound and 50 percent outbound during the peak hour). Alternatives 2 and 3 involve 64 trips in the peak hour during construction and 46 trips in the peak hour during normal operations.

Traffic Volume and Level of Service

Table 3.5.4-7 shows the delay and LOS for each alternative, with and without the project, during peak construction (year 2022) and normal operations (year 2027).

For Alternatives 2 and 3, the intersections adjacent to the tailings storage facility alternatives are expected to continue operating at an adequate LOS during both peak construction and normal operations. No right- or left-turn lanes are required at the study intersections providing access to the tailings storage facility alternatives.

Table 3.5.4-6. Site-generated trips during peak hour for each alternative

Alternative	Peak Construction		Normal Operations	
	Employee Trips	Material/ Equipment Trips	Employee Trips	Material/ Equipment Trips
Alternatives 2 and 3 – Near West	42	22	24	22
Alternative 4 – Silver King	66	22	36	22
Alternative 5 – Peg Leg	44	22	24	22
Alternative 6 – Skunk Camp	42	22	24	22

Note: Peak hour employee and material/equipment trips are assumed to be 50% inbound, 50% outbound.

Transportation Routes and Changes in Access

Mine development has the potential to permanently alter, add, or decommission NFS roads or temporarily restrict access to NFS roads and lands, which could impact forest users and permittees. Some roads cut off by the perimeter fence would result in dead-end conditions. Ongoing and future travel management planning would determine which, if any, of these dead-end roads should be closed or decommissioned. These new conditions would result in site-specific and user-specific impacts, depending upon an individual's preference for using an NFS road.

Under all action alternatives, public access would not be allowed on any roads within the perimeter fence for security purposes and in order to protect public health and safety. This may conflict with the ongoing travel management goals of maintaining NFS roads for public use to the degree reasonable. All NFS roads and unauthorized roads on NFS land within the perimeter fence or roads on NFS land outside the perimeter fence that would no longer be accessible would be either decommissioned, rerouted to connect to another road, changed to

administrative-only access, or have a turnaround constructed near the perimeter fence. Roadway decommissioning details would be developed by the Forest Service when the time for permanent closure is closer and more information is available. The NFS roads expected to be decommissioned or otherwise lost to public access for Alternatives 2 and 3 are shown in table 3.5.4-8.

Approximately 21.7 miles of NFS roads are expected to be decommissioned or lost. The roads impacted by the tailings storage facility are largely local to the tailings area and one route does provide through travel to other areas of the Tonto National Forest. Access would still be available to these areas but those routes may not be as direct or convenient.

All NFS roads that would be used by Resolution Copper and also remain open to the public would be maintained by Resolution Copper, and road improvements would be made when needed to maintain public safety. Table 3.5.4-9 describes the disturbance from new access roads associated with each alternative.

3.5.4.4 Alternative 4 – Silver King

Mine-Related Traffic

Table 3.5.4-5 summarizes the facility footprint and intersections impacted by mine-related traffic at each tailings storage facility alternative. Table 3.5.4-6 shows the total number of trips expected during the peak hour for each alternative (50 percent of trips are assumed to be inbound and 50 percent outbound during the peak hour). Alternative 4 involves 88 trips in the peak hour during construction and 58 trips in the peak hour during normal operations. Alternative 4 is unique in that it also involves relocating the filter plant and loadout facility from San Tan Valley to the West Plant Site. Thus, more employees are needed for the Silver King alternative than the other alternatives. In general, more employees are needed during peak construction than normal operations.

Table 3.5.4-7. Level of service and delay for tailings storage facility alternate locations during peak construction (2022) and normal operations (2027)

Alternative	Intersection	2022 without Project		2022 with Project		2027 without Project		2027 with Project	
		LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)
Alternatives 2 and 3 – Near West Location	Hewitt Station Road (NFS Road 357)/Eastbound U.S. 60								
	Northbound Through/Right	A	0.0	A	0.0	A	0.0	A	0.0
	Southbound Left/Through	B	10.6	B	11.3	B	10.9	B	11.4
	Hewitt Station Road (NFS Road 357)/Westbound U.S. 60								
	Northbound Left/Through	C	15.1	C	15.6	C	15.5	C	16.4
	Southbound Through/Right	B	13.7	B	12.1	B	13.9	B	12.9
Alternative 4 – Silver King Location	Silver King Mine Road (NFS Road 229)/U.S. 60								
	Eastbound Left	A	9.2	A	9.4	A	9.5	A	9.7
	Westbound Left	A	8.7	A	8.7	A	8.9	A	8.9
	Northbound Left/Through/Right	C	20.4	C	24.2	C	24.6	D	27.7
	Southbound Left/Through/Right	C	19.6	C	19.4	C	23.9	C	22.7
Alternative 5 – Peg Leg Location	Florence- Kelvin Highway/SR 79								
	Westbound Left/Right	B	10.1	B	10.4	B	10.4	B	10.6
	Southbound Left	A	7.9	A	7.9	A	7.9	A	8.0
	Florence-Kelvin Highway/SR 177								
	Eastbound Left/Right	A	9.3	A	9.9	A	9.5	A	9.9
	Northbound Left/Through	A	7.6	A	7.6	A	7.6	A	7.6
	Florence-Kelvin Highway/ Peg Leg Road								
	Eastbound Left/Right	n/a	n/a	A	8.8	n/a	n/a	A	8.7
	Northbound Left/Through	n/a	n/a	A	7.3	n/a	n/a	A	7.3
Alternative 6 – Skunk Camp Location	Dripping Springs Road/SR 77								
	Eastbound Left/Right	A	9.1	A	9.8	A	9.4	A	9.8
	Northbound Left/Through	B	7.4	A	7.4	A	7.4	A	7.5

Table 3.5.4-8. Miles of NFS roads decommissioned and lost for Alternatives 2 and 3 tailings storage facility

Facility	Tonto National Forest NFS Roads Decommissioned and Lost (miles)	Resolution Copper Applicant-Committed Improvements and Maintenance
Alternatives 2 and 3 – Near West: Total Roads*	21.70	
NFS Road 2386	0.20	Portions restored to level 1
NFS Road 1903	2.68	None
NFS Road 1907	1.82	None
NFS Road 1909	0.36	None
NFS Road 1910	0.41	None
NFS Road 1912	0.54	None
NFS Road 1913	0.29	None
NFS Road 1914	0.29	None
NFS Road 1915	0.39	None
NFS Road 1916	0.22	None
NFS Road 1917	0.40	None
NFS Road 1918	0.23	None
NFS Road 1919	0.40	None
NFS Road 2359	2.22	None
NFS Road 2360	1.33	None
NFS Road 2361	0.37	None
NFS Road 2362	0.31	None
NFS Road 2363	0.37	None
NFS Road 2364	0.59	None
NFS Road 2366	0.05	None
NFS Road 2380	0.96	None
NFS Road 252	3.36	Portions reconstructed to level 2
NFS Road 3450	0.26	None
NFS Road 518	2.41	None
NFS Road 982	1.10	Portions reconstructed to level 2
NFS Road 3455	0.08	None
NFS Road 357	0.06	Maintained (level not specified)

Note: Level 1 – Basic custodial care; Level 2 – High-clearance vehicles; Level 3 – Suitable for passenger cars

* Includes tailings facility (within fence line) and borrow area footprints; does not include pipeline or transmission line corridors, which are assumed to allow roads to remain open. Road segments less than 0.05 miles not shown.

Table 3.5.4-9. New access roads for tailings storage facility alternatives

Alternative	New Access Roads
Alternatives 2 and 3 – Near West	This alternative would include rerouting Silver King Mine Road (NFS Road 229) to maintain through-access.
Alternative 4 – Silver King	This alternative involves rerouting of Silver King Mine Road for deliveries to the West Plant Site. The new access road would be about 1 mile in length. The new access road reduces the use of Silver King Mine Road (NFS Road 229) to 0.4 mile, but infrequent use along NFS Road 229, north of the MARRCO corridor would continue for accessing the SRP substation.
Alternative 5 – Peg Leg	This alternative would include rerouting Silver King Mine Road (NFS Road 229) to maintain through-access. Most access roads would follow existing routes. However, some new access roads would be needed along the tailings conveyance pipeline corridor. There are two alignments under consideration for the pipeline corridor. Additional access roads for the western alignment would include 5.1 miles or 12.4 acres of new disturbance. Additional access roads for the eastern alignment would include 2.2 miles or 5.3 acres of new disturbance.
Alternative 6 – Skunk Camp	This alternative would include rerouting Silver King Mine Road/ NFS Road 229 to maintain through access. New access roads would be needed along the tailings conveyance pipeline corridor. There are two alignment options under consideration for the pipeline corridor. In summary, 4 miles of access roads are needed for the north option, and 6 miles of access roads are needed for the south option. In addition, 20 miles of new access roads are needed along a separate power line corridor.

Traffic Volume and Level of Service

Table 3.5.4-7 shows the delay and LOS for each alternative, with and without the project, during peak construction (year 2022) and normal operations (year 2027). For Alternative 4, the intersections adjacent to the tailings storage facility alternatives are expected to continue operating at an adequate LOS during both peak construction and normal operations.

Tranportation Routes and Changes in Access

The NFS roads expected to be decommissioned or otherwise lost to public access for Alternative 4 are shown in table 3.5.4-10.

Approximately 17.7 miles of NFS roads are expected to be decommissioned or lost. The roads impacted by the tailings storage facility provide through-travel to other areas of the Tonto National Forest, including some recreation loops and private inholdings (including Silver King Mine). Access would still be available to the recreation areas but those routes may not be as direct or convenient. Administrative access would be maintained on NFS Road 229 in order to provide through-travel to private inholdings.

All NFS roads that would be used by Resolution Copper and also remain open to the public would be maintained by Resolution Copper, and road improvements would be made when needed to maintain public safety. Table 3.5.4-10 describes the disturbance from new access roads associated with each alternative.

3.5.4.5 Alternative 5 – Peg Leg

Mine-Related Traffic

Table 3.5.4-5 summarizes the facility footprint and intersections impacted by mine-related traffic at each tailings storage facility alternative. Table 3.5.4-6 shows the total number of trips expected during the peak hour for each alternative (50 percent of trips are assumed to be inbound and 50 percent outbound during the peak hour). Alternative 5

involves 66 trips in the peak hour during construction and 46 trips in the peak hour during normal operations.

Traffic Volume and Level of Service

Table 3.5.4-7 shows the delay and LOS for each alternative, with and without the project, during peak construction (year 2022) and normal operations (year 2027). For Alternative 5, the intersections adjacent to the tailings storage facility alternatives are expected to continue operating at an adequate LOS during both peak construction and normal operations.

Transportation Routes and Changes in Access

Alternative 5 would not result in the loss or decommissioning of any additional NFS roads due to the tailings storage facility. BLM estimates that the Alternative 5 footprint would directly affect approximately 29 miles of inventoried routes, with additional indirect effects from through disruption of existing routes. The BLM land in the area is designated under off-highway vehicle (OHV) regulations as “Limited to Existing Roads and Trails.” The area includes existing primitive roads and trails, and the tailings facility would cause the loss of access and disrupt the continuity of existing routes. BLM also has identified potential loss of access to mining activities and grazing facilities as concerns for Alternative 5.

3.5.4.6 Alternative 6 – Skunk Camp

Mine-Related Traffic

Table 3.5.4-5 summarizes the facility footprint and intersections impacted by mine-related traffic at each tailings storage facility alternative. Table 3.5.4-6 shows the total number of trips expected during the peak hour for each alternative (50 percent of trips are assumed to be inbound and 50 percent outbound during the peak hour). Alternative 5 involves 64 trips in the peak hour during construction and 46 trips in the peak hour during normal operations.

Traffic Volume and Level of Service

Table 3.5.4-7 shows the delay and LOS for each alternative, with and without the project, during peak construction (year 2022) and normal operations (year 2027). For Alternative 6, the intersections adjacent to the tailings storage facility alternatives are expected to continue operating at an adequate LOS during both peak construction and normal operations.

Transportation Routes and Changes in Access

Alternative 6 would be located on private lands (after assumed acquisition of State Trust lands) and would impact 5.7 miles of Dripping Springs Road. BLM has identified the potential loss of access to mining activities and grazing facilities as concerns for Alternative 6.

3.5.4.7 Cumulative Effects

The Tonto National Forest identified the following reasonably foreseeable future actions as likely, in conjunction with development of the Resolution Copper Mine, to contribute to cumulative impacts on transportation and access, which may include impacts on the roads adjacent to the proposed mine, roads that would provide regional access to the proposed mine and its facilities, roads within or cut off by the perimeter fence that would be inaccessible to the public from mine activities, and the proposed primary access roads and utility maintenance roads (see figure 3.5.4-1). As noted in section 3.1, past and present actions are assessed as part of the affected environment; this section analyzes the effects of any RFFAs, to be considered cumulatively along with the affected environment and Resolution Copper Project effects.

- *Pinto Valley Mine Expansion.* The Pinto Valley Mine is an existing open-pit copper and molybdenum mine located approximately 8 miles west of Miami, Arizona, in Gila County. Pinto Valley Mining Corporation is proposing to expand mining activities onto an estimated 1,011 acres of new disturbance (245 acres on Tonto National Forest land and 766 acres on private

Table 3.5.4-10. Miles of NFS roads decommissioned and lost for Alternative 4 tailings storage facility

Facility	Tonto National Forest NFS Roads Decommissioned and Lost (miles)*	Resolution Copper Applicant-Committed Improvements and Maintenance
Alternative 4 – Silver King: Total Roads	17.70	
NFS Road 229	1.97	Portions reconstructed to level 3
NFS Road 1010	0.32	None
NFS Road 1053	1.46	None
NFS Road 2358	0.22	None
NFS Road 2371	0.38	None
NFS Road 2374	0.78	None
NFS Road 2375	0.41	None
NFS Road 2386	0.20	Portions restored to level 1
NFS Road 2389	0.82	None
NFS Road 2442	0.39	None
NFS Road 2443	0.12	None
NFS Road 2444	0.18	None
NFS Road 2445	0.61	None
NFS Road 2446	0.14	None
NFS Road 2447	0.65	None
NFS Road 2448	1.18	None
NFS Road 2449	0.25	None
NFS Road 2450	0.06	None
NFS Road 2451	0.12	None
NFS Road 2452	1.43	None
NFS Road 3152	0.55	Portions reconstructed to level 3
NFS Road 3787	0.14	None
NFS Road 650	3.62	None†
NFS Road 982	1.70	None†

Note: Level 1 – Basic custodial care; Level 2 – High-clearance vehicles; Level 3 – Suitable for passenger cars

* Includes tailings facility (within fence line) and borrow area footprints; does not include pipeline or transmission line corridors, which are assumed to allow roads to remain open. Road segments less than 0.05 miles not shown.

† The GPO indicates reconstruction of portions of these roads to level 2, but those actions were specific to the tailings storage facility at the Near West location.

land owned by Pinto Valley Mining Corporation) and extend the life of the mine to 2039. Impact analysis for the EIS is still pending; however, it is reasonable to expect that continued mine operations would contribute to heavy haul truck traffic along U.S. 60 and other roadways in the area, as well as vehicular traffic from mine employees, contractors, and others coming to and from the Pinto Valley Mine.

- *Ripsey Wash Tailings Project.* Mining company ASARCO is planning to construct a new tailings storage facility to support its Ray Mine operations. The environmental effects of the project were analyzed in an EIS conducted by the USACE and approved in a ROD issued in December 2018. As approved, the proposed tailings storage facility project would occupy an estimated 2,574 acres and be situated in the Ripsey Wash watershed just south of the Gila River approximately 5 miles west-northwest of Kearny, Arizona, and would contain up to approximately 750 million tons of material (tailings and embankment material). ASARCO estimates a construction period of 3 years and approximately 50 years of expansion of the footprint of the tailings storage facility as slurry tailings are added to the facility, followed by a 7- to 10-year period for reclamation and final closure. Impacts on transportation include a minor increase of approximately 115 vehicles per day along SR 177 during 3-year construction phase; during operations, only a negligible increase in project-associated vehicular traffic is anticipated. Approximately 1.4 miles of the existing, unpaved Florence-Kelvin Highway would be rerouted to the north and northeast of the tailings storage facility site and replaced with paved (asphalt) road. Cumulative effects associated with this project would be primarily related to the Alternative 5 – Peg Leg tailings storage facility location, with traffic using similar roads.
- *Silver Bar Mining Regional Landfill and Cottonwood Canyon Road.* AK Mineral Mountain, LLC, NL Mineral Mountain, LLC, POG Mineral Mountain, LLC, SMT Mineral Mountain, LLC, and Welch Mineral Mountain, LLC proposed to build a municipal solid waste landfill on private property surrounded by BLM land in an area known as the Middle Gila Canyons area. There is no way to access the proposed landfill without crossing BLM land. The owners/developers and Pinal County have applied for a BLM right-of-way grant and Temporary Use Permit for two temporary construction sites to obtain legal access to the private property and authorization of the needed roadway improvements. The proposed action includes improving a portion of the existing Cottonwood Canyon Road and a portion of the existing Sandman Road in order to accommodate two-way heavy truck traffic to and from the proposed landfill. Traffic generated by the planned landfill would significantly increase the overall annual daily traffic on Cottonwood Canyon Road. Average annual daily traffic would increase by approximately 367 percent (303 percent during winter months and 549 percent in summer). Greater safety risks may occur on this road due to the mixed use of OHVs and truck traffic to and from the proposed landfill, as the traffic generated by the landfill would primarily consist of tractor/trailer vehicles with a gross weight of over 80,000 pounds. Mineral Mountain Road and Price Road would likely be impacted by displaced traffic due to temporary closures and disruption of access on Cottonwood Canyon Road.
- *Imerys Perlite Mine.* Imerys Perlite Mine submitted a plan of operations in 2013 which included plans for continued operation of the existing sedimentation basin at the millsite; continued use of segments of NFS roads for hauling; and mining at the Forgotten Wedge and Rosemarie Exception No. 8 claims. The proposed action would have Imerys Perlite Mine continuing use of NFS Roads 229, 989, and a portion of NFS Road 2403 throughout the life of the project. Imerys would be responsible for maintaining these roads at a native-surfaced road level. Traffic to and from the millsite would occur on a regular basis.
- *Ray Land Exchange and Proposed Plan Amendment.* ASARCO is also seeking to complete a land exchange with the BLM by

which the mining company would gain title to approximately 10,976 acres of public lands and federally owned mineral estate located near ASARCO's Ray Mine in exchange for transferring to the BLM approximately 7,304 acres of private lands, primarily in northwestern Arizona. It is known that at some point ASARCO wishes to develop a copper mining operation in the "Copper Butte" area west of the Ray Mine; however, no details are currently available as to potential environmental effects, including to transportation and access, resulting from this possible future mining operation. Under the proposed action, holders and lessees of current and existing rights-of-way would negotiate directly with ASARCO regarding their status, terms, and conditions.

- *Tonto National Forest Plan Amendment and Travel Management Plan.* The Tonto National Forest is currently in the process of revising its forest plan to replace the plan now in effect, which was implemented in 1985. Simultaneously, the Tonto National Forest is developing a Supplemental EIS to address certain court-identified deficiencies in its 2016 Final Travel Management Rule EIS. Both documents and their respective implementing decisions are expected within the next 2 years. Both documents would have substantial impacts on NFS roads and transportation routes through Tonto National Forest lands. Based on the proposed travel management changes:
 - A number of routes identified for decommissioning fall within the project footprint; these would have no additional impacts when considered cumulatively with Resolution Copper Project impacts.
 - No transportation routes identified for proposed decommissioning would render invalid any alternative access routes needed to bypass project facilities.
 - Several routes proposed for decommissioning parallel proposed pipeline corridor segments. These would likely come into conflict since access roads are needed along the pipeline corridors. This occurs primarily along the Alternative 5 western pipeline corridor option.
- No new roads proposed by Resolution Copper appear to conflict with roads proposed for decommissioning.
- *Copper King Exploratory Drilling/Superior West Exploration.* This project combines the environmental review of two mineral exploration projects proposed by Bronco Creek Exploration, Copper King, and Superior West. While Bronco Creek Exploration is the mining claimant, the exploration would be funded and bonded by Kennecott Exploration Company (part of the Rio Tinto Group), who would be the operator of record for both Plans of Operations. The combined projects result in a total of 106 unique drill site locations identified, of which the proponent would be authorized to select up to 43 to be drilled over a 10-year period. Existing roads and helicopter would be used to access drill sites. Some additional traffic would occur, but would be unlikely to cumulatively add to Resolution Copper Project impacts.
- *ADOT Vegetation Treatment.* ADOT plans to conduct annual treatments using EPA-approved herbicides to contain, control, or eradicate noxious, invasive, and native plant species that pose safety hazards or threaten native plant communities on road easements and NFS lands up to 200 feet beyond road easement on the Tonto National Forest. It can reasonably be assumed that ADOT would continue to conduct vegetation treatments along U.S. 60 on the Tonto National Forest during the expected life of the Resolution Copper Mine (50–55 years) for safety reasons. The vegetation treatment could impact motorized use along roads from additional traffic and road use, but impacts would be minimal and would be unlikely to cumulatively add to impacts from the Resolution Copper Project.
- *LEN Range Improvements.* Two actions have been proposed relating to the LEN allotment, which is a large grazing allotment in the so-called "Copper Butte" area located south of Superior between SR 177 on the east side and the White Canyon

Wilderness on the west side; the LEN allotment is administered by the BLM Tucson Field Office. The first action would be to renew the grazing permit (#6197). The second action includes redrilling eight existing wells and drilling three new wells; equipping them with solar pumps, storage tanks, and water troughs; and performing maintenance of roads and access to the range improvements. Presently, conditions of some roads on the allotment are in disrepair and are not passable except by high-clearance four-wheel-drive vehicles. The proposed project would include minimal road maintenance and repair to allow drilling equipment into the project sites. This improvement could increase access to the area, but is not expected to be cumulative with Resolution Copper Project impacts, as none of the project disturbance is in this same area.

Other projects and plans are certain to occur or be in place during the foreseeable life of the Resolution Copper Mine (50–55 years). These, combined with general population increase and increase in recreation from mitigation measures coordinated by Resolution Copper (such as the planned outdoor recreation hub at the town of Superior, and the Recreation User Group [RUG] Plan), may cumulatively contribute to future changes to transportation use patterns in the region.

3.5.4.8 Mitigation Effectiveness

The Forest Service is in the process of developing a robust mitigation plan to avoid, minimize, rectify, reduce, or compensate for resource impacts that have been identified during the process of preparing this EIS. Appendix J contains descriptions of mitigation concepts being considered and known to be effective, as of publication of the DEIS. Appendix J also contains descriptions of monitoring that would be needed to identify potential impacts and mitigation effectiveness. As noted in chapter 2 (section 2.3), the full suite of mitigation would be contained in the FEIS, required by the ROD, and ultimately included in the final GPO approved by the Forest Service. Public comment on the EIS, and in particular appendix J, will inform the final suite of mitigation measures.

At this time, no mitigation measures have been identified that would be pertinent to transportation and access. Applicant-committed environmental protection measures have been detailed elsewhere in this section, would be a requirement for the project, and have already been incorporated into the analysis of impacts.

Unavoidable Adverse Impacts

Increased traffic associated with mine worker commuting and truck traffic to and from the mine are expected to result in impacts that cannot be avoided or fully mitigated, including increased traffic congestion and increased risk of traffic accidents. Decreases in LOS to subpar levels (LOS E or F) would occur at several intersections due to mine traffic, unless traffic changes were made to accommodate the increased traffic. The only applicant-committed environmental protection measure that would alleviate impacts on LOS would be the addition of turn lanes at the SR 177/U.S. 60 intersection.

Access to the Oak Flat area, including Devil's Canyon and Apache Leap, would be maintained to an extent, but would use less-direct routes than NFS Road 315, which currently provides the primary access. Loss of access to these areas would be mitigated, but not fully.

Loss of access to the highlands north of the West Plant Site would be fully offset for Alternatives 2, 3, 5, and 6 by rerouting the road. Loss of access to the general public under Alternative 4 would not be mitigated by this measure, as only administrative access would be maintained.

All alternatives, including Alternative 6, could result in some loss of access to mining activities and grazing facilities in the area around the tailings storage facilities.

3.5.4.9 Other Required Disclosures

Short-Term Uses and Long-Term Productivity

Impacts from increased mine-related traffic would be short-term impacts that would cease when the mine is closed.

Irreversible and Irretrievable Commitment of Resources

Irretrievable impacts on transportation and access would occur as a result of an increase of traffic on State, County, and public NFS roads from mining and related activities within the analysis area and from the reduction of public access to roads within the perimeter fence. Because mine-related traffic would cease after mine closure, traffic impacts would not be considered an irreversible commitment of resources. Existing roads that would be decommissioned within the perimeter fence of the mine would constitute both an irreversible and irretrievable commitment of resources. Roads that are permanently covered with tailings or within the subsidence area would be an irreversible commitment, whereas those that are cut off to public access by the perimeter fence could potentially be restored or rerouted following mine closure and therefore are considered to be an irretrievable commitment of resources.